

Table of Contents

Schedule of Activities	S3
ILTS Council	S5
ELITA Board	S7
LICAGE Council	S8
Congress Program Committee	S9
Acknowledgement of Supporters.....	S10
General Information	S11
Who Should Attend.....	S11
Goals and Objectives	S11
CME Information	S11
Scientific Program	S11
Abstracts	S11
Poster Sessions	S11
Registration	S12
Society Membership Booths.....	S12
Session Descriptions	S12
Complimentary Wi-Fi.....	S13
Speaker Slide Check-in Room	S13
Congress Location	S14
Social Activities.....	S14
Awards.....	S15
Program.....	S21
Author Index	S375
Keyword Index.....	S395

Schedule of Activities

All activities will take place in the Queen Elizabeth II Conference Centre unless otherwise listed.

On-Site Registration Hours

Room: Sanctuary Foyer, Ground Level

Tuesday, June 3, 2014 3:00 pm – 6:00 pm

Wednesday, June 4, 2014 6:30 am – 7:00 pm

Thursday, June 5, 2014 6:30 am – 7:00 pm

Friday, June 6, 2014 6:30 am – 7:00 pm

Saturday, June 7, 2014 7:30 am – 1:00 pm

Speaker Slide Check-in Hours

Room: Albert Suite, Level 2

Tuesday, June 3, 2014 3:00 pm – 6:00 pm

Wednesday, June 4, 2014 6:30 am – 7:00 pm

Thursday, June 5, 2014 6:30 am – 7:00 pm

Friday, June 6, 2014 6:30 am – 7:00 pm

Saturday, June 7, 2014 7:30 am – 1:00 pm

Exhibit Hours

*Room: Benjamin Britten Lounge, Level 3
Caxton Lounge, Level 2
Pickwick Suite, Level 1*

Wednesday, June 4, 2014 5:30 pm – 7:00 pm
Opening of Exhibits, Opening Reception

Thursday, June 5, 2014 10:00 am – 5:30 pm

Friday, June 6, 2014 10:00 am – 5:00 pm

Special Events in the Exhibit Hall

*Room: Benjamin Britten Lounge, Level 3
Caxton Lounge, Level 2
Pickwick Suite, Level 1*

Wednesday, June 4, 2014 5:30 pm – 7:00 pm
*Opening of Exhibits/Opening Reception,
Poster Session I*

Thursday, June 5, 2014 10:30 am – 11:15 am
*Morning Coffee Break, Poster Session II
Presenters in Attendance*

5:00 pm – 5:30 pm
*Afternoon Coffee Break, Poster Session II
Presenters in Attendance*

Friday, June 5, 2014 10:15 am – 11:00 am

Morning Coffee Break, Poster Session III

Presenters in Attendance

4:15 pm – 4:45 pm

Afternoon Coffee Break, Poster Session III

Presenters in Attendance

Poster Sessions (Presenters in Attendance)

Room: Caxton Lounge, Level 2

Pickwick Suite, Level 1

Poster Session I

Wednesday, June 4, 2014 5:30 pm – 7:00 pm

Poster Session II

Thursday, June 5, 2014 10:15 am – 11:00 am
4:45 pm – 5:15 pm

Poster Session III

Friday, June 6, 2014 10:15 am – 11:00 am
4:45 pm – 5:15 pm

Poster Sessions (Presenters Set-Up and Dismantle)

*Room: Caxton Lounge, Level 2
Pickwick Suite, Level 1*

Poster Session I: Wednesday, June 4, 2014
Set-Up: 3:00 pm – 5:00 pm
Dismantle: 7:00 pm – 7:30 pm

Poster Session II: Thursday, June 5, 2014
Set-Up: 9:00 am – 10:00 am
Dismantle: 5:30 pm – 6:00 pm

Poster Session III: Friday, June 6, 2014
Set-Up: 9:00 am – 10:00 am
Dismantle: 5:30 pm – 6:00 pm

Posters are to be removed immediately following the end of Poster Viewing at 5:30 pm on Friday, June 6. Any posters left on the board will be removed and can be picked up at the Congress registration desk before Saturday, June 7, 1:00 pm. Any posters not picked up by that time will be discarded.

Schedule of Activities

All activities will take place in the Queen Elizabeth II Conference Centre unless otherwise listed.

Opening Ceremony

Room: Fleming Room, Level 3

Thursday, June 5, 2014 8:00 am – 8:15 am

Vanguard Reception*

Room: Mountbatten Lounge, Level 5

Thursday, June 5, 2014 7:00 pm – 8:00 pm

**Attendees age 42 and under are invited to attend.*

Presidential Address, Distinguished Service Award, & ILTS Business Meeting

Room: Fleming Room, Level 3

Friday, June 6, 2014 9:30 am – 10:15 am

Medieval Magnificence at Guildhall *

Room: Offsite - Guildhall

Friday, June 6, 2014 8:00 pm – 11:00 pm

**Ticketed event with separate registration fee. No entry permitted without ticket. Roundtrip transportation is included with the purchase of each ticket.*

ILTS Council

Executive Committee

President

Didier Samuel, MD, PhD
Hospital Paul Brousse
Villejuif, France

President-Elect

Elizabeth A. Pomfret, MD, PhD
Lahey Clinic
Burlington, MA, USA

Secretary

Michael R. Charlton, MD
Intermountain Medical Center
Murray, UT, USA

Treasurer

Patrizia A. Burra, MD, PhD
University of Padova
Padova, Italy

Past President

Richard B. Freeman, Jr., MD
Dartmouth-Hitchcock Medical Center
Lebanon, NH, USA

Councilors

Marina Berenguer, MD
Hospital Le Fe
Valencia, Spain

Chao-Long Chen, MD
Chang Gung Memorial Hospital
Kaohsiung Hsien, Taiwan

Pierre Clavien, MD, PhD
University Hospital Zurich
Zurich, Switzerland

John R. Klinck, MD, FRCPC, FRCA
Addenbrooke's Hospital
London, United Kingdom

Sung-Gyu Lee, MD
Asan Medical Center
Seoul, Korea

Jan Lerut, MD, PhD
University Hospital of St. Luc
Brussels, Belgium

Claus U. Niemann, MD
University of California, San Francisco
San Francisco, CA, USA

Scope Committee

Juan Carlos Garcia-Valdecasas, MD, PhD
University of Barcelona
Barcelona, Spain

Chung Mau Lo, MD
University of Hong Kong
Hong Kong, China

Michael A.E. Ramsay, MD
Baylor University Medical Center
Dallas, TX, USA

Journal Editors

John R. Lake, MD
University of Minnesota
Minneapolis, MN, USA

John P. Roberts, MD
University of California, San Francisco
San Francisco, CA, USA

Committee Chairs

Anesthesia Committee

Randolph H. Steadman, MD
University of California, Los Angeles
Los Angeles, CA, USA

Scholarship Committee

Nancy Kwan Man, MBBS, PhD
University of Hong Kong
Hong Kong, China

Basic Science Committee

Anil Dhawan, MD
Kings College Hospital
London, United Kingdom

Strategic Alliance Committee

Didier Samuel, MD, PhD
Hospital Paul Brousse
Villejuif, France

Development Committee

John R. Lake, MD
University of Minnesota
Minneapolis, MN, USA

Vanguard Committee

Robert S. Venick, MD
University of California, Los Angeles
Los Angeles, CA, USA

Education Committee

Patrizia Burra, MD, PhD
University of Padova
Padova, Italy

Website Committee

John R. Klinck, MD
Addenbrookes Hospital
London, United Kingdom

Pediatric

Sue V. McDiarmid, MD
University of California, Los Angeles
Los Angeles, CA, USA

ILTS Headquarters

15000 Commerce Parkway, Suite C
Mt. Laurel, NJ 08054
United States
Telephone: 856-439-0500
Fax: 856-439-0525
www.ilts.org

ELITA Board

Executive Committee

President

Paolo Muiesan, MD
University of Birmingham
Birmingham, United Kingdom

Secretary

Andreas Pascher, MD, PhD
Humboldt-Universitat
Berlin, Germany

Vice Chairman

Christophe Duvoux, MD
Henri Mondor Hospital
Paris, France

Treasurer

Gabriela A. Berlakovich MD
Medical University of Vienna
Vienna, Austria

ELTR Custodian

Rene Adam, MD
Hospital Paul Brousse
Paris, France

Members

Luca S. Belli, MD
Ospedale Niguarda Ca Granda
Milan, Italy

William F. Bennet, MD, PhD
Sahlgrenska University Hospital
Gothenburg, Sweden

Martin Oliverius, MD, PhD
Institute for Clinical & Experimental Medicine
Prague, Czech Republic

Jacques Pirenne, MD, PhD
Catholic University Leuven
Leuven, Belgium

Wojciech Polak, MD, PhD
Erasmus Medical Center Rotterdam
Rotterdam, The Netherlands

Roberto I. Troisi, MD, PhD
Ghent University
Ghent, Belgium

LICAGE Council

Executive Officers

President

Philip Bayly, MBBS, FRCA
Freeman Hospital
Newcastle, United Kingdom

Membership Secretary

Clare Melikian, MBBS, FRCA
Royal Free Hospital
London, United Kingdom

Secretary/Treasurer

Alistair Lee, MBChB, FRCA, FFICM
Henri Mondor Hospital
Paris, France

Councilors

Giannia Biancofiore, MD
Ospedale Cisanello
Pisa, Italy

John Klinck, MD, FRCPC, FRCA
Addenbrooks Hospital
Cambridge, United Kingdom

Claus-Georg Krenn, MD, PhD, MBA
Medical University of Vienna
Vienna, Austria

Susan Mallett, MBBS, FRCA
Royal Free Hospital
London, United Kingdom

Susan Mandell, MD
University of Colorado Health Sciences Center
Denver, CO, USA

Fuat Saner, DEAA, MD
University Hospital
Essen, Germany

Catherine Paugam-Burtz, MD, PhD
Hospital Beaujon
Paris, France

Koen Reyntjens, MD
University Medical Hospital
Groningen, The Netherlands

2014 Congress Program Committee

Program Chair

Elizabeth A. Pomfret, MD, PhD
Lahey Clinic
Burlington, MA, USA

ILTS Local Program Chair

Anil Dhawan, MD
Kings College Hospital
London, United Kingdom

ELITA Local Program Chair

Paolo Musien, MD
University Hospitals Birmingham NHS Foundation
Birmingham, United Kingdom

LICAGE Local Program Chair

Susan Mallett, MB, BS, FRCA
Royal Free Hospital
London, United Kingdom

Local Committee

Nigel Heaton, MD
Kings College Hospital
London, United Kingdom

John O'Grady, MD, PhD
Kings College Hospital
London, United Kingdom

Alberto Sanchez-Fueyo, MD, PhD
Kings College Hospital
London, United Kingdom

Anita Verma, MD
Kings College Hospital
London, United Kingdom

Julia Wendon, PharmD
Kings College Hospital
London, United Kingdom

Acknowledgement

The ILTS, ELITA & LICAGE would like to thank the following companies for their support of the Congress with unrestricted educational grants (at time of printing):

Four Star Level



Two Star Level



One Star Level



General Information

Who Should Attend

The Joint International Congress of the ILTS, ELITA and LICAGE is the leading education Congress for scientists, surgeons, anesthesiologists, physicians, nurses, and organ procurement personnel in the field of liver transplantation from around the world. The Congress is designed to allow the liver transplantation specialists to interact and network with individuals from various parts of the globe and to compare and understand the differences in procedures and therapy in the treatment of liver transplantation.

Goals & Objectives

1. To provide an international scientific and educational exchange for anesthesiologists, hepatologists, surgeons, intensivists and transplant nurses.
2. To explore the contraindications to living donor liver transplant.
3. To promote understanding of perioperative management controversies.
4. To review recent innovative techniques in liver transplantation.
5. To enhance the dialogue regarding adults with pediatric liver disease.

CME Information

Accreditation Statement

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the Institute for the Advancement of Human Behavior (IAHB) and the International Liver Transplant Society (ILTS). The IAHB is accredited by the ACCME to provide continuing medical education for physicians.

Credit Designation Statement

The IAHB designates this live activity for a maximum of 22.0 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

CME Certificates/Evaluations

Your opinion is important to the program committee. CME certificates and evaluations can be submitted online. **This information can be found by visiting www.ilts.org after the meeting.**

Scientific Program

All sessions, unless otherwise noted, will take place at the Queen Elizabeth II Conference Centre (QEII).

Abstracts

Abstracts selected for the Congress will be presented in plenary, concurrent, and poster sessions that will highlight the most outstanding papers from liver transplant specialties. All accepted abstracts are published in the official Congress program book, a supplement to the scientific journal supplement, ILTS/AASLD journal, *Liver Transplantation*.

Poster Sessions

The Poster Sessions are an important educational event of this Congress. We hope you support and attend these scientific presentations. All poster presentations are located in the Caxton Lounge on Level 2 and Pickwick Suite on Level 1 of the QEII. Poster presentations have been assigned in numerical order per the numerical order of printed abstracts in this program book. All abstracts selected for poster presentation will be available online through the ILTS website, <http://2014.ilts.org> by May 2014.

Registration

All attendees must be registered for the Congress. You are required to wear your badge to move in and out of sessions. Registration is located in the Sanctuary Foyer, Ground Level of the QEII. Registration hours are listed in the Schedule of Activities, page S3

Society Membership Booths

The ILTS, ELITA & LICAGE will have society membership booths located in the Sanctuary Foyer, Ground Level of the QEII. The membership booths will be open during registration hours. All attendees are encouraged to stop by and visit the booths to learn about the latest information.

Session Descriptions

• State-of-the-Art Lectures

Thursday, June 5, 11:00 – 11:30 am and Friday June 6, 11:00–11:30 am

Top experts in the field of liver transplantation, Roger S. Williams, CBE and Allan D. Kirk, MD, PhD, will each present a State-of-the-Art Lecture. Dr. Williams will present “Medical Care or Transplantation for the Acute Liver Failure” on Thursday, June 5, 11:00 am – 11:30 am, and Dr. Kirk will present “Humoral Alloimmunity and the Liver: *Emerging Insights and Their Therapeutic Implications*” on Friday, June 6, 11:00 am – 11:30 am

• Featured Symposia

Thursday, June 5, Friday, June 6 and Saturday, June 7

The program committee has developed multiple program topics that will be discussed in the Featured Symposia sessions. The committee has invited liver transplantation experts from across the globe to present on topics addressing the **Living Donor, Acute Liver Failure, Long-term Outcomes, and Extremes of the Immunologic Spectrum** (all program topics can be found in the Scientific Program).

• Vanguard Grand Rounds Case Presentations

Thursday, June 5, 6:30 am – 8:00 am

This morning session will involve several presentations of interesting or difficult cases by a Vanguard Committee member to a senior ILTS participant. After comments from the senior member, the audience is encouraged to participate in a lively and informal open discussion. Case presentations will focus on **Late Graft Dysfunction and Donor Specific Antibodies; The Development of Intra-Cardiac Thrombus during Orthotopic Liver Transplantation; and Use of the New Antiviral Therapies Before and After Liver Transplantation for HCV?**

**Registration to attend this session is complimentary, and will be limited to the first 200 registrants. Tickets will be provided and breakfast will be served.*

• Vanguard Debates

Friday, June 6, 6:30 am – 8:00 am

This morning session will involve three debates over controversial topics between a Vanguard Committee member and a senior ILTS participant. Debate topics will include **Should BMI Limit Transplant Candidacy Liver Transplantation for HCC and Transplant Benefit; and Which Grafts can be Considered Truly Marginal in 2014?**

**Registration to attend this session is complimentary, and will be limited to the first 200 registrants. Tickets will be provided and breakfast will be served.*

• Plenary Abstract Sessions

Friday, June 6 and Saturday June 7, 8:00 am – 9:30 am

The Plenary Sessions are submitted abstract sessions. The program planning committee has selected the best rated abstracts to be presented in the Plenary Sessions. Don't miss the opportunity to learn about the latest research being done across the world in liver transplantation. (All program topics can be found in the Scientific Program).

- **Rising Star Symposium***

Thursday, June 5, 8:15 am – 10:15 am

The Rising Star Symposium is a submitted abstract session. The goal of this symposium is to attract the brightest and best combinations of youth and wisdom working in the clinical and basic science of liver transplantation research today. The symposium is designed to encourage young investigator/mentor teams to submit abstracts. The program planning committee has selected six young investigator/mentor teams, and the teams each give a joint 20 minute presentation. The mentor will give a 4-minute presentation of the background information and previous data relevant to the topic. The objective of the mentor's presentation is to educate the Congress attendees on the importance and relevance of the work to be presented. The young investigator will follow with an 8-minute presentation of the data submitted in the abstract. There will be 8 minutes allotted for discussion. (All program topics can be found in the Scientific Program).

**Supported by Bristol-Myers Squibb*

- **Concurrent Oral Abstract Sessions**

Thursday, June 5 & Friday, June 6 - 3:15pm – 4:45pm & 5:15pm – 6:45pm

The Concurrent Oral Sessions are submitted abstract sessions. The program planning committee has selected specific abstracts, and grouped them into specific topic driven concurrent sessions. Each selected abstract presentation will consist of an 8 minute oral presentation given by one of the abstract authors, followed by 2 minutes for audience questions. These sessions will allow participants the opportunity to learn various new insights in a multitude of areas all pertaining to liver transplantation. (All program topics can be found in the Scientific Program).

- **Poster Sessions**

The Poster Sessions are submitted abstract sessions. The program planning committee has selected abstracts to be presented in poster format. Posters are viewable during open exhibit hall hours, and presenters will be attendance during the following dates/times in both the **Caxton Lounge Level 2 and Pickwick Suite Level 1**:

Session I:

Wednesday, June 4 5:30 pm – 7:00 pm

Session II:

Thursday, June 5 10:15 am – 11:00 am
4:45 pm – 5:15 pm

Session III:

Friday, June 6 10:15 am – 11:00 am
4:45 pm – 5:15 pm

- **Submitted Video Session**

Friday, June 6, 5:15 pm – 6:45pm

For the sixth year in a row, Congress participants have been given the opportunity to submit liver transplantation surgical videos for presentation. The program planning committee has selected videos to be presented during one of the concurrent oral abstract time slots.

Complimentary Wi-Fi

There is complimentary Wi-Fi for ILTS attendees in all public spaces and meeting rooms. To access, please use information below:

Click on wireless network: QEIIGuest

Speaker Slide Check-in Room

The Speaker Slide Check-in Room is located in **Albert Suite, Level 2** of the QEII. The Speaker Slide Check-in Room is provided for presenters to prepare for their presentations and ensure a seamless integration of a wide variety of audiovisual technologies in various meeting rooms. All speakers are required to use PowerPoint presentations; it is extremely important that speakers allow sufficient time

for checking into the Speaker Slide Check-in Room. All speakers must check into the Speaker Slide Check-in Room.

- All PowerPoint presentations need to be checked into the Speaker Slide Check-in Room at least 3 hours before your session begins.
- Personnel in the Speaker Slide Check-in Room are available to assist with any last minute changes and to troubleshoot any problems presenters may have.
- Presenters will have their presentation electronically queued from the Speaker Slide Check-in room to the meeting room.

By checking in at the Speaker Slide Check-in Room and following these simple guidelines, speakers greatly contribute to the success of the congress. The Speaker Slide Check-in Room hours are located in the Schedule of Activities page S3.

Congress Location

Queen Elizabeth II Conference Centre

The Queen Elizabeth II Conference Centre will host this year's Joint Congress. Situated in the heart of Westminster, the Centre has stunning views of Westminster Abbey, Big Ben and the London Eye both from the doorstep and from inside the Centre itself. One of the world's great capital cities, London's cosmopolitan blend of culture, history, vibrancy and modern living provides the ideal setting for unforgettable events.

Queen Elizabeth II Conference Centre

Broad Sanctuary, Westminster
London, United Kingdom, SW1P3EE

Social Activities

Opening Reception

Wednesday, June 14, 2014

5:30 pm – 7:00 pm

Benjamin Britten Lounge, Level 3

Caxton Lounge, Level 2

Pickwick Suite, Level 1

The Opening Reception will take place during the Opening of Exhibits. All registered attendees are able to attend this event.

Opening Ceremony

Thursday, June 5, 2014

8:00 – 8:15 a.m.

A special presentation by Sir Roy Calne, FRCP, FRCS, FRS, fellow of the Royal Society and was Professor of Surgery at Cambridge University, will be given. All registered attendees are able to attend this event.

Medieval Magnificence at Guildhall -

Congress Closing Reception*

Friday, June 6, 2014

8:00 pm – 11:00 pm

Guildhall has been the city powerhouse since the 12th Century. In an era when the Lord Mayor of London rivalled the Monarch for influence this is where they held court. Today, 800 years later, Guildhall is still the home of the City of London Corporation and acts as a grand setting for glittering banquets in honor of visiting Heads of State and other dignitaries. Situated in the heart of London, this rare and magnificent medieval Grade 1 listed landmark offers a spectacular backdrop for any prestigious event.

**This is a ticketed reception. Entry will only be granted to attendees that purchase tickets in advance in addition to Congress registration. Please note that there is limited ticket availability for this event. No entry is permitted without a ticket. Roundtrip transportation is provided with the purchase of each ticket. Transportation will be provided.*

Distinguished Service Award Winners

Nigel Heaton, MBBS, FRCS
Professor of Transplant Surgery
Kings College Hospital
London, United Kingdom

and

Andrew K. Burroughs, MBChB(Hons), FEBG, FRCP
(Deceased)

The Distinguished Service Awards will be presented on
Friday, June 6, 9:30 am – 10:15 am, in the Fleming Room, Level 3 of the QEIL.

Rising Star Award Winners

*Supported by an Unrestricted Educational Grant from Bristol-Myers Squibb.

The Rising Star Award is given to the best combinations of youth and wisdom working in the clinical and basic science of liver transplantation research today. This award is based upon abstract submissions by a young investigator and their designated mentor. Rising Star Award winner presentations will take place on Thursday, June 5, 8:15 - 10:15 am in the Fleming Room, Level 3 of the QEII.

*Supported by an Unrestricted Educational Grant from Bristol Myers Squibb.

Team #1, Abstract # O-1

Human Liver Transplantation Using Normothermic Machine Preservation

Peter Friend, MD

-Mentor

Nuffield Department of Surgical Sciences
Oxford, United Kingdom

Reena Ravikumar, MBChB

-Young Investigator

University of Oxford
Oxford, United Kingdom

Team #2, Abstract O-2

Fucosyltransferase-2 Non-Secretor Status is Associated with Non-Anastomotic Biliary Strictures After Liver Transplantation in Recipients with Primary Sclerosing Cholangitis

Luc van der Laan, PhD

-Mentor

Erasmus University Medical Center
Rotterdam, The Netherlands

C. Verhoeven, MSc

-Young Investigator

Erasmus University Medical Center
Rotterdam, The Netherlands

Team #3, Abstract O-3

Hepatic Adenoma and its Complication in Patients with Glycogen Storage Disease Type I after Portocaval Shunt before Liver Transplantation

Nam Joon Yi, MD, PhD

-Mentor

Seoul National University College of Medicine
Seoul, Korea

YoungRok Choi, MD

-Young Investigator

Seoul National University College of Medicine
Seoul, Korea

Team #4, Abstract O-4

Alginate Microencapsulated Human Hepatocytes Optimised for Clinical Transplantation

Ragai Mitry, BSC, DIc, PhD

-Mentor

Kings College Hospital
London, United Kingdom

Jitraruch Suttiruk, MD

-Young Investigator

Kings College Hospital
London, United Kingdom

Team #5, Abstract O-5

Decellularized Liver Scaffolds Preferentially Induce Foxp3+ Regulatory T-cells and Inhibit Allogenic T-cell Activation

Shusen Zheng, MD, PhD

-Mentor

Key Laboratory of Combined Multi-organ Transplantation, Ministry of Public Health
Hangzhou, Zhejiang, China

Zhongjie Lu, MM

-Young Investigator

Key Laboratory of Combined Multi-organ Transplantation, Ministry of Public Health
Hangzhou, Zhejiang, China

Team #6, Abstract O-6

Liver transplantation with Allografts Recovered from Donors after Circulatory Death Using In-situ Normothermic Regional Perfusion (NRP)

Gabriel Oniscu, MBChB, MD, FRCS

-Mentor

Royal Infirmary of Edinburgh
Edinburgh, United Kingdom

Andrew Sutherland, MB, ChB, DPhil

-Young Investigator

Royal Infirmary of Edinburgh
Edinburgh, United Kingdom

Young Investigator Awards

Cameron Fairfield, Abstract # O-7

Meta-analysis of Steroid-containing Versus Steroid-sparing Immunosuppression for Liver Transplanted Patients: Preliminary Findings of a Cochrane Review.

Blanca Norero, Abstract # O-8

The Expression of Genes Related to B Cells are Associated to a Successful Conversion from Calcineurin Inhibitor (CNI) Based Immunosuppression to Mycophenolate Mofetil (MMF) Monotherapy in Liver Transplant Recipients.

Sumana Ramachandra, Abstract # O-17

Hemiportocaval Shunts: A Panacea for low GRWR grafts in Adult Living Donor Liver Transplantation?

Saista Amin, Abstract # O-43

Pediatric Liver Allograft Health with Normal Liver Function Test, 10 Years after Liver Transplantation: All Is Not Well!!!

Carlo Pulitano, Abstract # O-52

In Vivo Assessment of Hepatic Microcirculation Using Sidestream Dark Field Imaging: An Innovative Method To Predict Early Graft Function After Liver Transplantation.

Amit Rastogi, Abstract # O-60

Hilar Anatomy in 1319 Living Liver Donors and Its Implications on Clinical Acceptability.

Wei Chen, Abstract # O-74

Rapamycin Enhances Cetuximab Cytotoxicity by Inhibiting Mtor-Mediated Drug Resistance in Mesenchymal Hepatoma Cells.

Shu Lu, Abstract # O-85

Applicability of Rapid Thrombelastography and Functional Fibrinogen Assay in Adult Liver Transplantation.

Xuyong Wei, Abstract # O-88

Clinical Significance of Serum Aminoacylase 1 Expression in Human Hepatocellular Carcinoma and Liver Transplantation.

Gun Hyung Na, Abstract # O-89

Effects of Locoregional Treatments Before Living Donor Liver Transplantation on Overall Survival and Disease Free Survival.

Masahiro Ohira, Abstract # O-90

Novel Adjuvant Immunotherapy Using Liver Natural Killer Cells for Preventing Recurrence of Hepatocellular Carcinoma in Liver Transplantation.

James Fung, Abstract # O-97

Histological Outcome After Liver Transplantation For Chronic Hepatitis B Using Oral Antiviral Therapy Alone Without Hepatitis B Immune Globulin.

Antonino Castellaneta, Abstract # O-106

Plasmacytoid Dendritic Cell-Derived IFN-[alpha] Promotes Murine Liver Ischemia/Reperfusion (I/R) Injury Via Induction of Hepatocyte IRF-1.

Osamu Yoshida, Abstract # O-107

DAP12 Deficiency Enhances the Allostimulatory Capacity of Liver Dendritic Cells and Breaks Liver Transplant Tolerance.

Jaime Glorioso, Abstract # O-115

The Spheroid Reservoir Bioartificial Liver: A Pilot Study.

Davide Ghinolfi, Abstract # O-124

Octogenarian Donors and Post-Liver Transplant Ischemic Type Biliary Lesions (ITBL): A Predictive Score Based on Donor Hemodynamic Instability and Bilirubin Peak.

Amelia Hessheimer, Abstract # O-125

Pre-Arrest Heparinization is Better than Post-Arrest Fibrinolysis in DCD Liver Transplantation.

Lorenzo Orci, Abstract # O-133

Donor Quality and the Risk of Hepatocellular Carcinoma Recurrence after Liver Transplantation.

Chengli Du, Abstract # O-134

The Down-regulation of Mir-126 Promotes Metastasis and Angiogenesis in Hepatocellular Carcinoma.

Hiroshi Sakai, Abstract # O-135

The Impact of Fcγ Receptor Polymorphism on Infection-Related Complications in ABO-Incompatible Living Donor Liver Transplantation Under Rituximab-Based Immunosuppressive Regimen.

Young Investigator Awards

Sanghoon Lee, Abstract # O-139

Liver Transplantation using Hepatitis B Core-Positive
Donor Liver Grafts in Infants and Children.

SooHo Lee, Abstract # P-10

Detailed Electrocardiographic Analysis of Post-
Reperfusion Bradycardia and Asystole and
Their Outcome in Patients Undergoing Liver
Transplantation.

Travel Award Winners

Nobuhisa Akamatsu, Abstract # O-18

Outcomes after Living Donor Liver Transplantation for HCV Positive Recipients in Japan: Results of a Nationwide Survey.

Ahmed Mukhtar, Abstract # O-19

Intraoperative Terlipressin Therapy Is Associated with a Reduced Incidence of Postoperative Acute Kidney Injury After Living Donor Liver Transplantation.

Seung Duk Lee, Abstract # O-22

Kinetics of B, T, NK Lymphocytes and Isoagglutinin Titers in ABO Incompatible Living Donor Liver Transplantation Using Rituximab and Basiliximab.

Bianca DellaGuardia Abstract # O-28

Could Transient Elastography (Fibroscan®) Predicts Nonviral Liver Graft Damage in Liver Recipients?

Unnikrishnan Gobalakrishnan, Abstract #O-75

Randomised Double Blind Placebo Controlled Trial of Perioperative Prostaglandin E1 Infusion in Live Donor Liver Transplantation.

Paolo Salvalaggio, Abstract # O-94

Prolonged Waiting-list Time Does Not Have a Negative Impact in the Post-transplant Survival of Patients With Hepatocellular Carcinoma.

Mecit Kantarci, Abstract # O-98

Diagnostic Value of Gd-EOB-DTPA-Enhanced MR Imaging for Detection of the Cirrhosis-Associated Hepatocellular Carcinoma in Patients With Liver Transplant Candidates.

Maogen Chen, Abstract # O-114

Human Gingiva-Derived Mesenchymal Stromal Cells Inhibit Graft-Versus-Host Disease Through CD39 and IDO.

Hsien Jen Chiang, Abstract # P-83

Quantification Of Hepatic Steatosis With Mr Spectroscopy In Living Donor Liver Transplantation.

Mingchun Lai, Abstract # O-107

Prognostic Value of Rho Gdp Dissociation Inhibitors in Hepatocellular Carcinoma After Liver Transplantation.

P. Banghui, Abstract # O-600

Predictors of Survival in Patients With Hepatocellular Carcinoma Accepted for Living Donor Liver Transplantation Beyond the “Size-Number” Criteria.

Jae Hyun Han, Abstract # P-613

De Novo Hepatitis B Virus Infection After Adult Liver Transplantation Using a Positive Hepatitis B Core Antibody Graft.

Federico Piñero, Abstract # P-632

Towards A Predictive Score Of Enhanced Recovery And Early Discharge From Hospital After Liver Transplantation (Eralt).

Tan To Cheung, Abstract # P-671

Evaluation of 11C-Acetate and 18F-Fdg Pet Scan With Contrast Ct on Pathological and Prognosis Prediction in HCC Patients Before Liver Transplantation- a Single-Institute-Experience.

Aliaksei Shcherba, Abstract # P-702

Influence of Back Table Portal and Arterial Flushing With HTK and Tacrolimus on the Incidence of Liver Graft Dysfunction.

**The 2014 Joint International Congress of
ILTS, ELITA & LICAGE**

**June 4 – 7, 2014
London, United Kingdom**

PROGRAM

The 2014 Joint International Congress of ILTS, ELITA & LICAGE

Day-at-a- Glance, Wednesday, June 4, 2014

6:30 AM – 7:00 PM Registration Open

*Page S23 Room Location: Sanctuary Foyer,
Ground Level*

9:45 AM – 11:00 AM Sponsored Symposium

Sponsored by Astellas

**Refining Approaches to Candida
Management in Liver Transplantation**

*Page S23 Room Location: Churchill Auditorium,
Ground Level*

11:15 AM – 12:30 PM Sponsored Lunch Symposium

Sponsored by Astellas

**Improving Long-term Outcomes in
Liver Transplantation – The Next
Paradigm Shift?**

*Page S23 Room Location: Churchill Auditorium,
Ground Level*

1:00 PM – 5:15 PM Sponsored Symposium

Sponsored by Astellas

**Liver Transplantation – Aspiring to
Excellence**

*Page S23 Room Location: Churchill Auditorium,
Ground Level*

5:30 PM – 7:00 PM Opening of the Exhibit Hall

*Page S23 Room Locations: Benjamin Britten
Lounge, Level 3; Caxton Lounge,
Level 2; Pickwick Suite, Level 1*

5:30 PM – 7:00 PM Poster Session I

**See Poster Section for Complete
Listing**

*Page S23 Room Location: Caxton Lounge,
Level 2; Pickwick Suite, Level 1
Presenters in Attendance*

Wednesday, June 4, 2014

Registration Open

6:30 AM – 7:00 PM

Room Location: Sanctuary Foyer, Ground Level

Sponsored Symposium

Sponsored by Astellas

Refining Approaches to Candida Management in Liver Transplantation

9:45 AM – 11:00 AM

Room Location: Churchill Auditorium, Ground Level

Sponsored Lunch Symposium

Sponsored by Astellas

Improving Long-term Outcomes in Liver Transplantation – The Next Paradigm Shift?

11:15 AM – 12:30 PM

Room Location: Churchill Auditorium, Ground Level

Sponsored Symposium

Sponsored by Astellas

Liver Transplantation – Aspiring to Excellence

1:00 PM – 5:15 PM

Room Location: Churchill Auditorium, Ground Level

Opening of the Exhibit Hall

5:30 PM – 7:00 PM

Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1

Poster Session 1

5:30 PM – 7:00 PM

See Poster Section for Complete Listing, Page S51

Room Location: Caxton Lounge, Level 2, Pickwick Suite, Level 1

Presenters in Attendance

The 2014 Joint International Congress of ILTS, ELITA & LICAGE

Day-at-a- Glance, Thursday, June 5, 2014

6:30 AM – 7:00 PM	Registration Open	11:45 AM – 1:15 PM	Featured Symposia
Page S26	Room Location: Sanctuary Foyer, Ground Level	Page S27	Featured Symposium # 1 Risk Evaluation and Outcomes Room Location: Churchill Auditorium, Ground Level
6:30 AM – 8:00 AM	Vanguard Grand Round Case Presentations (Ticketed Session)	Page S28	Featured Symposium # 2: HCC Room Location: Fleming Room, Level 3
Page S26	Room Location: Mountbatten Room, Level 6 Case # 1: Late Graft Dysfunction and Donor Specific Antibodies Case # 2: The Development of Intra-Cardiac Thrombus during Orthotopic Liver Transplantation Case # 3: Use of the New Antiviral Therapies Before and After Liver Transplantation for HCV?	Page S28	Featured Symposium # 3 Pediatric Room Location: St. James Suite, Level 4
8:00 AM – 8:15 AM	Opening Ceremony	1:15 PM – 1:30 PM	Break
Page S26	Room Location: Fleming Room, Level 3	1:30 PM – 3:00 PM	Sponsored Lunch Symposium Taking HCV Out of the Transplantation Equation Sponsored by Gilead Sciences Europe Limited
8:15 AM – 10:15 AM	Rising Star Symposium	Page S28	Room Location: Fleming Room, Level 3
Page S26	Room Location: Fleming Room, Level 3	3:00 PM – 3:15 PM	Break
10:15 AM – 5:30 PM	Exhibits Open	3:15 PM – 4:45 PM	Concurrent Oral Abstract Sessions
Page S27	Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1	Page S29	Immunosuppression Room Location: Westminster Suite, Level 4
10:15 AM – 11:00 AM	Coffee Break	Page S29	Living Donor Room Location: Churchill Auditorium, Ground Level
	Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1	Page S30	Outcomes Room Location: Fleming Room, Level 3
10:15 AM – 11:00 AM	Poster Session 2	Page S31	Anesthesia/Critical Care Medicine: Interactive Case Presentations Room Location: St. James Suite, Level 4
Page S27	See Poster Section for Complete Listing Room Locations: Caxton Lounge, Level 2; Pickwick Suite, Level 1 Presenters in Attendance	4:45 PM – 5:15 PM	Coffee Break Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1
11:00 AM – 11:30 AM	State-of-the-Art Lecture # 1: Medical Care or Transplantation for Acute Liver Failure?	4:45 PM – 5:15 PM	Poster Session 2 See Poster Section for Complete Listing
Page S27	Room Location: Fleming Room, Level 3	Page S31	Room Locations: Caxton Lounge, Level 2; Pickwick Suite, Level 1 Presenters in Attendance
11:30 AM – 11:45 AM	Break		

5:15 PM – 6:45 PM	Concurrent Oral Abstract Sessions
<i>Page S31</i>	Patient Selection/Organ Allocation <i>Room Location: Churchill Auditorium, Ground Level</i>
<i>Page S32</i>	Pediatrics <i>Room Location: St. James Suite, Level 4</i>
<i>Page S33</i>	Surgical Techniques/Complications <i>Room Location: Fleming Room, Level 3</i>
<i>Page S33</i>	Viral Hepatitis <i>Room Location: Westminster Suite, Level 4</i>
6:45 PM – 7:00 PM	Break
7:00 PM – 8:00 PM	Vanguard Reception*
<i>Page S34</i>	<i>Room Location: Mountbatten Lounge, Level 5</i> <i>*By Invitation Only, Age 42 and Under</i>

Thursday, June 5, 2014

Registration Open

6:30 AM – 7:00 PM

Room Location: Sanctuary Foyer, Ground Level

Vanguard Grand Round Case Presentations

(Ticketed Session)

6:30 AM – 8:00 AM

Room Location: Mountbatten Room, Level 6

Moderators: Cynthia Wang, MD, University of California, Los Angeles, Los Angeles, CA, USA and Carlo Sposito MD, National Institute of Turmours, Milan, Italy

These morning sessions will involve presentations of interesting or difficult cases by a Vanguard Committee member to a senior ILTS participant. After comments from the senior member, the audience is encouraged to participate in a lively and informal open discussion. Case presentation will focus on Late Graft Dysfunction and Donor Specific Antibodies, the Development of Intra-cardiac Thrombus during Orthotopic Liver Transplantation and the Use of the New Antiviral Therapies Before and After Liver Transplantation for HCV.

6:30 AM – 7:00 AM Case # 1: Late Graft Dysfunction and Donor Specific Antibodies

A 21 year old male was transplanted as a toddler for acute liver failure. Over the past year, while on low-dose Tacrolimus monotherapy, his liver function tests have been progressively elevated (ALT range 150-200, GGT range 175-300). He is found to have strongly positive Class II Donor Specific Antibodies (DSA). Questions which are raised: How often should we be monitoring DSAs in long-term follow-up? What do we know about the prevalence and significance of +DSA in late graft dysfunction? What is the optimal treatment in this case? (No treatment, IVIG, Rituximab, Bortezomib, Plasmapheresis?)

6:30 Case Presentation
Robert Venick, MD
University of California, Los Angeles
Los Angeles, CA, USA

6:40 Senior Discussion and Important Points
Goran Klintmalm, MD, PhD
Baylor University Medical Center
Dallas, TX, USA

6:50 Question and Answer

7:00 AM – 7:30 AM Case # 2: The Development of Intra-Cardiac Thrombus during Orthotopic Liver Transplantation

The diagnosis of intra-cardiac thrombus (ICT) during the performance of orthotopic liver transplantation (OLT) is a vexing clinical challenge. The sparse existing literature on ICT reports widely varying outcomes with no consensus on diagnosis, etiology, treatment, or disease progression. We will begin with a case of ICT diagnosed by intra-operative TEE and lead the audience through a discussion of management and anticipated outcomes. Specific topics for discussion will include: The role of routine application of TEE in OLT TEE findings in the diagnosis of ICT Is there a role for prophylaxis for ICT? Review of the data associating ICT with anti-fibrinolytic agents Potential therapeutic options including anti-coagulation, trans-venous aspiration, cardiac surgery How/when to proceed with OLT

7:00 Case Presentation
Geraldine Diaz, DO
University of Chicago Medical Center
Chicago, IL, USA

7:10 Senior Discussion and Important Points
Andre DeWolf, MD
Northwestern University Medical School
Chicago, IL, USA

7:20 Question and Answer

7:30 AM – 8:00 AM Case # 3: Use of the New Antiviral Therapies Before and After Liver Transplantation for HCV?

The problem with conventional therapy (PEG-IFN and RBV) for HCV is its toxicity which can prevent its use pre and post-transplant. Now, with the new antiviral drugs available with almost 100% efficacy and minor side effects, they can be considered to eliminate HCV before liver transplantation. This case will explore the use, dosing, duration, and monitoring of Simeprevir and Sofosbuvir as well as other potentially new antiviral medications pre and post-transplantation.

7:30 Case Presentation
Gonzalo Crespo, MD
University of Barcelona
Barcelona, Spain

7:40 Senior Discussion and Important Points
Patrizia Burra, MD
University of Padova
Padova, Italy

7:50 Question and Answer

Opening Ceremony

8:00 AM – 8:15 AM

Room Location: Fleming Room, Level 3

Rising Star Symposium

Sponsored by Bristol-Myers Squibb

8:15 AM – 10:15 AM

Room Location: Fleming Room, Level 3

Moderators: Sue McDiarmid, MD, University of California Los Angeles, Los Angeles, CA, USA and Didier Samuel, MD, PhD, Hospital Paul Brousse, Villejuif, France

8:15 AM – 8:35 AM, Team #1: Human Liver Transplantation Using Normothermic Machine Preservation (Abstract # O-1)

8:15 AM Mentor
Peter Friend, MD
Nuffield Department of Surgical Sciences
Oxford, United Kingdom

8:19 AM Young Investigator
Reena Ravikumar, MBChB
University of Oxford
Oxford, United Kingdom

8:35 AM – 8:55 AM, Team #2: Fucosyltransferase-2 Non-Secretor Status is Associated with Non-Anastomotic Biliary Strictures After Liver Transplantation in Recipients with Primary Sclerosing Cholangitis (Abstract # O-2)

8:35 AM Mentor
Luc van der Laan, PhD
Erasmus University Medical Center
Rotterdam, The Netherlands

8:39 AM Young Investigator
C. Verhoeven, MSc
Erasmus University Medical Center
Rotterdam, The Netherlands

8:55 AM – 9:15 AM, Team #3: Hepatic Adenoma and its Complication in Patients with Glycogen Storage Disease Type I after Portocaval Shunt before Liver Transplantation (Abstract # O-3)

8:55 AM Mentor
Nam Joon Yi, MD, PhD
Seoul National University College of Medicine
Seoul, Korea

8:59 AM Young Investigator
YoungRok Choi, MD
Seoul National University College of Medicine
Seoul, Korea

9:15 AM – 9:35 AM, Team #4 Alginate Microencapsulated Human Hepatocytes Optimised for Clinical Transplantation (Abstract # O-4)

9:15 AM Mentor
Anil Dhawan, MD
Kings College Hospital
London, United Kingdom

9:19 AM Young Investigator
Jitraruch Suttiruk, MD
Kings College Hospital
London, United Kingdom

9:35 AM – 9:55 AM, Team #5 Decellularized liver scaffolds preferentially induce Foxp3+ regulatory T cells and inhibit allogenic T cell activation (Abstract # O-5)

9:35 AM Mentor
Shusen Zheng, MD, PhD
Key Laboratory of Combined Multi-organ Transplantation, Ministry of Public Health
Hangzhou, Zhejiang, China

9:39 AM Young Investigator
Zhongjie Lu, MM
Key Laboratory of Combined Multi-organ Transplantation, Ministry of Public Health
Hangzhou, Zhejiang, China

9:55 AM – 10:15 AM, Team #6 Liver Transplantation with Allografts Recovered from Donors after Circulatory Death Using In-Situ Normothermic Regional Perfusion (NRP) (Abstract # O-6)

9:55 AM Mentor
Gabriel Oniscu, MBChB MD FRCS
Royal Infirmary of Edinburgh
Edinburgh, United Kingdom

9:59 AM Young Investigator
Andrew Sutherland, MB ChB DPhil
Royal Infirmary of Edinburgh
Edinburgh, United Kingdom

Exhibits Open

10:15 AM – 5:30 PM

Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1

Coffee Break

10:15 AM – 11:00 AM

Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1

Poster Session 2

10:15 AM – 11:00 AM

Presenters in Attendance

See Poster Section for Complete Listing, Page S67

Room Locations: Caxton Lounge, Level 2; Pickwick Suite, Level 1

State-of-the-Art Lecture # 1:

Medical Care or Transplantation for Acute Liver Failure?

11:00 AM – 11:30 AM

Room Location: Fleming Room, Level 3

*Roger S. Williams, CBE
Director of the Institute of Hepatology, Foundation for Liver Research
University of London
London, United Kingdom*

Break

11:30 AM – 11:45 AM

Featured Symposium # 1: Risk Evaluation and Outcomes

11:45 PM – 1:15 PM

*Room Location: Churchill Auditorium, Ground Level
Moderators: Gianni Biancospino, MD, UTI Trapianti, Tirrenia Pisa, Italy and Clare Melikian, MBBS, FRCA, Royal Free Hospital, NHS Foundation Trust, London, United Kingdom*

11:45 AM Should We Set Limits on an Acceptable BMI for Transplantation?

*William Bernal, MD, FRCP
Reader in Hepatology and Intensive Care Medicine
Institute of Liver Studies, Kings College Hospital
London, United Kingdom*

12:05 PM Is the Measurement of Physiological Reserve the Best Predictor of Outcomes?

*Chris Snowden, MD, FRCA
Consultant Anaesthetist and Honorary Senior Lecturer
Freeman Hospital, Newcastle upon Tyne UK
Newcastle upon Tyne, United Kingdom*

12:25 PM Composite Risk: Predicting Short and Long Term Outcomes

*Susan Mandell, MD, PhD
Professor of Anesthesiology
University of Colorado HSC
Aurora, CO, USA*

12:45 PM Impact of Early Post-operative Morbidity on Long-term Patient Outcomes

*Gareth Ackland, PhD, FRCA
Clinician Scientist/Honorary Consultant
University College London
London, United Kingdom*

1:05 PM Panel Discussion

Featured Symposium # 2: HCC

11:45 PM – 1:15 PM

*Room Location: Fleming Room, Level 3
Moderators: Derek Manas, MD, FRCS, The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, United Kingdom, and Augusto Villanueva-Rodriguez, MD, King's College Hospital, London, United Kingdom*

11:45 AM Containing the Demand

*Vincenzo Mazzaferro, MD
Director GI Surgery And Liver Transplantation Unit
National Cancer Institute of Milan
Milan, Italy*

12:05 PM Picking the Winners

*Christophe Duvoux, MD
Director of Hepatology
Henri Mondor Hospital-Paris Est University
Creteil, France*

12:25 PM Impact of Rationing on Allocation for HCC

*Pierre Clavien, MD, PhD
University Hospital Zurich
Zurich, Switzerland*

12:45 PM Time for New Criteria in an Era of Effective Loco-regional Therapy

*John Roberts, MD
University of California, San Francisco
San Francisco, CA, USA*

1:05 PM Panel Discussion

Featured Symposium # 3: Pediatric

11:45 PM – 1:15 PM

*Room Location: St. James Suite, Level 4
Moderators: Rohit Kohli, MBBS, MS, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA and Patrick McKiernan, MB, FRCPCH, Liver Unit, Children's Hospital, Birmingham, United Kingdom*

11:45 AM Surgeons: What You Need to Know About Adult Recipient with Pediatric Liver Disease

*Nigel Heaton, MBBS, FRCS
Kings College Hospital
London, United Kingdom*

12:00 PM Question & Answer

12:05 PM Liver Transplantation in a Newborn

*Mureo Kasahara, MD, PhD
Director of Transplantation Center
National Center for Child Health and Development
Tokyo, Japan*

12:20 PM Question & Answer

12:25 PM Pediatric Liver Allocation around the World – North America

*Binita Kamath, MBBChir MRCP
Assistant Professor
The Hospital for Sick Children
Toronto, ON, CA*

12:35 PM Pediatric Liver Allocation around the World – South America

*Paulo Chapchap, MD, PhD
Liver Transplantation Program Director
Hospital Sirio Libanes
Sao Paulo, Brazil*

12:45 PM Pediatric Liver Allocation around the World – Europe

*Raj Prasad, MCh, FRCS
St. James University Hospital
Leeds, United Kingdom*

12:55 PM Panel Discussion

Break

1:15 PM – 1:30 PM

Sponsored Lunch Symposium

Taking HCV Out of the Transplantation Equation

Sponsored by Gilead Sciences Europe Limited

1:30 PM – 3:00 PM

Room Location: Fleming Room, Level 3

Break

3:00 PM – 3:15 PM

Concurrent Oral Abstract Session: Immunosuppression

3:15 PM – 4:45 PM

Room Location: Westminster Suite, Level 4

*Moderators: Joshua Levitsky, MD, Northwestern University
Feinberg School of Medicine, Chicago, IL, USA and Abraham
Shaked, MD, PhD, University of Pennsylvania, Philadelphia, PA,
USA*

3:15 PM Meta-Analysis of Steroid-Containing Versus Steroid-Sparing Immunosuppression for Liver Transplanted Patients: Preliminary Findings of a Cochrane Review. (Abstract # O-7)

Cameron J. Fairfield, Ewen M. Harrison, Luit Penninga, James J. Powell, Stephen J. Wigmore. Edinburgh, United Kingdom; Copenhagen, Denmark.

3:25 PM The Expression of Genes Related to B Cells Are Associated to a Successful Conversion from Calcineurin Inhibitor (CNI) Based Immunosuppression to Mycophenolate Mofetil (MMF) Monotherapy in Liver Transplant Recipients. (Abstract # O-8)

Blanca Norero, Carolina Serrano, Rosa María Pérez, Ignacio Duarte, Marco Arrese, Alejandro Soza, Nicolás Jarufe, Jorge Martínez, Juan Francisco Guerra, Carlos Benítez. Santiago, Chile.

3:35 PM Early Introduction of Everolimus in De Novo Liver Transplantation: 3-Months Final Results (Primary Endpoint) of a Multicenter Randomized Clinical Trial (EPOCAL). (Abstract # O-9)

Umberto Cillo, Alessandro Vitale, Mauro Salizzoni, Michele Coledan, Giorgio Rossi, Umberto Baccarani, Luciano De Carlis, Alessandra Bertacco, Laura Saracino, Rafael Ramirez Morales, Salvatore Agnes. Padova, Italy; Torino, Italy; Bergamo, Italy; Milan, Italy; Udine, Italy; Mian, Italy; Rome, Italy.

3:45 PM The H2304E1 Study: Efficacy and Safety of Everolimus With Reduced Tacrolimus Versus Standard Tacrolimus in De Novo Liver Transplant Recipients at 36 Months. (Abstract # O-10)

P. De Simone, G. M. Kaiser, L. De Carlis, H. J. Metselaar, C. Duvoux, F. Nevens, L. Fischer, J. Fung, G. Dong, B. Rauer, G. Junge, F. Saliba. Pisa, Italy.

3:55 PM Everolimus Monotherapy after Tacrolimus Withdrawal at Month 4 after Liver Transplantation: 3-Year Results from the H2304 Study Extension. (Abstract # O-11)

J. Fung, H.J. Metselaar, B. Koneru, M. Bartels, G. McCaughan, K. Chavin, G. Dong, B. Rauer, G. Junge, L. Fischer. Cleveland, OH, USA.

4:05 PM Population Pharmacokinetics and Pharmacogenetics of Once Daily Tacrolimus Formulation in Liver Transplant Patients. (Abstract # O-12)

Dirk J.A.R. Moes, Sebastiaan A.S. van der Bent, Jesse J. Swen, Tahar Straaten, Hein W. Verspaget, Henk-Jan Guchelaar, Jan den Hartigh, Bart van Hoek. Leiden, Zuid Holland, Netherlands.

4:15 PM Safety and Pharmacokinetics of Mizoribine in Adult Living Donor Liver Transplantation. (Abstract # O-13)

Yusuke Katsuki, Masahiro Shinoda, Osamu Itano, Hideaki Obara, Minoru Kitago, Hiroshi Yagi, Yuta Abe, Ken Hoshino, Tatsuo Kuroda, Yuko Kitagawa. Tokyo, Japan.

4:25 PM Decrease of CD39 on Peripheral Regulatory T Cells in Liver Transplant Recipients during Acute Cellular Rejection. (Abstract # O-14)

Hua Fan, Dong-Dong Han, Jian-Tao Kou, Ping Li, Qiang He. Beijing, China.

4:35 PM Quantification of Donor DNA in the Circulation after Liver Transplantation As a Potential Universal Rejection Biomarker Using Digital Droplet PCR. (Abstract # O-15)

Jan E. Slotta, Julia Beck, Sarah Birau, Stefan Balzer, Reiner Andag, Philipp Kanzow, Jessica Schmitz, Jochen Gaedcke, Onnen Mörer, Philip Walson, Michael Oellerich, Eckehardt Schütz, Otto Kollmar. Göttingen, Germany.

Concurrent Oral Abstract Session: Living Donor

3:15 PM – 4:45 PM

Room Location: Churchill Auditorium, Ground Level

Moderators: Jan Lerut, MD, PhD, University Hospital St. Luc, Brussels, Belgium and Chao Long Chen, MD, PhD, Kaoshiung Chang Gung Memorial Hospital, Kaoshiung, Taiwan

3:15 PM Update on Worldwide Causes of Morbidity and Mortality in Living Donor Liver Transplantation. (Abstract # O-16)

Allan M. Concejero, Chao-Long Chen. Kaoshiung, Taiwan; Manila, Philippines.

3:25 PM Hemiportocaval Shunts: A Panacea for Low GRWR Grafts in Adult Living Donor Liver Transplantation? (Abstract # O-17)

Sumana Ramachandra, J. George, R. Mohanka, A. Rastogi, S. Goja, B. Menon, A. Joly, V. Vohra, P. Bhangui, P. Singla, S. Bajjal, A. Soin. Gurgaon, NCR, India.

3:35 PM Outcomes after Living Donor Liver Transplantation for HCV Positive Recipients in Japan: Results of a Nationwide Survey. (Abstract # O-18)

Nobuhisa Akamatsu, Yasuhiko Sugawara, Taku Aoki, Yoshihiro Sakamoto, Norihiro Kokudo. Tokyo, Japan.

- 3:45 PM Intraoperative Terlipressin Therapy Is Associated with a Reduced Incidence of Postoperative Acute Kidney Injury after Living Donor Liver Transplantation. (Abstract # O-19)**
Ahmed Mukhtar, Ihab Mahmoud, Gihan Obayah, Ahmed Hasanin, Fawzia Aboul Fetouh, Hany Dabbous, Rasha Refaie, Ibrahim Mostafa, Mohamed Bahaa, Hany Saeed, Amr Abdelaal, Mohamed Fathy, Mahmoud El Meteini. Cairo, Egypt.
- 3:55 PM Profiling of NAFLD Patients Among Cryptogenic Cirrhotics Undergoing Living Donor Liver Transplantation: New Insights. (Abstract # O-20)**
 Biswanath P. Gouda, Sanjiv Saigal, Narendra Chaudhary, Neeraj Saraf, Ravi Mohanka, Sanjay Goja, Amit Rastogi, P. B. Menon, Arvinder S. Soin. Gurgaon, Delhi (NCR), India.
- 4:05 PM Elevated Portal Venous Pressure after Living Donor Hepatectomy Negatively Influences Postoperative Synthetic Liver Function and Increases Postoperative Complications. (Abstract # O-21)**
 Sanjay Govil, Vivekanandan Shanmugam, Mohamed Safwan Mohamed Ilias, Arikichenin Olithselvan, Gomathy Narasimhan, Kota Venugopal, Srinivas Reddy, Anand Bharthan, K. Rajesh, Mohamed Rela. Chennai, Tamil Nadu, India.
- 4:15 PM Kinetics of B, T, NK Lymphocytes and Isoagglutinin Titers in ABO Incompatible Living Donor Liver Transplantation Using Rituximab and Basiliximab. (Abstract # O-22)**
Seung Duk Lee, Seong Hoon Kim, Young-Kyu Kim, Sang-Jae Park. Goyang-si, Korea.
- 4:25 PM Using Small-For-Size Grafts in Recipients With High MELD Scores in Living Donor Liver Transplantation: Our Experience. (Abstract # O-23)**
Hongyu Li, Yonggang Wei, Lvnan Yan, Wentao Wang, Bo Li, Tianfu Wen. Chengdu, Sichuan, China.
- 4:35 PM Right Posterior Sector Graft Has Fewer Septic Complications As Compared To Modified Right Lobe Graft Even When GRBWR Is Lesser. (Abstract # O-24)**
Giriraj Bora, Neerav Goyal, Subash Gupta. New Delhi, India.

Concurrent Oral Abstract Session: Outcomes

3:15 PM – 4:45 PM

Room Location: Fleming Room, Level 3

Moderators: Henrik Petrowsky, MD, University Hospital Zurich, Zurich, Switzerland and Ivo Graziadei, Medical University Innsbruck, Innsbruck, Austria

- 3:15 PM Liver Transplant Outcomes in Recipients with High BMI. (Abstract # O-25)**
Sherilyn Gordon Burroughs, Ashish Saharia, Anju Rajaraman, Joy Nolte, Emad Asham, David Victor, Howard Monsour, Robert McFadden, Joseph Galati, A. O. Gaber, R. M. Ghobrial. Houston, TX, USA.
- 3:25 PM Impact of Biological MELD Scores over 40 on Functional Status Post Liver Transplantation. (Abstract # O-26)**
Maha Boktour, Howard P. Monsour Jr, Emad Asham, Ashish Saharia, Sherilyn Gordon-Burroughs, David W. Victor III, Robert S. McFadden, Ahmed O. Gaber, Mark R. Ghobrial. Houston, TX, USA.
- 3:35 PM The Effect of Transplant Center Volume on Mortality of Liver Transplant Recipients. (Abstract # O-27)**
Aliaksei Pustavoitau, Allan Massie, Dorry Segev. Baltimore, MD, USA.
- 3:45 PM Could Transient Elastography (FibroScan®) Predicts Nonviral Liver Graft Damage in Liver Recipients? (Abstract # O-28)**
Bianca Della-Guardia, Andreia S. Evangelista, Guilherme E.G. Felga, Lidiane V. Marins, Paolo R.O. Salvalaggio, Marcelo B. Rezende, Marcio D. Almeida. Sao Paulo, SP, Brazil.
- 3:55 PM Endothelial Function in Patients With End-Stage Liver Disease As a Potential Predictor of Outcome before and after Liver Transplantation. (Abstract # O-29)**
Kymerly D. Watt, Matthew Plevak, Ross Dierkhising, Amir Lerman, W.R. Kim. Rochester, MN, USA.
- 4:05 PM Renal Function after Orthotopic Liver Transplantation in Patients with a MELD Score 35 or Greater: A Look into the UNOS Share 35 Era. (Abstract # O-30)**
David W. Victor, Howard P. Monsour, Maha R. Boktour, Emad H. Asham, Sherilyn Gordon Burroughs, Robert S. McFadden, Ashish Saharia, A. Osama Gaber, R. Mark Ghobrial. Houston, TX, USA.
- 4:15 PM Prevalence and Risk Factors for Pneumocystis Jiroveci Pneumonia (aka PCP) in Liver Transplant Recipients. (Abstract # O-31)**
Travis Winston, Cedric Spak, Linda Jennings, James F. Trotter. Dallas, TX, USA.

4:25 PM Preoperative BNP Level As a Predictor of ICU Mortality after Liver Transplantation. (Abstract # O-32)
Amelie Toussaint, Etienne Gayat, Paer Abback, Federika Dondero, Linda Khoy-Ear, Catherine Paugam-Burtz. Clichy, France, Metropolitan; Paris, France.

4:35 PM Unexplained Early Allograft Dysfunction in Living Donor Liver Transplantation: Predictive Factors and Outcomes. (Abstract # O-33)
K. Elankumaran, M. Balachandran, Singla Punit, Bhangui Prashant, R. K. Sumana, S. Goja, A. Rastogi, R. Mohanka, N. Saraf, S. Saigal, A. S. Soin. Gurgaon, Haryana, India.

Concurrent Oral Abstract Session: Anesthesia/Critical Care Medicine: Interactive Case Presentations

3:15 PM – 4:45 PM

Room Location: St. James Suite, Level 4
Moderators: Alistair Lee, MBChB, FRCA, FFICM, Edinburgh Royal Infirmary, Edinburgh, United Kingdom and Fuat Saner, DEAA, MD, University Hospital, Essen, Germany

3:15 PM Considerations of Tricuspid Regurgitation In Liver Transplantation (Abstract # P-8)
Joshua C. Herborn. Chicago, IL, USA.

3:35 PM Role Of Nitric Oxide (No) In The Intraoperative Management Of Severe Pulmonary Hypertension During Lt (Abstract # P-486)
Alejandro Mejia, Anthony Aramoonie, Carlos Fasola, Stephen Cheng, Federico Osorio, Richard Dickerman, David Defazio, Gong Lee. Dallas, TX, USA.

3:55 PM Successful Olt In A Patient With Esld With Hcc With Chronic Atrial Fibrillation With Low Cardiac Index (Abstract # P-476)
Parshotam Lal Gautam, Chris Harle, Achal Dhir, Wojciech Dobkowski, Tony Vannelli, Fiona Ralley. Ludhiana, Punjab, India; London, ON, Canada.

4:15 PM Early Extubation In The Hepatopulmonary Syndrome: A Case Report (Abstract # P-16)
Amanda Trommello, Nicole Khetani, Elia Elia, Cataldo Doria, Yoogoo Kang. Philadelphia, PA, USA; Philadelphia, PA, USA.

4:35 PM Question & Answer

Coffee Break

4:45 PM – 5:15 PM

Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1

Poster Session 2

4:45 PM – 5:15 PM

Presenters in Attendance

See Poster Section for Complete Listing, Page S67

Room Locations: Caxton Lounge, Level 2; Pickwick Suite, Level 1

Concurrent Oral Abstract Session: Patient Selection/Organ Allocation

5:15 PM – 6:45 PM

Room Location: Churchill Auditorium, Ground Level
Moderators: Mohammed Rela, MS, FRCS, Kings College Hospital, London, United Kingdom and Constantino Fondevila, MD, Hospital Clinic University of Barcelona, Barcelona, Spain

5:15 PM Liver Transplantation for Hepatocellular Carcinoma Beyond the Milan Criteria. (Abstract # O-34)
Xiao Xu, Di Lu, Qi Ling, Xuyong Wei, Jian Wu, Lin Zhou, Sheng Yan, Liming Wu, Lei Geng, Qinghong Ke, Feng Gao, Zhenhua Tu, Weilin Wang, Min Zhang, Yan Shen Haiyang Xie Weishi Jiang Haibo Wang Shusen Zheng. Hangzhou, China; Shenzhen, China.

5:25 PM Validation of the Barcelona Clinic Liver Cancer Staging Prognostic Ability in Predicting the Survival Benefit of Liver Transplantation for Patients With Hepatocellular Carcinoma. (Abstract # O-35)
Alessandro Vitale, Teh-La Huo, Franco Trevisani, Yun-Hsuan Lee, Fabio Farinati, Umberto Cillo. Padova, Italy; Taipei, Taiwan; Bologna, Italy.

5:35 PM Liver Retransplantation Associated With Kidney Transplantation for End Stage Liver Graft Disease and Chronic Renal Insufficiency: Results of a Bicentric Study. (Abstract # O-36)
François Cauchy, Eric Vibert, Denis Castaing, Astrid Schielke, Fabiano Perdigao, Didier Samuel, Filomena Conti, Daniel Azoulay, Lilian Schwarz, René Adam, Olivier Soubrane, Olivier Scatton. Paris, France; Villejuif, France.

5:45 PM Understanding the Role of Coronary Angiography in Pre-Liver Transplant Cardiac Evaluation in a Singapore Liver Transplant Institution. (Abstract # O-37)
Jia Hao Law, Ning Qi Pang, Ling Te Terry Pan, Boon Leng Kieron Lim, Wei Chieh Alfred Kow. Singapore, Singapore.

5:55 PM U.S Temporal Trends in Liver Transplant (LT) in Patients with Human Immunodeficiency Virus (HIV). (Abstract # O-38)
Isabel Campos-Varela, Jennifer L. Dodge, Norah A. Terrault. San Francisco, USA.

- 6:05 PM Simultaneous Liver and Thoracic Transplantation Is a Life-Saving Procedure. (Abstract # O-39)**
Laurens J. Ceulemans, Sébastien Strypstein, Diethard Monbaliu, Johan Vanhaecke, Bart Meyns, Geert Verleden, Dirk Van Raemdonck, Frederik Nevens, Jacques Pirenne. Leuven, Belgium.
- 6:15 PM Maintenance Cost of the Cirrhotic Patient on the Waiting List for Liver Transplantation. Impact of MELD, Gravity and Time on Waiting List. (Abstract # O-40)**
Jose Antonio Orellana Turri, Luciana Bertocco Paiva Haddad, Wellington Andraus, Marcio Augusto Diniz, Luiz Augusto Carneiro D'Albuquerque. Sao Paulo, Brazil.
- 6:25 PM Comorbidity Score As a Selection Criteria for LDLT in Elderly Patients. (Abstract # O-41)**
Arzu Oezcelik, Murat Dayangac, Necdet Guler, Yalcin Erdogan, Onur Yaprak, Yildiray Yuzer, Yaman Tokat. Istanbul, Turkey.
- 6:35 PM Age and Outcome in Liver Transplantation for Acute Liver Failure. (Abstract # O-42)**
William S. Burnside, Philip Bayly. Newcastle, United Kingdom.

Concurrent Oral Abstract Session: Pediatrics

5:15 PM – 6:45 PM

Room Location: St. James Suite, Level 4

Moderators: Piotr Kalcinski, MD, Children's Memorial Health Institute, Warsaw, Poland and Robert Venick, MD, University of California Los Angeles, Los Angeles, CA, USA

- 5:15 PM Pediatric Liver Allograft Health with Normal Liver Function Test, 10 Years after Liver Transplantation : All Is Not Well!!! (Abstract # O-43)**
Saista Amin, Juliana Puppi, Bhaswati Acharyya, Corina Cotoi, Lara Souza, Alberto Quaglia, Anil Dhawan. London, United Kingdom.
- 5:25 PM Cognitive and Intellectual Function in Korean Pediatric Liver Transplantation Recipients; Cross Sectional Study in a Large Volume Living Donor Liver Transplantation Center. (Abstract # O-44)**
Nam-Joon Yi, Jeong-Moo Lee, Suk-Won Suh, YoungRok Choi, Hae Won Lee, Hyun-Young Kim, Kwang-Woong Lee, Kyung-Suk Suh, Jiwon Lee, Hee Gyung Kang, Jae-Won Kim. Seoul, Korea.
- 5:35 PM Outcomes of Late Re-Transplantation after Pediatric Liver Transplantation: From Child To Adulthood. (Abstract # O-45)**
Jules Kohaut, Ailton Sepulveda, Filomena Conti, Yvon Calmus, Denis Bernard, Fabiano Perdigo, Astrid Schielke, Olivier Scatton, Olivier Soubrane. Paris, France.

- 5:45 PM The Assessment of Late Results of Pediatric Liver Transplantation With ABO Non-Identical Grafts. (Abstract # O-46)**
Piotr J. Kalcinski, Malgorzata Markiewicz-Kijewska, Joanna Teisserye, Hor Ismail, Anna Ostoj-Chyzynska, Marek Szymczak. Warszawa, Poland.
- 5:55 PM Serum and Tissue DSA Subclass, Stellate and Endothelial Phenotype Monitoring in ITN029ST Tolerant Pediatric Liver Transplant Recipients over 5+ Years of Follow-Up. (Abstract # O-47)**
Sandy Feng, A.J. Demetris, Kumiko Isse, Udeme Ekong, Alin Girnita, Sai Kanaparthi, Carol Soppe, Nadia Tchao. San Francisco, CA, USA; Pittsburgh, PA, USA; New Haven, CN, USA; Cincinnati, OH, USA; Bethesda, MD, USA.
- 6:05 PM Monitoring Post-Operative Complications With Microdialysis in Children after Liver Transplantation. (Abstract # O-48)**
Gisli B. Bergmann, Håkon Haugaa, Søren Pischke, Tor I. Tønnessen. Oslo, Norway.
- 6:15 PM Limited Utility of PELD Score and Long Wait Time for Young Children with Chronic Liver Disease Listed for Liver Transplant. (Abstract # O-49)**
Girish Hiremath, Daniel Leung, Amrita Narang, Sanjiv Harpavat, Ryan Himes, Paula Hertel, Douglas Fishman, Beth Carter, John Goss, Ross Shepherd. Houston, USA.

- 6:25 PM Post-Transplant EBV-DNAemia, Related Diseases and Effect of Therapy in a Cohort of Pediatric Liver Recipients. (Abstract # O-50)**
Cigdem Arikian, Latife Doganay, Nur Olgun, Cahit Yilmaz, Murat Zeytun, Rasim Farajov, Murat Kilic. Izmir, Turkey.
- 6:35 PM Late Cytomegalovirus (CMV) Reactivation or Infection: High Incidence of Graft Hepatitis in D-R+ Pediatric Liver Transplant Recipients. (Abstract # O-51)**
Anita Verma, Giulia Cremonini, Nigel Heaton, Hector Vilca-Melendez, Anil Dhawan. London, United Kingdom.

Concurrent Oral Abstract Session: Surgical Techniques/Complications

5:15 PM – 6:45 PM

Room Location: Fleming Room, Level 3

Moderators: Ernest Hidalgo, MD, PhD, St. James University Hospital, Leeds, United Kingdom and Goran Klintmalm, MD, PhD, Baylor University Medical Center, Dallas, TX, USA

- 5:15 PM In Vivo Assessment of Hepatic Microcirculation Using Sidestream Dark Field Imaging: An Innovative Method To Predict Early Graft Function after Liver Transplantation. (Abstract # O-52)**
Carlo Pulitano, Phong Ho, David Joseph, Sandroussi Charbel, Deborah Verran, Geoffrey McCaughan, Nicholas Shackel, Michael Crawford. Sydney, Australia.
- 5:25 PM Technical Options for Outflow Reconstruction in Domino Liver Transplantation. (Abstract # O-53)**
Sofia de la Serna, Laura Lladó, Joan Fabregat, Emilio Ramos, Jaume Torras, Carme Baliellas, Juli Busquets, Nuria Pelaez, Lluís Secanella, Antoni Rafecas. Barcelona, Spain.
- 5:35 PM Early Hepatic Artery Thrombosis (eHAT) after Living Donor Liver Transplantation: Not So Fatal Anymore! (Abstract # O-54)**
Pravin Agrawal, Ravi Mohanka, Amit Rastogi, Sanjay Goja, Balachandran Menon, Prashant Bhargui, Sumana Kolar, Punit Singla, Sanjeev Saigal, Neeraj Saraf, Tarun Piplani, S. Baijal, Arvinder Soin. Gurgaon, Harayan, India.
- 5:45 PM Multi-Modality Approach for Biliary Complication after Living Donor Liver Transplantation. (Abstract # O-55)**
Yu-Hung Lin, Yueh-Wei Liu, Chee-Chien Yong, Chih-Che Lin, Chih-Chi Wang, Tsan-Shiun Lin, Yi-Chun Chiu, Chao-Long Chen. Kaohsiung, Taiwan.
- 5:55 PM Robotic Right Lobectomy for Living Donor of Liver. (Abstract # O-56)**
Yao-Ming Wu, Rey-Heng Hu. Taipei, Taiwan.
- 6:05 PM Usefulness of Temporary Portocaval Shunt in Liver Transplantation. (Abstract # O-57)**
Umberto Maggi, Leonardo Centonze, Roberto Lauro, Gianluca Fornoni, Daniele Dondossola, Gianni Paone, Paolo Reggiani, Lucio Caccamo, Giorgio Rossi. Milano, MI, Italy.
- 6:15 PM Surgical Technique of Left Lateral Section Liver Graft Replacement in Children. (Abstract # O-58)**
Sergey V. Gautier, Dmitry G. Akhaladze. Moscow, Russian Federation.

- 6:25 PM High Levels of VWF and CD163 Are Associated With Increased Blood Loss, RBC Transfusion Requirements and Risk for Transfusion in Orthotopic Liver Transplantation. (Abstract # O-59)**
Freeha Arshad, Ton Lisman, Robert J. Porte. Groningen, Netherlands.

- 6:35 PM Hilar Anatomy in 1319 Living Liver Donors and Its Implications on Clinical Acceptability. (Abstract # O-60)**
Amit Rastogi, P. Singla, T. Piplani, P. Bhargui, K.R. Sumana, P.B. Menon, S. Goja, R. Mohanka, N. Saraf, N. Mohan, S. Saigal, A.S. Soin. Delhi-NCR, India.

Concurrent Oral Abstract Session: Viral Hepatitis

5:15 PM – 6:45 PM

Room Location: Westminster Suite, Level 4

Moderators: Francesco Russo, MD, University of Padova, Padova, Italy and Herold Metselaar, MD, PhD, Erasmus Medical Center, Rotterdam, The Netherlands

- 5:15 PM Long Term Outcome of Mild Hepatitis C Recurrence after Liver Transplantation: A Large Prospective Study. (Abstract # O-61)**
Martina Gambato, Gonzalo Crespo, María Carlota Londoño, Zoe Mariño, Sabela Lens, Jose A. Carrión, Pablo Ruiz, Ignacio Alfaro, Jaume Bosch, Rosa Miquel, Miquel Navasa, Xavier Forns. Barcelona, Spain.
- 5:25 PM Post-Liver Transplant Fibrosis Progression Varies by Hepatitis C Virus (HCV) Genotype. (Abstract # O-62)**
Isabel Campos-Varela, Jennifer C. Lai, Elizabeth C. Verna, Jacqueline G. O'Leary, R. Todd Stravitz, Lisa M. Forman, James F. Trotter, Robert S. Brown, Norah A. Terrault. San Francisco, USA; New York, USA; Dallas, USA; Richmond, USA; Denver, USA.
- 5:35 PM Usefulness of ELF, IP10, Fibroscan and Their Combinations in the Early Prediction of Severe Hepatitis C Recurrence after Liver Transplantation. (Abstract # O-63)**
Gonzalo Crespo, Martina Gambato, Olga Millán, Gregori Casals, Pablo Ruiz, Xavier Forns, Mercé Brunet, Wladimiro Jiménez, Miquel Navasa. Barcelona, Spain.
- 5:45 PM Impact of Anemia in Viral Response during Triple Therapy in Liver Transplant Recipients. (Abstract # O-64)**
Carmen Vinaixa, Audrey Coilly, Maria Garcia, Angel Rubin, Victoria Aguilera, Jean Charles Duclos-Vallée, Martin Prieto, Didier Samuel, Marina Berenguer. Valencia, Spain; Villejuif, Paris, France.

5:55 PM The Influence of Calcineurin Inhibitors Selection on the Outcome of HCV Recurrence in Liver Transplantation Recipients: A Meta-Analysis. (Abstract # O-65)

Zhiyong Guo, Jianwen Lin, Weiqiang Ju, Dongping Wang, Xiaoshun He. Guangzhou, China.

6:05 PM Influence of Immunogenetic Donor and Recipient Factors on the Outcome of Liver Transplantation for Hepatitis C Virus-Related Chirrosis. (Abstract # O-66)

Giorgia Rizza, Francesco Tandoi, Renato Romagnoli, Francesca Bertinetto, Paola Magistroni, Antonio Amoroso, Mauro Salizzoni. Turin, Italy.

6:15 PM Applicability of Triple Therapy in Cirrhotic Population: Validation of Cupic Data. (Abstract # O-67)

Carmen Vinaixa, Carla Satorres, Maria Garcia, Salvador Benlloch, Angel Rubin, Victoria Aguilera, Martin Prieto, Marina Berenguer. Valencia, Spain.

6:25 PM Relevance of Chronic Hepatitis E in Liver Transplant Recipients: A Real-World-Setting. (Abstract # O-68)

Antonio Galante, Sven Pischke, Melanie Lang, Marc Lütgehetmann, Susanne Polywka, Bjorn Nashan, Ansgar W. Lohse, Martina Sterneck. Hamburg, Germany.

6:35 PM Romiplostim's Effect to Optimize SVR with Telaprevir, Ribavirin, And Peg Interferon-alfa 2a in Thrombocytopenic Cirrhotics with Chronic Hepatitis C. A Placebo Controlled Prospective Clinical Trial: RESTRAINT C Trial. (Abstract # O-69)

P. Patrick Basu, Niraj J. Shah, Mark Aloysius, Ravi Siriki, Md Rahaman. New York, NY, USA.

Break

6:45 PM – 7:00 PM

Vanguard Reception*

7:00 PM – 8:00 PM

Room Location: Mountbatten Lounge, Level 5

**By Invitation Only, Age 42 and Under*

The 2014 Joint International Congress of ILTS, ELITA & LICAGE

Day-at-a- Glance, Friday, June 6, 2014

6:30 AM – 7:00 PM	Registration Open	11:45 AM – 1:15 PM	Featured Symposia
Page S37	Room Location: Sanctuary Foyer, Ground Level	Page S38	Featured Symposium # 4: Living Donor Room Location: Fleming Room, Level 3
6:30 AM – 8:00 AM	Vanguard Debate Session (Ticketed Event)	Page S39	Featured Symposium # 5 Super Bugs, Emerging Drugs and Regulations Room Location: St. James Suite, Level 4
Page S37	Room Location: Mountbatten Room, Level 6 Debate # 1 Should BMI Limit Transplant Candidacy? Debate # 2 Liver Transplantation for HCC and Transplant Benefit Debate # 3 Which Grafts can be Considered Truly Marginal in 2014?	Page S39	Featured Symposium # 6 Liver Directed Cellular Therapy – Hope or Hype Room Location: Churchill Auditorium, Ground Level
8:00 AM – 9:30 AM	Plenary Abstract Session #1	1:30 PM – 3:00 PM	Sponsored Lunch Symposium State-of-the-Art Care in Liver Transplantation: From Organ Donation to Long-term Benefits <i>Sponsored by Novartis Pharmaceuticals</i>
Page S37	Room Location: Fleming Room, Level 3	Page S39	Room Location: Fleming Room, Level 3 Attendance by UK delegates is not recommended
9:30 AM – 10:15 AM	Presidential Address Distinguished Service Award Presentation ILTS Business Meeting	1:30 PM – 3:00 PM	Sponsored Lunch Symposium <i>Sponsored by Janssen-Cilag</i>
Page S38	Room Location: Fleming Room, Level 3	Page S39	Room Location: Churchill Auditorium, Ground Level
10:00 AM – 5:00 PM	Exhibits Open	3:00 PM – 3:15 PM	Break
Page S38	Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1	3:15 PM – 4:45 PM	Concurrent Oral Abstract Sessions
10:15 AM – 11:00 AM	Coffee Break	Page S39	Anesthesia/Critical Care Medicine Room Location: St. James Suite, Level 4
	Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1	Page S40	Tissue Injury/Immunology Room Location: Fleming Room, Level 3
10:15 AM – 11:00 AM	Poster Session 3 <i>See Poster Section for Complete Listing</i>	Page S41	Malignancies Room Location: Churchill Auditorium, Ground Level
Page S38	Room Locations: Caxton Lounge, Level 2; Pickwick Suite, Level 1 Presenters in Attendance	Page S41	Recurrent Disease/Pathology Room Location: Westminster Suite, Level 4
11:00 AM – 11:30 AM	State-of-the-Art Lecture # 2	4:45 PM – 5:15 PM	Coffee Break
Page S38	Humoral Alloimmunity and the Liver: Emerging Insights and Their Therapeutic Implications Room Location: Fleming Room, Level 3		Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1
11:30 AM – 11:45 AM	Break	4:45 PM – 5:15 PM	Poster Session 3 <i>See Poster Section for Complete Listing</i>
		Page S42	Room Locations: Caxton Lounge, Level 2; Pickwick Suite, Level 1

Friday, June 6

5:15 PM – 6:45 PM	Concurrent Oral Abstract Sessions
<i>Page S42</i>	Extended Criteria Donors/Disease Transmission <i>Room Location: St. James Suite, Level 4</i>
<i>Page S43</i>	Acute Liver Failure <i>Room Location: Westminster Suite, Level 4</i>
<i>Page S44</i>	Surgical Video Session <i>Room Location: Fleming Room, Level 3</i>
<i>Page S44</i>	Late Breaking <i>Room Location: Churchill Auditorium, Ground Level</i>
8:00 PM – 11:00 PM	Medieval Magnificence at Guildhall – Closing Reception (Ticketed Event)
<i>Page S45</i>	<i>Offsite Event (Ticketed event with separate registration fee. No entry permitted without ticket. Roundtrip transportation is included with the purchase of each ticket)</i>

Friday, June 6, 2014

Registration Open

6:30 AM – 7:00 PM

Room Location: Sanctuary Foyer, Ground Level

Vanguard Debate Session

(Ticketed Event)

6:30 AM – 8:00 AM

Room Location: Mountbatten Room, Level 6

Moderators: Alejandro Forner, MD, PhD, University of Barcelona, Barcelona, Spain, and Roberto Hernandez Alejandro, MD, Western University, London, ON, Canada

These morning sessions will involve three debates over controversial topics between a Vanguard Committee member and a senior ILTS participant. Debate topics will include:

- Should BMI Limit Transplant Candidacy?
- Liver Transplantation for HCC and Transplant Benefit
- Which Grafts can be Considered Truly Marginal in 2014?

6:30 AM – 7:00 AM **Debate # 1: Should BMI Limit Transplant Candidacy?**

6:30 AM **Pro**

Kym Watt, MD
Mayo Clinic Rochester
Rochester, MN, USA

6:40 AM **Con**

Michael Charlton, MD
Intermountain
Medical Center
Salt Lake City, UT, USA

6:50 AM **Rebuttals, Question and Answer**

7:00 AM – 7:30 AM **Debate # 2: Liver Transplantation for HCC and Transplant Benefit**

7:00 AM **Pro**

Alessandro Vitale, MD, PhD
Padova University Hospital
Padova, Italy

7:10 AM **Con**

Richard Freeman, MD
Dartmouth-Hitchcock
Medical Center
Lebanon, NH, USA

7:20 AM **Rebuttals, Question and Answer**

7:30 AM – 8:00 AM **Debate # 3: Which Grafts can be Considered Truly Marginal in 2014?**

7:30 AM **Pro**

Rahul Kakodkar, MD
Chief of Hepatobiliary
Surgery & Liver
Transplantation
Continental Hospital
Hyderabad, India

7:40 AM **Con**

Mohamed Rela, MD
King's College Hospital
London, United Kingdom

7:50 AM **Rebuttals, Question and Answer**

Plenary Abstract Session #1

8:00 AM – 9:30 AM

Room Location: Fleming Room, Level 3

Moderators: Paolo Muesan, MD, University Hospital Birmingham NHS Foundation, Birmingham, United Kingdom, and Alistair Lee, FRCA, FFICM, Royal Infirmary, Edinburgh, United Kingdom

8:00 AM **Sofosbuvir and Ribavirin for the Treatment of Chronic HCV with Cirrhosis and Portal Hypertension with and without Decompensation: Early Virologic Response and Safety. (Abstract # O-70)**

Nezam Afdhal, Gregory Everson, Jose Luis Calleja, Geoffrey McCaughan, William T. Symonds, Jill Denning, Lindsay McNair, John G. McHutchison, Michael Charlton, Rajender Reddy, Tarik Asselah, Edward Gane, Xavier Forns. Boston, MA, USA; Aurora, CO, USA; Madrid, Spain; Sydney, Australia; Foster City, CA, USA; Murray, UT, USA; Philadelphia, PA, USA; Clichy, France; Auckland, New Zealand; Barcelona, Spain.

8:10 AM **Sofosbuvir and Ribavirin for the Treatment of Recurrent Hepatitis C Infection after Liver Transplantation: Results of a Prospective, Multicenter Study. (Abstract # O-71)**

Michael Charlton, Didier Samuel, Edward Gane, Robert S. Brown, Jr., Michael P. Curry, Paul Kwo, Robert Fontana, Richard Gilroy, Lewis Teperman, Andrew J. Muir, John G. McHutchison, William T. Symonds, Jill Denning, Lindsay McNair, Sarah Arterburn Norah Terrault Xavier Forns Michael P. Manns. Murray, UT, USA; Villejuif, France; Auckland, New Zealand; NY, NY, USA; Boston, MA, USA; Indianapolis, IN, USA; Ann Arbor, MI, USA; Lawrence, KS, USA; Durham, NC, USA; Foster City, CA, USA; San Francisco, CA, USA; Barcelona, Spain; Hannover, Germany.

8:20 AM **Successful Withdrawal of Immunosuppression by a Cell Therapy Using Donor Ag-pulsed Tregs in Living Donor Liver Transplantation: An Update on Clinical Trial. (Abstract # O-72)**

Kenichiro Yamashita, Masaaki Zaitzu, Akihisa Nagatsu, Ryoichi Goto, Tetsu Oura, Masaaki Watanabe, Takeshi Aoyagi, Tomomi Suzuki, Tsuyoshi Shimamura, Toshiya Kamiyama, Norihiro Sato, Junichi Sugita, Kanako Hatanaka, Hisashi Bashuda, Ko Okumura Satoru Todo. Sapporo, Japan; Tokyo, Japan; Kurume, Japan.

- 8:30 AM Treatment of Donor Specific Antibodies: IVIG Is Efficacious for Early but Not Late Pediatric Liver Graft Dysfunction. (Abstract # O-73)**
 Laura J. Wozniak, Robert S. Venick, Sarathi Bhattacharya, Bitu Naini, Elaine F. Reed, Douglas G. Farmer, Sue V. McDiarmid. Los Angeles, CA, USA.
- 8:40 AM Rapamycin Enhances Cetuximab Cytotoxicity By Inhibiting mTOR-Mediated Drug Resistance in Mesenchymal Hepatoma Cells. (Abstract # O-74)**
Wei Chen, Qida Hu, Chao Liang, Xueli Bai, Tingbo Liang. Hangzhou, China.
- 8:50 AM Randomised Double Blind Placebo Controlled Trial of Perioperative Prostaglandin E1 Infusion in Live Donor Liver Transplantation. (Abstract # O-75)**
 S. Sudhindran, Unnikrishnan Gopalakrishnan, Ramachandran N. Menon, Dinesh Balakrishnan. Kochi, Kerala, India.
- 9:00 AM Liver Transplantation or Chemotherapy for Non-Resectable Colorectal Liver Metastases? (Abstract # O-76)**
Morten Hagness, Jon M. Solheim, Pål-Dag Line, Aksel E. Foss, Svein Dueland. Oslo, Norway.
- 9:10 AM Sphingosine Kinase-2 (SK2) Plays an Important Role in Injury to Liver Grafts from Non-Heart-Beating Donors. (Abstract # O-77)**
 Yanjun Shi, Hasibur Rehman, Yasodha Krishnasamy, John Lemasters, Charles Smith, Zhi Zhong. Charleston, USA; Hummelstown, USA.
- 9:20 AM Long-Term Liver Transplantation Survival in Patients With Angiographically-Proven Coronary Artery Disease: A Single Center Study. (Abstract # O-78)**
Christopher L. Wray, Jennifer C. Scovotti, Randolph H. Steadman. Los Angeles, CA, USA.

Presidential Address, Distinguished Service Award Presentation, ILTS Business Meeting

9:30 AM – 10:15 AM

Room Location: Fleming Room, Level 3

Exhibits Open

10:00 AM – 5:00 PM

Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1

Coffee Break

10:15 AM – 11:00 AM

Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1

Poster Session 3

10:15 AM – 11:00 AM

Presenters in Attendance

See Poster Section for Complete Listing, Page S83

Room Locations: Caxton Lounge, Level 2; Pickwick Suite, Level 1

State-of-the-Art Lecture # 2

Humoral Alloimmunity and the Liver: Emerging Insights and Their Therapeutic Implications

11:00 AM – 11:30 AM

Room Location: Fleming Room, Level 3

*Allan D. Kirk, MD, PhD
 Professor and Scientific Director,
 Emory Transplant Center
 Emory University Hospital
 Atlanta, GA, USA*

Break

11:30 AM – 11:45 AM

Featured Symposium # 4: Living Donor

11:45 AM – 1:15 PM

Room Location: Fleming Room, Level 3

*Moderators: Avi Soin, MBBS, MS, FRCS, Medanta-The Medicity, Gurgaon, India and Yee Lee Cheah, MBBCh, AFRCSI, National University Singapore, Singapore
 Khoo Teck Puat Hospital*

11:45 AM Getting More Horsepower Out of Your Graft: Graft Modulation

*James Pomposelli, MD, PhD
 Associate Professor of Surgery
 Lahey Hospital and Medical Center
 Carlisle, MA, USA*

12:05 PM Are There Any Contraindications to Living Donor Liver Transplant?

*Chung Mau Lo, MBBS, MS
 Chair Professor of Surgery
 The University of Hong Kong
 Hong Kong, China*

12:25 PM Improving Living Donor Safety

*Daniela Ladner, MD, MPH
 Assistant Professor of Surgery
 Northwestern University
 Chicago, IL, USA*

12:45 PM Is Living Donation a Barrier to Creating Effective Deceased Donor Transplantation?

*Mohamed Rela, MS, FRCS
 Professor of Liver Surgery and Transplantation
 Kings College Hospital
 London, United Kingdom*

1:05 PM Panel Discussion

Featured Symposium # 5: Super Bugs, Emerging Drugs and Regulations

11:45 AM – 1:15 PM

Room Location: St. James Suite, Level 4

Moderators: Michael Heneghan, MD, FRCPI, King's College Hospital, London, United Kingdom and Jacques Belghiti, MD, Hospital Beaujon, Clichy, France

11:45 AM Emerging Multidrug Resistant Superbugs in Liver Transplant Recipients – End of Antibiotic Era

*Anita Verma, MD
Kings College Hospital
London, United Kingdom*

12:10 PM Question & Answer

12:15 PM Challenges in Management of Fungal Infections in Liver Transplant Recipients

*Faouzi Saliba, MD
Associate Professor of Hepatology and Gastroenterology
Hopital Paul Brousse
Villejuif, France*

12:40 PM Question & Answer

12:45 PM Donor Derived Infections and Regulatory Challenges

*Emily Blumberg, MD
Professor of Medicine
Perelman School of Medicine of the University of Pennsylvania
Philadelphia, PA, USA*

1:10 PM Question & Answer

Featured Symposium # 6: Liver Directed Cellular Therapy – Hope or Hype

11:45 AM – 1:15 PM

Room Location: Churchill Auditorium, Ground Level

Moderators: Anil Dhawan, MD King's College Hospital, London, United Kingdom, and Valeria Mas, Ms, PhD, University of Virginia, Charlottesville, VA, USA

11:45 AM Current State of Human Hepatocyte Transplantation

*Stephen Strom, PhD
Professor, Cell Transplantation and Regenerative Medicine
Karolinska Institutet
Stockholm, Sweden*

12:05 PM Use of Mesenchymal Stem Cells in Liver Disease

*Luc van der Laan, PhD
Associate Professor
Erasmus Medical Center
Rotterdam, The Netherlands*

12:25 PM T-Regulatory Cells for Tolerance in Liver Transplant Recipients

*Alberto Sanchez-Fuayo, MD, PhD
Kings College Hospital
London, United Kingdom*

12:45 PM IPS and ES Derived Hepatocytes

*David Hay, BSc, PhD
Principal Investigator
University of Edinburgh
Edinburgh, United Kingdom*

1:05 PM Panel Discussion

Sponsored Lunch Symposium

State-of-the-Art Care in Liver

Transplantation: From Organ Donation to Long-term Benefits

Sponsored by Novartis Pharmaceuticals

1:30 PM – 3:00 PM

Room Location: Fleming Room, Level 3

Attendance by UK delegates is not recommended

Sponsored Lunch Symposium

Sponsored by Janssen-Cilag

1:30 PM – 3:00 PM

Room Location: Churchill Auditorium, Ground Level

Break

3:00 PM – 3:15 PM

Concurrent Oral Abstract Session: Anesthesia/Critical Care Medicine

3:15 PM – 4:45 PM

Room Location: St. James Suite, Level 4

Moderators: John Klinck, MD, FRCPC, Cambridge University Hospitals, Cambridge, United Kingdom and Geraldine Diaz, DO, University of Chicago Medical Center, Chicago, IL, USA

3:15 PM Does the Severity of Portopulmonary Hypertension (POPH) Matter in the Intensive Care Unit (ICU) Post Liver Transplant (LT)? (Abstract # O-79)

Alice Gallo de Moraes, Rodrigo Cartin-Ceba, Michael J. Krowka. Rochester, MN, USA.

3:25 PM Target Dobutamine Stress Test (tDSE) in Predicting Adverse Cardiac Events (PACE) Within One Year Following Liver Transplantation (LT). (Abstract # O-80)

Marina Gitman, Ramona Nicolau, Donald Ganier, Krish Sekar, Bobby Nossaman. New Orleans, LA, USA.

3:35 PM Impact of Early Pre-Transplant Sepsis on Post Liver-Transplant Outcome in Cirrhotic Patients. (Abstract # O-81)

Linda Khoy-Ear, Agnès Périer, Mathilde Eurin, Amélie Toussaint, Emmanuel Weiss, Richard Moreau, Juliette Kavafyan, Federica Dondero, François Durand, Catherine Paugam-Burtz. Clichy, France; Paris, France.

3:45 PM **Comparison of Three Surgical Techniques in Liver Transplantation: Caval Cross Clamp (CCC), Piggyback (PB) and Piggyback Plus Cavoportal Shunt (PB+ CPS). (Abstract # O-82)**
Giulia Malara, Ben Clevenger, Maria Armstrong, Susan V. Mallett. London, United Kingdom.

3:55 PM **The Association of Promotor Gene Polymorphism of the Tumor Necrosis Factor -a and Interleukin-10 With Severity of Lactic Acidosis during Liver Transplantation Surgery. (Abstract # O-83)**
Fawzia M. Aboulfetouh, Ahmed Mokhtar, Osama Farahat, Maged Salah, Heba Baz, Dalia Labib. Cairo, Egypt.

4:05 PM **Effects of Vasoactive Agents on Blood Loss and Transfusion Requirements During Orthotopic Liver Transplantation. (Abstract # O-84)**
Alexander A. Vitin, Kenneth Martay, Youri L. Vater, Gregory A. Dembo. Seattle, WA, USA.

4:15 PM **Applicability of Rapid Thrombelastography and Functional Fibrinogen Assay in Adult Liver Transplantation. (Abstract # O-85)**
Shu Yang Lu, Kenichi A. Tanaka, Ezeldeen Abuelkasem, Raymond M. Planinsic, Tetsuro Sakai. Pittsburgh, PA, USA.

4:25 PM **Epidural Anaesthesia Is Safe and Effective for Donor Hepatectomies - Our Experience With 169 Cases. (Abstract # O-86)**
Akila Rajakumar, Ilankumaran Kaliamoorthy, Shivalika Gupta, Mettu Srinivas Reddy, Mohamed Rela. Chennai, India.

4:35 PM **Liver Transplant from Uncontrolled DCD Donors: A Challenge in Coagulation Management. (Abstract # O-87)**
Annabel Blasi, Constantino Fondevila, Amelia Hessheimer, Javier Fernandez, Joan Beltran, Graciela Martinez-Palli, Jaume Balust, Pilar Taurà, Juan Carlos Garcia-Valdecasas. Barcelona, Spain.

Concurrent Oral Abstract Session: Tissue Injury/Immunology

3:15 PM – 4:45 PM

Room Location: Fleming Room, Level 3

Moderators: Jerzy Kupiec-Weglinski, PhD, University of California Los Angeles, Los Angeles, CA, USA and Tor Inge Tonessen, MD, PhD, Oslo University Hospital, Oslo, Norway

3:15 PM **Clinical Significance of Serum Aminoacylase 1 Expression in Human Hepatocellular Carcinoma and Liver Transplantation. (Abstract # O-88)**
Xuyong Wei, Xiao Xu, Haiyang Xie, Qi Ling, Di Lu, Jianguo Wang, Lin Zhou, Shushen Zheng. Hangzhou, China.

3:25 PM **Effects of Locoregional Treatments before Living Donor Liver Transplantation on Overall Survival and Disease Free Survival. (Abstract # O-89)**
Gun Hyung Na, Dong Goo Kim, Jae Hyun Han, Soo Ho Lee, Eun Young Kim, Tae Ho Hong, Young Kyoung You. Seoul, Republic of Korea.

3:35 PM **Novel Adjuvant Immunotherapy Using Liver Natural Killer Cells for Preventing Recurrence of Hepatocellular Carcinoma in Liver Transplantation. (Abstract # O-90)**
Masahiro Ohira, Kohei Ishiyama, Seigo Nishida, Andreas G. Tzakis, Hideki Ohdan. Hiroshima, Japan; Miami, FL, USA.

3:45 PM **Prediction of Recurrence after Liver Transplantation for HCC : Validation of the AFP Model in an Italian Cohort. (Abstract # O-91)**
A. Notarpaolo, G. Bizouard, M. Gambato, R. Montalti, G. Magini, L. Miglioresi, A. Vitale, G. Vennarecci, C. D Ambrosio, P. Burra, F. Manenti, S. Fagioli, G.M. Ettore, A. Andreoli, U. Cillo. S. Katsahian F. Roudot-Thoraval C. Duvoux. Creteil, France; Padova, Italy; Modena, Italy; Bergamo, Italy; Roma, Italy; Reggio Emilia, Italy.

3:55 PM **Long-Term Outcome of Salvage Liver Transplantation for HCC Recurrence after Liver Resection: University of Bologna Experience. (Abstract # O-92)**
Massimo Del Gaudio, Matteo Cescon, Giorgio Ercolani, Alberto Balduzzi, Sara Pellegrini, Matteo Ravaioli, Alessandro Cucchetti, Valentina Rosa Bertuzzo, Chiara Zanfi, Maria Cristina Morelli, Antonio Daniele Pinna. Bologna, Italy.

4:05 PM **Downregulation of HDAC6 Induces Hypoxia Tolerance and Angiogenesis in Hepatocellular Carcinoma Cells and Predicts a Poor Prognosis of Hepatocellular Carcinoma Patients with Liver Transplantation. (Abstract # O-93)**
Jian Wu, Zhen Lv, Chengli Du, Heng Xiao, Chaofeng Ding, Lin Zhou, Haiyang Xie, Shusen Zheng. Hangzhou, Zhejiang, China.

4:15 PM **Prolonged Waiting-List Time Does Not Have a Negative Impact in the Post-Transplant Survival of Patients With Hepatocellular Carcinoma. (Abstract # O-94)**
Paolo R. Salvalaggio, Guilherme E. Felga, Bianca Della Guardia, Marcio D. Almeida, Marcelo B. Rezende. Sao Paulo, Brazil.

4:25 PM **Treatment of Experimental Hepatocellular Carcinoma (HCC) Using a Novel Engineered Host Defence Peptide. (Abstract # O-95)**
Pål-Dag Line, Ji-Hua Shi, Gunnar Kvalheim, Baldur Sveinbjörnsson, Øystein Rekdal. Oslo, Norway; Tromsø, Norway.

- 4:35 PM** **A Novel Classification of Hepatocellular Carcinoma Based on Long Noncoding RNA Signature: Implications for Prognosis Following Liver Transplantation. (Abstract # O-96)**
Zhe Yang, Lin Zhou, Chaofeng Ding, Zhiyun Zheng, Liming Wu, Shusen Zheng. Hangzhou, China.

Concurrent Oral Abstract Session: Malignancies

3:15 PM – 4:45 PM

Room Location: Churchill Auditorium, Ground Level
Moderators: Petro Majno, Hopitaux Universitaires, Geneva, Switzerland and Francesco D'Amico, MD, PhD, University of Padova, Padova, Italy

- 3:15 PM** **Histological Outcome after Liver Transplantation for Chronic Hepatitis B Using Oral Antiviral Therapy Alone Without Hepatitis B Immune Globulin. (Abstract # O-97)**
James Fung, Regina Lo, See-Ching Chan, Kenneth S.H. Chok, William W. Sharr, Wing-Chiu Dai, Tan-to Cheung, Albert C.Y. Chan, Tiffany Wong, Irene O.L. Ng, Man-fung Yuen, Chung-Mau Lo. Hong Kong, China.
- 3:25 PM** **Diagnostic Value of Gd-EOB-DTPA-Enhanced MR Imaging for Detection of the Cirrhosis-Associated Hepatocellular Carcinoma in Patients With Liver Transplant Candidates. (Abstract # O-98)**
Mecit Kantarci, Berhan Pirimoglu, Gurkan Ozturk, Betul Gundogdu. Erzurum, Turkey.
- 3:35 PM** **Histologically Proven Nonalcoholic Fatty Liver Disease and Clinically Related Factors in Recipients after Liver Transplantation. (Abstract # O-99)**
Hyeyoung Kim, Kyoungbun Lee, Kwang-Woong Lee, Nam-Joon Yi, Hae Won Lee, Geun Hong, YoungRok Choi, Suk-Won Suh, Ja June Jang, Kyung-Suk Suh. Seoul, Korea.
- 3:45 PM** **Conversion To Entecavir Monotherapy from Combination Therapy With Hepatitis B Immunoglobulin for Hepatitis B Prophylaxis in Long Term Survivor after Liver Transplantation: Prospective Single Center Trial. (Abstract # O-100)**
Nam-Joon Yi, Jeong-Moo Lee, Youngrok Choi, Suk-Won Suh, Kwang-Woong Lee, Kyung-Suk Suh. Seoul, Republic of Korea.
- 3:55 PM** **Predicting Recurrent Hepatocellular Carcinoma after Liver Transplantation with a New Clinical Score. (Abstract # O-101)**
Federico Piñero, Sebastián Marciano, Federico Orozco Ganem, Margarita Anders, Alina Zerega, Carla Ramirez Cabrera, Oscar Andriani, Octavio Gil, Luis Podesta, Eduardo de Santibañes, Lucas McCormack, Adrián Gadano, Marcelo Silva. Pilar, Argentina; Buenos Aires, Argentina; Córdoba, Argentina.

- 4:05 PM** **Sexual Functioning in Patients With End-Stage Liver Disease before and after Liver Transplantation (LT). (Abstract # O-102)**
Beatriz Rodríguez-Medina, Agustín Ramos-Prol, Carla Satorres, Carmen Vinaixa, Ángel Rubín, María García, Victoria Aguilera, Martín Prieto, Marina Berenguer. Valencia, Spain; Las Palmas, Spain; Madrid, Spain.
- 4:15 PM** **Sarcopenic Obesity With Metabolic Syndrome: A Newly Recognized Entity Following Living Donor Liver Transplantation. (Abstract # O-103)**
Narendra S. Choudhary, Sanjiv Saigal, Neeraj Saraf, Ravi Mohanka, Amit Rastogi, Sanjay Goja, Palat B. Menon, Sunil K. Mishra, Ambrish Mithal, Arvinder S. Soin. Gurgaon, Haryana, India.
- 4:25 PM** **Early Molecular Events Associated with Accelerated HCV Recurrence Post Liver Transplantation. (Abstract # O-104)**
Ricardo C. Gehrau, Valeria R. Mas, Danielle Ladie, Jihee L. Suh, Daniel G. Maluf. Charlottesville, VA, USA.
- 4:35 PM** **Sorafenib Use Pre Transplant Is Associated with Decreased Post Transplant Recurrence Rates in Patients Inside and Outside the Milan Criteria at 3 Years. (Abstract # O-105)**
Howard P. Monsour Jr., Emad H. Asham, Maha Boktour, David W. Victor III, Robert S. McFadden, Ashish Saharia, Sherilyn Gordon Burroughs, Ahmed O. Gaber, Mark R. Ghobrial. Houston, TX, USA.

Concurrent Oral Abstract Session: Recurrent Disease/Pathology

3:15 PM – 4:45 PM

Room Location: Westminster Suite, Level 4
Moderators: Simone Strasser, MD, PhD, Royal Prince Alfred Hospital, Camperdown, Australia and Richard Gilroy, MD, Kansas University Medical Center, Kansas City, KS, USA

- 3:15 PM** **Plasmacytoid Dendritic Cell-Derived IFN- α Promotes Murine Liver Ischemia/Reperfusion (I/R) Injury via Induction of Hepatocyte IRF-1. (Abstract # O-106)**
Antonino Castellaneta, Osamu Yoshida, Shoko Kimura, David A. Geller, Noriko Murase, Angus W. Thomson. Pittsburgh, USA; Bari, Italy.
- 3:25 PM** **DAP12 Deficiency Enhances the Allostimulatory Capacity of Liver Dendritic Cells and Breaks Liver Transplant Tolerance. (Abstract # O-107)**
Osamu Yoshida, Shoko Kimura, Lei Dou, Benjamin M. Matta, David A. Geller, Angus W. Thomson. Pittsburgh, PA, USA.
- 3:35 PM** **Hypothermic Oxygenated Machine Perfusion (HOPE) Down-Regulates the Immune Response in a Rat Model of Liver Transplantation. (Abstract # O-108)**
Andrea Schlegel, Philipp Kron, Rolf Graf, Pierre-Alain Clavien, Philipp Dutkowski. Zurich, Switzerland.

- 3:45 PM Warm Ischemia & Reperfusion Causes Liver Microcirculatory Injury and Acute Endothelial Dysfunction. Simvastatin Pre-Treatment Prevents These Deleterious Events. (Abstract # O-109)**

Diana Hide, Sergi Vila, Giusi Marrone, Juan Carlos Garcia-Pagan, Jaime Bosch, Jordi Gracia-Sancho. Barcelona, Spain.

- 3:55 PM Immune-Regulatory Pathways Are Transiently Activated during the Spontaneous Establishment of Operational Tolerance Following Liver Transplantation. (Abstract # O-110)**

Richard Danger, Richard Taubert, María-Carlota Londoño, Marta Martínez, Juan José Lozano, Antoni Rimola, Michael P. Manns, Alberto Sánchez-Fueyo, Elmar Jaeckel. London, United Kingdom; Hannover, Germany; Barcelona, Spain.

- 4:05 PM Endogenous Stem Cell Mobilization via CXCR4 Antagonism Allows for Drug Free Transplantation in a Large Animal Preclinical Model. (Abstract # O-111)**

Andrew M. Cameron, Russell Wesson, Andrew L. Singer, George M. Williams, Zhaoli Sun. Baltimore, MD, USA.

- 4:15 PM Injury of Peribiliary Glands and Vascular Plexus before Liver Transplantation Predicts Formation of Non-Anastomotic Biliary Strictures. (Abstract # O-112)**

Sanna Op den Dries, Andrie C. Westerkamp, Negin Karimian, Annette S.H. Gouw, James F. Markmann, Ton Lisman, Heidi Yeh, Korkut Uygün, Paulo Martins, Robert J. Porte. Groningen, Netherlands; Boston, MA, USA.

- 4:25 PM Iron Regulates Intra-Hepatic Lymphocyte-Mediated Immune Responses. (Abstract # O-113)**

Eliaño Bonaccorsi-Riani, Richard Danger, Marc Martínez-Llordella, Marta Martínez, Anna Rodríguez, Miquel Bruguera, Antoni Rimola, Hellen Collins, Alberto Sánchez-Fueyo. London, United Kingdom; Barcelona, Spain.

- 4:35 PM Human Gingiva-Derived Mesenchymal Stromal Cells Inhibit Graft-Versus-Host Disease Through CD39 and IDO. (Abstract # O-114)**

Maogen Chen, Zhiyong Guo, Dongping Wang, Weiqiang Ju, Jian Gu, Homayoun H. Zadeh, Songguo Zheng, Xiaoshun He. Guangzhou, Guangdong, China; Los Angeles, CA, USA

Coffee Break

4:45 PM – 5:15 PM

Room Locations: Benjamin Britten Lounge, Level 3; Caxton Lounge, Level 2; Pickwick Suite, Level 1

Poster Session 3

4:45 PM – 5:15 PM

Presenters in Attendance

See Poster Section for Complete Listing, Page S83

Room Locations: Caxton Lounge, Level 2; Pickwick Suite, Level 1

Concurrent Oral Abstract Session: Extended Criteria Donors/Disease Transmission

5:15 PM – 6:45 PM

Room Location: St. James Suite, Level 4

Moderators: Sandy Feng, MD, PhD, University of California San Francisco, San Francisco, CA, USA and Tamara Perera, MS, FRCS, Queen Elizabeth Hospital, Birmingham, United Kingdom

- 5:15 PM The Spheroid Reservoir Bioartificial Liver: A Pilot Study. (Abstract # O-115)**

Jaime Glorioso, Shennen Mao, Hakon Haugaa, Brian Rodysill, Bruce Amiot, Scott Nyberg. Rochester, MN, USA; Oslo, Norway; Minneapolis, MN, USA.

- 5:25 PM A Proof of Concept, Phase II European Trial Demonstrates the Efficacy of a Novel, Extracellular Matrix-Targeted, Antioxidant in Patients With HBV- and Autoimmune Hepatitis- (AIH) Related Acute on Chronic Liver Diseases. (Abstract # O-116)**

D. Samuel, P. Ichai, N. Carbonell, M. Rudler, G. Gerken, P. Mathurin, F. Durand, C. Duvoux, D. G. Larrey, F. Zoulim, M. P. Manns, C. Trautwein, V. Leroy, B. Nalpas, N. Moniaux, J. Faivre, L. Jamot, C. Brechot, G. Amouyal, P. Amouyal. Villejuif, France; Paris, France; Essen, Germany; Lille, France; Clichy, France; Creteil, France; Montpellier, France; Lyon, France; Hannover, Germany; Aachen, Germany; Grenoble, France.

- 5:35 PM 3, 4-Methylenedioxymethamphetamine (MDMA/ 'Ecstasy') Ingestion and Acute Liver Failure. (Abstract # O-117)**

Zubair U. Mohamed, Chris Willars, Georg Auzinger, Michael Heneghan, Nigel Heaton, Julia Wendon, William Bernal. London, United Kingdom.

- 5:45 PM Minimizing Technical Complication of Auxiliary Orthotopic Liver Transplantation (AOLT) Should Not Extend Indications in Patients with Acute Liver Failure (ALF). (Abstract # O-118)**

Manuela Césaretti, Fédérica Dondéro, Safi Dokmak, Claire Francoz, Catherine Paugam, François Durand, Jacques Belghiti. Clichy, France.

5:55 PM **Antigen-Specific Immunoabsorption: Current Experience and Longterm Results of Five ABO-Incompatible Adult Liver Transplantation. (Abstract # O-119)**
M. Gelu-Simeon, P. Ichai, T.M. Antonini, A. Coilly, M. Sebah, N. Kassis, E. Vibert, R. Adam, D. Castaing, D. Samuel, F. Saliba. Villejuif, France.

6:05 PM **Outcome of Patients With Acute Liver Failure Meeting the Criteria of Liver Transplantation in a Recent Cohort: Impact of Albumin Dialysis With MARS® and Liver Transplantation. (Abstract # O-120)**
F. Saliba, G. Dahlqvist, A. Letierce, P. Ichai, I. Ruiz, A. Coilly, M. Boudon, D. Samuel. Villejuif, France; Boulogne-Billancourt, France.

6:15 PM **ALF/ACLF Versus CLD Group - Is the Outcome Different in Pediatric Living Donor Liver Transplantation (LDLT)? (Abstract # O-121)**
Neelam Mohan, Sakshi Karkra, M. Dhaliwal, V. Raghunathan, R. Mohanka, A. Rastogi, M. Balachandran, S. Goja, V. Vohra, A. Soin. Gurgaon, Haryana, India.

6:25 PM **Role of Mycophenolate Mofetil (MMF) in Steroid Non Responsive Severe Acute Alcoholic Hepatitis: A Randomized Open Label Placebo Control Prospective Clinical Pilot Trial. (Abstract # O-122)**
P. Patrick Basu, Niraj J. Shah, Mark Aloysius. New York, NY, USA.

6:35 PM **Acute Liver Failure (ALF) Due To Yellow Phosphorous Poisoning. (Abstract # O-123)**
Dinesh Jothimani, Jayanthi Venkatraman, Vijaya Srinivasan, Guhan Muthamizh, Joy Vargese, A. Olithselvan, Mohamed Rela. Chennai, Tamilnadu, India; London, United Kingdom

Concurrent Oral Abstract Session: Acute Liver Failure

5:15 PM – 6:45 PM

Room Location: Westminster Suite, Level 4

Moderators: Kenneth Simpson, MD, PhD, University of Edinburgh, Edinburgh, United Kingdom and Rahul Kakodkar, MS, Continental Hospital, Hyderabad, India

5:15 PM **Octogenarian Donors and Post-Liver Transplant Ischemic Type Biliary Lesions (ITBL): A Predictive Score Based on Donor Hemodynamic Instability and Bilirubin Peak. (Abstract # O-124)**
Davide Ghinolfi, Quirino Lai, Paolo DeSimone, Laura Coletti, Giovanni Tincani, Gabriele Catalano, Giuseppe Arenga, Emanuele Balzano, Paola Carrai, Giulia Leonardi, Daniele Tassinari, Dario Tartaglia, Franco Filippini. Pisa, Italy.

5:25 PM **Pre-Arrest Heparinization Is Better Than Post-Arrest Fibrinolysis in DCD Liver Transplantation. (Abstract # O-125)**
Amelia J. Hessheimer, Marina Vendrell, Javier Muñoz, Eduardo Flores, Ángel Ruiz, Pilar Taurá, Juan C. García-Valdecasas, Constantino Fondevila. Barcelona, Spain.

5:35 PM **MicroRNAs to Assess Warm Ischemic Injury during Machine Perfusion of Liver Grafts from Circulatory Death Donors. (Abstract # O-126)**
C. J. Verhoeven, D. Monbaliu, I. Habib, J. de Jonge, T. Wylin, I. Jochmans, V. Heedfeld, H. J. Metselaar, R. W.F. de Bruin, G. Kazemier, J. Ijzermans, J. Pirenne, L. J.W. van der Laan. Rotterdam, Netherlands; Leuven, Belgium.

5:45 PM **Outcomes Following Liver Transplantation Using Grafts from Elderly Donors: DBD vs DCD-UK Experience. (Abstract # O-127)**
Miriam Cortes, Wael Jassem, Krishna Menon, Elissaios Kontis, Michael A. Heneghan, John O'Grady, Hector Vilca-Melendez, Parthi Srinivasa, Andreas Prachalias, Nigel Heaton. London, United Kingdom.

5:55 PM **2-Hit Hypothesis: A Second "Hit" Increases the Risk for Death in Liver Allograft Recipients with Preformed Donor Specific Alloantibodies. (Abstract # O-128)**
Jacqueline G. O'Leary, Hugo Kaneku, Peter T. Kim, Linda W. Jennings, Brian M. Susskind, Paul I. Terasaki, Goran B. Klintmalm. Dallas, TX, USA; Los Angeles, CA, USA.

6:05 PM **Functional Warm Ischemic Time as a Predictor of Graft Failure and Biliary Complications. (Abstract # O-129)**
Kristopher P. Croome, Alain Lipowicz, David R. Grant, John B. Seal, Max Marquez, Jessica Coffey, William Wall, Markus Selzner, Roberto Hernandez-Alejandro. London, ON, Canada; Toronto, ON, Canada.

6:15 PM **Hemiliver Graft for Split Liver Transplantation: A 9-Year Single Center Experience in the United States. (Abstract # O-130)**
Koji Hashimoto, Cristiano Quintini, Federico Aucejo, Masato Fujiki, Teresa Diago, Dymrna Kelly, Charles Winans, Bijan Egtesad, John Fung, Charles Miller. Cleveland, OH, USA.

6:25 PM **Coagulation Profiles of Maastricht Category 2 DCD Donors Do Not Indicate a Role for Exogenous Fibrinolysis. (Abstract # O-131)**
Amelia J. Hessheimer, Marina Vendrell, Ángel Ruiz, Graciela Martínez-Palli, Juan C. García-Valdecasas, Constantino Fondevila, Pilar Taurá. Barcelona, Spain.

6:35 PM **The Evolving Use of Higher Risk Grafts Is Associated With an Increased Incidence of Acute Kidney Injury after Liver Transplantation. (Abstract # O-132)**
Joanna A. Leithead, Neil Rajoriya, Bridget K. Gunson, Paolo Muiresan, James W. Ferguson.
 Birmingham, United Kingdom.

Concurrent Oral Abstract Session: Surgical Video Session

5:15 PM – 6:45 PM

Room Location: Fleming Room, Level 3
Moderators: Brian Davidson, Royal Free Hospital, London, United Kingdom and Ki Hun Kim, MD, PhD, Asan Medical Center, Seoul, Korea

5:15 PM **Tailored Recipient Hepatectomy Using High Hilar Dissection (HHO)**
 Kwang-Woong Lee, MD, PhD
 Seoul National University College of Medicine
 Seoul, Korea

5:25 PM **Ex-vivo Subtotal Colectomy and Whipple Procedure with Reconstruction of SMV and SMA**
 Ian McGilvray, MD, PhD
 Toronto General Hospital
 Toronto, ON, Canada

5:35 PM **Hepatic Artery Reconstruction Using Gastroepiploic Artery in Living Donor Liver Transplantation**
Tsan-Shiun Lin, MD
 Kaohsiung Chang Gung Memorial Hospital
 Kaohsiung, Taiwan

5:45 PM **PNUYH Method of Living Donor Liver Transplantation**
 Chongwoo Chu, MD, PhD
 Pusan National University, Yangsan Hospital
 Yangsan, Korea

5:55 PM **Liver Transplantation with Renoportal Anastomosis for Extensive Portal Vein Thrombosis**
 Mihai-Calin Pavel, MD
 Hospital Clinic Provincial de Barcelona
 Barcelona, Spain

6:05 pm **Outflow Improvement During a Limited Left Graft Implantation**
 Rafael Diaz-Neto, MD, PhD
 Royal Free Hospital
 London, United Kingdom

6:15 pm **Surgical Repair of Biliobiliary Anastomosis after LDLT**
 Petru Bucurh, MD
 Hopital Trousseau-CHRU Tours
 Tours, France

6:25 PM **Total Laparoscopic Living Donor Right Hepatectomy**
 Jai Young Cho, MD, PhD
 Seoul National University College of Medicine
 Seoul, Korea

6:35 PM **Surgical Maneuvers for Grafts Optimization During the Bench Work**
 Rafael Diaz-Neto, MD, PhD
 Royal Free Hospital
 London, United Kingdom

Concurrent Oral Abstract Session: Late Breaking

5:15 PM – 6:45 PM

Room Location: Churchill Auditorium, Ground Level
Moderators: Mark Ghobrial, MD, PhD, The Methodist Hospital, Houston, TX, USA and Patrizia Burra, MD, PhD, University of Padova, Padova, Italy

5:15PM **Postoperative Calcium Homeostasis and Outcomes in Liver Transplant Recipients. (Abstract # LB-1)**
Jana Hudcova, Tomas Cvrk, Michael Kaufman, Robin Ruthazer, Roman Schumann. Burlington, MA, USA; Boston, USA.

5:215PM **A Comparison of VO2 Peak Estimation by Duke Activity Status Index (DASI) and VO2 Peak Measured by Cardiopulmonary Exercise Testing (CPX) in Potential Liver Transplant Recipients. (Abstract # LB-2)**
Shaun I. Baxter, Euan M. Thomson, David Cameron, Alastair A. Innes. Edinburgh, United Kingdom.

5:35PM **How Far Can We Push the Limit of Donor Age in DCD Liver Transplantation? (Abstract # LB-3)**
Irene Scalera, Giorgia Catalano, Thamara Perera, Hynek Mergental, Darius Mirza, Simon Bramhall, John Isaac, Paolo Muiresan. Birmingham, United Kingdom.

5:45PM **Pre-retrieval Reperfusion Decreases Cancer Recurrence after Rat Ischemic (DCD-like) Liver Graft Transplantation. (Abstract # LB-4)**
Graziano Oldani, Lindsey Crowe, Lorenzo Orci, Laura Rubbia-Brandt, Florence Slits, Claudio DeVito, Gilles Mentha, Philippe Morel, Stephanie Lacotte, Christian Toso. Geneva, Switzerland.

5:55PM **Liver Transplantation Using Pre-conditioned Hypoxic Donor Livers Is a Safe Way to Increase the Donor Pool – A Case Controlled Study. (Abstract # LB-5)**
Mansoor A. Madanur, Elissaios Kontis, Krishna Menon, Anthony Stafford, Wayel M. Jassem, Andreas Prachalias, Parthi Srinivasan, Hector V. Melendez, Mohamed S. Rela, Nigel D. Heaton. London, United Kingdom.

- 6:05PM Plasma Vascular Endothelial Growth Factor (VEGF) Predicts Vascular Invasion in Patients with Hepatocellular Carcinoma (HCC) Undergoing Liver Transplantation. (Abstract # LB-6)**
Wei Zhang, Richard Kim, Cristiano Quintini, Koji Hashimoto, Masato Fujiki, Teresa Diago, Bijan Eghtesad, Charles Miller, John Fung, Ann Tan, K.V. Narayanan Menon, Federico Aucejo. Cleveland, OH, USA; Tampa, FL, USA; Abbotsford, Canada.
- 6:15PM Liver Transplantation for Hepatocellular Carcinoma Using the Milan Criteria and the Expanded UK Listing Criteria: A Single Centre Experience. (Abstract # LB-7)**
Anthony T. Stafford, Elissaios Kontis, Krish V. Menon, Abid Suddle, Alberto Quaglia, John O'Grady, Augusto Villanueva, Andreas Prachalias, Wayel Jassem, Parthi Srinivasan, Hector V. Melendez, Mohamed Rela, Nigel Heaton. London, United Kingdom.
- 6:25PM Molecular Characterization of Acute Cellular Rejection during Immunosuppression Withdrawal Trials in Liver Transplantation. (Abstract # LB-8)**
Eliano Bonaccorsi-Riani, Juanjo J. Lozano, Carlos Benitez, Maria C. Londono, Felix Bohne, Marc Martinez-Llordella, Antoni Rimola, Alberto Sanhchez-Fueyo. London, United Kingdom; Barcelona, Spain.
- 6:35PM The Cost-Effectiveness of Sofosbuvir Treatment Pre-Transplant to Prevent HCV Recurrence Post-Transplant. (Abstract # LB-9)**
Kosh Agarwal, Ed Gane, Xavier Forns, Michael Manns, Sammy Saab, Massimo Colombo, Zobair Younossi, Norah Terrault, John McHutchison. London, United Kingdom; Auckland, New Zealand; Barcelona, Spain; Hannover, Germany; Los Angeles, USA; Milan, Italy; VA, USA; San Francisco, USA; Foster City, USA.

8:00 PM – 11:00 PM Medieval Magnificence at Guildhall – Closing Reception

Offsite Event

(Ticketed event with separate registration fee. No entry permitted without ticket. Roundtrip transportation is included with the purchase of each ticket.)

The 2014 Joint International Congress of ILTS, ELITA & LICAGE

Day-at-a- Glance, Saturday, June 7, 2014

6:45 AM – 8:00 AM	Women in Transplantation Breakfast Session	10:00 AM – 11:30 AM	Featured Symposia
<i>Page S47</i>	<i>Room Location: Mountbatten Room, Level 6</i>	<i>Page S49</i>	Featured Symposium # 11: Directed Antiviral Therapy for Hepatitis C <i>Room Location: Churchill Auditorium, Ground Level</i>
7:30 AM – 1:00 PM	Registration Open	<i>Page S49</i>	Featured Symposium # 12: Acute Liver Failure <i>Room Location: St. James Suite, Level 4</i>
<i>Page S47</i>	<i>Room Location: Sanctuary Foyer, Ground Level</i>	<i>Page S49</i>	Featured Symposium # 13: Long-term Outcomes <i>Room Location: Fleming Room, Level 3</i>
8:00 AM – 9:30 AM	Plenary Abstract Session 2		
<i>Page S47</i>	<i>Room Location: Fleming Room, Level 3</i>		
9:30 AM – 10:00 AM	Coffee Break	1:15 PM – 1:30 PM	Coffee Break
	<i>Room Location: Benjamin Britten Lounge, Level 3</i>		<i>Room Location: Benjamin Britten Lounge, Level 3</i>
10:00 AM – 11:30 AM	Featured Symposia	1:30 PM – 2:30 PM	Featured Symposium # 14: Practice Guidelines
<i>Page S48</i>	Featured Symposium # 7: Surgical Techniques <i>Room Location: Churchill Auditorium, Ground Level</i>	<i>Page S50</i>	<i>Room Location: Fleming Room, Level 3</i>
<i>Page S48</i>	Featured Symposium # 8: Extremes of the Immunologic Spectrum <i>Room Location: Fleming Room, Level 3</i>		
<i>Page S48</i>	Featured Symposium # 9: Living the Life: Making the Most of Your Liver Transplant <i>Room Location: Westminster Suite, Level 4</i>		
<i>Page S48</i>	Featured Symposium # 10: Perioperative Management Controversies <i>Room Location: St. James Suite, Level 4</i>		
11:30 AM – 11:45 AM	Coffee Break		
	<i>Room Location: Benjamin Britten Lounge, Level 3</i>		

Saturday, June 7, 2014

Women in Transplantation

Breakfast Session

6:45 AM – 8:00 AM

Co-sponsored with The Transplantation Society

Room Location: Mountbatten Room, Level 6

Registration Open

7:30 AM – 1:00 PM

Room Location: Sanctuary Foyer, Ground Level

Plenary Abstract Session 2

8:00 AM – 9:30 AM

Room Location: Fleming Room, Level 3

Moderators: Elizabeth Pomfret MD, PhD, Lahey Medical Clinic, Burlington, MA, USA and Anil Dhawan, MD, Kings College, London, United Kingdom

- 8:00 AM Donor Quality and the Risk of Hepatocellular Carcinoma Recurrence after Liver Transplantation. (Abstract # O-133)**
Lorenzo A. Orci, Pietro E. Majno, Stéphanie Lacotte, Gilles Mentha, Christian Toso. Geneva, Switzerland.
- 8:10 AM The Down-Regulation of Mir-126 Promotes Metastasis and Angiogenesis in Hepatocellular Carcinoma. (Abstract # O-134)**
Chengli Du, Jian Wu, Zhen Lv, Jun Cheng, Haiyang Xie, Shusen Zheng. Hangzhou, Zhejiang, China.
- 8:20 AM The Impact of Fcg Receptor Polymorphism on Infection-Related Complications in ABO-Incompatible Living Donor Liver Transplantation Under Rituximab-Based Immunosuppressive Regimen. (Abstract # O-135)**
Hiroshi Sakai, Yuka Tanaka, Seiichi Shimizu, Kentaro Ide, Kohei Ishiyama, Takashi Onoe, Masahiro Ohira, Hiroyuki Tahara, Tsuyoshi Kobayashi, Hirotaka Tashiro, Hideki Ohdan. Hiroshima, Japan.
- 8:30 AM Cardiopulmonary Exercise Testing: Can It Really Predict Survival? (Abstract # O-136)**
Anish Gupta, Ranjan Guha, Simon Cottam. London, United Kingdom.

- 8:40 AM Sofosbuvir Plus Ribavirin before Transplantation Prevented HCV Infection Post-Transplant in Patients with HCV Cirrhosis and HCC: Results of an Open-Label Trial. (Abstract # O-137)**

Michael P. Curry, Norah Terrault, Jacqueline O'Leary, Xavier Forns, Robert Brown, Jr., Raymond T. Chung, Edward Gane, Jonathan M. Fenkel, Fredric Gordon, Alexander Kuo, Thomas Schiano, Eugene Schiff, Alex Befeler, John G. McHutchison, William T. Symonds Jill Denning Lindsay McNair Sarah Arterburn Dilip Moonka Gregory Everson Nezam Afdhal. Boston, MA, USA; San Francisco, CA, USA; Dallas, TX, USA; Barcelona, Spain; NY, NY, USA; Auckland, New Zealand; Philadelphia, PA, USA; Burlington, MA, USA; La Jolla, CA, USA; Miami, FL, USA; St Louis, MO, USA; Foster City, CA, USA; Detroit, MI, USA; Denver, CO, USA.

- 8:50 AM Sofosbuvir Compassionate Use Program for Patients with Severe Recurrent Hepatitis C Including Fibrosing Cholestatic Hepatitis Following Liver Transplantation. (Abstract # O-138)**

Xavier Forns, Martin Prieto, Michael Charlton, John G. McHutchison, William T. Symonds, Jill Denning, Theo Brandt-Sarif, Paul Chang, Valerie Kivett, Robert J. Fontana, Thomas F. Baumert, Audrey Coilly, Lluís Castells, Francois Habersetzer. Barcelona, Spain; Valencia, Spain; Murray, UT, USA; Foster City, CA, USA; Ann Arbor, MI, USA; Strasbourg, France; Villejuif, France.

- 9:00 AM Liver Transplantation Using Hepatitis B Core-Positive Donor Liver Grafts in Infants and Children. (Abstract # O-139)**

Sanghoon Lee, Byunggon Na, Dong Kyu Oh, Jin Yong Choi, Wontae Cho, Jong Man Kim, Choon Hyuck D. Kwon, Jae-Won Joh, Suk-Koo Lee. Seoul, Korea.

- 9:10 AM Protection of the Small Remnant Liver By Portal Pressure Modulation With an Adjustable Vascular Ring (MID-AVR™) after Major Hepatectomy in Pigs. (Abstract # O-140)**

P. Bucur, Ma Allard, I. Vignon-Clementel, C. Audebert, D. Drasdo, M. Sebah, L. Cazenave, D. Castaing, E. Viber. Villejuif, France; Tours, France; Rocquencourt, France.

- 9:20 AM Impact of Everolimus on the Recurrence Rate of Hepatocellular Carcinoma after Liver Transplantation – 12, 24, and 36 Months Data from 719 LTx Recipients. (Abstract # O-141)**

G. Junge, F. Saliba, P. De Simone, L. Fischer, J. Fung, G. Dong, H. Schwende, A. Speziale. Basel, Switzerland.

Coffee Break

9:30 AM – 10:00 AM

Room Location: Benjamin Britten Lounge, Level 3

Featured Symposium # 7: Surgical Techniques

10:00 AM – 11:30 AM

Room Location: Churchill Auditorium, Ground Level
Moderators: Jacques Pirenne, MD, PhD, University Hospital Leuven, Leuven, Belgium and Wojciech Polak, MD, PhD, Erasmus Medical Center, Rotterdam, The Netherlands

10:00 AM Technical Challenges: Deceased Donor Full Left and Full Right
Paolo Muesan, MD
University Hospitals Birmingham NHS Foundation Birmingham, United Kingdom

10:20 AM Latest Surgical Innovations in Living Donor Liver Transplantation
Sung-Gyo Lee, MD, PhD
Professor of Surgery
Asan Medical Center
Seoul, Korea

10:40 AM New Developments in Organ Preservation: Normothermic Perfusion
Peter Friend, MD, FRCS
Professor of Transplantation
University of Oxford
Oxford, United Kingdom

11:00 AM Multivisceral Transplantation for Complete Portomesenteric Thrombosis
Andreas Pascher, MD, PhD
Associate Professor of Surgery
Charite - University Medicine Berlin
Berlin, Germany

11:20 AM Panel Discussion

Featured Symposium # 8: Extremes of the Immunologic Spectrum

10:00 AM – 11:30 AM

Room Location: Fleming Room, Level 3
Moderators: John Fung, MD, PhD, Cleveland Clinic Foundation, Cleveland, OH, USA and James Neuberger, MD, Queen Elizabeth Hospital, Birmingham, United Kingdom

10:00 AM Salvage Immunosuppression
Andreas Pascher, MD, PhD
Associate Professor of Surgery
Charite - University Medicine Berlin
Berlin, Germany

10:20 AM Etiology: Who Needs More?
James Trotter, MD
Medical Director of Liver Transplantation
Baylor University Medical Center
Dallas, TX, USA

10:40 AM Etiology: Who Needs Less?
Federico Villamil, MD
Director of Liver Transplantation
Buenos Aires British Hospital
Buenos Aires, Argentina

11:00 AM Liver Eaters
Jacqueline O'Leary, MD
Baylor University Medical Center
Dallas, TX, USA

11:20 AM Panel Discussion

Featured Symposium # 9: Living the Life: Making the Most of Your Liver Transplant

10:00 AM – 11:30 AM

Room Location: Westminster Suite, Level 4
Moderators: John O'Grady, MD, PhD, Kings College Hospital, London, United Kingdom and Kenneth Simpson, University of Edinburgh, Edinburgh, United Kingdom

10:00 AM Employment and Education
Fredrik Aberg, MD, PhD
Gastroenterology/Hepatology Fellow
Helsinki University Hospital
Helsinki, Finland

10:15 AM Smoking
Joanna Leithead, MRCP, MD
Clinical Lecturer in Hepatology
Queen Elizabeth Hospital and University of Birmingham
Birmingham, United Kingdom

10:30 AM Poly-addiction
James Bell, FRACP, MD
Consultant, Addictions
Kings Health Partners
London, United Kingdom

10:45 AM Sexuality and Fertility
Patrizia Burra MD, PhD
University of Padova
Padova, Italy

11:00 AM Economic Burden for the Liver Transplant Recipient
Sanjiv Saigal, DM, MRCP
Director
Medanta Institute of Liver Transplantation and Regenerative Medicine
Gurgaon, India

11:15 AM Panel Discussion

Featured Symposium # 10: Perioperative Management Controversies

10:00 AM – 11:30 AM

Room Location: St. James Suite, Level 4
Moderators: John Klinck, MD, FRCPC, FRCA, Addenbrooks Hospital, Cambridge, United Kingdom, and Phillip Bayly, MBBS, FRCA, Freeman Hospital, Newcastle

10:00 AM Management of Patients Receiving Marginal Grafts
Simon Cottam, MB, FRCA
Kings College Hospital
London, United Kingdom

10:20 AM Management of the Living Donor Recipient
Akila Rajakumar, MD, FRCA
Global Health City
Chennai, India

10:40 AM Cardiac Output Monitoring and the Micro-circulation

*Christiaan Boerma, MD, PhD
Consultant, Intensive Care
Medical Center Leeuwarden
Leeuwarden, The Netherlands*

11:00 AM The Microcirculation in Liver Disease

*Dan Martin, MD
University College London,
London, United Kingdom*

11:20 AM Panel Discussion**Coffee Break****11:30 AM – 11:45 AM**

Room Location: Benjamin Britten Lounge, Level 3

Featured Symposium # 11: Directed Antiviral Therapy for Hepatitis C**11:45 AM – 1:15 PM**

*Room Location: Churchill Auditorium, Ground Level
Moderators: Ed Gane, MD, MBChB, University of Auckland,
Auckland, New Zealand and David Mutimer, MD, Queen
Elizabeth Hospital, Birmingham, United Kingdom*

11:45 AM A Lead into Transplantation

*Marina Berenguer, MD
Professor of Medicine
Hospital La Fe
Valencia, Spain*

12:05 PM Post-transplant: Who and When?

*Robert Brown, MD, MPH
Frank Cardile Professor of Medicine
Columbia University College of Physicians and
Surgeons
New York, NY, USA*

12:25 PM Drug Interaction for HCV Post Liver Transplant - Debate**12:25 PM PRO**

*Michael Charlton, MD
Professor of Medicine
Intermountain Medical Center
Salt Lake City, UT, USA*

12:40 PM CON

*Didier Samuel, MD, PhD
Professor of Hepatology and Gastroenterology
Hospital Paul Brousse
Villejuif, France*

12:50 PM Pro Rebuttal**12:55 PM Con Rebuttal****1:00 PM Panel Discussion****Featured Symposium # 12: Acute Liver Failure****11:45 AM – 1:15 PM**

*Room Location: St. James Suite, Level 4
Moderators: Sue Mallett, MB, BS, FRCA, Royal Free Hospital,
London, United Kingdom and James O'Beirne, MB, BS, MRCP,
Royal London Hospital, London, United Kingdom*

11:45 AM Understanding the Coagulopathy of Acute Liver Failure

*Ton Lisman, PhD
Associate Professor of Experimental Surgery
University Medical Center Groningen
Groningen, The Netherlands*

12:05 PM Intracranial Pressure Monitoring and Management

*Julia Wendon, PharmD
Kings College London
London, United Kingdom*

12:25 PM What Are the Options When Time is Running Out?

*Nigel Heaton, MBBS, FRCS
Kings College Hospital
London, United Kingdom*

12:45 PM Immunoparesis: Infection and Outcome in Acute Liver Failure

*Kenneth Simpson, MD, PhD
Senior Lecturer, Hepatology
The University of Edinburgh
Edinburgh, United Kingdom*

1:05 PM Panel Discussion**Featured Symposium # 13: Long-term Outcomes****11:45 AM – 1:15 PM**

*Room Location: Fleming Room, Level 3
Moderators: Gabriela A. Berlakovich, MD, FEBS, Medical
University Vienna, Vienna, Austria and William Bennet, MD,
PhD, FEBS, Sahlgrenska University, Gothenberg, Sweden*

11:45 AM 20 Year Follow-up: An Adult Perspective

*Thomas Berg, MD
Charité - University Medicine Berlin
Berlin, Germany*

12:05 PM 20 Year Follow-up: A Pediatric Perspective

*Sue McDiarmid, MD
University of California, Los Angeles
Los Angeles, CA, USA*

12:25 PM Are There Challenges in Getting Them to 20 Years?

*Kymberly Watt, MD
Associate Professor of Medicine
Mayo Clinic
Rochester, MN, USA*

12:45 PM Long Term Outcomes of Multi-Organ Transplantation

*Rene Adam, MD, PhD
Professor of Surgery
Hospital Paul Brousse
Villejuif, France*

1:05 PM Panel Discussion

Coffee Break

1:15 PM – 1:30 PM

Room Location: Benjamin Britten Lounge, Level 3

Featured Symposium # 14: Practice Guidelines

1:30 PM – 2:30 PM

Room Location: Fleming Room, Level 3

Moderators: John Klinck, MD, FRCPC, Cambridge University Hospitals, Cambridge, United Kingdom, and Michael Charlton, MD, Intermountain Medical Center, Salt Lake City, UT, USA

1:30 PM Diagnosis and Management of Hepatopulmonary Syndrome and Portopulmonary Hypertension

*Michael Krowka, MD
Mayo Clinic Rochester
Rochester, MN, USA*

1:50 PM Liver Transplantation for alcoholic Liver Disease

*Marina Berenguer, MD
Professor of Medicine
Hospital La Fe
Valencia, Spain*

2:10 PM Living Donor Liver Transplantation

*Charles Miller, MD
Cleveland Clinic
Cleveland, OH, USA*

POSTER SESSION I

5:30 PM – 7:00 PM

Room: Caxton Lounge, Level 2; Pickwick Suite, Level 1

† Those posters identified as a Poster of Distinction by this symbol have received review scores that place them in the top 10% of their category. The Planning Committee encourages you to make them a priority when you visit the poster session.

Anesthesia/Critical Care Medicine

- P-1** **The Effect of Various Ventilatory Strategies during General Anaesthesia on Postoperative Respiratory Complications in Patients Undergoing Elective Live Donor Hepatectomies. (Abstract # P-1)**
Sheffali Aggarwal, Sanjeev Aneja, Subhash Chawla, Tulika Shrivatva, Subash Gupta. New Delhi, Delhi, India.
- P-2** **Can Massive Volume Overload Result in Severe Pulmonary Hypertension in Liver Transplantation (LTx) Candidates? (Abstract # P-2)**
Andre M. De Wolf, Joshua Herborn, Wayne Soong. Chicago, IL, USA.
- P-3** **Clinical Course of Patients Receiving Split Liver Transplants; the Edinburgh Experience. (Abstract # P-3)**
Catherine Determann, Jennifer Whitgift, Dermot McKeown, James Powell, Mark Dunn. Edinburgh, United Kingdom.
- P-4** **Determination of Transfusion Requirement and Blood Bank Stores in Liver Transplantation. (Abstract # P-4)**
Halit Ziya Dundar, Remzi Iscimen, Pinar Tasar Sarkut, Baris Gulcu, Gurkan Turker, Yasemin Heper, Ekrem Kaya. Bursa, Turkey.
- P-5** **Two-Stage Liver Transplantation: Three Clinical Scenarios. (Abstract # P-5)**
Ender Gedik, Murat Biçakcioglu, Emrah Otan, Burak Isik, Cemalettin Aydin, Yasar Bayindir, Hüseyin I. Toprak, Cüneyt Kayaalp, Sezai Yilmaz. Malatya, Turkey.
- P-6** **Extra-Corporeal Membrane Oxygenation after Living Related Liver Transplantation. (Abstract # P-6)**
Ender Gedik, Emrah Otan, Reha M. Çelik, Olcay M. Disli, Cemalettin Aydin, Nevzat Erdil, Ramazan Kutlu, Sezai Yilmaz. Malatya, Turkey.
- P-7 †** **The Incidence of Fibrinolysis Following Reperfusion of Liver Graft. (Abstract # P-7)**
Laura L. Hammel, Melissa Ertl. Madison, WI, USA.

- P-8 †** **Considerations of Tricuspid Regurgitation in Liver Transplantation. (Abstract # P-8)**
Joshua C. Herborn. Chicago, IL, USA.
- P-9** **Predictors of Requirement of Renal Replacement Therapy and Renal Dysfunction after Liver Transplantation: Experience from a South Indian Center. (Abstract # P-9)**
Ilankumaran Kaliamoorthy, Akila Rajakumar, A.P. Ellango, Mettu S. Reddy, Mohamed Rela. Chennai, Tamil Nadu, India.
- P-10 †** **Detailed Electrocardiographic Analysis of Post-Reperfusion Bradycardia and Asystole and Their Outcome in Patients Undergoing Liver Transplantation. (Abstract # P-10)**
SooHo Lee, Sung-Hoon Kim, Young-Jin Moon, Jung-Won Kim, Sun-Key Kim, Gyu-Sam Hwang. Seoul, Korea.
- P-11** **Prevention of Hypothermia in Patients Undergoing Orthotopic Liver Transplantation Using the Fisher and Paykel Humigard Open Surgery Humidification System: A Prospective Randomised Pilot Clinical Trial. (Abstract # P-11)**
 Laurence Weinberg, Daniel Alban, Robert Jones, David Story, Brett Pearce, Larry McNicol. Heidelberg, Victoria, Australia; Heidelberg, Australia.
- P-12** **Does Liver Transplant Exposure Improve the Ability of Anesthesia Residents to Manage Intraoperative Crisis? Preliminary Results of a Simulation Study. (Abstract # P-12)**
Dung Nguyen, Shira L. Gurvitz, Annette Rebel, Amy DiLorenzo, Zaki-Udin Hassan. Lexington, USA.
- P-13** **Micardial Dysfunction in Liver Transplantation. Use of Milrinone. (Abstract # P-13)**
Gonzalo Javier Pérez Villarejo, Antonio Díaz Martínez, Juanma Pérez Moreno, Javier Yeves González, Juan Carmona Auriol. Málaga, Spain.
- P-14 †** **Comparison between Thrombelastography and Thromboelastometry in Liver Transplantation. (Abstract # P-14)**
 Ezeldeen Abuelkasem, Kenichi A. Tanaka, Raymond M. Planinsic, Tetsuro Sakai. Pittsburgh, PA, USA.
- P-15** **Fast Track in Liver Transplantation. A National Single Center Experience. (Abstract # P-15)**
Dana R. Tomescu, Mihai Popescu, Simona O. Dima. Bucharest, Romania.
- P-16** **Early Extubation in the Hepatopulmonary Syndrome: A Case Report. (Abstract # P-16)**
Amanda Trommello, Nicole Khetani, Elia Elia, Cataldo Doria, Yoogoo Kang. Philadelphia, PA, USA; Philadelphia, PA, USA.

- P-17** **Can Preoperative Portal Vein Flow Velocity or Size Predict Hemodynamic Instability during Clamping of the Inferior Vena Cava in Liver Transplantation? (Abstract # P-17)**
Chih-Hsien Wang, Tsung-Hsiao Shih, Chao-Long Chen, Kwok-Wai Cheng, Sheng-Chun Yang, Chia-Jung Huang, Shao-Chun Wu, Bruno Jawan. Kaohsiung, Taiwan.
- P-18** **Successful Management of Pediatric Liver Transplant for Fulminant Hepatic Failure (FHF) Without an ICP Monitor. (Abstract # P-18)**
Tomas J. Kucera, Jeffrey White, Peaches Orallo. Gainesville, FL, USA.
- P-19** **Anesthesia Care for Children With Fulminant Liver Failure: Report of Our Experience. (Abstract # P-19)**
Taylan Sahin, Erdinc Koca, Volkan Ince, Muharrem Ucar, Huseyin Ilksen Toprak, Sezai Yilmaz. Igdır, Turkey; Adiyaman, Turkey; Malatya, Turkey.
- P-20** **Sirtuin 1: A New Insight in Fatty Liver Graft Preservation. (Abstract # P-20)**
Mohamed Bejaoui, Eirini Pantazi, Mohamed Amine Zaouali, Emma Folch-Puy, Hassen Ben Abdennebi, Joan Roselló-Catafau. Barcelona, Spain; Monastir, Tunisia.
- P-21** **Rapamycin Attenuates Hepatocellular Injury Induced By Ischemia/Reperfusion in Rats. (Abstract # P-21)**
Yinghua Chen, Wenhui Luo, Yi Ma, Xiaofeng Zhu, Xiaoshun He. Guangzhou, Guangdong, China.
- P-22** **Tacrolimus(FK506) Induced Cytotoxicity via TRAIL-R1 (DR4) or TRAIL-R2 (DR5) in Jurkat Cells. (Abstract # P-22)**
Soo Jin Na Choi, Sang Young Chung. Gwangju, Korea.
- P-23** **Hypoxic Preconditioning of Adipose-Tissue Derived Stem Cells Enhances the Liver Regenerating Potential By Releasing Secretome. (Abstract # P-23)**
Ho-Joong Choi, Say-June Kim, Dong-Goo Kim. Bucheon, Korea; Daejeon, Korea; Seoul, Korea.
- P-24** **A Score Model for the Continuous Assessment of Early Allograft Function after Liver Transplantation. (Abstract # P-24)**
Miriam Cortes, Eugenia Pareja, José Mir, José V. Castell, Agustín Lahoz. Valencia, Spain; Hospital La Fe, Spain.
- P-25** **Allogeneic Mice Liver Transplantation Increase the Expression of Regulatory B Cells in Liver Graft. (Abstract # P-25)**
Yuan Ding, Sheng Yan, Yan Wang, Lin Zhou, HaiYang Xie, ShuSen Zheng. Hangzhou, Zhejiang Province, China.
- P-26** **Long-Term Allograft Tolerance Is Characterized by the Higher Levels of Circulating CD19+CD24hiCD38hi B Cells. (Abstract # P-26)**
Lei Geng. Hangzhou, Zhejiang, China.
- P-27** **A Novel Form of the Human Manganese Superoxide Dismutase Protects Rat and Human Liver Grafts Undergoing Cold Storage and Warm Reperfusion Injuries. (Abstract # P-27)**
Diana Hide, Sergi Guixé-Muntet, Constantino Fondevila, Aldo Mancini, Juan Carlos García-Pagán, Jaime Bosch, Jordi Gracia-Sancho. Barcelona, Spain; Naples, Italy.
- P-28** **Epithelial-Mesenchymal Transition Delayed By E-Cadherin To Promote Tissue Formation in Hepatic Differentiation of Mouse Embryonic Stem Cells *In Vitro*. (Abstract # P-28)**
Anbin Hu, Xiaoshun He. Guangzhou, China.
- P-29** **Curcumin Treated Dendritic Cells Can Effectively Expand Human Doner Intra-Hepatic CD4posCD25highFOXP3pos Regulatory T-Cells. (Abstract # P-29)**
Yamen Jabri, Ruchi Sharma, Andreas Prachlias, Parthi Srinivassan, Shirin Khorsandi, Nigel Heaton, Emmanuel Xystrakis, Xia Haung, Wayel Jassem, Yun Ma. London, United Kingdom.
- P-30** **Lipidomics Reveals Lipid Pathway Alterations Correlated With DBD, DCD and LRD Livers. (Abstract # P-30)**
Cristina Legido-Quigley, Ana Maria Casas, Arun Sen, Hector Vilca, Ma Yun, Wayel Jassem. London, United Kingdom.
- P-31 †** **TIM-3 Signaling Negatively Regulates Ischemia-Reperfusion Injury in Mouse Orthotopic Liver Transplantation. (Abstract # P-31)**
Yuanxing Liu, Haofeng Ji, Yu Zhang, Xiu-da Shen, Feng Gao, Terry Nguyen, Ronald W. Busuttill, Jerzy W. Kupiec-Weglinski. Los Angeles, CA, USA.
- P-32** **The Effects of Lipids in Steatotic and Non-Steatotic Livers in Conditions of Partial Hepatectomy Under Ischaemia-Reperfusion. (Abstract # P-32)**
Mariana Mendes-Braz, Maria Elias-Miró, Burkhard Kleuser, Susann Fayyaz, Mónica B. Jiménez-Castro, Marta Massip-Salcedo, Jordi Gracia-Sancho, Fernando S. Ramalho, Juan Rodes, Carmen Peralta. Barcelona, Spain; Ribeirão Preto, Spain; Postdam, Germany.
- P-33** **Sirtuin 1 Overexpression Attenuates Endoplasmic Reticulum Stress in Rat Liver Ischemic Preconditioning. (Abstract # P-33)**
Eirini E. Pantazi, Mohamed Amine M.A. Zaouali, Mohamed M. Bejaoui, Emma E. Folch-Puy, Hassen Ben H.B. Abdebbebi, Antoni A. Rimola, Joan J. Roselló-Catafau. Barcelona, Spain; Monastir, Tunisia.

Basic Sciences

P-34 **Role of Soluble CD30 (sCD30) Levels To Monitor Overall Immunosuppression after Liver Transplantation (LTx). (Abstract # P-34)**
H. Parekh, A. Mukerji, S. Geier, R. Patula, A. Karachristos, M. Maloo, P. Lai, A. Jain. Philadelphia, PA, USA; Bronx, NY, USA.

P-35 **Association between Polymorphisms of PPM1E Gene and Tumor Size of Hepatocellular Carcinoma Patients. (Abstract # P-35)**
Min-Su Park. Seoul, Republic of Korea.

P-36 **Intestinal Microbial Variation May Predict Early Acute Rejection after Liver Transplantation in Rats. (Abstract # P-36)**
Zhigang Ren, Jianwen Jiang, Guangying Cui, Haifeng Lu, Xinhua Chen, Lin Zhou, Shusen Zheng. Hangzhou, Zhejiang, China.

P-37 **Allogenic Peripheral T Effectors Are Suppressed By Human Intrahepatic CD4posCD25posFOXP3pos Regulatory T Cells Treated By Rapamycin and Retinoic Acid. (Abstract # P-37)**
Ruchi Sharma, Yamen Jabri, Miriam Cortes, Emmanuel Xystrakis, Parthi Srinivasan, Andreas Prachalias, Xiaohong Huang, Godhev Manakkat Vijay, Nigel Heaton, Yun Ma, Wayel Jassem. London, United Kingdom.

P-38 † **Umbilical Cord-Derived Mesenchymal Stem Cells Educate Dendritic Cells to Acquire Tolerogenic Phenotype through IL-6 Mediated Upregulation of SOCS1. (Abstract # P-38)**
Guo-Ying Wang, Yi-Nan Deng, Wei Liu, Qi Zhang, Yang Yang, Gui-Hua Chen. Guangzhou, China.

P-39 **The Mode of Death of the Liver Donor Imprints Distinct Immune Adaptive Responses on the Hepatic Resident Lymphocytes. (Abstract # P-39)**
Emmanuel Xystrakis, Xiaohong Huang, Miriam Cortes, Andreas Prachalias, Mohamed Rela, Susan Fuggle, Nigel Heaton, Yun Ma, Wayel Jassem. London, United Kingdom.

P-40 **Experimental Study of CD133-Positive Liver Cancer Stem Cells in Tumor Recurrence after Liver Transplantation in the Role and Intervention of Nanosecond Pulses. (Abstract # P-40)**
Shengyong Yin, Xinhua Chen, Shuseng Zheng. Hangzhou, Zhejiang, China.

P-41 **Reversing Endogenous Alloreactive B Cell GC Responses With Anti-CD154 or CTLA-4Ig. (Abstract # P-41)**
Hao Yin, Zheng-Xin Wang, Zhi-Ren Fu, Anita Chong. Shanghai, China; Chicago, IL, USA.

P-42 † **Interferon Regulatory Factor-1 (IRF-1) Regulates NK Cell Activation and Contributes to Hepatic Ischemia Reperfusion Injury in Allogeneic Liver Transplantation. (Abstract # P-42)**
Shinichiro Yokota, Osamu Yoshida, Lei Dou, John R. Klune, Shoko Kimura, Qiang Du, Angus W. Thomson, David A. Geller. Pittsburgh, USA.

P-43 **Loss of Heterozygosity of ZDHHC2 Is Associated With Early Metastatic Recurrence of Hepatocellular Carcinoma Following Liver Transplantation. (Abstract # P-43)**
Zhijun Zhang, Lin Zhou, Jie Tang, Chuanhui Peng, Shusen Zheng. Hangzhou, Zhejiang Province, China.

Extended Criteria Donors/Disease Transmission

P-44 **Protective Effect of Cold Perfusion and Perfluorocarbons on Hepatic Graft Ischemia for Donation after Cardiac Death Grafts in a Rat Model. (Abstract # P-44)**
Dmitri Bezinover, Saravanan Ramamoorthy, Saifeldin Mahmoud, Zakiah Kadry, Tadaihiro Uemura, Piotr K. Janicki. Hershey, PA, USA.

P-45 **Improving Outcomes in Liver Transplantation from Donation after Circulatory Death (DCD). (Abstract # P-45)**
Humberto Bohorquez, Ari J. Cohen, David Bruce, Ian Carmody, Trevor Reichman, George E. Loss. New Orleans, LA, USA.

P-46 **The Use of Severe Steatotic Grafts for Patients With High MELD Score. (Abstract # P-46)**
W.C. Dai, S.C. Chan, S.H. Chok, T.T. Cheung, W.W. Sharr, A.C.Y. Chan, J.Y.Y. Fung, T.C.L. Wong, C.M. Lo. Pokfulam, Hong Kong.

P-47 **Establish and Characterize a Donation after Brain Death Followed by Cardiac Death Model in Pigs. (Abstract # P-47)**
Zhiyong Guo, Hui Ye, Guixing Xu, Chuanzhao Zhang, Haochen Wang, Zhuohui Li, Xiaoshun He. Guangzhou, China.

P-48 **Histological Injury Detected in Biopsies of Extrahepatic Bile Duct of Donor Livers Represents Injury in the Rest of the Biliary Tree, Including the Intrahepatic Bile Ducts. (Abstract # P-48)**
Negin Karimian, Pepijn Weeder, Fernanda Bomfati, Sanna Op den Dries, Janneke Wiersma-Buist, Annette S.H. Gouw, Ton Lisman, Robert J. Porte. Groningen, Netherlands.

- P-49** **Preliminary Observations on the Effect of Anterograde Persufflation (A-PSF) on Energy Charge and Hepatocyte Function in Donation after Cardiac Death (DCD) Livers Declined for Clinical Use. (Abstract # P-49)**
Shirin E. Khorsandi, Suttiruk Jitraruch, Lynette Fairbanks, Corina Cotoi, Wayel Jassem, Hector Vilca-Melendez, Andreas Prachalias, Anil Dhawan, Nigel Heaton, Parthi Srinivasan. London, United Kingdom.
- P-50** **Donation after Cardiac Death Liver Transplantation - A Rational Expanding of Liver Pool, Compared With Living Donor Liver Transplantation. (Abstract # P-50)**
Guoling Lin, Jun Yu, Yuanxing Liu, Zhenhua Tu, Li Zhuang, Tian Shen, Zhuoyi Wang, Jian Wu, Sheng Yan, Min Zhang, Yan Shen, Weilin Wang, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-51** **Safety of the Use of G6PD Deficient Donors in Living Donor Liver Transplantation- Results of the Pilot Study. (Abstract # P-51)**
Manoj Shrivatsav, Mettu S. Reddy, Venugopal Kota, Gomathy Narasimhan, Ilankumaran Kaliamoorthy, Sanjay Govil, Anand Bharathan, Kumar Palaniappan, Abdelrhaim Dabora, Mohamed Rela. Chennai, Tamil Nadu, India.
- P-52 †** **A Neurological Score for Predicting Time of Cardiac Death after Withdrawal of Life-Sustaining Treatment in Neurocritical Patients. (Abstract # P-52)**
Guixing Xu, Zhiyong Guo, Weiqiang Ju, Dongping Wang, Xiaoshun He. Guangzhou, China.
- P-53** **A Case Report: Cross-Auxiliary Double Domino Donor Liver Transplantation. (Abstract # P-53)**
Zhijun Zhu, Liying Sun, Lin Wei, Wei Qu, Zhigui Zeng, Ying Liu, Liang Zhang, Enhui He. Beijing, China.

Fulminant Liver Failure

- P-54 †** **Role of Intravenous N-Acetyl Cysteine (NAC) With Steroid in Acute Alcoholic Hepatitis (AAH) With High Morbidity Score: A Randomized Open Label Prospective Clinical Pilot Trial. (Abstract # P-54)**
P. Patrick Basu, Niraj J. Shah, Mark Aloysius. New York, NY, USA.
- P-55** **Urgent Liver Transplantation for Amanita Phalloides Caused Acute Liver Failure. (Abstract # P-55)**
Abuzer Dirican, Mehmet Yilmaz, Adil Baskiran, Suleyman Koc, Mustafa Ates, Cengiz Ara, Cuneyt Kayaalp, Sezai Yilmaz. Malatya, Turkey.

- P-56** **Fulminant EBV Hepatitis Requiring Liver Transplantation: Case Report and Review of the Literature. (Abstract # P-56)**
Alejandro Mejia, Edward Dominguez, Steven Foster, Abdullah Mubarak, Hector Nazario, Parvez Mantry, Stephen Cheng, Adil Habib, Maisha Barnes, Jeffrey Weinstein. Dallas, TX, USA.
- P-57** **Is Plasmapheresis(PP) the Key To Successful Living Donor Liver Transplant (LDLT) in Fulminant Wilson Disease(FW) With Severe Hemolysis? (Abstract # P-57)**
Neelam Mohan, Veena Raghunathan, Maninder Dhaliwal, Sandeep Kudale, Sakshi Karkra, A. Soin. Gurgaon, Haryana, India.
- P-58** **Prediction of Mortality Following Liver Transplantation for Fullminant Hepatic Failure. (Abstract # P-58)**
Emrah Otan, Cemalettin Aydin, Adil Baskiran, Cengiz Bal, Cuneyt Kayaalp, Sezai Yilmaz. Malatya, Turkey; Eskisehir, Turkey.
- P-59 †** **Blood Parameters Can Serve as Prognostic Markers of Patients Have ABO Incompatibility Liver Transplantation. (Abstract # P-59)**
Bingyi Lin, Zhiyun Zheng, Lei Geng, Lin Zhou, Shusen Zheng. HangZhou, ZhengJiang, China.

Hepatitis C

- P-60 †** **Anti-Hepatitis C (HCV) Triple Therapy With Protease Inhibitors in HIV/HCV Co-Infected Patients after Liver Transplantation. (Abstract # P-60)**
T.M. Antonini, V. Furlan, E. Teicher, S. Haim-Boukobza, M. Sebah, A. Coilly, L. Bonhomme-Faivre, A.M. Roque-Afonso, D. Vittecoq, D. Samuel, A.M. Taburet, J.C. Duclos-Vallee. Villejuif, France; Le Kremlin-Bicetre, France.
- P-61 †** **Triple Therapy for HCV Cirrhosis in Liver Transplant Candidates. High Rate of Prevention of HCV Recurrence after Liver Transplantation (LT) in Well Selected Patients. (Abstract # P-61)**
Ana Maria Braithwaite, Victoria Aguilera, Carmen Vinaixa, Maria Garcia, Salvador Benlloch, Angel Rubin, Martín Prieto, Marina Berenguer. Valencia, Spain.
- P-62** **HCV Genotype 4 Recurrence Is Not a Significant Cause of Mortality in Cohort of Egyptian Patients Underwent Living Donor Liver Transplantation. (Abstract # P-62)**
Mohamed Said, Mostafa EL-Shazly, Gamal Esmat, Noaman El-Garem, Sherif Mogawer, Mona Elamir, Amany Abdel-Maksoud, Ayman Salah, E.Z. El-Korashy, Hesham Aboeisha, Adel Hosny. Cairo, Egypt.

P-63 **Positive HLA Tissue Typing Is Associated with Increased Risk of HCV Recurrence Post Living Donor Liver Transplantation; Single Center Experience in Egypt. (Abstract # P-63)**
Mohamed Said, Huda Amer, Yasmin Saad, Sanna Kamel, Ayman Yosry. Cairo, Egypt.

P-64 **Prior Trans-arterial Chemoembolization—A Protective Factor Against Rapid HCV Recurrence Post Liver Transplant in Patients with HCV with HCC??? - A Retrospective Analysis. (Abstract # P-64)**
Bhavin B. Vasavada, Karan Julka, Chao L. Chen. Kaohsiung, Taiwan.

Immunosuppression

P-65 **Efficacy and Safety of Everolimus in Liver Transplant Recipients – A Single Center Experience. (Abstract # P-65)**
Ivelise R.C. Brasil, Ronaldo M. Esmeraldo, Romero M. Esmeraldo, Vicente B.F. Guimaraes, Francisco T.M. de Paula, Israelly E.G. Lucena, Daniel B.P. Freitas. Fortaleza, CE, Brazil.

P-66 **Where Is the Maximum Benefit of Everolimus after Liver Transplantation?: Early Or Late Indication. (Abstract # P-66)**
 Itxarone Bilbao, Cristina Dopazo, Jose Luis Lázaro, Lluís Castells, Mireia Caralt, Sofia de la Serna, Ramon Charco. Barcelona, Spain.

P-67 † **Long-Term Superior Renal Function With Everolimus and Reduced Tacrolimus in Liver Transplant Recipients: 3-Year Results from the H2304 Extension Study. (Abstract # P-67)**
Lutz Fischer, Faouzi Saliba, Gernot M. Kaiser, Luciano De Carlis, Herold J. Metselaar, Frederik Nevens, Christophe Duvoux, Gaohong Dong, Barbara Rauer, Guido Junge. Hamburg, Germany.

P-68 **Conversion To Mammalian Target of Rapamycin Inhibitors and Calcineurin Inhibitor Discontinuation in Liver Transplantation: A Systematic Review and Meta-Analysis of Randomised Controlled Trials. (Abstract # P-68)**
Thomas E. Glover, Evangelia E. Ntzani, Paul Gibbs, J. Andrew Bradley, Christopher J.E. Watson, Vasilis Kosmoliaptis. Cambridge, United Kingdom; Ioannina, Greece.

P-69 **Everolimus Based Calcineurin Inhibitors Minimization Regimens in Renal Transplantation Recipients: A Meta-Analysis. (Abstract # P-69)**
Zhiyong Guo, Dongping Wang, Fei Li, Weiqiang Ju, Xiaoshun He. Guangzhou, China.

P-70 **Correlation of Adverse Drug Reactions (ADRs) Triggered By Immunosuppressive Therapy With Re-Admissions in Post-Liver Transplant. (Abstract # P-70)**
 Karla R. Andrade, Luciana Haddad, Lucas S. Nacif, Liliana Ducatti, Carolina B. Manin, Wellington Andraus, Luiz Augusto Carneiro D’Albuquerque. Sao Paulo, Brazil.

P-71 **Impact of Cyclosporine Versus Tacrolimus on the Incidence of Chronic Kidney Disease Following Liver Transplantation. (Abstract # P-71)**
Jingcheng Hao, Wentao Wang, Lvnan Yan. Chengdu, Sichuan, China.

P-72 **Role of Intravenous (IV) Mycophenolate Mofetil (MMF) with Delayed Introduction of Tacrolimus in Liver Transplant (LTx) Recipient Who Have Severe Renal Dysfunction at the Time of Transplant. (Abstract # P-72)**
A. Jain, A. Mukerji, A. Karachristos, M. Maloo, K. Lau, A. Di Carlo. Philadelphia, PA, USA; Bronx, NY, USA.

P-73 † **Sorafenib Prolongs Skin Allograft Survival Through Upregulation of Treg and Autophagy-Related Mechanism In Vivo. (Abstract # P-73)**
Jiunn-Chang Lin, Chien-Liang Liu, Jie-Jen Lee, Tsang-Pai Liu, Wen-Ching Ko, Chih-Hsiung Wu, Yu-Jen Chen. Taipei, Taiwan.

P-74 **Immunosuppression in Living Donor Liver Transplantation- Less Is Better. (Abstract # P-74)**
 Pankaj Lohia, Rajesh Dey, Kavita Sharma, Subash Gupta, Manav Wadhawan. New Delhi, India.

P-75 **Immunosuppression Withdrawal in Children after Liver Transplantation – Is It Possible? (Abstract # P-75)**
Joanna Teisseyre, Malgorzata Markiewicz-Kijewska, Piotr Kalicinski, Hor Ismail, Mikolaj Teisseyre, Irena Jankowska. Warsaw, Poland.

P-76 **Survival Analysis of Sirolimus-Based Immunosuppression in Liver Transplantation for Patients With Hepatocellular Carcinoma. (Abstract # P-76)**
Shilei Xu, Yingcai Zhang, Qin Yang, Jianrong Liu, Yang Yang. Guangzhou, Guangdong, China.

Living Donor

P-77 **Evaluation of Liver Donors’ Outcome in LDLT: The National Liver Institute Experience. (Abstract # P-77)**
Khaled A. Abou El Ella, Amr M. Aziz, Hany A. Shoreim, Ossama A. Hegazy, Mohamed B. Taha, Ibrahim Marwan. Menoufiya, Egypt.

- P-78 Comparison between Right Liver Donor Hepatectomies With and Without Pringle Maneuver: Postoperative Course and Early Follow Up. (Abstract # P-78)**
Gurkan Ozturk, Bulent Aydinli, Nurinnisa Ozturk, Sukru Arslan, Ercan Korkut, Aysenur Dostbil, Nurhak Aksungur. Erzurum, Turkey.
- P-79 Living Donor Grafts As an Option for Liver Retransplantation. (Abstract # P-79)**
Thomas Becker, Nils Heits, Benedikt Reichert, Alexander Bernsmeier, Rainer Günther, Martina Kohl, Felix Braun. Kiel, Germany.
- P-80 Does Macrovesicular Steatosis Contraindicate Right Lobe Liver Donation? (Abstract # P-80)**
P. Bhangui, J. George, Y.B. Raghavendra, R. Mohanka, A. Rastogi, S. Goja, P. Balachandran, K.R. Sumana, P. Singla, D. Gautam, N. Saraf, S. Saigal, A.S. Soin. Delhi NCR, India.
- P-81 Liver Regeneration and Recovery in Right Lobe Living Donors: More a Matter of Function Rather Than Volume Alone? (Abstract # P-81)**
P. Bhangui, J. Duclos, C. Salloum, A. Elmaleh, P. Andreani, R. Adam, D. Castaing, D. Azoulay. Villejuif, France; Creteil, France; Delhi NCR, India.
- P-82 Causes of Aborted Live Donor Hepatectomy: Can It Be Avoided? (Abstract # P-82)**
Chao-Long Chen, Allan M. Concejero, Chih-Che Lin, Yueh-Wei Liu, Chee-Chien Yong. Kaohsiung, Taiwan.
- P-83 † Quantification of Hepatic Steatosis with MR Spectroscopy in Living Donor Liver Transplantation. (Abstract # P-83)**
Hsien Jen Chiang, Chun Wei Li, Chun Chi Lin, Hsien Wen Chiang, Tung Liang Huang, Chao Long Chen, Yu Fan Cheng. Kaohsiung, Taiwan.
- P-84 Biliary Complications after Donor Hepatectomy: The Dark Side of the Moon. (Abstract # P-84)**
Murat Dayangac, Murat Akyildiz, Necdet Guler, Onur Yaprak, Arzu Ozcelik, Yalcin Erdogan, Yildiray Yuzer, Yaman Tokat. Istanbul, Turkey.
- P-85 58 Consecutive Living Liver Donors. Implementation of an Educational Service Agreement between Fundación Programa Metropolitano De Trasplante De Hígado at Caracas, Venezuela and the Liver Transplant Center of Columbia University at New York, USA. (Abstract # P-85)**
Manuel E. De Guglielmo, Dafne Del Valle, Elena Pestana, Damelys Marín, Miguel Vasallo, Carlos Rodríguez, Tomoaki Kato, Pedro Rivas. Caracas, Distrito Capital, Venezuela; New York, NY, USA.
- P-86 Results and Complications of ERCP in Adult Living Donor Liver Transplantation Recipients. (Abstract # P-86)**
Luis F. Flores, Constantino Fondevila, Andrés Cárdenas, Alejandro Fernández-Simón, Jorge Rodríguez, José Fuster, Juan C. García-Valdecasas. Barcelona, Spain.
- P-87 † Arterial Anastomosis Under Loupe Magnification in Adult and Pediatric Living Donor Liver Transplantation- 1300 Cases, Single Surgeon Experience over 13 Years. (Abstract # P-87)**
Subash Gupta, Neerav Goyal, Shiraz Ahmad Rather. Delhi, India.
- P-88 Should Anticoagulant Prophylaxis Be Made after Right-Lobe Liver Hepatectomy? (Abstract # P-88)**
Sinan Hatipoglu, Adil Baskiran, Cuneyt Kayaalp, Sezai Yilmaz. Malatya, Turkey.
- P-89 Predictive Factors for Significant Steatosis in Potential Healthy Liver Donors. (Abstract # P-89)**
Dinesh Jothimani, Manoj Srivatsav, Srinivas Reddy, A. Olithselvan, Joy Vargese, Gomathy Narasimhan, Mohamed Rela. Chennai, Tamilnadu, India; London, United Kingdom.
- P-90 Portal Vein Thrombosis in Living Donor Liver Transplantation Recipients: Changing the Present To Improve the Future. (Abstract # P-90)**
Hazem Zakaria Lasheen, Mohammed Taha, Emad Hamdy Salem, Hassam El-Deen Soliman, Tarek Ibrahim, Khaled Abou El-Ella, Koichi Tanaka. Shebin El-Koom, Menofia, Egypt; Kobe, Japan.
- P-91 Outcome of Living Donor Liver Transplantation Using Partial Liver Allografts with Dual Arterial Supply. (Abstract # P-91)**
Sanghoon Lee, Jinsoo Rhu, Eunmi Gil, Jin Yong Choi, Wontae Cho, Seunghwan Lee, Hyung Hwan Moon, Jong Man Kim, Choon Hyuck D. Kwon, Jae-Won Joh, Suk-Koo Lee. Seoul, Korea.
- P-92 Translational Study the Role of Cytokine and Growth Factors during Liver Regeneration in Healthy Liver Donors after Partial Hepatectomy. (Abstract # P-92)**
Ping-Yi Lin, Yao-Li Chen, Chi-Chen Lin. Changhua, Taiwan; Taichung, Taiwan.
- P-93 † Donor Mortality Among 2138 Live Liver Donors in Egypt: "The Nightmare of Living Donor Liver Transplantation". (Abstract # P-93)**
Ibrahim Kamel Marwan, Mahmoud El Metani, Magdy Ameen, Mohamed Abd Elwahab. Shebeeb El Koom, Egypt; Cairo, Egypt; Mansoura, Egypt.

- P-94** **Mother Versus Father Versus Close Relatives; Identical Versus Compatible – Who Is a Better Donor in Pediatric Living Donor Liver Transplant (LDLT)? (Abstract # P-94)**
Neelam Mohan, Sakshi Karkra, R. Mohanka, A. Rastogi, M. Balachandran, A. Soin. Gurgaon, Haryana, India.
- P-95** **Living Donor Liver Transplantation for Obese Patients in a Single Center Experience in Japan. (Abstract # P-95)**
Takahiro Murokawa, Masashi Kadohisa, Masaki Honda, Shintaro Hayashida, Kwang-Jong Lee, Hidekazu Yamamoto, Takayuki Takeichi, Katsuhiro Asonuma, Yukihiko Inomata. Kumamoto, Japan.
- P-96** **Preservation of the Segment Four Lower (S4A) Venous Drainage Improves Donor Safety in Living Related Liver Transplantation. (Abstract # P-96)**
Vasudevan Ramaswamy, Subash Soni, Abhideep Chaudhary, Saumitra Rawat, Anil Arora. New Delhi, Delhi, India.
- P-97 †** **Vascular Complications after Adult and Pediatric- Living Donor Liver Transplantation: Trends Observed with 1134 Cases Over a Period of 8 Years. (Abstract # P-97)**
Shiraz Ahmad Rather, Neerav Goyal, Subash Gupta. Delhi, India.
- P-98** **Outcome of Liver Transplantation in Hemochromatosis. 12 De Octubre Hospital Experience. (Abstract # P-98)**
Rebeca Sanabria, Alejandro Manrique, Iago Justo, Alberto A. Marcacuzco, Naim Fakih, Oscar Caso, Jorge Calvo, Felix Cambra, Alvaro Garcia Sesma, Carmelo Loinaz, Carlos Jimenez. Madrid, Spain.
- P-99** **Low Graft Body Weight Ratio Does Not Predict Outcome in Recipients With Body Mass Index Above 30. (Abstract # P-99)**
Vivekanandan Shanmugam, Sanjay Govil, Arikichenin Olithselvan, Mohamed Safwan Mohamed Ilias, Gomathy Narasimhan, Srinivas Reddy, Naresh Shanmugam, Joy Vargheese, Dinesh Jothimani, Mohamed Rela. Chennai, Tamil Nadu, India.
- P-100** **Excellent Outcome of Living Donor Liver Transplantation for End-Stage Alcoholic Liver Disease: A Single Centre Experience. (Abstract # P-100)**
Sanjay Kumar Yadav, Sanjiv Saigal, Neeraj Saraf, Narendra Singh Choudhary, Ravi Mohanka, Amit Rastogi, Sanjay Goja, P.B. Menon, Arvinder Singh Soin. Gurgaon, Sector 38, Haryana, India.

Malignancies

- P-101** **De Novo Hepatocellular Carcinoma in 4 Liver Allografts. (Abstract # P-101)**
Michel Blé, Angel Rubin, Carmen Vinaixa, Victoria Aguilera, Salvador Benlloch, Maria Garcia-Eliz, Rafael López-Andujar, Martin Prieto, Marina Berenguer. Valencia, Spain.
- P-102** **Safe Withdrawal of Sorafenib as Adjuvant Therapy after Liver Transplantation for Hepatocellular Carcinoma beyond Milan Criteria. (Abstract # P-102)**
Yinghua Chen, Wenhui Luo, Weiqiang Ju, Xiaoshun Zhu, Xiaoshun He. Guangzhou, Guangdong, China.
- P-103** **Mechanism of Liver X Receptor Signaling Pathway in Cholangiocarcinoma: A Putative Therapeutic Target. (Abstract # P-103)**
Sherilyn Gordon Burroughs, Xuefeng Xia. Houston, TX, USA.
- P-104** **Incidence and Outcomes of De Novo Malignancies after Living Donor Liver Transplantation. (Abstract # P-104)**
Taizo Hibi, Masahiro Shinoda, Yusuke Katsuki, Masayuki Tanaka, Kenta Inomata, Osamu Itano, Minoru Kitago, Hiroshi Yagi, Yuta Abe, Yuko Kitagawa. Tokyo, Japan.
- P-105** **Long-Term Survival Analysis of Liver Transplantation for Hepatocellular Carcinoma With Bile Duct Tumor Thrombus. (Abstract # P-105)**
Sung-Gyu Lee, Wan-Joon Kim, Yo-Han Park, Shin Hwang, Deok-Bog Moon, Chul-Soo Ahn, Ki-Hun Kim, Tae-Yong Ha, Gi-Won Song, Dong-Hwan Jung, Gil-Chun Park, Hyung-Woo Park, Sung-Hwa Kang, Bo-Hyun Jung, Eol Choi Jae-Hyun Kwon. Seoul, Korea.
- P-106 †** **Repetitive Transarterial Chemoembolization Reduces Recurrence Rate in Milan-Out Patients With Hepatocellular Cancer after Liver Transplantation: A Pair-Match Analysis. (Abstract # P-106)**
Quirino Lai, Gerd Otto, Ivo Graziadei, Giuseppe Tisone, Massimo Rossi, Alfonso W. Avolio, Jan Lerut. Brussels, Belgium; Rome, Italy; Mainz, Germany; Innsbruck, Austria.
- P-107 †** **Prognostic Value of Rho GDP Dissociation Inhibitors in Hepatocellular Carcinoma after Liver Transplantation. (Abstract # P-107)**
Mingchun Lai, Lin Zhou, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-108 †** **The Criteria of Salvage Liver Transplantation for Recurrent Hepatocellular Carcinoma Should Be Expanded. (Abstract # P-108)**
Fei Liu, Yonggang Wei, Bo Li, Wentao Wang, Tianfu Wen, Lvnan Yan. Chengdu, Sichuan, China.

- P-109 Diagnostic Accuracy of Elastography, Alfa Fetoprotein and Ultrasound Findings in Screening for Hepatocellular Carcinoma in Patients on Liver- Transplant Waiting List. (Abstract # P-109)**
Lucas S. Nacif, Denise C.P. Vezozzo, Alina Matsuda, Wellington Andraus, Rafael S. Pinheiro, Suzane K. Ono, Flair J. Carrilho, Luiz C. D'Albuquerque. Sao Paulo, Brazil.
- P-110 Usefulness of PIVKA-II after Living Donor Liver Transplantation for Hepatocellular Carcinoma. (Abstract # P-110)**
Min-Su Park, Kwang-Woong Lee, YoungRok Choi, SuK-Won Suh, Jeong-Moo Lee, Nam-Joon Yi, Kyung-Suk Suh. Seoul, Republic of Korea.
- P-111 Sorafenib Versus Best Supportive Care after Recurrent Hepatocellular Carcinoma: Case-Control Study from Argentina and Uruguay. (Abstract # P-111)**
Federico Piñero, Sebastián Marciano, Margarita Anders, Federico Orozco Ganem, Manuel Mendizabal, Alina Zerega, Josemaría Menéndez, Octavio Gil, Solange Gerona, Matías Tisi Baña, Eduardo de Santibañes, Ricardo Mastai, Adrián Gadano, Marcelo Silva. Pilar, Argentina; Ciudad de Buenos Aires, Argentina; Córdoba, Argentina; Montevideo, Uruguay.
- P-112 Influence of Transcatheter Arterial Chemoembolization on Tumour and Patient Status before Liver Transplantation for Hepatocellular Carcinoma. (Abstract # P-112)**
Lukasz Rdzanek, Piotr Kalinowski, Maciej Krasnodebski, Marek Krawczyk. Warsaw, Poland.
- P-113 Risk Factors of the Hepatocellular Carcinoma Recurrence after Living Donor Liver Transplantation; a Single Center Experience Retrospective Analysis. (Abstract # P-113)**
Naoki Tanimine, Yuka Tanaka, Kohei Ishiyama, Kentaro Ide, Masahiro Ohira, Hiroyuki Tahara, Takahiro Tashiro, Hideki Ohdan. Hiroshima, Japan.
- P-114 Prevention and Treatment of Recurrent Hepatocellular Carcinoma after Liver Transplantation: Hangzhou Experiences. (Abstract # P-114)**
Wei Wang, Yufu Ye, Ting Wang, Sheng Yan, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-115 Comparisons of Surgical Outcomes and Recurrence after Liver Transplantation in Patients With Hepatitis B vs. Hepatitis C Related Hepatocellular Carcinoma. (Abstract # P-115)**
Tiffany C.L. Wong, Kenneth S.H. Chok, T.T. Cheung, Albert C.Y. Chan, James Y.Y. Fung, William Sharr, Simon H.Y. Tsang, Jeff W.C. Dai, See Ching Chan, Chung Mau Lo. Hong Kong, Hong Kong.
- P-116 Living Donor Liver Transplantation Does Not Increase Tumor Recurrence of Hepatocellular Carcinoma Compared to Deceased Donor Transplantation. (Abstract # P-116)**
Guangqin Xiao, Jiulin Song, Shu Shen, Jia-Yin Yang, Lu-Nan Yan. Chengdu, Sichuan Province, China.
- P-117 Favorable Long-Term Outcome after Liver Transplantation in HCC-Recipient. (Abstract # P-117)**
Ekaterina Yaroshenko, Maxim Kornilov, Yan Moysyuk. Moscow, Russian Federation.
- P-118 FBW7 Suppresses Invasion and Metastasis in Hepatocellular Carcinoma Cells via Down-Regulation of Notch-1. (Abstract # P-118)**
Jun Yu, Wu Zhang, Feng Gao, Yuanxing Liu, Zhiyun Chen, Longyu Cheng, Shangfen Xie, Shusen Zheng. Hangzhou, China.
- P-119 Genetic Polymorphism of B7-H3 is Not Associated with HCC Incidence of LT Recipients in Han Chinese Population. (Abstract # P-119)**
Xiaobo Yu, Bajin Wei, Min Zhang, Jian Wu, Xiao Xu, Lin Zhou, Shusen Zheng. Hangzhou, China.
- P-120 The Long-Term Outcome of Liver Transplantation for Recurrent Hepatocellular Carcinoma after Repeat Hepatic Resection. (Abstract # P-120)**
Tong Zhang, Bin-Sheng Fu, Hua Li, Chi Xu, Shu-Hong Yi, Yang Yang, Gui-Hua Chen. Guangzhou, Guangdong, China.
- Outcomes**
- P-121 † Prolonged-Release Tacrolimus (ADVAGRAF) Improves Survival Outcomes in *De Novo* Liver Transplantation: the European Liver Transplant Registry (ELTR). (Abstract # P-121)**
R. Adam, V. Karam, V. Delvart, P. Trunecka, D. Samuel, W. Bechstein, P. Nemec, G. Tisone, J. Klempnauer, M. Rossi, O. Rummo, J. Belghiti, M. Krawczyk, J. Pratschke, O. Kollmar K. Boudjema M. Colledan B. Ericzon G. Manton U. Baccarani P. Neuhaus A. Paul P. Bachellier F. Zamboni P. Muiesan. France; Czech Republic; Germany; Italy; Belarus; Poland; Austria; Sweden; United Kingdom.
- P-122 Successful Treatment of Fungal (Aspergillosis) Abscess and Co-Infected With CMV in Both Brain and Lung Developed after Orthotopic Liver Transplantation for Toxic Fulminant Hepatitis. (Abstract # P-122)**
Keun Soo Ahn, Yong Hoon Kim, Tae Jun Park, Hyoung Tae Kim, Won Hyun Cho, Byoung Kuk Jang, Tae-Seok Kim, Koo Jeong Kang. Daegu, Korea.

- P-123 Control of Diabetes Mellitus (DM) in Liver Transplant Recipients (LTR). (Abstract # P-123)**
Beatriz Rodríguez-Medina, Diego Álvarez, Carla Satorres, Ignacio Herrero, Trinidad Serrano, Manuel De la Mata, Victoria Aguilera, Ángel Rubin, Martín Prieto, Marina Berenguer. Valencia, Spain; Las Palmas, Spain; Madrid, Spain; Pamplona, Spain; Zaragoza, Spain; Córdoba, Spain.
- P-124 Factors Associated with Lower Rejection Rates in Liver Transplantation. (Abstract # P-124)**
Kin-Pan Au, See-Ching Chan, Siu-Ho Chok, William Wei Sharr, Wing-Chiu Dai, Sui-Ling Sin, Tiffany Cho-Lam Wong, Chung-Mau Lo. Hong Kong, Hong Kong.
- P-125 DIAMOND: Preserving Renal Function (RF) with Tac Prolonged-Release in *De Novo* LTx Pts with Different Primary Disease (PD). (Abstract # P-125)**
W. Bechstein, P. Truncka, J. Klempnauer, J. Pirenne, S. Friman, A. Zhao, H. Isoniemi, L. Rostaing, U. Settmacher, M. Brown, N. Undre, G. Tisone. Germany; Czech Republic; Belgium; Sweden; Russian Federation; Finland; France; USA; United Kingdom; Italy.
- P-126 † Multicenter Study of Elective Liver Retransplantation in Spain. (Abstract # P-126)**
Carmen Bernal-Bellido, Martín Prieto Castillo, Jorge Ortíz de Urbina, Trinidad Serrano, Antonio Poyato, Alejandra Otero, Magdalena Salcedo, Gloria Sanchez-Antolin, Manuel Rodríguez-García, Santiago Tomé, Valentin Cuervas-Mons, Rafael Bárcena, Miguel Angel Gómez-Bravo. Sevilla, Spain; Valencia, Spain; Bilbao, Spain; Zaragoza, Spain; Córdoba, Spain; A Coruña, Spain; Madrid, Spain; Valladolid, Spain; Santander, Spain; Santiago de Compostela, Spain.
- P-127 Outcome after Living Donor Liver Transplantation in Patients With Renal Dysfunction. (Abstract # P-127)**
Tejal Bhoj, Shailendra Lalwani, Vivek Mangla, Vinay Kumaran, Samiran Nundy, Naimish N. Mehta. Old Rajinder Nagar, New Delhi, India.
- P-128 Impact of Blood Product Transfusion on Patient/Graph Outcome in Liver Transplantation. (Abstract # P-128)**
Annabel Blasi, Joan Beltran, Artur Pereira, Graciela Martínez-Palli, Jaume Balust, Pilar Taura, Juan Carlos García-Valdecasas. Barcelona, Spain.
- P-129 Liver Transplantation for Autoimmune Hepatitis with DCD Donors. (Abstract # P-129)**
J. Bustamante, D. Klintman, S. Kriese, M. Muñoz Tornero, I. Cadden, N. McDougall, G. Whitehouse, A. Quaglia, J.G. O'Grady, N.D. Heaton, A. Sanchez Fueyo, Ma Heneghan. London, United Kingdom; Baracaldo, Spain; Malmo, Sweden; Murcia, Spain; Belfast, United Kingdom.
- P-130 Carbapenem-Resistant *Klebsiella Penumoniae* Multiple Liver Abscesses in a Liver Transplanted Patient: Report of a Case. (Abstract # P-130)**
Amedeo Carraro, Umberto Montin, Paola Violi, Fabio Soldani, Romualdo Mazzi, Matteo Donataccio, Ercole Concia, Umberto Tedschi. Verona, Italy.
- P-131 The Effect of Donor Age on the Outcome of Liver Transplant in Patients With Hepatitis B Virus Infection. (Abstract # P-131)**
Tan To Cheung, Kenneth S.H. Chok, Albert Chan, William Sharr, See Ching Chan, James Y.Y. Fung, Sheung Tat Fan, Chung Mau Lo. Hong Kong, Hong Kong.
- P-132 Patient Burden and Quality of Life in Liver Transplantation Recipients. (Abstract # P-132)**
Ji Seon Yoon, Hye Jin Choi, Oen Oak Shin, Sang Hwa Seo. Seoul, Republic of Korea.
- P-133 Pregnancy and Delivery in Women With Portal Hypertension. (Abstract # P-133)**
Zoulikha Jabiry-Zieniewicz, Filip Dabrowski, Bronislawa Pietrzak, Barbara Suchonska, Rafal Kowalczyk, Mirosław Wielgos. Warsaw, Poland.
- P-134 Living Donor Liver Transplantation. Outcome after 58 Transplants in Adult and Children in a Single Center. (Abstract # P-134)**
Manuel E. De Guglielmo, Dafne Del Valle, Elena Pestana, Damelys Marín, Miguel Vasallo, Carlos Rodríguez, Luzmila Aguero, Abigail Sala, Carlos Lozada, Hermogenes Malavé, Tomoaki Kato, Pedro Rivas. Caracas, Distrito Capital, Venezuela; New York, NY, USA.
- P-135 † Renal Dysfunction after Liver Transplantation in Italy: Results of a Cross-Sectional, Multicenter Study (SURF). (Abstract # P-135)**
Paolo De Simone, Mauro Salizzoni, Matteo Cescon, Luciano De Carlis, Alfonso Galeota Lanza, Alfredo Di Leo, Alfonso W. Avolio, Donato Donati, Rossella Brusa, Stefano Fagioli. Pisa, Italy; Turin, Italy; Bologna, Italy; Milan, Italy; Naples, Italy; Bari, Italy; Rome, Italy; Varese, Italy; Origgio, Italy; Bergamo, Italy.
- P-136 Management of Biliary Complications after Living Donor Liver Transplantation: An Egyptian Experience. (Abstract # P-136)**
Ibrahim Mostafa, Mahasen Mabrouk, Mahmoud El-Meteini, Shereen Hunter, Mohammed Bahaa, Ahmed Abd El-Azeem El-Mikkawy. Giza, Egypt; Cairo, Egypt.
- P-137 The First Four Years of Liver Transplantation in a Developing Country: The Ecuadorian Experience. (Abstract # P-137)**
Sergio Enderica-Gonzalez, Juan C. Aguilar, Juan J. Suarez, Harry F. Dorn, Juan Garces, Enrique Carrera, Paul E. Astudillo, Frans I. Serpa. Quito, Ecuador.

- P-138 † Depression in Liver Transplant Candidates May Be Explained by Frailty, Not Severity of Liver Disease. (Abstract # P-138)**
Jeffrey F. Friedman, David C. Cron, Angela E. Thelen, Jordan E. Derck, Ashley D. Gerebics, Michael J. Englesbe, Christopher J. Sonnenday. Ann Arbor, MI, USA.
- P-139 Hemophagocytic Syndrome after Orthotopic Liver Transplantation: A Report of Three Cases. (Abstract # P-139)**
Bin-Sheng Fu, Shu-Hong Yi, Hui-Min Yi, Yang Yang, Gui-Hua Chen. Guangzhou, Guangdong, China.
- P-140 Chronic Renal Failure after Liver Transplantation in Long Term: Prevalence and Risk Factors. (Abstract # P-140)**
Suut Gokturk, Bulent Baran, Asli Ormeci, Ozlem Soyer, Sami Evirgen, Ilgin Ozden, Filiz Akyuz, Cetin Karaca, Kadir Demir, Sabahattin Kaymakoglu, Fatih Besisik. Istanbul, Turkey.
- P-141 Importance of Individual Surgeon's Experience in Deceased Donor Liver Transplantation. (Abstract # P-141)**
Michal Grat, Zbigniew Lewandowski, Karolina Grat, Joanna Ligocka, Karolina M. Wronka, Wacław Holówko, Hanna Zborowska, Krzysztof Zieniewicz, Paweł Nyckowski, Tadeusz Wróblewski, Rafał Paluszkiwicz, Ireneusz Grzelak, Krzysztof Dudek, Piotr Remiszewski, Waldemar Patkowski, Bogusław Najnięgiel, Marek Krawczyk. Warsaw, Poland.
- P-142 Postoperative Confusion Following Liver Transplantation: A Multifactorial and Under Recognised Occurrence. (Abstract # P-142)**
Victoria Green, Francesca Hogg, Ashley Barnabas, George Auzinger, Julia Wendon, Varuna Aluvihare, Abid Suddle, John O'Grady, Wayel Jassem, Michael Heneghan, Kosh Agarwal. London, United Kingdom.
- P-143 Changes in Patient/Graft Survival and Death Causes of Liver, Kidney and Heart Transplantation Over Time, According To Age, Sex, Region: A Meta-Analysis. (Abstract # P-143)**
Zhiyong Guo, Dongping Wang, Xi Yuan, Weiqiang Ju, Xiaoshun He. Guangzhou, China.
- P-144 Protective Effect of Remote Limb Ischemic Postconditioning on the Liver Grafts of Rats With a Novel Model. (Abstract # P-144)**
Junjun Jia, Jianhui Li, Li Jiang, Lin Zhou, Shusen Zheng. Hangzhou, China.
- P-145 Differential Risk Factors for Chronic Kidney Disease between Patients With and Without Acute Kidney Injury Following Liver Transplantation. (Abstract # P-145)**
Hideya Kamei, Yasuhiro Onishi, Yasuhiro Ogura. Nagoya, Japan.
- P-146 † Are the Early Quality of Life Benefits Sustained Long-Term after Liver Transplantation? a 10-Year Longitudinal Diagnosis Stratified Evaluation. (Abstract # P-146)**
V. Karam, C. Danet, D. Samuel, R. Adam, T.M. Antonini, F. Saliba, D. Castaing. Villejuif, France.
- P-147 Close Monitoring for Polyneuropathy/Myopathy Is Warranted Among Liver Transplant Recipients on Long-Term Treatment With Telbivudine. (Abstract # P-147)**
Zeki Karasu, Ilker Turan, Soner Duman, Murat Sozbilen, Fulya Gunsar, Galip Ersoz, Ulus S. Akarca. Izmir, Turkey.
- P-148 Risk Factors Analysis for New-Onset Diabetes Mellitus after Liver Transplantation—A Nationwide Population-Based Study. (Abstract # P-148)**
Pei-Ching Kuo, Chien-Hui Yang, Wen-Tsan Chang, King-Teh Lee. Kaohsiung, Taiwan.
- P-149 Impact of Serial Change of Donor Specific Antibodies on the Graft Outcomes after Liver Transplantation. (Abstract # P-149)**
Jung Jun Lee, Dong Jin Joo, A-Lan Lee, Su Hyung Lee, Sung Hoon Kim, Dae Hoon Han, Man Ki Ju, Gi Hong Choi, Jin Sub Choi, Soon Il Kim, Myoung Soo Kim. Seoul, Korea; Wonju, Korea.
- P-150 Hip Joint Pain: A Rare Initial Presentation of Cryptococcal Osteomyelitis and Septic Arthritis after Liver Transplantation. (Abstract # P-150)**
M. Maloo, H. Clauss, A. Karachristos, K. Lau, A. Di Carlo, A. Jain. Philadelphia, PA, USA.
- P-151 Cardiac Complications and Adverse Cardiac Events after Liver Transplantation. (Abstract # P-151)**
Mitsuru Nakatsuka, Martha Behnke, Robert A. Fisher. Richmond, VA, USA.
- P-152 NAFLD in the 21st Century: A Modern Challenge in Liver Transplantation. (Abstract # P-152)**
Sara Napetti, Andrew I. Sutherland, Rosanne Bate, Gabriel C. Oniscu, Anya Adair. Edinburgh, United Kingdom.
- P-153 Transplantation for Primary Hyperoxaluria. (Abstract # P-153)**
Gomathy Narasimhan, Rajesh Rajalingam, Naresh Shanmugam, V. Chandrasekhar, Rajasekhar Perumalla, S. Vivekanandan, A. Olithselvan, Dinesh Jothimani, Joy Varghese, Srinivas Reddy, Mohamed Rela. Chennai, India.
- P-154 Renal Glomerular Filtration Rate at 1 Year Post Liver Transplantation: A Prognostic Indicator for Mortality. (Abstract # P-154)**
Nicholas Onaca, Peter Kim, Greg McKenna, Giuliano Testa, Richard Ruiz, Tiffany Anthony, Marlon Levy, Robert Goldstein, Goran Klintmalm. Dallas, USA.

- P-155** **Evaluating Risk Factors for Multi Drug Antibiotic Resistance Post Living Donor Liver Transplantation. (Abstract # P-155)**
Sarah Osman, Hany Dabbous, Iman Fawzy, Mahmoud El-Meteini. Cairo, Egypt.
- P-156** **History of Major Abdominal Surgery Affects Patients Mortality after Liver Transplantation. (Abstract # P-156)**
Cengiz Ara, Fatih Ozdemir, Adil Baskiran, Volkan Ince, Sezai Yilmaz. Malatya, Turkey.
- P-157** **Initial 3-Year Experience of Liver Transplantation at a Low-Volume Center. (Abstract # P-157)**
Jeong-Ik Park, Sung-Gyu Lee. Busan, Korea; Seoul, Korea.
- P-158** **Outcome of Patients Considered Unsuitable for Liver Transplantation – A Missed Opportunity for Palliative Care? (Abstract # P-158)**
Anju Phoolchand, Sam Murray, Brian Hogan, James O’Beirne. London, United Kingdom.
- P-159 †** **Portal Pressure of ≥ 20 mm of Hg As a Predictor of Mortality in 221 Right Lobe Living Donor Liver Transplant Recipients. (Abstract # P-159)**
Sumana Ramachandra, J. George, P. Agrawal, R. Mohanka, A. Rastogi, S. Goja, B. Menon, A. Joly, V. Vohra, P. Bhangui, P. Singla, S. Baijal, A. Soin. Gurgaon, NCR, India.
- P-160** **Ten Years Single-Centre Experience on Patients With MELD-Score ≥ 30 in Liver Transplant Waiting List. (Abstract # P-160)**
Matteo Ravaioli, Valentina R. Bertuzzo, Matteo Cescon, Lorenzo Maroni, Alessandro Cucchetti, Giorgio Ercolani, Massimo Del Gaudio, Antonio D. Pinna. Bologna, Italy.
- P-161** **Nursing of the Patients With Severe Agranulocytosis after Orthotopic Liver Transplantation. (Abstract # P-161)**
Lihan Rui, Qiaoling Zeng, Yingcui Liu. Guangzhou, China.
- P-162** **Predictors of Survival after Adult to Adult Living Donor Liver Transplantation. (Abstract # P-162)**
Emad Hamdy Salem, Maha Lotfy, Ayman Alsebaey. Shibin El-Kom, Menoufiya, Egypt; Shibin El-Kom, Egypt.
- P-163** **Risk Factor of Renal Dysfunction Post-Liver Transplantation. (Abstract # P-163)**
Alba Vargas Garcia, Irene Peñas Herrero, Eva Muñoz Conejero, Rebeca Amo Alonso, Andrea Loza Vargas, Felix Garcia Pajares, Carolina Almohalla Alvarez, Gloria Sanchez Antolin. Valladolid, Spain.
- P-164** **Assessment of Pre and Post- Reperfusion Liver Graft Biopsies Can Predict Post Orthotopic Liver Transplant Outcome. (Abstract # P-164)**
Ruchi Sharma, Yamen Jabri, Emmanuel Xystrakis, Elissaios Kontis, Anuja Athale, Ana Ciscar Belles, Parthi Srinivasan, Andreas Prachalias, Xiaohong Huang, Nigel Heaton, Alberto Quaglia, Yun Ma, Wayel Jassem. London, United Kingdom.
- P-165** **Geriatric Nutritional Risk Index May Be a Significant Nutritional Factor in Renal Transplantation Patients According To the Presence Or Absence of Chronic Kidney Disease. (Abstract # P-165)**
Ho Sik Shin, Yeon Soon Jung, Hark Rim, Myunghee Yoon, Dong Hoon Shin, Taek Sang Kim, Hyun Yul Rhew. Busan, Republic of Korea.
- P-166** **A Single Center Experience of ABO-Incompatible Adult Living Donor Liver Transplantation: 230 Cases over 5 Years. (Abstract # P-166)**
Gi-Won Song, Sung-Gyu Lee, Shin Hwang, Chul-Soo Ahn, Ki-Hun Kim, Tae-Yong Ha, Dong-Hwan Jung, Gil-Chun Park, Sung-Hwa Kang, Bo-Hyun Jung, Min-Ho Sin, Young-In Yoon, Wan-Joon Kim, Eol Choi, Jae Hyun Kwon. Seoul, Korea.
- P-167 †** **Impact of Pretransplant Infection on Outcome after Living Donor Liver Transplantation. (Abstract # P-167)**
Thiagarajan Srinivasan, Ravi Mohanka, Neeraj Saraf, Sanjeev Saigal, Arvinder Singh Soin. Gurgaon, Haryana, India.
- P-168** **Simultaneous Liver-Kidney Transplantation in HIV-Infected Patients. (Abstract # P-168)**
Giuseppe Tarantino, Giuseppe D’Amico, Nicola Cautero, Nicola De Ruvo, Roberto Ballarin, Valentina Serra, Mauro Codeluppi, Beniamino Baisi, Giovanni Cappelli, Fabrizio Di Benedetto. Modena, Italy.
- P-169** **The Use of Deceased Donors Over 75 Years in Liver Transplantation; a Nordic Collaborative Study. (Abstract # P-169)**
Trygve Thorsen, Bennet William, Olausson Michael, Ericzon Bo-Göran, Nowak Greg, Frans Duraj, Helena Isoniemi, Rasmussen Allan, Tom H. Karlsen, Foss Aksel. Oslo, Norway; Gothenburg, Sweden; Stockholm, Sweden; Uppsala, Sweden; Helsinki, Finland; Copenhagen, Denmark.
- P-170** **Observation and Nursing Care of Intestinal Fistula after Upper Abdominal Multiple Organ Transplantation. (Abstract # P-170)**
Haidan Ye, Yingcui Liu, Qiaoling Zeng. Guangzhou, Guangdong, China.
- P-171** **Nursing of Donor Liver in Liver Transplantation in Adult Children after Cardiac Death. (Abstract # P-171)**
Qiaoling Zeng, Yingcui Liu, Lihan Rui. Guangzhou, China.

- P-172** **Nursing Experience of Biliary Complication after Orthotopic Liver Transplantation. (Abstract # P-172)**
Qiaoling Zeng, Yingcui Liu, Qingxiu Fan. Guangzhou, China.
- P-173** **Effects of Preceding Liver Resection on Salvage Liver Transplantation for Recurrent HCC after Liver Resection. (Abstract # P-173)**
Qijun Zhang, Zhenhua Hu, Jie Zhou, Lin Zhou, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-174** **Low Express of Oct4-PG1 Predicts a Poor Prognosis of Hepatocellular Carcinoma Patients With Liver Transplantation. (Abstract # P-174)**
Cheng Zhang, Jian Wu, Zhen Lv, Chengli Du, Zhou Lin. Hangzhou, Zhejiang, China.
- P-175** **Ischemic-Type Biliary Lesions Following Liver Transplantation: A New Diagnosis and Therapy Model. (Abstract # P-175)**
Ying-Cai Zhang, En-Ze Qu, Qi Zhang, Jie Ren, Rong-Qin Zheng, Yang Yang, Gui-Hua Chen. Guangzhou, Guangdong, China.
- P-176** **Clinical Analysis of Liver Transplantation and Multivisceral Transplantation Using Donation Aftercardiac Death Donors. (Abstract # P-176)**
Qiang Zhao, Zhiyong Guo, Xiaoshun He, Weiqiang Ju, Dongping Wang. Guangzhou, Guangdong, China.

Patient Selection/Organ Allocation

- P-177** **Portopulmonary Hypertension: Prevalence and Survival in Patients Undergoing Liver Transplantation. (Abstract # P-177)**
Emica Shimozone, Cristina A.A. Caruy, Adilson R. Cardoso, Derli C.M. Servian, Ilka F.S.F. Boin. Campinas, São Paulo, Brazil.
- P-178** **Influence of Donor-Recipient Gender Mismatch on Graft Survival after Liver Transplantation. (Abstract # P-178)**
Florin Botea, Vladimir Brasoveanu, Mihnea Ioan Ionescu, Radu Zamfir, Dana Tomescu, Irinel Popescu. Bucharest, Romania.
- P-179** **HLA Variants Related to Primary Sclerosing Cholangitis Influence Rejection after Liver Transplantation. (Abstract # P-179)**
Bjarte Fosby, Sigrid Næss, Johannes R. Hov, James Traherne, Kirsten M. Boberg, John Trowsdale, Aksel E. Foss, Pål D. Line, Andre Franke, Espen Melum, Helge Scott, Tom H. Karlsen. Oslo, Norway; Cambridge, United Kingdom; Kiel, Germany.
- P-180** **Impact of MELD Allocation System on Survival after Liver Transplantation in France. (Abstract # P-180)**
Carine Jasseron, Corinne Antoine, Camille Legeai, Christian Jacquelin, The Liver Transplant Advisory. Saint-Denis La Plaine, France.

- P-181** **Pretransplant Serum Levels of C-Reactive Protein Predict Prognoses in Patients Undergoing Liver Transplantation for Hepatocellular Carcinoma. (Abstract # P-181)**
Young-Kyu Kim, Seong Hoon Kim, Seung Duk Lee, Hana Shin, Yumi Lee, Soon-Ae Lee. Goyang, Korea.
- P-182** **Analysis of UNOS Data Regarding Combined Heart-Liver Transplant for Failing Fontan and Cardiac Cirrhosis from 1988 to 2012. (Abstract # P-182)**
Richard A. Lirio, Fernando Zapata, Wendy J. Grant, David F. Mercer, Alan Langnas, Ruben E. Quiros-Tejiera. Omaha, NE, USA.
- P-183** **Liver Transplant Wait List Mortality in a Tertiary Care Hospital in Southern India. (Abstract # P-183)**
Joy Varghese, Lakshmi Suganya, Srinivasa Reddy, Cherian Tom, Venkataraman Jayanthi, Srinivasan Vijaya, Mohamed Rela. Chennai, Tamilnadu, India; Chennai, India.
- P-184** **Demographic Characteristics of Organ Donor in China: A Single Center Report. (Abstract # P-184)**
Xiaoping Wang, Min Hang, Xiaopeng Yuan, Chuanbao Chen, Xingyuan Jiao, Xiaoshun He. Guangzhou, Guangdong, China.
- P-185** **Hangzhou Criteria and Neutrophil-Lymphocyte Ratio Used To Select Hepatocellular Carcinoma for Liver Transplantation. (Abstract # P-185)**
Guangqin Xiao, Yan Zhong, Jiayin Yang, Lunan Yan. Chengdu, China.

Pediatrics

- P-186** **Diaphragmatic Hernia after Liver Transplantation in Children: Single Centre Experience. (Abstract # P-186)**
M. Cortes, S.E. Khorsandi, N. Tapuria, E. Kontis, H. Vilca-Melendez, M. Rela, N. Heaton. London, United Kingdom.
- P-187** **Management and Incidence of EBV Infection in Pediatric Liver Transplant Patients Treated With Tacrolimus. (Abstract # P-187)**
Marcelo Dip, Daniela Borgnia, Esteban Halac, Walter Arrieta, Guillermo Cervio, Rojas Luis, Martinito Roxana, Sarkis Claudia, Jacobo Dillon Agustina, Bosalesh Andrea, Davilla Maria, Imventarza Oscar. Ciudad autonomia de Buenos Aires, Buenos Aires, Argentina.
- P-188** **Osteoporosis in Pediatric Liver Transplantation. (Abstract # P-188)**
Walid Faraj, Abdallah Abou Niaj, Nancy Nakhoul, Ghada Elhajj Fuleihan, Bernard Sagharian, Ali Haydar, Ali Shamseddine, Ghatas Khoury, Samar Jabbour, Mohamed Khalife. Beirut, Lebanon.

- P-189 Diagnostic Value of Ceruloplasmin for Fulminant Wilson's Disease. (Abstract # P-189)**
Jung Ah Kim, Seak Hee Oh, Jin Min Cho, Kyung Mo Kim. Seoul, Korea.
- P-190 Outcome of 10-Year Survivors of Pediatric Liver Transplantation in a Single Center in Korea. (Abstract # P-190)**
Sanghoon Lee, Kyo-Won Lee, Jin Yong Choi, Wontae Cho, Seunghwan Lee, Hyung Hwan Moon, Jong Man Kim, Choon Hyuck D. Kwon, Jae-Won Joh, Suk-Koo Lee. Seoul, Korea.
- P-191 Pathology of Pediatric EBV-Induced Fulminant Hepatic Failure -A Critical Indication for Liver Transplantation-. (Abstract # P-191)**
Atsuko Nakazawa, Natsuko Nakano, Kentaro Matsuoka, Ken-Ichi Imadome, Seisuke Sakamoto, Mureo Kasahara. Tokyo, Japan.
- P-192 Monogenic Liver Diseases - Liver Transplantation As Gene Therapy. (Abstract # P-192)**
Kumar Palaniappan, Manoj Shrivastav, Naresh Shanmugam, Rajesh Rajalingam, Rajasekhar Perumalla, Gomathy Narashiman, Mohamed Rela. Chennai, Tamilnadu, India.
- P-193 3 Years Biliary Complications in 72 Paediatric Split Liver Transplantation. (Abstract # P-193)**
M. Platto, D. Pinelli, L. Locatelli, M. Guizzetti, E. Marini, M. Zambelli, A. Aluffi, V. Corno, L. D'Antiga, A. Lucianetti, M. Colledan. Bergamo, Italy.
- P-194 Combined Liver Kidney Transplantation in Pediatric Patients: A Single Centre Experience. (Abstract # P-194)**
Jesus Quintero, Olalla Rodriguez, Leire Gondra, Ramon Vilalta, Mar Miserachs, Elisenda Busquets, Gema Ariceta, Ramon Charco. Barcelona, Spain.
- P-195 ABO Incompatible Living Related Liver Transplant in Children: Saudi Single Center Experience. (Abstract # P-195)**
Mohammad Shagrani, Martin Burdelski, Talal AlGoufi, Hussah AlHussaini, Asma Fayyad, Mohamed AlSebayel, Hamad AlBahili, Dieter Broering. Riyadh, Saudi Arabia.
- P-196 † ABO-Incompatible Pediatric Liver Transplantation: Experience of a Single Center. (Abstract # P-196)**
Sergey V. Gautier, Irina E. Tsurulnikova, Vitaly N. Poptsov, Olga M. Tsurulnikova, Olga P. Shevchenko. Moscow, Russian Federation.

Radiology

- P-197 Usefulness of Hepatobiliary Scintigraphy for Detecting Biliary Leak in Living Donor Liver Transplant Recipients. (Abstract # P-197)**
Dinesh Balakrishnan, Unnikrishnan Gopalakrishnan, Ramachandran N. Menon, Raghavendra Babu, Viju Bharathan, S. Sudhindran. Kochi, Kerala, India.
- P-198 Intraoperative Trans-Liver Surface Approach in Management of Hepatic Venous Occlusion during Pediatric Living Donor Liver Transplant. (Abstract # P-198)**
Yu-Fan Cheng, Shin-You Ou, Leo Leung-Chit Tsang, Chun-Yen Yu, Tung-Liang Huang, Tai-Yi Chen, Chao-Long Chen. Kaohsiung, Taiwan.
- P-199 The Relationship between Meld Score and Hemodynamic Parameters in Diffuse Chronic Parenchymal Liver Disease. (Abstract # P-199)**
Naile Bolca Topal, Ahu Ulca Sahin, Halit Ziya Dundar, Pinar Tasar Sarkut, Ekrem Kaya. Bursa, Turkey.
- P-200 A Comprehensive Analysis of Downstaging To Meet Listing Criteria for Hepatocellular Carcinoma. (Abstract # P-200)**
Richard Gilroy, Marc Heronemus, Elizabeth Charlton, Steven Lemons, Timothy Schmitt, Philip Johnson. Kansas City, KS, USA.
- P-201 Effectiveness of Protocol Doppler Ultrasonography in Salvaging Grafts in Post Orthotopic Liver Transplant. (Abstract # P-201)**
Karthik Mathivanan, Anand Khakhar, Anand Ramamurthy, Mahesh Gopasetty, Manish C. Varma. Chennai, Tamil Nadu, India.
- P-202 Multislice Computerised Tomography (MDCT) for Graft Size Assessment and Volumetric Analysis in Living Donor Liver Transplants (LDLT). (Abstract # P-202)**
Ankur J. Shah, Sharad Maheshwari, Kapil Yadav, Vibha Varma, Sorabh Kapoor, Barun Nath, Jayshri Shah, Vinay Kumaran. Mumbai, India.
- P-203 Magnetic Resonance Improvement during the Peri-Operation Period of Liver Transplantation for a Child With Hyperbilirubinemia. (Abstract # P-203)**
Zhenhua Tu, Min Zhang, Weilin Wang, Shusen Zheng. Hangzhou, China.

Recurrent Disease/Pathology

- P-204 † Sinusoidal Infiltrative And/OR Plasma Cell-Poor Hepatitis: Immediate and Long-Term Implications of an Under-Recognized Pattern of Acute Cellular Rejection. (Abstract # P-204)**
Iram Siddiqui, Nazia Selzner, Max Marquez, Oyedele A. Adeyi. Toronto, ON, Canada.

- P-205 Predictive Factors of Acute Cellular Rejection during Triple Therapy in Liver Transplant Recipients. (Abstract # P-205)**
Victoria Aguilera, Carmen Vinaixa, Ana Braithwaite, Maria Garcia, Angel Rubin, Salvador Benlloch, Martin Prieto, Marina Berenguer. Valencia, Spain.
- P-206 Donor Derived Familial Hypercholesterolemia and Impact Upon Clinical Outcomes. (Abstract # P-206)**
Marc Heronemus, Richard Gilroy, Ryan Taylor, Timothy Schmitt, Patrick Moriarty. Kansas City, KS, USA.
- P-207 † The Impact of HBV Recurrence on the Survival of HBV Related Liver Transplant. (Abstract # P-207)**
Tsung-Hui Hu, Chao-Long Chen, Chih-Che Lin, Chih-Chi Wang, King-Wah Chiu, Yueh-Wei Liu, Yu-Hung Lin. Kaohsiung, Taiwan.
- P-208 Utility of Quantiferon-GOLD for Diagnosis of Latent Tuberculosis Infection (LTBI) in Liver Transplant Recipients (LTRs) from a High Prevalence Area.—An Interim Analysis of a Prospective Study. (Abstract # P-208)**
Arikichenin Olithselvan, Vivekanandan Shanmugam, Mukul Vij, Naresh Shanmugam, Gomathy Narasiman, Rajsekar Perumalla, Srinivas Reddy, Joy Vargese, Dinesh Jothimani, Mohamed Rela. Chennai, India.
- P-213 Liver Transplantation With Pre-Existing Diffuse Portal Vein Thrombosis: Outcomes in Peru. (Abstract # P-213)**
Jose C. Chaman, Pedro M. Padilla, Carlos F. Rondon, Felix A. Carrasco, Omar A. Mantilla, Wilmer Bacilio. Lima, Peru.
- P-214 Arterio-Portal Fistula Encountered Immediately in Left Lobe Hepatic Graft after Living Donor Liver Transplantation: Report of a Case. (Abstract # P-214)**
Wen-Tsan Chang, Wen-Long Su, Sen-Ren Wong, Shin-Chang Chuang, Kung-Kai Kuo, Jong-Shyone Chen, King-Teh Lee. Kaohsiung, Taiwan.
- P-215 A New Liver Autotransplantation after In-Situ Graft Hepatectomy for Huge Hepatocellular Carcinoma Involving IVC. (Abstract # P-215)**
Young Seok Han, Dong Lak Choi, Ghil Suk Yoon. Daegu, Republic of Korea.
- P-216 Intraoperative Embolization of Splenic Vein for Preventing Portal Vein Thrombosis after Splenectomy in Liver Transplantation Patient. (Abstract # P-216)**
Eol Choi, Deok Bok Moon, Seung Kyu Lee, Jae Hyeon Kwon. Seoul, Republic of Korea.
- P-217 Conversion Hepaticojejunostomy for Biliary Anastomotic Stricture after Right Lobe Living Donor Liver Transplantation. (Abstract # P-217)**
Murat Dayangac, Tonguc U. Yilmaz, Necdet Guler, Onur Yaprak, Murat Akyildiz, Gulum Altaca, Yildiray Yuzer, Yaman Tokat. Istanbul, Turkey.

Surgical Techniques/Complications

- P-209 Comparative Prospective Study of Three Solutions for Liver Preservation: Celsior, IGL-1 and UW. (Abstract # P-209)**
R. Adam, V. Karam, M. Sebah, O. Ciacio, G. Pittau, P. Bucur, M. Gelli, E. Vibert, A. Sa Cunha, F. Saliba, D. Samuel, D. Castaing. Villejuif, France.
- P-210 Portal Vein Thrombosis: A Real Challenge for Liver Transplantation. (Abstract # P-210)**
Bulent Aydinli, Gurkan Ozturk, Abdurrahim Colak, Sukru Arlan, Ercan Korkut. Erzurum, Turkey.
- P-211 Recipient Splenic Artery Utilization in Orthotopic Liver Transplantation. (Abstract # P-211)**
Rodrigo P. Braga, Carlos E.S. Baia, Margareth P. Lalee, Fabio Crescentini, Eloiza Quintela. Sao Paulo, SP, Brazil.
- P-212 High Applicability and Low Rate Complications of Choledochostomy Without T-tube in Adult Liver Transplantation. (Abstract # P-212)**
Mireia Caralt, Amaia Gantxegi, Daniel Andrada, Paula Jimenez, Sofia de la Serna, Gonzalo Sapisochin, Cristina Dopazo, José Luis Lázaro, Itxarone Bilbao, Ramon Charco. Barcelona, Spain.
- P-218 Vena Cava Preservation With Temporary Porto Caval Shunt, an Excellent Technique To Initiate a Liver Transplant Program in a Low Resource Area. (Abstract # P-218)**
Juan V. del Rio Martin, Pedro Hernandez Rivera, Rafael Pastrana, Ivan Antunez, Ramon Cao Alvira, Carlos Garcia. San Juan, PR, Puerto Rico.
- P-219 Broncho-Biliary Fistula after Living Right Lobe Liver Donation: Case Report and Literature Review. (Abstract # P-219)**
Mohamed Z. Elkelani, F. Enani, B. Badee, Kh. Omar, M. Hassan, Yehia E. Elmorsy, Koichi Tanaka, S. Bazaraa, N. Farid, N. Hammad, S. Radwan. Jeddah, Saudi Arabia; Riyadh, Saudi Arabia; Kobe, Japan.
- P-220 † Clinical Relevance of Microbiological Analysis of Stool and Bile during Cholangiography in Liver Transplant Recipients. (Abstract # P-220)**
Anna Hüsing, Vito R. Cicinnati, Miriam Maschmeier, Hartmut H. Schmidt, Susanne Beckebaum, Iyad Kabar. Münster, Germany.
- P-221 The Cause and Management of Liver Abscess after Orthotopic Liver Transplantation. (Abstract # P-221)**
Ming Han, Xiaoping Wang, Xiaopeng Yuan, Jian Zhou, Xiaoshun He, Yi Ma. GuangZhou, GuangDong, China.

- P-222 Successful Treatment of Diffuse Portal Vein Thrombosis after Splenectomy Following Living Donor Liver Transplantation Patient. (Abstract # P-222)**
Sung-Hwa Kang, Shin Hwang, Sung-Gyu Lee, Eol Choi, Jae-Hyun Kwon. Seoul, Korea.
- P-223 A Rare Infectious Complication after Licing Donor Liver Transplantation. (Abstract # P-223)**
Joo S. Kim, Doo J. Kim, Jae P. Jung, Jang Y. Jeon, Tae You, Samuel Lee. Seoul, Korea.
- P-224 Supply of Probiotics Reduces Posttransplant Early Infection Rates after Liver Transplantation: A Single Center Observational Cross-Sectional Cohort Study. (Abstract # P-224)**
Young-Kyu Kim, Seong-Hoon Kim, Seung-Duk Lee, Hana Shin, Yumi Lee, Soon-Ae Lee. Goyang, Gyeonggi, Korea; Goyang, Gyeonggi, Korea.
- P-225 Risk Factors for the Development of Early Hepatic Artery Thrombosis after Liver Transplantation. (Abstract # P-225)**
Luis M. Marin-Gomez, Carmen Bernal-Bellido, Gonzalo Suarez-Artacho, Jose M. Alamo-Martinez, Francisco Porras, Juan Serrano-Diaz-Canedo, Francisco J. Padillo-Ruiz, Miguel A. Gomez-Bravo. Seville, Spain.
- P-226 Minimizing Incidence of Hepatic Artery Thrombosis in Living Donor Liver Transplantation. (Abstract # P-226)**
Naimish N. Mehta, Vivek Mangla, Vibha Varma, Shailendra Lalwani, Vinay Kumaran, Samiran Nundy. New Delhi, India.
- P-227 The Hemothorax Caused By the Chest Tube Insertion in the Deceased Donor Liver Transplantation Patient: A Case Report. (Abstract # P-227)**
Ju Ik Moon, Seong Uk Cheon, In seok Choi. Daejeon, Korea.
- P-228 Abdominal Closure with Bogota Bag after Pediatric Liver Transplantation. (Abstract # P-228)**
Koray Kutluturk, Emrah Otan, Ertugrul Karabulut, Cemalettin Aydin, Cuneyt Kayaalp, Sezai Yilmaz. Malatya, Turkey.
- P-229 Double Trouble in Living Donor Liver Transplantation – Implications of Double Graft Artery. (Abstract # P-229)**
Kumar Palaniappan, Vivekandan Shanmugam, Srinivas Reddy, Mohamed Rela. Chennai, Tamilnadu, India.
- P-230 The Liver Packing for the Control of Intraoperative Hemorrhage during Liver Transplantation: A Single-Center Experience. (Abstract # P-230)**
Damiano Patrono, Francesco Tandoi, Fabio Maroso, Elisabetta Magra, Costanza Ajani, Bertolotti Giovanni, Romagnoli Renato, Salizzoni Mauro. Turin, Piedmont, Italy.
- P-231 ERCP Versus MRCP for Diagnosis of Anastomotic Biliary Strictures in the Recipients after Orthotopic Liver Transplant. (Abstract # P-231)**
Yunsheng Qin. Hangzhou, China.
- P-232 Recurrent Hepatitis C Virus Genotype 4 Infection after Living Donor Liver Transplantation: Risk Factors and Outcome. (Abstract # P-232)**
Emad Hamdy Salem, Mohammed Taha, Ayman Alsebaey, Amr Aziz, Khaled Abou El-Ella. Shibin El-Kom, Menoufiya, Egypt.
- P-233 Reconstruction of Variant Right Hepatic Artery in Liver Transplantation: Comparison of Two Techniques. (Abstract # P-233)**
Ailton Sepulveda, Louise Barbier, Grazia Fusco, Federica Dondero, Fabiano Perdigao, Olivier Scatton, Jacques Belguiti, Olivier Soubrane. Paris, Ile-de-France, France; Clichy, Ile-de-France, France.
- P-234 Risk Factors of Late Arterial Complications in Liver Transplantation. (Abstract # P-234)**
Andres Valdivieso, Lorea Martinez-Indart, Mikel Prieto, Mikel Gastaca, Alberto Ventoso, Patricia Ruiz, Amaya Matarranz, Javier Bustamante, Ibone Palomares, Jose Ramon Fernandez, Milagros Testillano, Maria Jesus Suarez, Miguel Montejo, Jorge Ortiz-de-Urbina. Bilbao, Spain; Leioa-Bilbao, Spain.
- P-235 ERCP-Related Complications in Liver Transplant Recipients With Anastomotic Biliary Strictures. (Abstract # P-235)**
Kang-Jie Chen, Qi-Yong Li, Yun-Sheng Qin, Fu-Chun Yang, Shu-Sen Zheng. Hangzhou, China.
- P-236 Clinical Observation of Liver Transplantation for Adult Langerhans Cell Histiocytosis. (Abstract # P-236)**
Jian Zhou, Weiqiang Ju, Zhiyong Guo, Xiaoping Wang, Chuanbao Chen, Xingyuan Jiao, Xiaoshun He. Guangzhou, China.
- P-237 Diagnosis and Treatment of Hyperosmolar Non-Ketotic Hyperglycemic Coma Induced By Methylprednisolone Pulse Therapy for Acute Rejection after Liver Transplantation. (Abstract # P-237)**
Jian Zhou, Weiqiang Ju, Xiaopeng Yuan, Chuanbao Chen, Xiaoping Wang, Ming Han, Xingyuan Jiao, Xiaoshun He. Guangzhou, China.

Malignancies

- Immunomodulation by Prostaglandin E1 Reduces the Risk of Early HCC Recurrence Following Liver Transplantation. (Abstract # LB-10)**
Arno Kornberg, Ulrike Witt, Katharina Thrum, Helmut Friess, Dietmar Gottschild. Munich, Germany; Berlin, Germany; Jena, Germany.

Anesthesia/Critical Care Medicine

First Use of a Hemoadsorption Device (Cytosorb®) During Continuous Venovenous Hemofiltration (CVVH) in a Patient Undergoing Retransplantation With ABO Incompatible Graft for Acute Graft Dysfunction. (Abstract # LB-11)

Dana Tomescu, Mihai Popescu, Cristiana Pistol-Tanase, Anca Nastase, Simona O. Dima. Bucharest, Romania.

Immunosuppression

Everolimus Plus Mycophenolate Mofetil as Initial Immunosuppression after Liver Transplantation. (Abstract # LB-12)

M. Jiménez Pérez, R. González Grande, F.J. Rando Muñoz, J. de la Cruz Lombardo, M.A. Suárez Muñoz, J.L. Fernández Aguilar, J. Santoyo Santoyo, J.M. Rodrigo López. Málaga, Spain.

Basic Sciences

Chemiric Tolerogenic Regulatory CD8+ T Cells Induced By Trogocytosis, a Bridge To Immune Tolerance. (Abstract # LB-13)

Xian Liang Li, Dong Dong Han, Ping Li, Fei Pan, Jian Tao Kou, Hua Fan, Qiang He. Bei Jing, China.

Remote Ischemic Preconditioning Protects Against Liver Ischemia-Reperfusion Injury via Heme Oxygenase-1-Induced Autophagy. (Abstract # LB-14)

Xiangcheng Li, Yun Wang, Chenyu Jiao, Jian Shen, Yonghua Xu, Hai Zhang, Yuan Tian, Changjun Huang, Ke Wang, Aihua Yao, Yue Yu, Xuehao Wang. Nanjing, Jiangsu, China.

Surgical Techniques/Complications

Impact of Intra-operative Blood Transfusion on Long-Term Outcomes of Liver Transplantation for Hepatocellular Carcinoma. (Abstract # LB-15)

S.H. Kenneth Chok, T.T. Cheung, C.Y. Albert Chan, W. William Sharr, H.Y. Simon Tsang, Y.Y. James Fung, W.C. Jeff Dai, S.C. Chan, C.M. Lo. Hong Kong, Hong Kong.

DCD Grafts in HCC Patients: Oncological and Clinical Outcome. (Abstract # LB-16)

Irene Scalera, Moustafa Mourad, Tamara Perera, Hynek Mergental, Darius Mirza, Simon Bramhall, John Isaac, Paolo Muiesan. Birmingham, United Kingdom.

Auto Liver Transplantation for IVC Tumor. (Abstract # LB-17)

Susumu Eguchi, Mitsuhisa Takatsuki, Akihiko Soyama, Masaaki Hidaka, Tamotsu Kuroki. Nagasaki, Japan.

Patient Selection/Organ Allocation

Transplantation Ethics. (Abstract # LB-18)

Aparna Dalal. Seattle, USA.

The Rabbit Liver Could Be Split: A Rabbit Model of Associated Liver Partition and Portal Vein Ligation. (Abstract # LB-19)

Mingheng Liao, Tao Zhang, Haichuan Wang, Lixi Luo, Han Qin, Gang Pan, Zhaoyan Yu, Kunlin Xie, Jiwei Huang, Hong Wu, Yong Zeng. Chengdu, Sichuan, China.

Living Donor

Unusual Events in Donor Surgery: The Near Misses. (Abstract # LB-20)

Neerav Goyal, Manav Wadhawan, Shaleen Agarwal, Ramdip Ray, Shishir Pareekh, Giriraj Bohra, Muhammed Nayeem, Ravichand Siddachari, Pankaj Lohia, Subash Gupta. New Delhi, Delhi, India.

Anaphylactic Shock and DIC Due to Hepatitis B Immunoglobulin during Liver Transplantation - A Case Report. (Abstract # LB-21)

Achal Dhir, Fatimah Alsalah, Stephen Morrison. London, Canada.

Genetic Polymorphisms in FMO3 and CYP3A5 Associate with Tacrolimus Metabolism in Chinese Liver Transplant Patients. (Abstract # LB-22)

Fan Junwei, Wang Zhaowen, Chen Dawei, Zhong Lin, Peng Zhihai. Shang Hai, China.

Donor Liver Allocation According To Urgency Or Outcome. Results of a Survey. (Abstract # LB-23)

Katrin S. Umgelter, Aida Anetsberger, Moritz Tobiasch, Manfred Blobner, Andreas Umgelter. Munich, Germany.

A Case Report of Carcinoid Syndrome: Which Organ to Tackle First – Heart or Liver? (Abstract # LB-24)

Achal Dhir, Aphichat Supathamwit, Stephen Morrison, Wojciech Dobkowski. London, ON, Canada.

POSTER SESSION II

10:15 AM – 11:00 AM

Room: Caxton Lounge, Level 2; Pickwick Suite, Level 1

† Those posters identified as a Poster of Distinction by this symbol have received review scores that place them in the top 10% of their category. The Planning Committee encourages you to make them a priority when you visit the poster session.

Anesthesia/Critical Care Medicine

- P-238 † An Increase in RBC Transfusion Requirements during Orthotopic Liver Transplantation after Market Withdrawal of Aprotinin. (Abstract # P-238)**
Freeha Arshad, Andrie Westerkamp, Ton Lisman, Marieke T. de Boer, Robert J. Porte. Groningen, Netherlands.
- P-239 Use of Recombinant Activated Factor VII (rFVIIa) during Liver Transplantation (LTx) for Primary Dysfunction Or Delayed Function of Hepatic Allograft. (Abstract # P-239)**
N. Brister, M. Kerestury, D. Johnson, A. Karachristos, M. Maloo, K. Lau, A. Di Carlo, A. Jain. Philadelphia, PA, USA.
- P-240 Comparison of the Anesthetic Management of Single and Dual Grafts Living Donor Liver Transplantation. (Abstract # P-240)**
Kwok-Wai Cheng, Chih-Hsien Wang, Chao-Long Chen, Shao-Chun Wu, Tsung-Hsiao Shih, Sheng Chun Yang, Chia-Jung Huang, Bruno Jawan. Kaohsiung, Taiwan.
- P-241 Paravertebral Block Catheters Improve Post-Operative Pain Control after Living Donor Right Lobe Hepatectomy. (Abstract # P-241)**
 Jennifer Leiting, Jacob L. Hutchins, David M. Radosevich, Raja Kandaswamy, John R. Lake, Timothy L. Pruett, Srinath Chinnakotla. Minneapolis, USA.
- P-242 Anaemia and Liver Transplantation: Time for Action? (Abstract # P-242)**
Ben Clevenger, Matthew Henley, Susan Mallett. London, United Kingdom.
- P-243 Thrombotic Thrombocytopenic Purpura after Living Donor Liver Transplantation. A Case Report of an Unusual Complication. (Abstract # P-243)**
Manuel E. De Guglielmo, Erika Medina, José L. Ledezma, Elena Pestana, Miguel Vasallo, Carlos Rodríguez, Damelys Marín, Christiane Saltiel, Tomoaki Kato, Pedro Rivas. Caracas, Distrito Capital, Venezuela; New York, NY, USA.

- P-244 Primary Graft Dysfunction after Liver Transplantation: Effectiveness of Coupled Plasma Filtration Adsorption. (Abstract # P-244)**
Halit Ziya Dundar, Remzi Iscimen, Pinar Tasar Sarkut, Fahir Ozkalemkas, Ekrem Kaya. Bursa, Turkey.
- P-245 Continuous Veno-Venous Hemodiafiltration As a Prognostic Factor during Early Postoperative Period of Liver Transplantation. (Abstract # P-245)**
 Elena Giráldez Vázquez, Rita Fernández Garda, F. Gude Sampedro, Juan R. Fernández Villanueva, Enrique Ferrer Vizoso. Santiago de Compostela, A Coruña, Spain.
- P-246 Impact of Platelet Transfusion on Hospital Stay in Patients With MELD Score ≤ 24 Undergoing Living Donor Liver Transplantation. (Abstract # P-246)**
Nikunj Gupta, G.V. Premkumar, Jayanti Shankar, Annu Jolly, Seema Bhalotra, Vijay Vohra. Gurgaon, Haryana, India.
- P-247 Can the History of Esophageal Bleeding Be Used To Predict the Hemodynamic Instability of Inferior Vena Cava Clamping during Living Donor Liver Transplantation? (Abstract # P-247)**
Chia-Jung Huang, Kwok-Wai Cheng, Chao-Long Chen, Shao-Chun Wu, Tsung-Hsiao Shih, Sheng Chun Yang, Bruno Jawan, Chih-Hsien Wang. Kaohsiung, Taiwan.
- P-248 New Index for Liver Transplant Regarding Marginal Donors. (Abstract # P-248)**
Iago Justo, Félix Cambra, Naim Fakihi, Oscar Caso, Rebeca Sanabria, Alberto Marcacuzco, Alejandro Manrique, Jorge Calvo, Alvaro García-Sesma, Carmelo Loinaz, Paula Rioja, Carlos Bermello, Manuel Abradelo, Enrique Moreno, Carlos Jiménez. Madrid, Spain.
- P-249 Validating the McCluskey Index for the Necessity for Hemoderivative Transfusion in Our Liver Transplant Serie. (Abstract # P-249)**
Iago Justo, Oscar Caso, Felix Cambra, Naim Fakihi, Rebeca Sanabria, Alberto Marcacuzco, Alejandro Manrique, Jorge Calvo, Carmelo Loinaz, Alvaro García-Sesma, Paula Rioja, Cristina Cobo, Carlos Bermello, Manuel Abradelo, Enrique Moreno, Carlos Jiménez. Madrid, Spain.
- P-250 Myocardial Performance Index Using Tissue Doppler Imaging Has Prognostic Value of Posttransplat Hospitalization in Pediatric Patients Undergoing Liver Transplantation. (Abstract # P-250)**
Jung-Won Kim, Dong-Min Jang, Sun-Key Kim, Won-Jung Shin, Gyu-Sam Hwang. Seoul, Korea.

- P-251 Differences between Radial and Femoral Arterial Blood Pressure Measurements during Orthotopic Liver Transplantation. (Abstract # P-251)**
Matthew Lee, Laurence Weinberg, Brett Pearse, Nicholas Scurrah, David Story, Param Pillai, Peter McCall, Larry McNicol, Philip Peyton. Melbourne, Victoria, Australia.
- P-252 Liver Transplant and the Bloody Glove: Treat Dieulafoy before You Acquit. (Abstract # P-252)**
Peches Orallo, Jeffrey White, Lauren Hemmerich. Gainesville, FL, USA.
- P-253 Fast Tracking in Adult Living Donor Liver Transplantation - Is It Feasible and Safe? (Abstract # P-253)**
G.V. Premkumar, Pooja Bhangui, Nikunj Gupta, Annu Jolly, Seema Bhalotra, Vijay Vohra. Gurgaon, Haryana, India.
- P-254 Anesthesiologist Training as a Determinant of Institutional Care Standards in Adult Liver Transplantation. (Abstract # P-254)**
Wayne Soong, Andre M. De Wolf. Chicago, IL, USA.
- P-255 Effect of Intra-Operative HES 130/0.4 Use on Post-Operative Renal Function in LDLT Recipients. (Abstract # P-255)**
V. Vijay, G.V. Prem, G. Nikunj, J. Annu, B. Seema, S. Jayanti. Gurgaon, Haryana, India.
- P-256 Intraoperative Management for Liver Transplantation and Combined Liver-Intestinal Transplantation. (Abstract # P-256)**
Xiaoxing Song, Douglas G. Farmer, Ronald W. Busuttil, Victor W. Xia. Los Angeles, CA, USA.
- P-260 Epithelial To Mesenchymal Transition and Hepatic Stellate Cell: The Double Face of Everolimus. (Abstract # P-260)**
Amedeo Carraro, Valentina Masola, Gianluigi Zaza, Elena Tibaldi, Anna Maria Brunati, Umberto Montin, Paola Violi, Antonio Lupo, Umberto Tedeschi. Verona, Italy; Padova, Italy.
- P-261 Rapamycin Attenuates Hepatocellular Injury and Fibrosis in Bile Duct-Ligated Rats and Human Hepatic Stellate Cells. (Abstract # P-261)**
Yinghua Chen, Wenhui Luo, Yi Ma, Xiaoshun He. Guangzhou, Guangdong, China.
- P-262 FK506 Accelerates CoCl₂ - Induced Cytotoxicity via ER Stress Pathway. (Abstract # P-262)**
Sang Young Chung, Soo Jin Na Choi. Gwangju, Korea.
- P-263 Is There Correlation between Functional Capacity and Respiratory Assessment of End-Stage Liver Disease Patients Candidates for Liver Transplant? (Abstract # P-263)**
Daniele Costa dos Santos, Vivian Limongi, Aurea Maria Oliveira da Silva, Raquel Silveira Bello Stucchi, Ilka Fatima Santana Ferreira Boin. Campinas, Brazil.
- P-264 Liver Transplantation Monitoring of Serum Cytokines as Biomarkers for Overall Immunosuppression. (Abstract # P-264)**
S. Geier, A. Mukerji, H. Parekh, P. Lai, A. Karachristos, M. Maloo, A. Jain. Philadelphia, PA, USA; Bronx, NY, USA.
- P-265 Long-Term Survival Recipients Are Characterized By the Higher Levels of Circulating CD19+CD24hiCD38hi B Cells. (Abstract # P-265)**
Lei Geng, Junjun Jia, Lin Zhang, Saxiao Tang, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-266 Neuropeptide PACAP Promotes Hepatoprotection in Mouse Liver Ischemia-Reperfusion Injury (IRI) via CREB-KLF4 Dependent Autophagy. (Abstract # P-266)**
Haofeng Ji, Yu Zhang, Yuanxing Liu, Xiu-da Shen, Feng Gao, Ronald W. Busuttil, Joseph Pisegna, Jerzy W. Kupiec-Weglinski. Los Angeles, CA, USA.
- P-267 Metabonomic Study of Immunosuppressant on Body Metabolism in Rat Following Liver Transplantation by UPLC-MS. (Abstract # P-267)**
Jianwen Jiang, Zhigang Ren, Junjun Jia, Deying Chen, Weilin Wang, Lin Zhou, Da Yu, ShuSen Zheng. Hangzhou, Zhejiang Province, China.
- P-268 Combined Targeting of mTORC1 and mTORC2 Synergistically Inhibits Proliferation of Hepatocellular Carcinoma Cells: Effects of Everolimus and Ku0063794. (Abstract # P-268)**
Say-June Kim, Ho-Joong Choi, Dong-Goo Kim. Daejeon, Korea; Bucheon, Korea; Seoul, Korea.

Basic Sciences

- P-257 Regulatory T Cells Balance the Immune Activation of Effector T Cells By Contact-Dependent Immune Suppression and Immune Stimulation By Cytokine Production. (Abstract # P-257)**
Stalin Chellappa, Morten Hagness, Kjetil Taskén, Einar M. Aandahl. Oslo, Norway.
- P-258 Carbonic Anhydrase II Reduces Endoplasmic Reticulum Stress and Apoptosis in Fatty Liver Grafts Preserved in IGL-1 Solution. (Abstract # P-258)**
Mohamed Bejaoui, Eirini Pantazi, Mohamed Amine Zaouali, Emma Folch-Puy, Gina Hotter, Hassen Ben Abdennebi, Joan Roselló-Catafau. Barcelona, Spain; Monastir, Tunisia.
- P-259 Condition Cardiorespiratory and Functional in Patients Postoperative Liver Transplantation. (Abstract # P-259)**
Thais C. Campacci, Marcela M. Carvalho Da Silva, Aurea M. Oliveira da Silva, Ilka F.S.F. Boin. Campinas, Brazil.

- P-269** **TLR4 Dampens Autophagy and Promotes Hepatic Sinusoidal Endothelial Injury in Marginal Liver Grafts. (Abstract # P-269)**
Xin Li, Xiaobing Liu, Changxian Li, Hui Liu, Chungmau Lo, Kwan Man. Hong Kong, China.
- P-270** **Postconditioning the Orthotopic Liver Transplantation Grafts of Rats: Optimizing the Algorithm and Investigate the Underlying Mechanism. (Abstract # P-270)**
Jianhui Li, Junjun Jia, Li Jiang, Shasha Chen, ShuSen Zheng. Hangzhou, China.
- P-271** **Effects of a Physiotherapy Intervention Program in Liver Transplantation Candidates from Unicamp Clinical Hospital - Preliminary Study. (Abstract # P-271)**
Vivian Limongi, Daniele dos Santos, Áurea da Silva, Ilka Boin, Raquel Stucchi. Campinas, Sao Paulo, Brazil.
- P-272** **The Knockout of Telomere-independent Rap1 Attenuates Hepatic Ischemia Reperfusion Injury by Suppressing Neutrophil Activation. (Abstract # P-272)**
K. Man, C.X. Li, Kevin T.P. Ng, C.M. Lo. Hong Kong, China.
- P-273** **Impact of Short-Term Rewarming Machine Preservation To Subnormothermia Iin Porcine DCD Liver Graft. (Abstract # P-273)**
Naoto Matsuno, Hiromichi Obara, Munekazu Naito, Naoyuki Hatayama, Shin Enosawa. Setagaya, Tokyo, Japan; Hachioji, Tokyo, Japan; Sinjuku, Tokyo, Japan.
- P-274 †** **Clinical Significance of Long Intergenic Noncoding RNA-p21 in Hepatocellular Carcinoma Patients Following Liver Transplantation. (Abstract # P-274)**
Chuanhui Peng, Jian Wu, Chaofeng Ding, Shaobing Cheng, Shusen Zheng. Hangzhou, China.
- P-275** **Research of Establishing Non-Heart-Beating Mouse Liver Transplantation Model. (Abstract # P-275)**
Yang Tian, Sheng Yan, Yan Wang, Yuan Ding, Haiyang Xie, Lin Zhou, Shusen Zheng. Hangzhou, Zhejiang Province, China.
- P-276** **Decellularization of Human and Porcine Livers: Applications for Graft Engineering. (Abstract # P-276)**
Monique M.A. Verstegen, Sjoerd van den Hoek, Herold J. Metselaar, Jan IJzermans, Luc J.W. van der Laan, Jeroen de Jonge. Rotterdam, Netherlands.
- P-277** **MiRNA CHIP Analyses of Grafted Liver after Mice Liver Transplantation. (Abstract # P-277)**
Yan Wang, Sheng Yan, Yuan Ding, Yang Tian, Lin Zhou, HaiYang Xie, ShuSen Zheng. Hangzhou, China.
- P-278** **Impaired Biliary HCO₃⁻ Protective Barrier: An Early Event of Pathogenesis of Ischemic-Type Biliary Lesions. (Abstract # P-278)**
Weiliang Xia, Penghong Song, Haiyang Xie, Shusen Zheng. Hangzhou, China.
- P-279** **SPA0355, a Thiourea Analog, Attenuates Ischemia/Reperfusion-Induced Liver Injury in Mice. (Abstract # P-279)**
Hee Chul Yu, Jae Do Yang, Sang In Bae, Baik Hwan Cho, Byung Hyun Park. Jeonju-si, Republic of Korea.
- P-280** **CADM1 Regulates G1/S Transition and Represses Tumorigenicity Through Rb-E2F Pathway in Hepatocellular Carcinoma. (Abstract # P-280)**
Wu Zhang, Haiyang Xie, Zhijun Jiang, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-281** **Solanine Induced Reactive Oxygen Species Inhibit the Growth of HepG2. (Abstract # P-281)**
Wei Zhang, Xueqin Meng, Shen Yan, Zhijun Jiang, Weilin Wang, Shusen Zheng. Hangzhou, China.
- P-282** **Impaired Autophagy: A Mechanism of Fatty Liver Sensitive to Ischemia Reperfusion Injury. (Abstract # P-282)**
Qiang Zhao, Zhiyong Guo, Xiaoshun He, Weiqiang Ju, Dongping Wang. Guangzhou, Guangdong, China.

Extended Criteria Donors/Disease Transmission

- P-283** **Liver Transplants from Donors Aged 70 Plus (Analysis of Andalusian Cohort). (Abstract # P-283)**
Carmen Cepeda, Carmen Bernal, Gonzalo Suarez, Jose Maria Alamo, Luis Miguel Marin, Juan Serrano, Francisco Javier Padillo, Miguel Angel Gomez-Bravo. Seville, Spain.
- P-284** **Usage of Liver Grafts from Pediatric Cardiac Death Donors in Adult Recipients in China: A Single Center Experience. (Abstract # P-284)**
Weiqiang Ju, Zhiyong Guo, Chuanshao Zhang, Dongping Wang, Ming Han, Xiaoshun He. Guangzhou, China.
- P-285** **Criteria for Viability Assessment of Discarded Human Donor Livers during Ex-Vivo Normothermic Machine Perfusion. (Abstract # P-285)**
Michael E. Sutton, Sanna Op den Dries, Negin Karimian, Marieke T. de Boer, Janneke Wiersema-Buist, Annette S.H. Gouw, Henri G.D. Leuvenink, Ton Lisman, Robert J. Porte. Groningen, Netherlands.

- P-286 Long-Term Outcome of ABO-Incompatible Living Donor Liver Transplantation in a Single Center Experience. (Abstract # P-286)**
Naoki Kawagishi, Ikuo Takeda, Shigehito Miyagi, Kazushige Satoh, Noriaki Ohuchi. Sendai, Miyagi, Japan.
- P-287 Outcomes of Liver Transplantation Using Donation after Cardiac Death Grafts: Role of Tissue Plasminogen Activator Donor Flush. (Abstract # P-287)**
Chandrashekhar A. Kubal, Richard S. Mangus, Jonathan A. Fridell, Joseph A. Tector. Indianapolis, IN, USA.
- P-288 Systematic Monitoring of Recipients of CDC High Risk Allografts: Single Center Experience. (Abstract # P-288)**
Isi E. Obadan, Sonia N. Chimienti, Paulo N. Martins, Babak Movahedi, Adel Bozorgzadeh. Worcester, MA, USA.
- P-289 Improving Safety of ABO-Incompatible LDLT with a Simplified Protocol of Low-Dose Rituximab and Double-Filtration Plasmapheresis. (Abstract # P-289)**
A.S. Soin, Vikram Raut, R. Mohanka, A. Rastogi, S. Goja, B. Menon, A. Tiwari, V. Raina, N. Saraf, S. Saigal. Gurgaon, India.
- P-290 Graft Derived Cell-Free DNA as an Early Organ Integrity Biomarker after Liver Transplantation of a HELLP Syndrome Donor Liver. (Abstract # P-290)**
Jan E. Slotta, Philipp Kanzow, Ekkehardt Schütz, Michael Oellerich, Otto Kollmar. Göttingen, Germany.
- P-291 Liver Transplantation from HBcAb Positive Donors Carry Minimal Or No Risk of HBV Transmission To the Recipient. (Abstract # P-291)**
Alan White, Samir Pathak, Magdy Attia, Ernest Hidalgo, Phaedra Tachtatzis, Antony Hale, Niaz Ahmad. Leeds, United Kingdom.
- P-292 † Liver Grafts for Transplantation from Donors With Diabetes: An Analysis of the US National Database. (Abstract # P-292)**
Jun Zheng, Jie Xiang, Jie Zhou, Zhiwei Li, Zhenhua Hu, ChungMau Lo, Weilin Wang. Hangzhou, Zhejiang, China; Hong Kong, China; Hangzhou, China.

Fulminant Liver Failure

- P-293 Molecular Adsorbents Recirculating System (MARS®): A Review of Clinical Course, Intervention and Outcome. (Abstract # P-293)**
Jody Olson, Whitney Watson, Sean Kumer, Marc Heronemus, Richard Gilroy, Timothy Schmitt. Kansas City, KS, USA.

- P-294 Liver Transplantation for Fulminant Hepatic Failure Due to Hepatitis E- A Single Center Experience. (Abstract # P-294)**
Shailendra Lalwani, Vivek Mangla, Samiran Nundy, Naimish Mehta. Delhi, India.
- P-295 Perioperative Assessment and Outcome Result of Liver Transplantation for Acute Liver Failure in the Children and Adults. (Abstract # P-295)**
Mitsuru Nakatsuka, Martha Behnke. Richmond, VA, USA.
- P-296 Molecular Adsorbent Recirculating System (MARS) as Bridge to Liver Transplantation. The Oslo Experience. (Abstract # P-296)**
Per B.M. Olin, Håkon Haugaa. Oslo, Norway.
- P-297 Racial/Ethnic Disparities in Post-Liver Transplantation Survival Among Acute Liver Failure Patients in the U.S. (Abstract # P-297)**
Robert J. Wong, Clark A. Bonham, Aijaz Ahmed. Stanford, CA, USA.

Hepatitis C

- P-298 Telaprevir with Adjusted Dose of Ribavirin in Naïve CHC-G1: Efficacy and Treatment in CHC in Hemodialysis Population. TARGET C Trial- A Placebo Randomized Control Clinical Trial. (Abstract # P-298)**
P. Patrick Basu, Niraj J. Shah, Ravi Siriki, Md Rahaman. New York, NY, USA.
- P-299 The Role of N-Acetylcysteine, Protecting the Graft from the Fibrosis Progression Due To HCV Recurrence, after Liver Transplantation. Long Terms Results of a Randomized Controlled Study. (Abstract # P-299)**
Francesco D'Amico, Alessandra Bertacco, Alessandro Vitale, Eleonora De Martin, Alberto Zanetto, Giacomo Zanusi, Daniele Neri, Patrizia Burra, Umberto Cillo. Padova, Italy.
- P-300 Quality of Life, Anxiety, Depression and Social Support in HCV Mono-Infected and HIV/ HCV Co-Infected Patients Waiting for Liver Transplantation. (Abstract # P-300)**
V. Karam, I. Varescon, A. Untas, I. Sabar, D. Samuel, J.C. Duclos-Vallee. Villejuif, France; Paris, France.
- P-301 † Leukopenia during Interferon Based Hepatitis C Treatment in Liver Transplant Recipients Is Associated With Increased Infection Risk. (Abstract # P-301)**
Ludi Koning, Kimberly D. Watt, Bettina E. Hansen, Julie K. Heimbach, Robert J. de Knecht, Michael R. Charlton. Rotterdam, Netherlands; Rochester, MN, USA; Salt Lake City, UT, USA.

P-302 **Genotype 3 and Higher LDL Levels Are Predictors of Good Response for Hepatitis C Recurrence Post Living Donor Liver Transplantation. (Abstract # P-302)**
Sanjiv Saigal, Narendra S. Choudhary, Neeraj Saraf, Dheeraj Gautam, Ravi Mohanka, Amit Rastogi, Sanjay Goja, P. Balachandran Menon, Arvinder S. Soin. Gurgaon, Haryana, India; Gurgaon, India.

P-303 **Combination Therapy of Sofosbuvir and Simeprevir for Fibrosing Cholestatic Hepatitis C after Liver Transplantation. (Abstract # P-303)**
 Melanie Lang, Susanne Polywka, Johannes Kluwe, Lutz Fischer, Sabine Jordan, Mark Lütgehetmann, Bjoern Nashan, Ansgar Lohse, Martina Sterneck. Hamburg, Germany.

Immunosuppression

P-304 **Acute Hemolytic Anemia after Liver Transplantation Received Early Steroid Withdrawal in One Case. (Abstract # P-304)**
Yinghua Chen, Weiqiang Ju, Dongping Wang, Xiaoshun He. Guangzhou, Guangdong, China.

P-305 † **Renal Function Deterioration Is Higher Within the First Year after Liver Transplantation: Results of the Italian Cross-Sectional, Multicenter Study (SURF). (Abstract # P-305)**
Paolo De Simone, Francesca Donato, Gianluca Mennini, Umberto Cillo, Denis Dissegna, Silvia Rosi, Patrizia Burra, Giovanni Vennarecci, Donato Donati, Rossella Brusa, Stefano Fagioli. Pisa, Italy; Milan, Italy; Rome, Italy; Padua, Italy; Udine, Italy; Varese, Italy.

P-306 **Everolimus Treatment in Liver Transplantation. A Spanish Multicentre Cohort. (Abstract # P-306)**
J. Fabregat, I. Bilbao, M. Salcedo, Ma Gómez, C. Jimenez, J. Castroagudin, C. Almohalla, I. Herrero, V. Cuervas-Mons, A. Otero, A. Rubin, M. Miras, J. Rodrigo, T. Serrano, G. Crespo M. De la Mata J. Bustamante M.L. González-Diéguez A. Moreno I. Narvaez M. Guiler. Hospitalet de Llobregat, Spain; Madrid, Spain; Barcelona, Spain; Sevilla, Spain; Santiago Compostela, Spain; Valladolid, Spain; Navarra, Spain; A Coruña, Spain; Valencia, Spain; Murcia, Spain; Málaga, Spain; Zaragoza, Spain; Córdoba, Spain; Bilbao, Spain; Oviedo, Spain; Tenerife, Spain; Badajoz, Spain.

P-307 **Efficacy of a Quadruple Therapy With Late Introduction of Advagraf in Postoperative Evolution after Liver Transplantation. (Abstract # P-307)**
Laura Llado, Ana Gonzalez-Castillo, Carme Baliellas, Joan Fabregat, Emilio Ramos, Jaume Torras, Juli Busquets, Lluís Secanella, Nuria Pelaez, Antoni Rafecas, Xavier Xiol. Barcelona, Spain.

P-308 **Successful Immunosuppression With Sirolimus in Liver Transplantation. Long Term Follow-Up, a One Center Experience. (Abstract # P-308)**
Linda E. Munoz, Paula Cordero, Ana Silvera, Alfonso Gonzalez, Concepcion Sanchez, Edelmiro Perez, Homero Zapata, Miguel Escobedo. Monterrey, Mexico.

P-309 † **Azathioprine Immunosuppression Is Protective Against Recurrence of Primary Biliary Cirrhosis after Liver Transplantation. (Abstract # P-309)**
Francesca Saffioti, Pinelopi Manousou, Ioanna Parisi, Emmanuel Tsochatzis, Eleni Theocharidou, Amar P. Dhillon, Tu Vinh Luong, David Patch, James O'Beirne, Douglas Thorburn, Massimo Pinzani, Andrew K. Burroughs. London, United Kingdom.

P-310 † **Everolimus Safety Profile in Liver Transplant Recipients With 3-Year Exposure in the H2304 Core and Extension Study. (Abstract # P-310)**
E. Saliba, X. Rogiers, W. Chapman, L. Caicedo, A. Alsina, L. Teperman, G. Junge, B. Rauer, G. Dong, P. De Simone. Villejuif, France.

P-311 **Correlation between Mycophenolic Acid Blood Level and Renal Dysfunction in Stable Liver Transplant Recipients Receiving Mycophenolate Monotherapy. (Abstract # P-311)**
Min-Ho Shin, Yo-Han Park, Shin Hwang, Gi-Won Song, Dong-Hwan Jung, Chul-Soo Ahn, Ki-Hun Kim, Deok-Bok Moon, Tae-Yong Ha, Gil-Chun Park, Sung-Gyu Lee, Eol Choi, Jae-Hyun Kwon. Seoul, Korea.

P-312 **Effect of Glutamine-Supplemented Total Parenteral Nutrition on Postoperative Immunofunction in Critically Surgical Patients. (Abstract # P-312)**
JiangLong Huang, ZongHeng Zheng, HongBo Wei, Yong Huang, WeiPing Guo, Bo Wei, TuFeng Chen, GuangShen Ou. GuangZhou, China.

P-313 **A Case Report of Using Anti-Thymocyte Globulin for Treatment in Steroid Resistant Rejection after Liver Transplantation. (Abstract # P-313)**
Hee Chul Yu, Jae Do Yang, Sang In Bae, Baik Hwan Cho. Jeonju-si, Republic of Korea.

P-314 **Application of ATP Value of CD4+ T Cells and T Cell Subsets Analysis in Monitoring Immune Function in Post-Liver Transplantation Recipients. (Abstract # P-314)**
Xiaofeng Zhu, Yangjie Ou, Zhiyong Guo, Xiaoshun He. Guangzhou, Guangdong, China.

Living Donor

P-315 **Liver Stiffness in Living Donors With "Normal" Liver Histology. (Abstract # P-315)**
 Ayman Alsebaey, Naglaa Allam, Khalid Alsuwat, Imam Waked. Menofeya, Egypt; Riyadh, Saudi Arabia.

- P-316** **Living Donor Versus Deceased Donor Liver Transplantation for Hepatocellular Carcinoma Comparing the Milan, UCSF and Asan Criteria: Long-Term Follow-Up. (Abstract # P-316)**
Italo Bonadio, Isabelle Colle, Anja Geerts, Peter Smeets, Marleen Praet, Giammauro Berardi, Bernard De Hemptinne, Hans Van Vlierberghe, Roberto I. Troisi. Ghent, Belgium.
- P-317 †** **The Significance of Weight Reduction in Living Donors with Fatty Liver in Liver Transplantation. (Abstract # P-317)**
YoungRok Choi, Suk-Won Suh, Jeong-Moo Lee, Hyeyoung Kim, Ok-Kyung Kim, Sang-Hee Song, Hae Won Lee, Nam-Joon Yi, Kwang-Woong Lee, Kyung-Suk Suh. Seoul, Korea.
- P-318** **Successful Donation after Rapid Reversal of Liver Steatosis With Life Style Modification in Highly Motivated Liver Transplant Donors. (Abstract # P-318)**
Narendra S. Choudhary, Neeraj Saraf, Sanjiv Saigal, Dheeraj Gautam, Ravi Mohanka, Amit Rastogi, Sanjay Goja, P. Balachandran Menon, Arvinder S. Soin. Gurgaon, Haryana, India; Gurgaon, India.
- P-319** **To Do Or Not To Do Procure Middle Hepatic Vein Considering Donor and Recipient Safety in Adult Living Donor Liver Transplantation Using Right Lobe Graft. (Abstract # P-319)**
Chong Woo Chu, Young Mok Park, Kwnag Ho Yang, Ki Myung Moon, Je Ho Ryu. Yangsan, Republic of Korea.
- P-320** **Living Donor Liver Transplantation in a Patient With Developmental Interruption of the Inferior Vena Cava With Hemiazigos Substitution. (Abstract # P-320)**
Ramazan Donmez, Ahmet Kargi, Tarik Artis, Serdar Aslan, Serafettin Yazar, Tamer Karsidag, Koray Guven, Ahmet Turkoglu, Kamil Y. Polat. Istanbul, Turkey; Diyarbakir, Turkey.
- P-321** **Totally Laparoscopic Right Hepatectomy for Adult Living Donor Liver Transplantation. An Initial Experience in Two Consecutive Cases. (Abstract # P-321)**
Rotellar Fernando, Pardo Fernando, Benito Alberto, Martí-Cruchaga Pablo, Zozaya Gabriel, Lopez Luis, Hidalgo Francisco, Sangro Bruno, Herrero Ignacio. Pamplona, Spain.
- P-322** **1200 Living Donor Hepatectomy: A Single Center Experience With the Learning Curve. (Abstract # P-322)**
Neerav Goyal, Govindaraju Parthasarathi, Manav Wadhawan, Shaleen Agarwal, Ramdip Ray, Shishir Pareek, Giriraj Bohra, Mohammed Nayeem, Ravi Chand, Pankaj Lohia, Subash Gupta. New Delhi, Delhi, India.
- P-323** **Minimal Portal Vein Stenosis Triggers Contralateral Liver Hypertrophy Without Downstream Atrophy in a Porcine Model for Living Donor Preconditioning. (Abstract # P-323)**
Emilie Gregoire, Pauline Brige, Louise Barbier, Jean Hardwigsen, Y. Patrice Le Treut, Pierre Henri Rolland, Vincent Vidal. Marseille, France.
- P-324** **Does the Development of Chronic Kidney Disease and Acute Kidney Injury Affect the Prognosis after Living Donor Liver Transplantation? (Abstract # P-324)**
Yusuke Inoue, Akihiko Soyama, Mitsuhsa Takatsuki, Masaaki Hidaka, Tomohiko Adachi, Amane Kitasato, Tamotsu Kuroki, Susumu Eguchi. Nagasaki, Japan.
- P-325** **Donor Age Over Than 55 Years Old in Living Donor Liver Transplantation. (Abstract # P-325)**
SeungHwan Lee, Wontae Cho, JinYoung Choi, ByungGon Na, ShinSeok Yang, HyungHwan Moon, Jong Man Kim, Choon Hyuck David Kwon, Jae-Won Joh, Suk-Koo Lee. Seoul, Korea.
- P-326** **NLRP3 Inflammasome Regulated by Telomere-independent Repressor Activator Protein1(RAP1) Induced Graft Injury after LDLT. (Abstract # P-326)**
Hui Liu, Kwan Man, Changxian Li, Kevin T.P. Ng, Xiaobing Liu, Wei Geng, Xiang Qi, Yuenyuen Ma, Waiho Oscar Yeung, Jiang Liu, Xin Li, Seeching Chan, Chungmao Lo. Hong Kong, China.
- P-327** **Clinical Analysis of Lymphoproliferative Disorder Following Liver Transplantation at SNUH. (Abstract # P-327)**
Benjamin Navarro, Kwang-Woong Lee, Kyung-Suk Suh, Nam-Joon Yi, YoungRok Choi. Seoul, Korea.
- P-328** **Kinetics of Liver Regeneration after Living Donor Liver Transplantation. (Abstract # P-328)**
Tushar T. Pawar, Ankur J. Shah, Sharad Maheshwari, Vibha Varma, Sorabh Kapoor, Barun Nath, Jaysri Shah, Harshad Devarbhavi, Vinay Kumaran. Mumbai, Maharashtra, India.
- P-329** **Lower Recidivism Rate With Good Post-Transplant Outcome in Alcoholic Liver Disease: Experience from a Large Volume Living Donor Liver Transplant Center. (Abstract # P-329)**
Sanjiv Saigal, Sanjay Kumar Yadav, Narendra Singh Choudhary, Neeraj Saraf, Ravi Mohanka, Amit Rastogi, Sanjay Goja, P.B. Menon, Arvinder Singh Soin. Gurgaon, Haryana, India.
- P-330** **Effect of Side Biting Versus Caval Cross Clamping for Hepatic Outflow Reconstruction on Renal Function in the Immediate Post Operative Period in Living Donor Liver Transplantation. (Abstract # P-330)**
Vasudevan Ramaswamy, Subash Soni, Abhideep Chaudhary, Saumitra Rawat, Anil Arora. New Delhi, Delhi, India.

P-331 **Comparison of Patient Satisfaction According To Different Incision Methods for Donor Hepatectomy in Living Donor Liver Transplantation. (Abstract # P-331)**
Suk-Won Suh, Kwang-Woong Lee, Jeong-Moo Lee, YoungRok Choi, Nam-Joon Yi, Kyung-Suk Suh. Seoul, Korea.

P-332 **Are Liver Grafts from Living Donors Older Than 50 Years As Good As Those from Younger Donors? (Abstract # P-332)**
Tseten Yonjen Tamang, Sanjay Goja, Sanjiv Saigal, Neeraj Saraf, Ravi Mohanka, Amit Nath Rastogi, Balachandran Menon, Sumana Kolar Ramachandran, Prashant Vilas Bhargui, Punit Singla, Arvinder Singh Soin. Sector- 38, Gurgaon, Haryana, India.

P-333 **Living Donor Liver Transplantation Is the Optimal Treatment Strategy for Patients with Hepatocellular Carcinoma and with Low MELD. (Abstract # P-333)**
Giuliano Testa, James F. Trotter, Peter T.W. Kim, Tiffany Anthony, Richard Ruiz, Nicholas Onaca, Greg McKenna, Marlon F. Levy, Robert M. Goldstein, Goran B. Klintmalm. Dallas, TX, USA; Fort Worth, TX, USA.

P-334 † **Written Informed Consent for Living Liver Donation in the United States: Compliance with CMS & OPTN Guidelines and Alibi Offers. (Abstract # P-334)**
Carrie Thiessen, Yunsoo Kim, Peter S. Yoo, Manuel Rodriguez-Davalos, David Mulligan, Sanjay Kulkarni. New Haven, CT, USA.

P-335 **Correlation between Portal Pressure and Outcome Post Liver Transplant. (Abstract # P-335)**
Vibha Varma, Barun Nath, Sorabh Kapoor, Ankur Shah, Shailendra Lalwani, Naimish Mehta, Samiran Nundy, Vinay Kumar. Mumbai, India; New Delhi, India.

P-336 **Brazilian Experience in Living Donor Liver Transplantation (LDLT) in a Single Center. (Abstract # P-336)**
Reinaldo F. Junior, Rafael D. Vasconcelos, Klaus Steinbruck, Elizabeth Balbi, Lucio P. Moreira. Rio de Janeiro, Brazil.

P-337 **Lowering Donor Dropout Rate after Final Evaluation at a High Volume LDLT Centre-Learning With Experience. (Abstract # P-337)**
Amardeep Yadav, Sanjay Goja, Ravi Mohanka, Amit N. Rastogi, Balachandran Menon, Sanjiv Sehgal, Neeraj Saraf, Arvinder S. Soin. Delhi NCR, India.

P-338 **Predictors of Hepatic Steatosis in Living Liver Donors. (Abstract # P-338)**
Raghavendra Babu Yalakanti, Neeraj Saraff, Tarun Piplani, Dheeraj Gautam, Sanjiv Saigal, Ravi Mohanka, Amit Rastogi, Sanjay Goja, Balachandran Menon, Prashant Bhargui, Arvinder Singh Soin. Gurgaon, Haryana, India.

Malignancies

P-339 **Efficacy of Sorafenib in Patients With Pulmonary Metastatic Hepatocellular Carcinoma after Liver Transplantation. (Abstract # P-339)**
Yinghua Chen, Wenhui Luo, Weiqiang Ju, Xiaoshun He, Xiaofeng Zhu. Guangzhou, Guangdong, China.

P-340 **IMPDH2-Targeted Constraint of Cell Growth in Hepatocellular Carcinoma by Mycophenolic Acid. (Abstract # P-340)**
Kan Chen, Kwan Man, Herold J. Metselaar, Harry L.A. Janssen, Jaap Kwekkeboom, Dave Sprengers, Marco J. Bruno, Maikel P. Peppelenbosch, Qiuwei Pan. Rotterdam, Netherlands; Hangzhou, China; Hong Kong, China; Toronto, Canada.

P-341 **IL28B Rs12979860 TT Genotype Is Overrepresented in Patients With Hepatitis C Virus Induced Hepatocellular Carcinoma. (Abstract # P-341)**
Sara de la Fuente, Maria J. Citores, Elisa Cisneros, Ana B. Cuenca, Isolina Baños, Ana Duca, Noelia Escamilla, Valentín Cuervas-Mons. Majadahonda, Madrid, Spain; Madrid, Spain.

P-342 **Tumor Downstaging and the Risk of HCC Recurrence after Liver Transplantation. (Abstract # P-342)**
Paolo De Simone, Irene Bargellini, Quirino Lai, Giulia Lorenzoni, Davide Ghinolfi, Alessandro Silvestri, Laura Coletti, Daniela Campani, Carlo Bartolozzi, Franco Filippini. Pisa, Italy.

P-343 **The Role of RAP1 in Graft Injury Induced Cisplatin Resistance after Liver Transplantation. (Abstract # P-343)**
Wei Geng, Chungmau Lo, Xiang Qi, Changxian Li, Kevin T.P. Ng, Xiaobing Liu, Yuenyuen Ma, Kwan Man. Hong Kong, China.

P-344 **Hepatocellular Carcinoma Developing in a Post-Transplant Patient With Hepatitis C. (Abstract # P-344)**
Richard Gilroy, Marc Heronemus, Maura O'Neil, Muhammad Muneeb, Winston Dunn, Timothy Schmitt. Kansas City, KS, USA.

P-345 † **An Update on Liver Transplantation for Non-Resectable Colorectal Liver Metastases. (Abstract # P-345)**
Morten Hagness, Jon M. Solheim, Pål-Dag Line, Svein Dueland, Aksel Foss. Oslo, Norway.

- P-346 Living Donor Liver Transplantation for Locally Far Advanced Hepatocellular Carcinoma Patient Who Undertook Concurrent Hepatic Arterial Infusion Chemotherapy With External Beam Radiation. (Abstract # P-346)**
Dai Hoon Han, Dong Jin Ju, Jung Jun Lee, Ju Han Lee, Jae Geun Lee, Sung Hoon Kim, Man Ki Ju, Gi Hong Choi, Myong Soo Kim, Jin Sub Choi, Soon Il Kim. Seoul, Korea; Wonju, Korea.
- P-347 Liver Transplantation Compared With Radical Resection for Hilar Cholangiocellular Carcinoma: A Long-Term Single-Center Experience and Relevant Meta-Analysis. (Abstract # P-347)**
Anbin Hu, Xiaofeng Zhu, Xiaoshun He. Guangzhou, Guangdong, China.
- P-348 Primary Malignant Hepatic Tumors As Indication for Liver Transplantation in Children – 20 Years Experience. (Abstract # P-348)**
Piotr J. Kalicinski, Hor Ismail, Dorota Broniszczak, Bozena Dembowska-Baginska, Joanna Teisseyre, Przemyslaw Kluge, Andrzej Kosciesza, Ewa Swieszkowska, Danuta Perek, Joanna Pawlowska. Warszawa, Poland.
- P-349 Warm Ischemia Time Is an Independent Predictor of Tumor Recurrence in Liver Transplant Patients With HCC. (Abstract # P-349)**
Arno Kornberg, Ulrike Witt, Bernadette Küpper, Kathrin Kathenkamp, Dietmar Gottschild. Munich, Germany; Bad Berka, Germany; Jena, Germany.
- P-350 Up-To-Seven Criteria for Hepatocellular Carcinoma Liver Transplantation: A Single Center Analysis. (Abstract # P-350)**
Jianying Lei, Lunan Yan, Wentao Wang. Chengdu, Sichuan, China.
- P-351 † Neutrophil-Lymphocyte Ratio and Serum C-Reactive Protein Can Predict Overall and Disease-Free Survival after Living Donor Liver Transplantation in Patients With Hepatocellular Carcinoma. (Abstract # P-351)**
Gun Hyung Na, Dong Goo Kim, Jae Hyun Han, Soo Ho Lee, Eun Young Kim, Tae Ho Hong, Young Kyoungh You. Seoul, Republic of Korea.
- P-352 Radiological Response in Patients Treated With Transarterial Chemoembolization before Liver Transplantation: Correlation With Histological Necrosis and Impact on Tumor Recurrence. (Abstract # P-352)**
Daniele Nicolini, Andrea Agostini, Cinzia Mincarelli, Roberto Candelari, Roberto Montalti, Paolo Vincenzi, Alessandra Mandolesi, Federico Mocchegiani, Andrea Vecchi, Andrea Giovagnoni, Marco Vivarelli. Ancona, Marche, Italy.
- P-353 Living Donor Liver Transplantation for Mixed Hepatocellular and Cholangiocarcinoma – Outcomes. (Abstract # P-353)**
Kumar Palaniappan, Anand Bharathan, Mukul Vij, Vivekandan Shanmugham, Mohamed Rela. Chennai, Tamilnadu, India.
- P-354 Adapting Liver Transplantation for Hilar Non Resectable Stage I-II Cholangio Carcinomas According to Mayo Clinic's Protocol to a Single Center with Low Waiting List Time – The Oslo Experience. (Abstract # P-354)**
Jon M. Solheim, Aksel Foss, Pål-Dag Line, Svein Dueland, Morten Hagness. Oslo, Norway.
- P-355 Association between a Single Nucleotide Polymorphism in the 3'-UTR in CCNA2 and HBV-Related Hepatocellular Carcinoma in Chinese Han Patients. (Abstract # P-355)**
Haiyang Xie, Chunyang Xing, Bajin Wei, Lin Zhou, Xiao Xu, Jian Wu, Liming Wu, Shusen Zheng. Hangzhou, Zhejiang Province, China.
- P-356 Survival Analysis of Resection of Metachronous Adrenal Metastasis after Hepatocellular Carcinoma Resection and Liver Transplantation. (Abstract # P-356)**
Shin Hwang, Tae-Yong Ha, Chul-Soo Ahn, Ki-Hun Kim, Deok-Bog Moon, Gi-Won Song, Dong-Hwan Jung, Gil-Chun Park, Sung-Hwa Kang, Bo-Hyun Jung, Sung-Gyu Lee, Young-In Yoon, Eol Chio, Jae-Hyun Kwon. Seoul, Korea.
- P-357 FBW7 Increases Chemosensitivity in Hepatocellular Carcinoma Cells Through the Suppression of Epithelial-Mesenchymal Transition. (Abstract # P-357)**
Jun Yu, Wu Zhang, Feng Gao, Yuanxing Liu, Zhiyun Chen, Longyu Cheng, Shangfen Xie, Shusen Zheng. Hangzhou, China.
- P-358 Salvage Liver Transplantation for Recurrent Hepatocellular Carcinoma after Liver Resection: Retrospective Study of the Milan and Hangzhou Criteria. (Abstract # P-358)**
Jie Zhou, Zhenhua Hu, Zhiwei Li, Jie Xiang, Ze Qian, Jian Wu, Min Zhang, Shusen Zheng. Hangzhou, Zhejiang Province, China.
- Outcomes**
- P-359 Current Status and Outcome of Pediatric Liver Transplantation: A Saudi Perspective of Recently Established Organ Transplant Center. (Abstract # P-359)**
Talal T. AlGoufi, Mohammed A. Shagrani, Mohammed I. Alsebayel, Yasser M. Elsheik, Hamad M. Albahili, Jessica M. Murray, Asma I. Faiyad, Martin M. Burdelski, Deiter C. Broering. Riyadh, Saudi Arabia.

- P-360 Does Autologous Blood Transfusion during Liver Transplantation for Hepatocellular Carcinoma Increase Risk of Recurrence? (Abstract # P-360)**
Raphael L.C. Araujo, Wellington Andraus, Carlos Andrés Pantanali, Luciana Haddad, Joel Avancini Rocha Filho, Luiz Augusto Carneiro D'Albuquerque. São Paulo, Brazil.
- P-361 Influence of Hepatitis D Virus Co-Infection on Graft Survival after Liver Transplantation for Hepatitis B Virus Cirrhosis. (Abstract # P-361)**
Florin Botea, Vladimir Brasoveanu, Mihnea Ioan Ionescu, Speranta Iacob, Gabriela Droc, Irinel Popescu. Bucharest, Romania.
- P-362 Application of the BAR Score As Predictor of Short- and Long-Term Survival in Liver Transplantation Patients. (Abstract # P-362)**
Ivan Dias Campos Junior, Elisabete Yoko Udo, Raquel Silveira Bello Stucchi, Ilka Fátima Santana Ferreira Boin. Campinas, São Paulo, Brazil.
- P-363 First Experience of ABO Incompatible Liver Transplantation in Local Transplant Center Using Plasma Exchange and Anti-CD20 Monoclonal Antibody. (Abstract # P-363)**
Nam-Kyu Choi. Gwangju, Korea.
- P-364 Current Status of Liver Transplantation in Poland. (Abstract # P-364)**
Jarosław Czerwinski, Piotr Malkowski, Roman Danielewicz. Warsaw, Poland.
- P-365 Living Donor Liver Transplantation in Pakistan: A First Report. (Abstract # P-365)**
Faisal S. Dar, Abdul W. Dogar, Haseeb H. Zia, Amna Liaqat, Minhal Pervaiz, Nasir A. Khan, Mohammad Salih, Muhammad O. Querishi, Najam Ul Hassan Shah, Mohamed Rela. Islamabad, Pakistan; Chennai, Tamil Nadu, India.
- P-366 Association of Acute Rejection Episodes With Hepatitis B Virus Recurrence after Liver Transplantation for Hepatitis B Virus-Related End-Stage Liver Diseases. (Abstract # P-366)**
Junfang Deng, Lei Geng, Xiaofeng Tang, Sheng Yan, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-367 † Cardiovascular Risk Prediction in Liver Transplantation (LT). (Abstract # P-367)**
Tommaso Di Maira, Lorena Puchades, Victoria Aguilera, Angel Rubin, Fernando Sanjuan, Rafael Lopez Andujar, Martin Prieto, Marina Berenguer. Valencia, Spain.
- P-368 Survival after Liver Transplantation for Hepatocellular Carcinoma: Analysis of Risk Factors in a Single Center. (Abstract # P-368)**
Aranzazu Varona, Carmen Diaz, Armando Aguirre-Jaime, Dacil Diaz, Julian Portero, Victoria Castro, Carmen Maeso, Soledad Garrido, Manuel Barrera, Arturo Soriano. Santa Cruz de Tenerife, Spain.
- P-369 Predicting Survival after Orthoptic Liver Transplant (OLT): An Independent Assessment of the BAR Score. (Abstract # P-369)**
Jayne L. Dillon, Artur Jakabowski, Alicia Healey, Nazia Selzner, Eberhard Renner. Toronto, ON, Canada.
- P-370 † Analyses of 20-Year Survivors after Liver Transplantation in Adults. (Abstract # P-370)**
Cristina Dopazo, Itxarone Bilbao, Lluís Castells, Gonzalo Sapichin, Cristian Moreiras, Isabel Campos, Juan Echeverri, Mireia Caralt, Jose Luis Lazaro, Ramon Charco. Barcelona, Spain.
- P-371 † A Positive Complement Dependent Cytotoxic (CDC) Crossmatch Does Not Impact on Patient Survival or Increase the Risk of Acute Cellular Rejection, or Biliary Strictures after Liver Transplantation. (Abstract # P-371)**
Jessica K. Dyson, Vaughan Carter, Mark Hudson, Derek M. Manas, Steven Masson. Newcastle upon Tyne, United Kingdom; Newcastle, United Kingdom.
- P-372 † Impact of HLA Mismatch on Clinical Outcome after Living Donor Liver Transplantation for PBC: Japanese Multicenter Study. (Abstract # P-372)**
Hiroto Egawa, Shotaro Sakisaka, Yasuaki Takeyama, Masakazu Yamamoto. Tokyo, Japan; Fukuoka, Japan.
- P-373 Simplifying Cardiopulmonary Exercise Testing in End Stage Liver Disease Patients: A Pilot Study. (Abstract # P-373)**
Timothy J. Gunnerson, Bruce Johnson, James Findlay, Michael Joyner, Watt D. Kymberly. Rochester, MN, USA.
- P-374 Incidence of Infections in People with HIV Infection Compared With Immunosuppressed Transplant Recipients: A Meta-Analysis. (Abstract # P-374)**
Zhiyong Guo, Weiqiang Ju, Mengyao Qiu, Dongping Wang, Xiaoshun He. Guangzhou, China.
- P-375 Predictors of Intraoperative Blood Loss in Living Donor Liver Transplant Recipients and Its Correlation With Postoperative Outcome. (Abstract # P-375)**
Manoj Gupta, Tejal Bhoj, Shailendra Lalwani, Vivek Mangla, Vinay Kumaran, Samiran Nundy, Naimish Mehta. New Delhi, Delhi, India.
- P-376 Liver Retransplantation at a Major Living Donor Liver Transplantation Center: The Asan Medical Center Experience. (Abstract # P-376)**
Tae Yong Ha, Shin Hwang, Gi Won Song, Chul Soo Ahn, Ki Hun Kim, Deok Bog Moon, Dong Hwan Jung, Gil Chun Park, Sung Gyu Lee. Seoul, Korea.

- P-377** **Impact of Donor Age and Time on Mechanical Ventilation on Outcomes of Liver Transplantation in Brazil. (Abstract # P-377)**
Luciana Haddad, Alex Cassenote, Cristina C. Oliveira, Wellington Andraus, Luiz Augusto Carneiro D'Albuquerque. São Paulo, Brazil.
- P-378** **Early Occurrence of New-Onset Diabetes after Transplantation Is Related to the Type of Liver Graft and Warm Ischaemic Injury. (Abstract # P-378)**
Hermien Hartog, Christine May, Chris Corbett, Jeremy Tomlinson, Simon Bramhall, Hynek Mergental, John Isaac, Darius Mirza, Paolo Muiesan, Thamara Perera. Birmingham, United Kingdom.
- P-379** **Long Term Health-Related of Quality of Life of Adults With Liver Transplantation in Taiwan. (Abstract # P-379)**
Chien-Ning Hsu, Su-Fen Liu, Chao-Long Chen. Kaohsiung, Taiwan.
- P-380** **Effects of Graft-Recipient Weight Ratio in Living Donor Liver Transplantation for Hepatocellular Carcinoma. (Abstract # P-380)**
Zhenhua Hu, Qijun Zhang, Jie Zhou, Lin Zhou, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-381** **Living Donor Liver Transplantation for Obese and Underweight Patients: Outcomes. (Abstract # P-381)**
Siddharth Jain, Balachandran Menon, Prashant Bhangui, Sumana Ramachandran, Punit Singla, Sanjay Goja, Amit Rastogi, Ravi Mohanka, Neeraj Saraf, Sanjeev Saigal, Arvinder Singh Soin. Gurgaon, Haryana, India.
- P-382** **Use of Dexmedetomidine in Liver Transplant Recipients with Postoperative Agitated Delirium. (Abstract # P-382)**
Choi JinYong, Lee Kyo Won, Rhu Jinsoo, Gil Eunmi, Na Byunggon, Oh Dong Kyu, Cho Won Tae, Kim Jong Man, Kwon David Choon Hyuck, Joh Jae-Won, Park Jae Berm. Seoul, Korea.
- P-383** **Radiotherapy As Down Staging Treatment To Living Donor Liver Transplantation for Hepatocellular Carcinoma. (Abstract # P-383)**
Choi JinYong, Moon Hyung Hwan, Lee Seung Hwan, Yang Shin-Seok, Lee Kyo Won, Rhu Jinsoo, Gil Eunmi, Na Byunggon, Oh Dong Kyu, Kim Jong Man, Kwon David Choon Hyuck, Joh Jae-Won, Lee Sanghoon, Park Jae Berm, Kim Sung Joo Lee Suk-Koo Choi Kyu-Sung. Seoul, Korea.
- P-384** **Short-Term Outcome of Liver Transplantation in Patients With Preoperative Pulmonary Infection: A Single-Center Experience. (Abstract # P-384)**
Weiqiang Ju, Zhiyong Guo, Ming Han, Jianwei Lin, Xiaoshun He. Guangzhou, China.
- P-385** **Combined Simultaneous Heart and Liver Transplantation: Case Report. (Abstract # P-385)**
Bo-Hyun Jung, Shin Hwang, Chul-Soo Ahn, Ki-Hun Kim, Deok-Bog Moon, Tae-Yong Ha, Gi-Won Song, Dong-Hwan Jung, Sung-Hwa Kang, Eol Choi, Jae-Hyun Kwon, Sung-Gyu Lee. Seoul, Korea.
- P-386** **Transplanting the Team Helps To Minimize the Startup Pains in Living Donor Liver Transplantation. Early Outcomes from a New Center in Western India. (Abstract # P-386)**
Sorabh Kapoor, Barun Nath, Vibha Varma, Ankur J. Shah, Vinay Kumaran. Mumbai, Maharashtra, India.
- P-387** **Early Enteral Feeding Enhances Nutritional Status in Recipients after Living Donor Liver Transplantation: Interim Results. (Abstract # P-387)**
Jong Man Kim, Wontae Cho, Seunghwan Lee, Choon Hyuck D. Kwon, Jae-Won Joh, Suk-Koo Lee. Seoul, Korea.
- P-388** **Evolution of Liver Transplantation Outcomes in a Large European Transplant Centre. (Abstract # P-388)**
Marek Krawczyk, Michal Grat, Zbigniew Lewandowski, Karolina Grat, Karolina M. Wronka, Wacław Holówkó, Oskar Kornasiewicz, Waldemar Patkowski, Krzysztof Zieniewicz, Pawel Nyckowski, Tadeusz Wróblewski, Rafał Paluszkiwicz, Ireneusz Grzelak, Krzysztof Dudek, Piotr Remiszewski Bogusław Najnigier. Warsaw, Poland.
- P-389 †** **Down-Staging Advanced Hepatocellular Carcinoma To the Milan Criteria May Provide a Comparable Outcome To Conventional Milan Criteria. (Abstract # P-389)**
Jianyong Lei, Lunan Yan, Wentao Wang. Chengdu, Sichuan, China.
- P-390** **Liver Retransplantation for End-Stage Autoimmune Hepatitis: An Analysis of Trends and Risk Factors. (Abstract # P-390)**
Zhiwei Li, Zhenhua Hu, Jie Xiang, Jie Zhou, Jian Wu, Sheng Yan, Lin Zhou, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-391 †** **Effect of Donor Hepatic PPAR α Gene Polymorphisms on Glucose and Lipid Disorders after Liver Transplantation. (Abstract # P-391)**
Qi Ling, Xiao Xu, Kai Wang, Penghui Xiang, Xuanyu Zhang, Zhuoyi Wang, Li Zhuang, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-392** **Nursing Care of Orthotopic Liver Transplantation Patients Which Characterized By Hypoxemia As the First Symptom of Hepatopulmonary Syndrome. (Abstract # P-392)**
Yingcui Liu, Qiaoling Zeng, Lihan Rui. Guangzhou, China.

- P-393 Nursing in Liver Transplantation Patients With Adverse Reactions of Amphotericin B. (Abstract # P-393)**
Yingcui Liu, Qiaoling Zeng, Lihan Rui. Guangzhou, China.
- P-394 Survival, Immunosuppression and Mortality Risk Factors in 207 Liver Transplantation Chilean Patients. (Abstract # P-394)**
Juan Pablo Miranda, Jaime Poniachik, Danny Oksenberg, Jose Ibarra, Jaime Castillo, Juan Carlos Diaz. Santiago de Chile, Chile.
- P-395 Factors Affecting the Families a Donate Organs for Transplant. (Abstract # P-395)**
Marli Elisa Nascimento Fernandes, Zélia Zilda Lourenço de Camargo Bittencourt, Luiz Antonio da Costa Sardinha, Ilka de Fátima Santana Ferreira Boin. Campinas, Sao Paulo, Brazil.
- P-396 Pulmonary Complications Following Liver Transplantation: Assessment of Risk Factors and Outcome. (Abstract # P-396)**
Emrah Otan, Serdar Karakas, Ozkan Yetkin, Cemalettin Aydin, Bulent Unal, Sezai Yilmaz. Malatya, Turkey.
- P-397 HBV Recurrence in Patients Undergone Liver Transplantation for HBV and HDV. (Abstract # P-397)**
Adil Baskiran, Fatih Ozdemir, Volkan Ince, Burak Isik, Sezai Yilmaz. Malatya, Turkey.
- P-398 Early Hepatic Artery Thrombosis after Orthotopic Liver Transplantation – Graft Salvage Against All Odds. (Abstract # P-398)**
Marina Premuzic, Matea Majerovic, Ivana Knezevic, Radic Davor. Zagreb, Croatia.
- P-399 Hepatic Venous Compression By Hypertrophied Liver May Occur after Liver Transplantation and Cause Persistent Ascites. (Abstract # P-399)**
Mohamed Said, Mostafa Alshazly, Gamal Esmat, Noaman El-Garem, Sherif Mogawer, Mona Elamir, Amany AbdelMaksoud, Ayman Salah, Ez Alkorashy, Omar Abdel-Aziz, Adel Hosny. Cairo, Egypt.
- P-400 Increased Mortality Among African American Women after Liver Transplant (LT). (Abstract # P-400)**
Monika Sarkar, Jennifer Dodge, Norah Terrault. San Francisco, USA.
- P-401 Liver Transplantation: Gazi University/Ankara-Turkey Experience. (Abstract # P-401)**
Hakan Sozen, Gokhan Yagci, Osman Yuksel, Sinan Sari, Odul Egritas, Billur Demirogullari, Mehmet Ibis, Buket Dalgic, Aydin Dalgic. Ankara, Turkey.
- P-402 Efficacy of Longitudinal Prophylaxis Vaccination in Recipients after Adult Liver Transplantation. (Abstract # P-402)**
Junichi Togashi, Yasuhiko Sugawara, Nobuhisa Akamastu, Sumihito Tamura, Junichi Kaneko, Taku Aoki, Yoshihiro Sakamoto, Kiyoshi Hasegawa, Norihiro Kokudo. Tokyo, Japan.
- P-403 The Clinical Course of Preoperative Anti-HLA Antibody-Positive Recipients after Liver Transplantation. (Abstract # P-403)**
Taiji Tohyama, Jota Watanabe, Masahide Hatano, Eitaro Ito, Hitoshi Inoue, Shoichi Kageyama, Akihiro Takai, Tetsuya Mizumoto, Fumiki Kushihata, Yasutsugu Takada. Toon, Japan.
- P-404 Active Immunoprophylaxis With Hepatitis B Virus (HBV) Vaccination Is Not an Effective Strategy for Prevention of HBV Recurrence after Liver Transplantation. (Abstract # P-404)**
Ilker Turan, Deniz Mut, Murat Sozbilen, Selda Erensoy, Fulya Gunsar, Galip Ersoz, Ulus S. Akarca, Zeki Karasu. Izmir, Turkey.
- P-405 Excellent Liver Transplant Outcomes in Intensive Care Unit Vs. Non Intensive Care Unit Patients: A Single Center Experience. (Abstract # P-405)**
David W. Victor, Maha R. Bektour, Howard P. Monsour, Robert S. McFadden, Sherilyn Gordon Burroughs, Ashish Saharia, Emad H. Asham, R. Mark Ghobrial. Houston, TX, USA.
- P-406 Living Donor Liver Transplant (LDLT) Alone in a Candidate for Simultaneous Liver-Kidney Transplant (SLKT) – Concept of Sequential Kidney after Liver Transplant. (Abstract # P-406)**
Manav Wadhawan, Subash Gupta, Neerav Goyal. Delhi, India.
- P-407 Preliminary Observation on Liver Transplantation from Cerebral Hemorrhage's and Brain Trauma's DCD Donor. (Abstract # P-407)**
Xiaoping Wang, Dongping Wang, Min Han, Zhiyong Guo, Linwei Wu, Weiqiang Ju, Xiaofeng Zhu, Xiaoshun He, Xingyuan Jiao. Guangzhou, Guangdong, China.
- P-408 Comparison of IGL-1 with HTK Preservation Solution in Liver Transplantation - A Controlled Single-Center Series. (Abstract # P-408)**
Julio C. Wiederkehr, Mauro R. Igreja, Marcelo S. Nogara, Nelson Gonçalves, Maira Godoy, Camila Drago, Rogerio R. Vilas, Henrique A. Wiederkehr, Caroline A. de Carvalho. Blumenau, Santa Catarina, Brazil; Curitiba, Parana, Brazil.

- P-409 † Etiology of Liver Disease Affects Post-Liver Transplantation Survival Among Hepatocellular Carcinoma Patients. (Abstract # P-409)**
Robert J. Wong, Aijaz Ahmed, Waldo Concepcion, Carlos Esquivel. Stanford, CA, USA.
- P-410 † Postoperative Atrial Fibrillation Is Associated With Increased Morbidity and Mortality in Liver Transplantation. (Abstract # P-410)**
Apinyachon Worapot, Randolph H. Steadman, Ronald W. Busuttil, Victor W. Xia. Los Angeles, CA, USA.
- P-411 Liver Transplant for Crigler-Najjar Syndrome: A Registry-Based Case-Control Study. (Abstract # P-411)**
Jie Xiang, Jie Zhou, Zhiwei Li, Zhenhua Hu, Sheng Yan, Jian Wu, Lin Zhou, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-412 Preoperative Prophylaxis With Itraconazole Can Prevent Fungal Infection after Liver Transplantation. (Abstract # P-412)**
Takuya Yano, Masahiro Ohira, Seiichi Shimizu, Hideki Ohdan. Hiroshima, Japan.
- P-413 Early Postoperative Elevated Serum Creatinine Predicts Delayed Liver Graft Function from Donation after Cardiac Death. (Abstract # P-413)**
Tian Shen, Shen Yan, Lin Zhang, Shusen Zheng. Hangzhou, China.
- P-414 Western Australian Experience in Liver Transplantation for Low MELD Patients. (Abstract # P-414)**
Monika Zwierchowiewska, Dhruv Patel, Kang Fong, Lingjun Mou, Gary Jeffrey, Luc Delriviere. Perth, WA, Australia.
- P-417 Hepatocellular Carcinoma and Liver Transplantation: Size Matters but Volume Matters More. (Abstract # P-417)**
Alice Graham, Anya Adair, Ewan M. Harrison, James Gordon-Smith, Hamish Ireland, Dilip Patel, Stephen J. Wigmore. Edinburgh, United Kingdom.
- P-418 “Metroticket” Predictor for Assessing Liver Transplantation To Treat Hepatocellular Carcinoma: A Single-Center Analysis in Mainland China. (Abstract # P-418)**
Jianyong Lei, Lunan Yan, Wentao Wang. Chengdu, Sichuan, China.
- P-419 Comparison of Five MELD-Based Scores in Predicting Patient Survival after Liver Transplantation. (Abstract # P-419)**
Yucheng Ma, Lunan Yan, Jiayin Yang. Chengdu, Sichuan, China.
- P-420 Usefulness of Prothrombotic Screening of Potential Donors in Living Donor Liver Transplantation. (Abstract # P-420)**
Kumar Palaniappan, Gomathy Narashiman, Joy Varghese, Vivekandan Shanmugham, J. Olithselvan, Dinesh Jothamani, Mohamed Rela. Chennai, Tamilnadu, India.
- P-421 † Outcomes after Combined Liver Kidney Transplant Versus Kidney Transplant Followed By Liver Transplant. (Abstract # P-421)**
Edie Y. Chan, Renuka Bhattacharya, James D. Perkins. Chicago, USA; Seattle, USA.
- P-422 Hepatocellular Carcinoma Meld Exception in Brazil. (Abstract # P-422)**
Rafael S. Pinheiro, Lucas S. Nacif, Wellington Andraus, Liliana D. Lopes, Rafael A. Pecora, Vinicius Rocha-Santos, Andre D. Ibrahim, Luciana B. Haddad, Igor L. Calil, Ruy J. Cruz Jr, Luiz A. C. D’Albuquerque. Sao Paulo, SP, Brazil.

Patient Selection/Organ Allocation

- P-415 † Center Variation in Graft Failure Rates Is Larger for Simultaneous Liver Kidney Transplantation Than Liver Transplantation Alone. (Abstract # P-415)**
Sumeet K. Asrani, Giovanna Saracino, James Trotter, Mitra Nadim, W. Ray Kim, Linda Jennings, Goran Klintmalm. Dallas, USA; Los Angeles, USA; Stanford, USA.
- P-416 The Influence of Body Mass Index on Survival of Liver Transplant Patients. (Abstract # P-416)**
Félix Cambra, Iago Justo, Naim Fakih, Oscar Caso, Rebeca Sanabria, Alberto Marcacuzco, Alejandro Manrique, Jorge Calvo, Carmelo Loinaz, Alvaro Garcia-Sesma, Paula Rioja, Cristina Cobo, Carlos Bermello, Manuel Abradelo, Erique Moreno Carlos Jiménez. Madrid, Spain.
- P-423 Impact of Recipient Obesity on Outcomes after Liver Transplantation. (Abstract # P-423)**
Ashish Singhal, Gregory C. Wilson, Koffi Wima, Ralph C. Quillin, Madison Cuffy, Nadeem Anwar, Tiffany E. Kaiser, E. Steve Woodle, Flavio Paterno, Daniel E. Abbott, Tayyab S. Diwan, Shimul A. Shah. Cincinnati, OH, USA.

Pediatrics

- P-424 Three Year Follow-Up of Seroconversion Rate To Hepatitis- A Immunization in Living Donor Liver Transplant Children. (Abstract # P-424)**
Chih-Cheng Chen, Allan Concejero, Chih-Chi Wang, Chih-Che Lin, Chao-Long Chen. Kaohsiung, Taiwan.
- P-425 Portal Vein Thrombosis after Liver Transplant for Biliary Atresia and Rex Shunt: Case Report. (Abstract # P-425)**
Miriam Cortes, Mansoor Madanur, Anuja Athale, Shirin Khorsandi, Anthony Stafford, Hector Vilca-Melendez, Nigel Heaton. London, United Kingdom.

P-426 Hepatic Hemodynamic Disturbances in Cirrhotic Children: Correlation to PELD and Portal Vein Complications after Liver Transplantation. (Abstract # P-426)

Catherine de Magnée, Renaud Menten, Dana Dumitriu, Karlien Carbonez, Thierry Pirotte, Francis Veyckemans, Philippe Clapuyt, Francis Zech, Raymond Reding. Brussels, Belgium.

P-427 Split Liver Transplantation: A Single Center Experience at KFHS & RC in Saudi Arabia. (Abstract # P-427)

Yasser M. Elsheikh, Hamad Albahili, Mohammed R. Abdelfattah, Bassem Hegab, Ahmed Algohary, Yehia Saleh, Bander Alqahtani, Mohammed Alshagrani, Talal AlGoufi, Martin Burdelski, Mohammed I. Alsebayel, Dieter C. Broering. Riyadh, Saudi Arabia.

P-428 † Everolimus in Combination With Reduced Calcineurin Inhibitor in Paediatric Liver Transplant Recipients: Baseline Data from the H2305 Study. (Abstract # P-428)

R. Ganschow, L. Fischer, B.-G. Ericzon, A. Dhawan, A. D'Alessandro, J. Goss, C. Sips, A. Balfour, G. Junge. Hamburg, Germany.

P-429 Prevalence and Treatment of New-Onset Diabetes Mellitus after Liver Transplantation in Korean Children: A Single Center Study. (Abstract # P-429)

Hyun Jin Kim, Seak Hee Oh, Kyung Mo Kim, Jung Man Namgung, Dae Yeon Kim, Gi Won Song. Seoul, Republic of Korea.

P-430 † Analysis of Risk Factors for Biliary Complications in Pediatric Liver Transplantation. (Abstract # P-430)

Jerome M. Laurence, John B. Seal, Vicky Ng, Yaron Avitzur, Simon Ling, Nicola Jones, Maria DeAngelis, Annie Fecteau, Grant David, Kamath Binita, Anand Ghanekar. Toronto, ON, Canada.

P-431 Living Donor Liver Transplantation in Citrullinemia Type- 1: Report of Two Cases. (Abstract # P-431)

Neelam Mohan, Deepak Goyal, Sakshi Karkra. Gurgaon, Haryana, India.

P-432 † Large for Size Graft in Pediatric Transplantation-Do We Need To Reduce? (Abstract # P-432)

Gomathy Narasimhan, Anand Bharathan, Naresh Shanmugam, Rajesh Rajalingam, Manoj Srivatsav, Kumar Palaniappan, Vivekanandan Shanmugam, Srinivas Reddy, Sanjay Govil, Mohamed Rela. Chennai, India.

P-433 Melatonin in the Regulation of Epigenetic Programming of Liver Steatosis Through the Prenatal Glucocorticoid Exposure. (Abstract # P-433)

Mao-Meng Tiao, Chao-Long Chen, Yu-Fan Cheng, Chih-Chi Wang, Tsung-Hui Hu. Kaohsiung, Taiwan.

P-434 Acoustic Radiation Force Impulse as Auxiliary Diagnostic Method for the Indication of Liver Transplantation in Patients with Biliary Atresia. (Abstract # P-434)

Hajime Uchida, Seisuke Sakamoto, Kengo Sasaki, Takanobu Shigeta, Mikiko Miyasaka, Shunsuke Nosaka, Mureo Kasahara. Tokyo, Japan.

Radiology

P-435 Establishing a Diagnostic Algorithm for Biliary Strictures Following Liver Transplantation. (Abstract # P-435)

Richard Gilroy, Maura O'Neil, Marc Heronemus, Timothy Schmitt, Motjiba Olyae, Sean Kumer, Adam Alli, Stephen Waller, Philip Johnson. Kansas City, KS, USA.

P-436 Post-Biopsy Intrahepatic Arterial Venous Malformation Leading To Bleeding Esophageal Varicose and the Importance of N-Butyl Cyanoacrylate in the Management of This Complication. (Abstract # P-436)

Muhammad Muneeb, Richard Gilroy, Steven Lemons, Thomas Fahrback, Philip Johnson. Kansas City, KS, USA.

P-437 † The Acoustic Radiation Force Impulse Elastography in Post Transplant Recurrent Hepatitis C of Living Donor Liver Transplantation. (Abstract # P-437)

Tung-Liang Huang, Tai-Yi Chen, Leung-Chit Tsang, Shin-You Ou, Chun-Yen Yu, Hsien-Wen Hsu, Yu-Fan Cheng, Chao-Long Chen. Kaohsiung, Taiwan.

P-438 Successful Surgical Correction of Complete Portal Vein Occlusion By Thrombosis and Concomitantly Developed A-P Shunt Without Hepatocellular Dysfunction Complicated By Orthotopic Liver Transplantation. (Abstract # P-438)

Koo Jeong Kang, Keun Soo Ahn, Yong Hoon Kim, Hyung Tae Kim, Won Hyun Cho, Jae Seok Hwang, Jung Hyeok Kwon. Daegu, Korea.

P-439 The Preoperative Radiological Evaluation in Living Donor Liver Transplantation. (Abstract # P-439)

Mecit Kantarci, Berhan Pirimoglu, Yesim Kizrak, Akin Levent, Bulent Aydinli. Erzurum, Turkey.

P-440 Depiction of Parenchymal Perfusion Changes in Patients with Ischemic Biliary Lesions after Living Donor Liver Transplantation. (Abstract # P-440)

Mecit Kantarci, Berhan Pirimoglu, Yesim Kizrak, Hayri Ogul, Bulent Aydinli. Erzurum, Turkey.

P-441 **Feasibility of Automated MR Volumetry Using Hepatobiliary Phase Images of Gadoteric Acid-Enhanced MR: Comparison with CT Volumetry. (Abstract # P-441)**
Kyoung Won Kim, Woo Kyoung Jeong, Jeongjin Lee, So Yeon Kim, So Jung Lee, Hyoung Jung Kim, Jong Seok Lee, Gi-Won Song, Shin Hwang, Sung-Gyu Lee. Seoul, Korea.

Recurrent Disease/Pathology

P-442 **AST Platelet Ratio (APRI Scores) As a Non-Invasive Tool in a Diverse Patient Population and It Correlates With the Severity of Hepatoportal Pressure Gradients. (Abstract # P-442)**
Abimbola Aderinto, Dima Darwish, Wei-Chung Chen, Maha Boktour, Howard P. Monsour, Jr.. Houston, TX, USA.

P-443 **Risk and Outcome of Occult HBV Reactivation in Liver Transplantation With Hepatitis B Surface Antigen-Negative but Positive for Core Antibody. (Abstract # P-443)**
Kun-Ming Chan, Ting-Jung Wu, Tsung-Han Wu, Chih-Hsien Cheng, Yu-Chao Wang, Hong-Shiue Chou, Wei-Chen Lee. Taoyuan County, Taiwan.

P-444 **Management of Recurrent Hepatocellular Carcinoma after Liver Transplantation: A Single Center Experience. (Abstract # P-444)**
S.H. Kenneth Chok, S.C. Chan, T.T. Cheung, C.Y. Albert Chan, Y.Y. James Fung, W. William Sharr, C.M. Lo. Hong Kong SAR, Hong Kong.

P-445 **Severe Common Variable Immunodeficiency and Aggressive Recurrence of Nodular Regenerative Hyperplasia Post Liver Transplant Resulting in Bone Marrow Transplant: A Case Study. (Abstract # P-445)**
Maura O'Neil, Sean Kumer, Timothy Schmitt, Marc Heronemus, Richard Gilroy. Kansas City, KS, USA.

P-446 **Nonalcoholic Fatty Liver Disease after Liver Transplantation for Cryptogenic Cirrhosis or Non-Alcoholic Steatohepatitis. (Abstract # P-446)**
Julietta Pecoraro, Ocampo Silvana, Maria G. Videla, Silvina Yantorno, Pablo Barros Schelotto, Gabriel Gondolesi, Carlos Vigliano, Pedro Gonzalez, Ruben Laghens, Valeria Descalzi. Buenos Aires, Argentina.

Surgical Techniques/Complications

P-447 † **Impact of Degree of Atherosclerosis of Cryopreserved Arterial Grafts in Outflow Reconstruction in Living Donor Liver Transplantation. (Abstract # P-447)**
Mahmoud Ali, Chih-Chi Wang, Hock-Liew Eng, Ting-Lung Lin, Wei-Feng Lee, Yu-Hung Lin, Yueh-Wei Liu, Chee-Chien Yong, Chih-Che Lin, Shih-Ho Wang, Chao-Long Chen. Kaohsiung, Taiwan; Mansoura, Dakahlyia, Egypt.

P-448 **Anterior Sector Drainage: Which Graft Is the Best? (Abstract # P-448)**
Bulent Aydinli, Gurkan Ozturk, Sukru Arslan, Ercan Korkut, Aysenur Dostbil, Ali Ahislakioglu, Kemalettin Ozden, Mecit Kantarci. Erzurum, Turkey.

P-449 **Postoperative Intrahepatic Arterial Pseudoaneurysm in Segment VIII Treated With Right Hemihepatectomy after Liver Transplantation. (Abstract # P-449)**
Andreas Brandl, Robert Oellinger, Wolfgang Jaschke, Natalie Vallant, Johann Pratschke, Stefan Schneeberger. Innsbruck, Austria.

P-450 **Lung Machine Preservation Allows Liver Prior To Lung Transplant in a COPD Patient With Tuberculostatics-Induced Liver Failure. (Abstract # P-450)**
Laurens J. Ceulemans, Diethard Monbaliu, Geert Verleden, Frederik Nevens, Jacques Pirenne, Dirk Van Raemdonck. Leuven, Belgium.

P-451 **The Morbidity and Survival of 196 Consecutive Cases Undergoing Liver Transplantation in a Single Center from Mainland China: Ten-Year Experience. (Abstract # P-451)**
Peixian Chen, Wentao Wang, Lunan Yan. Chengdu, Sichuan Province, China.

P-452 **Hepatocellular Carcinoma Invading Duodenum Treated With Hepatectomy-Whipple En Bloc and Orthotropic Liver Transplantation. (Abstract # P-452)**
Yinghua Chen, Wenhui Luo, Anbin Hu, Xiaofeng Zhu, Xiaoshun He. Guangzhou, Guangdong, China.

P-453 **Simultaneous Pancreas-Kidney Transplantation after Liver Transplantation. (Abstract # P-453)**
Young Seok Han, Dong Lak Choi, Ghil Suk Yoon. Daegu, Republic of Korea.

P-454 **Anastomosis of Type 2 Portal Vein Variation and Low-Lying Right Posterior Duct Anomaly in Living Donor Liver Transplantation. (Abstract # P-454)**
Kwangsik Chun, Insang Song. Daejeon, Korea.

P-455 **Nursing of Hyperosmolar Non-Ketotic Hyperglycemic Coma Induced By Methylprednisolone Pulse Therapy for Acute Rejection after Liver Transplantation. (Abstract # P-455)**
Qiujiang Dou, Gongyun Chen, Lu Chen, Haidan Ye. Guangzhou, China.

P-456 **Factors Related With Gastrointestinal Perforation Post Liver Transplantation. (Abstract # P-456)**
Cheng Fang, Shusen Zheng. Hang Zhou, Zhejiang Province, China.

- P-457 Live Donor Liver Transplantation for Budd-Chiari Syndrome. (Abstract # P-457)**
Rasim Farajoy, Zafer Onen, Cahit Yilmaz, Onur Duygu, Gulay Aksu, Latife Doganay, Cigdem Arikian, Mehmet Alper, Murat Zeytinlu, Murat Kilic. Izmir, Turkey.
- P-458 No Need of Extracorporeal Venovenous Bypass for Liver Transplantation. (Abstract # P-458)**
Ignacio M. Gonzalez-Pinto, Jose-Carlos Fernandez, Pedro Picatto, Carmen Garcia-Bernardo, Alberto Miyar, Rocio Cueva, Belen Porrero, Madalina Frunza, Esther Fernando, Paul Ugalde. Oviedo, Asturias, Spain.
- P-459 Combined 'En Bloc' Liver and Pancreas Transplantation in Patient With Hepatocellular Carcinoma and Type 2 Diabetes Mellitus. (Abstract # P-459)**
Weiqiang Ju, Zhiyong Guo, Jianwei Lin, Dongping Wang, Xiaoshun He. Guangzhou, China.
- P-460 Warm Dissection in Organ Harvest from Deceased Donor. (Abstract # P-460)**
DongHwan Jung, SungGyu Lee, Shin Hwang, ChulSoo Ahn, KiHun Kim, DeokBog Moon, BoHyun Jung, SungHwa Kang. Seoul, Korea.
- P-461 Clinical Outcome of Internal Stent for Biliary Anastomosis in Liver Transplantation. (Abstract # P-461)**
Sung Won Jung, Dong-Sik Kim, Young Dong Yu, Sung Ock Suh. Seoul, Korea.
- P-462 † Optimizing Protocol for Adult ABO-Incompatible Living Donor Liver Transplantation. (Abstract # P-462)**
Bong-Wan Kim, Hee Jung Wang, Jun-Bae Bang, Yong Keun Park, Weiguang Xu. Suwon, Korea.
- P-463 Risk Factors for Number and Severity of Complications Following Deceased Donor Liver Transplantation. (Abstract # P-463)**
A. Parikh, K. Washburn, L. Matsuoaka, U. Pandit, Y. Genyk, J. Almeda, C. Mora-Esteves, G. Halff, J. Kim, B. Holland, D. Wilson, L. Sher, B. Koneru. Newark, USA; San Antonio, USA; Los Angeles, USA.
- P-464 Treatment of Bile Stricture after Liver Transplantation With Application of Full-Covered Metallic Stents. (Abstract # P-464)**
Maxim Kornilov, Yan Moysyuk. Moscow, Russian Federation.
- P-465 Are We Able To Avoid Bile Leaks after Liver Transplantation? (Abstract # P-465)**
Robert Krol, Jacek Pawlicki, Jacek Ziája, Lech Cierpka. Katowice, Poland.
- P-466 Choledochoduodenostomy in Liver Transplantation. (Abstract # P-466)**
Bjørn Lien, Aksel E. Foss, Tom H. Karlsen, Tim Scholz. Oslo, Norway.
- P-467 Right-Sided Diaphragmatic Hernia after Living Donor Right Hepatectomy : A Rare Complication after Living Donor. (Abstract # P-467)**
Gyu-Seong Choi, Ju Ik Moon. Seoul, Republic of Korea; Daejeon, Republic of Korea.
- P-468 Carbapenem Resistant Klebsiella Pneumoniae Infection in Liver Transplant Recipients. (Abstract # P-468)**
Kemalettin Ozden, Gurkan Ozturk, Bulent Aydinli, Muhammet Hamidullah Uyanik, Ayse Albayrak, Sukru Arslan. Erzurum, Turkey.
- P-469 Hepatic Artery Thrombosis after Liver Transplantation : 2 Case Reports. (Abstract # P-469)**
Young Mok Park, Kwang Ho Yang, Ki Myung Moon, Je Ho Ryu, Sang Ho Bae, Chong Woo Chu. Yangsan, Republic of Korea; Chunan, Republic of Korea.
- P-470 † Results of Anterior Sector Reconstruction of 'neo MHV' Using Portal Vein Graft Alone from Explanted Liver. (Abstract # P-470)**
Ramdip Ray, Sandeep Vohra, Giriraj Bora, Neerav Goyal, Subash Gupta. Delhi, India; Gurgaon, Delhi NCR, India.
- P-471 † Risk Factors of Early Arterial Complications in Liver Transplantation. (Abstract # P-471)**
Andres Valdivieso, Lorea Martinez-Indart, Mikel Prieto, Mikel Gastaca, Patricia Ruiz, Alberto Ventoso, Amaya Matarranz, Javier Bustamante, Ibone Palomares, Jose Ramon Fernandez, Milagros Testillano, Maria Jesus Suarez, Miguel Montejo, Jorge Ortiz-de-Urbina. Bilbao, Spain; Leioa-Bilbao, Spain.
- P-472 Inferior Vena Cava Syndrome Secondary to Disseminated Histoplasmosis after Liver Transplant – A Diagnostic Challenge. (Abstract # P-472)**
Julio C. Wiederkehr, Marcelo S. Nogara, Mauro R. Igreja, Maira Godoy, Camila Drago, Henrique A. Wiederkehr, Nelson Gonçalves. Blumenau, Santa Catarina, Brazil; Curitiba, Parana, Brazil.
- P-473 Necrotic Dermal Lesions in a Liver-Transplanted Patient: Report of a Case. (Abstract # P-473)**
Fahrettin Yildiz, Sacit Coban, Murat Taner Gulsen, Vahap Saricicek, Cuma Ali Emir. Gaziantep, Turkey; Sanliurfa, Turkey.
- P-474 Diagnosis and Treatment of Diabetic Ketoacidosis after Liver Transplantation. (Abstract # P-474)**
Jian Zhou, Zhiyong Guo, Xiaopeng Yuan, Chuanbao Chen, Xiaoping Wang, Ming Han, Xingyuan Jiao, Xiaoshun He. Guangzhou, China.

Basic Sciences

Mapping of Hepatic Expression Quantitative Trait Loci (eQTLs) in a Han Chinese Population. (Abstract # LB-25)

Xiaoliang Wang, Huamei Tang, Mujian Teng, Zhiqiang Li, Jianguo Li, Junwei Fan, Lin Zhong, Xing Sun, Junming Xu, Guoqing Chen, Dawei Chen, Zhaowen Wang, Tonghai Xing, Jinyan Zhang, Li Huang Shuyun Wang Xiao Peng Shengying Qin Yongyong Shi Zhihai Peng. Shanghai, China; Jinan, Shandong, China; Zhangzhou, Fujian, China.

Surgical Techniques/Complications

The Edinburgh Liver Function Score Accurately and Objectively Identifies Primary Non-Function After Liver Transplantation. (Abstract # LB-26)

Ian S. Currie, Jen H. Ong, Weiguang Ho, Alistair Lee, Amanda J. Lee. Edinburgh, United Kingdom; Aberdeen, United Kingdom.

Association between Donor and Recipient IL-18 Gene Polymorphisms and the Risk of Bacterial infection and Mortality after Liver Transplantation in a Han Chinese Population. (Abstract # LB-27)

lin Zhong, Hao Li, Qiang Zhi Li. Shanghai, China.

The Volumes of Segment 4 and Necrosis Are Not Risk factors for Graft Complications and Graft Survival in Extended Right Split Liver Transplantation. (Abstract # LB-28)

Shohei Komatsu, Fernando Pompeu Piza Vicentine, Sanaâ El Mouhadi, Fabiano Perdigao, Ailton Sepulveda, Olivier Soubrane, Olivier Scatton. Paris, France.

Down-Regulation of MicroRNA-29A Accelerates Hepatocyte Proliferation During Rat Liver Regeneration. (Abstract # LB-29)

Li-Xi Luo, Zhao-Yan Yu, Zhen Liu, Yong Zeng. Chengdu, Sichuan Province, China.

Quantitative Proteomics of Hypertrophic Chondrocytes in Osteoarthritis. (Abstract # LB-30)

Konstantinos Tsolis, Ioanna Papathanasiou, Fotini Kostopoulou, Vassiliki Gkretsi, Ekaterini S. Mpei, Kalliopi Kalatzaki, Michalis Zerbakis, Konstantinos Malizos, Aspasia Tsezou, Anastassios Economou. Iraklio, Greece; Larissa, Greece; Chania, Greece.

Anesthesia/Critical Care Medicine

A Case Report of Takotsubo (Stress) Cardiomyopathy After Living Donor Liver Transplantation Presenting As Postoperative Dyspnea. (Abstract # LB-31)

Navneethan Subramanian, Raman Raina, Subash Gupta. New Delhi, India.

Outcomes

Measurement of Stiffness and Fatty Change of Graft by Transient Elastography after Living Donor Liver Transplantation. (Abstract # LB-32)

Jae Geun Lee, Jung Jun Lee, Sung Hoon Kim, Gi Hong Choi, Myoung Soo Kim, Jin Sub Choi, Soon Il Kim, Dong Jin Joo. Seoul, Korea; Bundang, Korea; Wonju, Korea.

Immunosuppression

Combined Effect of Donor CYP3A5 and Recipient CYP3A4 Polymorphisms on the Individual Dosage Regimen of Tacrolimus in Chinese Liver Transplant Patients. (Abstract # LB-33)

Feng Guo, Junwei Fan, Zhaowen Wang, Dawei Chen, Zhihai Peng. Shanghai, China.

Stroke Volume and Systolic Pressure Variation Are Poor Predictors of Fluid Responsiveness During Major Pancreatic Surgery. (Abstract # LB-34)

Hassan Shakeban, Niamh Conlon, John Boylan. Dublin, Ireland.

Management of Hepatic Venous obstruction after Pediatric Living Donor Liver Transplantation at Liver Transplantation Institute of Inonu University. (Abstract # LB-35)

Mehmet Yilmaz, Fatih Ozdemir, Suleyman Koc, Ramazan Kutlu, Volkan Ince, Burak Isik, Cengiz Ara, Sezai Yilmaz. Malatya, Turkey.

Biliary Complications after Living Donor Living Transplantation: Initial Experience at a Teaching Hospital. (Abstract # LB-36)

Kishore G.S. Bharathy, Aravind K. Seshadri, Piyush K. Sinha, Shridhar Sasturkar, Senthil Kumar, Viniyendra Pamecha. New Delhi, India.

Living Donor Liver Transplantation in Patient With Christmas Disease: Case Report. (Abstract # LB-37)

Sanjeev Aneja, Navneethan Subramniam, Nitin Shankar, Subash Gupta. New Delhi, Delhi, India.

Association of a Change in Immunosuppressive Regimen with Bone Disease after Liver Transplantation. (Abstract # LB-38)

Tonghai Xing, Lin Zhong, Li Huang, Junwei Fan, Zhihai Peng. Shanghai, China.

Living Donor

Right Lobe Adult Living Donor Liver Transplantation: Does Portal Pressure Predict Outcome? (Abstract # LB-39)

Shridhar V. Sasturkar, Kishore G.S. Bharathy, Senthil Kumar, Shiv Kumar Sarin, Tushar Kanti Chattopadhyay, Viniyendra Pamecha. New Delhi, India.

POSTER SESSION III

10:15 AM – 11:00 AM &

4:45 PM – 5:15 PM

Room: Caxton Lounge, Level 2; Pickwick Suite, Level 1

† Those posters identified as a Poster of Distinction by this symbol have received review scores that place them in the top 10% of their category. The Planning Committee encourages you to make them a priority when you visit the poster session.

Anesthesia/Critical Care Medicine

- P-475** **Pre-Transplantation Hepatic Encephalopathy Is Associated With an Increase of Postoperative Morbidity after Liver Transplantation in Cirrhotic Patients. (Abstract # P-475)**
Paër-Sélim Abback, Amélie Toussaint, Linda Khoy-Ear, Jacqueline Cohen, Sylvie Janny, Didier Delefosse, Federica Dondero, Catherine Paugam-Burtz. Clichy, France; Paris, France.
- P-476** **Successful OLT in a Patient With ESLD With HCC With Chronic Atrial Fibrillation With Low Cardiac Index. (Abstract # P-476)**
Parshotam Lal Gautam, Chris Harle, Achal Dhir, Wojciech Dobkowski, Tony Vannelli, Fiona Ralley. Ludhiana, Punjab, India; London, ON, Canada.
- P-477** **Risk Factors for Vascular Catheter Complications in Liver Transplant. (Abstract # P-477)**
Marina Gitman, Ramona Nicolau, Donald Ganier, Bobby Nossaman. New Orleans, LA, USA.
- P-478** **Renal Insufficiency Leads To Increased Mortality in Post-Liver Transplantation. (Abstract # P-478)**
Luciana Haddad, Liliana Ducatti, Luiz Marcelo Malbouisson, Etienne Macedo, Luis Ohnishi, Camila Lima, Wellington Andraus, Flair José Carrilho, Luiz Augusto Carneiro D'Albuquerque. Sao Paulo, SP, Brazil; Sao Paulo, Brazil.
- P-479** **Use of Continuous Intravenous Bumetanide Infusion With Albumin for Oliguria With Functioning Hepatic Allograft after Liver Transplantation (LTx). (Abstract # P-479)**
A. Jain, A. Pathak, D. Johnson, A. Karachristos, M. Maloo, K. Lau, A. Di Carlo. Philadelphia, PA, USA.
- P-480 †** **Incidence and Outcome of Acquired Hepatocerebral Degeneration in Liver Transplantation Recipients: A Retrospective Analysis of 383 Preoperative Brain MRI. (Abstract # P-480)**
Sun-Key Kim, Jung-Won Kim, SooHo Lee, Hwa-Mi Lee, Sung-Hoon Kim, Dong-Min Jang, Gyu-Sam Hwang. Seoul, Korea.

- P-481** **Haemodynamic Instability during Liver Transplantation: Role of Intraoperative Echocardiography. (Abstract # P-481)**
Michael Kluger, Massimiliano Meineri, Grant R. David, Adriaan Van Rensburg. Toronto, ON, Canada.
- P-482 †** **Comparison of Acute Physiology and Chronic Health Evaluation (APACHE) II, APACHE IV, Simplified Acute Physiology Score 3, and Model for End-Stage Liver Disease Score To Predict Early Mortality after Liver Transplantation. (Abstract # P-482)**
Hannah Lee, Anna Kim, Hogeol Ryu. Seoul, Korea.
- P-483 †** **Intraoperative Changes in Corrected QT and JT Interval in Pediatric Liver Transplantation. (Abstract # P-483)**
Byungdoo Andrew Lee, Won-Jung Shin, In-Gu Jeon, Sung-Moon Jung, Gyu-Sam Hwang. Seoul, Korea.
- P-484** **Clinical Implication of Carboxyhemoglobin during Living Donor Liver Transplantation. (Abstract # P-484)**
Hyunyoung Lim, Minseok Oh, Gaabsoo Kim, Justin Sangwook Ko, Suk-Koo Lee. Seoul, Korea.
- P-485** **Continuous Renal Replacement Therapy as Bridging Therapy to Retransplantation during 64 Hours of Anhepatic State in a Nine-month Old Infant. (Abstract # P-485)**
Marge Lindeberg Lindvet, Lars Saraste, Anna Januszkiewicz, Bo-Göran Ericzon. Stockholm, Sweden.
- P-486** **Role of Nitric Oxide (NO) in the Intraoperative Management of Severe Pulmonary Hypertension during LT. (Abstract # P-486)**
Alejandro Mejia, Anthony Aramoonie, Carlos Fasola, Stephen Cheng, Federico Osorio, Richard Dickerman, David Defazio, Gong Lee. Dallas, TX, USA.
- P-487** **Antithrombin III As Predictor of Early Graft Function. (Abstract # P-487)**
Andrei F. Minou, Aliaksei E. Shcherba, Denis J. Efimov, Alyaksandr M. Dzyadzko, Oleg O. Rummo. Minsk, Belarus.
- P-488** **Change in Intraoperative Use of Blood and Blood Products in Paediatric Liver Transplantation. (Abstract # P-488)**
Zubair U. Mohamed, John Sedgewick, Paul Bras, Simon Cottam, Zoka Milan. London, United Kingdom.
- P-489** **Successful Resuscitation of 30-Minutes' Cardiac Arrest during Liver Transplantation. (Abstract # P-489)**
Yang Won Nah, Chang Woo Nam, Min Su Noh, Soon Eun Park, In Young Huh. Ulsan, Korea.

- P-490 Curative Hepatorenal Transplantation in the Primary Hyperoxaluria Type 1. (Abstract # P-490)**
Gonzalo J. Pérez Villarejo, Antonio Diaz Martínez, Pablo Romero Ávila, Javier Yebes González, Juan Carmona Auriolles. Málaga, Spain.
- P-491 Case Report: The Use of Intra - Operative Hemodialysis in Pediatric Liver Transplant. (Abstract # P-491)**
Bruno F.F. Tonelotto, Claudia M. Simoes, Marcela Mallavazi, Alexandre Cruz. Sao Paulo, SP, Brazil.
- P-492 Postoperative Glucose Levels and Outcome after Liver Transplantation. (Abstract # P-492)**
Melissa M. Grant, Gebhard Wagener. New York, NY, USA.
- P-493 Impact of Timing of Drainage of Massive Ascites on Operative and Post-Operative Course in Living-Donor Liver Transplant Recipients. A Prospective Randomized Controlled Trial. (Abstract # P-493)**
Amr M. Yassen, Waleed R. Elsarraf, Mohamed A. Elmorshidy, Tarek Salah, Ahmed M. Sultan, Mohamed Elsadany, Helmy E. Elgindy, Usama M. Sheha, Mohamed Abdel Wahab. Mansoura, Dakahlia, Egypt; Mansoura, Dakahlia, Egypt.
- P-494 Effects of Early Enteral Nutrition to the Liver Transplant Patients. (Abstract # P-494)**
Ik Jin Yun. Seoul, Korea.
- P-498 Experimental Study of the Distribution and Differentiation of Nanosecond Pulse Processed Bone Marrow Stem Cells in the Transplanted Rat Liver. (Abstract # P-498)**
Xinhua Chen, Zhigang Ren, Jianwen Jiang, Shengyong Yin, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-499 Protective Effect of Ginsenosides Rg3 for the Intestinal Mucosal Immunity in Rats after Liver Transplantation. (Abstract # P-499)**
Xinmei Chen, Jianwen Jiang. Jinan, Shandong, China; Hangzhou, Zhejiang, China.
- P-500 Effects of Resistin and Visfatin in Rat Steatotic Hepatic Ischemia-Reperfusion Injury. (Abstract # P-500)**
Maria Elias-Miró, Marian Mendes-Braz, Ruben Cereijo, Francesc Villarroya, Mónica Jiménez-Casto, Jordi Gracia-Sancho, Sergi Guixé-Muntet, Marta Massip-Salcedo, Joan Carles Domingo, Raquel Bermudo, Juan Rodés, Carmen Peralta. Barcelona, Spain; Sao Paulo, Brazil.
- P-501 Potential of Mesenchymal Stem Cells Co-culture with Primary Human Hepatocytes for Alginate Microbead Transplantation. (Abstract # P-501)**
Celine Filippi, Fabiane Barbero Klem, Suttiruk Jitraruch, Sharon C. Lehec, Emer Fitzpatrick, Ragai R. Mitry, Robin D. Hughes, Anil Dhawan. London, United Kingdom.
- P-502 Circulating Regulatory T Cells As Markers of Immune Response To Tolerance in Living Donor Liver Transplant Recipients. (Abstract # P-502)**
Manoj Gupta, Naimish Mehta, Kriti Mangla, Vinay Kumaran, Dheeraj Mohaniya, Samiran Nundy, Sangeeta Chaudhary. New Delhi, Delhi, India.
- P-503 Influence of Immunosuppressive Drugs on CCC-Cell Tumour Growth and Tumour Invasion Under Paracrine Stimulation of Tumour Associated Fibroblasts. (Abstract # P-503)**
Nils G. Heits, Alexander Bernsmeier, Tillmann Heinze, Jannik Kerber, Thomas Becker, Jan H. Egberts, Holger Kalthoff, Felix Braun. Kiel, Germany.
- P-504 The Utility of MicroRNA Expression Profiling To Determine Quality of Donation after Cardiac Death (DCD) Liver Grafts. (Abstract # P-504)**
Shirin E. Khorsandi, Siamak Salehi, Wayel Jassem, Hector Vilca-Melendez, Andreas Prachalias, Parthi Srinivasan, Nigel Heaton. London, United Kingdom.
- P-505 FK506 Induced Apoptosis Is Mediated By Endoplasmic Reticulum Derived Calcium Dependent Caspase- 12 in Jurkat Cells. (Abstract # P-505)**
Hak Joo Kim, Soo Jin Na Choi, Sang Young Chung. Seoul, Korea; Gwangju, Korea.

Basic Sciences

- P-495 Quantiferon TB Test – Does It Have a Role in Identifying Patients at Risk for Reactivation of Tuberculosis in Liver Transplant Recipients: A Study from an Endemic Country. (Abstract # P-495)**
Pavan Kumar Addala, Nataraj Murugan, Bipin Vibhute, Ramgopal Krishnan, Mahesh Gopasetty, Manish Varma, Anand Khakhar, Anand Ramamurthy. Chennai, Tamil Nadu, India.
- P-496 Emodin Ameliorates Hepatocellular Injury and Fibrosis in Bile Duct-Ligated Mice. (Abstract # P-496)**
Yinghua Chen, Wenhui Luo, Yi Ma, Xiaoshun He. Guangzhou, Guangdong, China.
- P-497 BAFF Binding to T Cell-Expressed BAFF-R Promotes Follicular Helper T Cell Proliferation and GC B Cell Responses. (Abstract # P-497)**
Maogen Chen, Zhiyong Guo, Dongping Wang, Weiqiang Ju, Qiang Tai, Qiang Li, William Stohl, Songguo Zheng, Xiaoshun He. Guangzhou, China; Los Angeles, USA.

- P-506 †** **The Phospholipase A2 Domain of Peroxiredoxin 6 Plays a Critical Tumor-Suppressing Role in the Carcinogenesis and Recurrence of Hepatocellular Carcinoma. (Abstract # P-506)**
Di Lu, Xiao Xu, Shusen Zheng. Hangzhou, China.
- P-507** **The Roles of IP10 in Liver Regeneration and Tissue Repair Are Cell Type Dependent. (Abstract # P-507)**
Yuenyuen Ma, Changxian Li, Wei Geng, Kevin T.P. Ng, Chungmau Lo, Kwan Man. Hong Kong, Hong Kong.
- P-508** **In Utero Transplantation to Decrease Immune Response in a Porcine Model of Hereditary Tyrosinemia Type 1. (Abstract # P-508)**
Shennen Mao, Jaime Glorioso, Raymond Hickey, James Fisher, Joseph Lillegard, Michael Strausbauch, Markus Grompe, Peter Wettstein, Scott Nyberg. Rochester, MN, USA; Portland, OR, USA.
- P-509** **Immunological Biomarker for Overall Immunosuppression (IS) in Liver Transplant (LTx) Recipients Using Proliferation Index of CD4 & CD8 Lymphocytes Stimulated With Monoclonal Anti-CD3 & Anti-CD28 Antibodies. (Abstract # P-509)**
A. Mukerji, R. Potula, S. Geier, H. Parekh, A. Karachristos, M. Maloo, A. Jain. Philadelphia, PA, USA; Bronx, NY, USA.
- P-510** **Neither IgM nor B Cells Play a Critical Role in the Pathogenesis Or Resolution of Hepatic Ischemia-Reperfusion Injury. (Abstract # P-510)**
James Richards, Emily Hesketh, Martina Busciaova, Chiara Ventre, Steve Anderton, Sarah Howie, Wigmore Stephen, Hughes Jeremy. Edinburgh, United Kingdom.
- P-511** **Transcriptomic Signature in Cirrhotic Patients in the Liver Transplantation Waiting List. (Abstract # P-511)**
Pilar Bueno-Requena, Jesus F. Bermejo-Martin, Felix Garcia Pajares, Alba Vargas, Fernando Santos Santamarta, Ramon Sanchez Ocaña, Lucia Rico, Veronica Iglesias, Eva Muñoz Conejero, Carolina Almohalla Alvarez, Gloria Sanchez Antolin. Valladolid, Spain.
- P-512 †** **Generation of NK Cells from Hematopoietic Stem Cells In Vitro for Anti-HCV and Anti-HCC Immunotherapy: Evaluation Using Human Hepatocyte Chimeric Mice. (Abstract # P-512)**
Seiichi Shimizu, Yuka Tanaka, Ryuichi Hotta, Hideki Ohdan. Hiroshima, Japan.
- P-513** **Synergistic Effects of Metformin in Combination With Rapamycin on Hepatocellular Carcinoma Cell Lines. (Abstract # P-513)**
Suk-Won Suh, Kwang-Woong Lee, Jeong-Moo Lee, YoungRok Choi, Nam-Joon Yi, Kyung-Suk Suh. Seoul, Korea.

- P-514** **Quantitative Proteomic Analysis Identified CAPS as a Novel Potential Biomarker for Early Detection of HBV-Related Hepatocellular Carcinoma. (Abstract # P-514)**
Jianguo Wang, Xiao Xu, Xuyong Wei, Di Lu, Haiyang Xie, Qi Lin, Lin Zhou, Shusen Zheng. Hangzhou, China.
- P-515 †** **Upregulation of microRNA-423-5p Promotes Cancer Cell Proliferation and Predicts Poor Prognosis of Hepatocellular Carcinoma Following Liver Transplantation. (Abstract # P-515)**
Liming Wu, Sheng Gao, Zhe Yang, Chunyang Xing, TingTing Pan, Lin Zhou, Haiyang Xie, Shusen Zheng. Hangzhou, China.
- P-516** **Donor Transmitted Malignancy Induce Severe Immune Reaction after Allogenic Mice Liver Transplantation. (Abstract # P-516)**
Sheng Yan, Yuan Ding, Yang Wang, Yang Tian, Lin Zhou, HaiYang Xie, ShuSen Zheng. Hangzhou, China.
- P-517** **IL-22 Ameliorates Mouse Liver Ischemia-Reperfusion Injury (IRI) by Promoting Hepatocellular Autophagy. (Abstract # P-517)**
Yu Zhang, Haofeng Ji, Yuanxing Liu, Xiu-Da Shen, Feng Gao, Ronald W. Busuttil, Shusen Zheng, Jerzy W. Kupiec-Weglinski. Los Angeles, CA, USA; Hangzhou, Zhejiang, China.
- P-518** **AMP-Activated Protein Kinase (AMPK) Deficiency Increases Mitochondrial Dysfunction after Liver Transplantation in Mice. (Abstract # P-518)**
Qinlong Liu, Hasibur Rehman, Yasodha Krishnasamy, Rick Schnellmann, John Lemasters, Zhi Zhong. Charleston, USA.

Extended Criteria Donors/Disease Transmission

- P-519** **Prophylaxis of De Novo Hepatitis B Virus Infection With Lamivudine in HBsAg-Negative Naïve Recipients of Hepatitis B Core Antibody-Positive Livers: A 13-Year Single-Center Experience. (Abstract # P-519)**
Ana Maria Braithwaite, Maria Garcia, Angel Rubin, Victoria Aguilera, Salvador Benlloch, Marina Berenguer, Carmen Vinaixa, Martín Prieto. Valencia, Spain.
- P-520** **Primary Non Function and Ischemia Times in the Era of Extended-Criteria Liver Allografts. (Abstract # P-520)**
Umberto Maggi, Leonardo Centonze, Ernesto Melada, Gianluca Fornoni, Barbara Antonelli, Giorgio Rossi. Milano, Italy.

- P-521** **Comparison of Short-Term and Long-Term Outcomes after DCD and DBD Donor Liver Transplantation. (Abstract # P-521)**
M. Cortes, D. Chasiotis, S.E. Khorsandi, E. Kontis, V.R. Patcha, A. Athale, I. Gomez, A. Ciscar, Ma Heneghan, J. O'Grady, H. Vilca-Melendez, A. Prachalias, P. Srinivasan, M. Rela, N. Heaton W. Jassem. London, United Kingdom.
- P-522** **Pathological Characteristics of Liver Allografts from Donation after Brain Death Followed by Cardiac Death in Pigs. (Abstract # P-522)**
Zhiyong Guo, Hui Ye, Guixing Xu, Chuanzhao Zhang, Xiaoshun He. Guangzhou, China.
- P-523** **The Impact of the Learning Curve on the Outcome of Domino Liver Transplantation. (Abstract # P-523)**
Luis M. Marin-Gomez, Gonzalo Suarez-Artacho, Jose M. Alamo-Martinez, Carmen Bernal-Bellido, Juan Serrano-Diaz-Canedo, Jose M. Sousa-Martin, Francisco J. Padillo-Ruiz, Miguel A. Gomez-Bravo. Seville, Spain.
- P-524 †** **Liver Transplantation Using Steatotic Donor Grafts: Characteristic Molecular Mechanisms Associated with Ischemia Reperfusion Injury. (Abstract # P-524)**
Jihee L. Suh, Ricardo C. Gehrau, Shawn Pelletier, Valeria R. Mas, Daniel G. Maluf. Charlottesville, VA, USA.
- P-525** **A Review of Initial Graft Function and Biliary Complications in Recipients of DCD Liver Grafts Receiving Streptokinase Pre-Flush during Procurement. (Abstract # P-525)**
Dhakshinamoorthy Vijayanand, Caroline Atkinson, Rajveer Thethi, Rajiv Dave, Magdy Attia, Ernest Hidalgo, Giles Toogood, Stephen Pollard, Raj Prasad, Niaz Ahmad. Leeds, United Kingdom.
- P-526 †** **Safe Use of Liver Grafts from Hepatitis B Surface Antigen Positive Donors in Liver Transplantation. (Abstract # P-526)**
Songfeng Yu, Wei Zhang, Zhiyong Yu, Longyu Cheng, Yufu Ye, Jun Yu, Weilin Wang, Shusen Zheng. Hangzhou, China.

Fulminant Liver Failure

- P-527** **State of the Nation - Management of Acute Liver Failure in a Developing Country. Impact of the Advent of Liver Transplantation. (Abstract # P-527)**
C. Ramkiran, B. Singh, K. Venugopal, S. Mohan, R. Ravichandra, B. Ashish, M.K. Dharmesh, P.T. Cherian, S.M. Rela. Hyderabad, Andhra Pradesh, India.

- P-528** **Molecular Absorbent Recirculating System in Acute Liver Failure in a Mexican Population. (Abstract # P-528)**
Laura E. Cisneros, Maria R. Muñoz, Linda E. Muñoz, Jose A. Velarde, Rosalba Moreno, Eduardo Marin, Nahum Mèndez. Monterrey, Nuevo León, Mexico; Monterrey, Nuevo León, Mexico; Guadalajara, Jalisco, Mexico; Puebla, Mexico; México, Mexico.
- P-529** **Acute Liver Failure in Taiwan - A Nationwide Longitudinal Analysis. (Abstract # P-529)**
Cheng-Maw Ho, Chih-Hsin Lee, Jann-Yuan Wang, Yao-Ming Wu, Ming-Chih Ho, Rey-Heng Hu, Po-Huang Lee. Taipei, Taiwan.
- P-530** **Prognostic Criteria after Artificial Liver MARS in Fulminant Hepatitis. (Abstract # P-530)**
Vincenzo Morabito, Massimo Rossi, Quirino Lai, Francesco Pugliese, Simone Novelli, Giancarlo Ferretti, Pasquale B. Berloco, Gilanrdo Novelli. Rome, RM, Italy; Pisa, Italy.
- P-531** **Emergency Living Donor Liver Transplantation Using ABO-Incompatible Donor for Acute Liver Failure. (Abstract # P-531)**
Masahiro Shinoda, Osamu Itano, Hideaki Obara, Minoru Kitago, Taizo Hibi, Yuta Abe, Hiroshi Yagi, Minoru Tanabe, Yuko Kitagawa. Tokyo, Japan.

Hepatitis C

- P-532** **The Impact of IL-28B Polymorphism and Diabetes on SVR after Antiviral Therapy (AT) for Post- Liver Transplant (LT) HCV Recurrence. (Abstract # P-532)**
Davide Bitetto, Vittoria Vero, Silvia Pecere, Luca Belli, Rosa M. Iemmolo, Maria C. Morelli, Francesca Donato, Patrizia Burra, Maria Rendina, Francesca R. Ponziani, Lucia Miglioresi, Daniele Di Paolo, Manuela Merli, Antonio Gasbarrini, Stefano Ginanni Corradini Edmondo Falletti Tullia De Feo Pierluigi Toniutto Stefano Fagiuoli. Bergamo, Italy; Milan, Italy; Modena, Italy; Bologna, Italy; Padua, Italy; Bari, Italy; Rome, Italy; Udine, Italy.
- P-533** **The Mean Platelet Volume and the Mean Platelet Volume/Platelet Count Ratio As Potential Markers for Progressive Liver Fibrosis in Post Transplant Hepatitis C (HCV) Patients. (Abstract # P-533)**
Yamen Jabri, Shirin Khorsandi, Wayel Jassem, V.R. Patcha, Ruchi Sharma, Andreas Prachalias, Parthi Srinivassan, Arjuna Singanayagam, Kosh Agarwal, Nigel Heaton. London, United Kingdom.
- P-534** **The Results of Response Guided Therapy for Hepatitis C Virus Recurrence Based on Early Protocol Liver Biopsy after Liver Transplantation in the Favorable Interleukin-28B Genotype Prevalent Area. (Abstract # P-534)**
Hyeyoung Kim, Kwang-Woong Lee, Nam-Joon Yi, Kyoungbun Lee, Suk-Won Suh, Tae Yoo, Min-Su Park, YoungRok Choi, Geun Hong, Hae Won Lee, Kyung-Suk Suh. Seoul, Korea.

P-535 Living Donor Liver Transplantation in a Patient With Strongly Positive Crossmatch.

(Abstract # P-535)

Naimish N. Mehta, Shailendra Lalwani, Vivek Mangla, Anil Arora, Kamini Khillan, R. K. Saran, Samiran Nundy. New Delhi, India.

P-536 Assessment of HCV-Induced Insulin Resistance in Egyptian HCV End-Stage Cirrhotic Patients before and after Living Donor Liver Transplantation. (Abstract # P-536)

Mahmoud Elmeteni, Mohamed Sakr, Magdah Elmonayeri, Eman Barakat, Sara Abdelhakam, Hend Ebadah, Mohamed Bahaa, Amr Abdelaal, Mohamed Fathy, Hany M. Dabbous, Iman Fawzy. Cairo, Egypt.

P-537 Potential Net Health Benefit of Pretransplant Sofosbuvir To Prevent Recurrence of HCV Infection after Liver Transplantation: A Multicentre, Cohort Model Study. (Abstract # P-537)

Alessandro Vitale, Stefano Fagioli, Tullia Maria De Feo, Patrizia Burra, Luca Belli, Francesca Donato, Davide Bitetto, Renato Romagnoli, Antonio Picciotto, Pierluigi Toniutto, Sherrie Bhoori, N. Passigato, Marco Vivarelli, Umberto Cillo. Padova, Italy; Bergamo, Italy; Milan, Italy; Torino, Italy; Genova, Italy; Udine, Italy; Verona, Italy; Ancona, Italy.

P-538 Results of Preemptive Treatment of Hepatitis C Genotype 3 after Living Related Liver Transplant (LRLT) – Based on RVR, a Novel Approach. (Abstract # P-538)

Manav Wadhawan, Subash Gupta, Neerav Goyal. Delhi, India.

Immunosuppression

P-539 Impact of Basiliximab Therapy in the Severity of Hepatitis C Recurrence after Liver Transplantation. (Abstract # P-539)

Mariana Cleres, Fernando Gruz, Sebastian Raffa, Silvina Yantorno, Pablo Barros Schelotto, Gabriel Gondolesi, Valeria Descalzi. Buenos Aires, Argentina.

P-540 De Novo Immunosuppression With Generic Tacrolimus: Outcomes at One Year Compared To Prograf®. (Abstract # P-540)

Emily Dannhorn, David Patch, Douglas Thorburn, Andrew Burroughs, Aileen Marshall, James O'Beirne. London, United Kingdom.

P-541 Exploring the Impact of Everolimus-Based Immunosuppression on Renal Function: The Reflect Study. (Abstract # P-541)

Paolo De Simone, Matteo Cescon, Umberto Cillo, Giuseppe Tisone, Raffaella Guarisco, Stefano Fagioli. Pisa, Italy; Bologna, Italy; Padua, Italy; Rome, Italy; Origgio, Italy; Bergamo, Italy.

P-542 Impact of Calcineurin Inhibitors on Sustained Virological Response in Maintenance Liver Transplant Patients With Recurrent Hepatitis C: Results from the SUSTAIN Study. (Abstract # P-542)

C. Duvoux, F. Villamil, G.A. Levy, E.L. Renner, G.L. Grazi, R.J. Firpi, F. Schirm, B. Rauer, P. Bernhardt. Creteil, France.

P-543 Side Effects and Predictive Factors of Intolerance of Mammalian Target of Rapamycin Inhibitors in Liver Transplantation. (Abstract # P-543)

Stéphanie Faure, Bénédicte Gagniard, Yohan Duny, Guillaume Danan, Christophe Carencio, Astrid Herrero, Michael Bismuth, Dominique Larrey, Georges Philippe Pageaux. Montpellier, France.

P-544 Outcomes of Renal Transplant Recipients Treated With Mycophenolate Mofetil Versus Enteric Coated Mycophenolate Sodium: A Meta-Analysis. (Abstract # P-544)

Zhiyong Guo, Weiqiang Ju, Fei Li, Dongping Wang, Xiaoshun He. Guangzhou, China.

P-545 Role of Intravenous (IV) Mycophenolate Mofetil with Delayed Introduction of Tacrolimus in Liver Transplant (LTx) Recipient Who Are on Renal Replacement Therapy (RRT) Prior To LTx. (Abstract # P-545)

A. Jain, A. Murkerji, A. Karachristos, M. Maloo, K. Lau, A. Di Carlo. Philadelphia, PA, USA; Bronx, NY, USA.

P-546 Excellent Short-Term Outcome of Reduced Dose of Mycophenolate Mofetil With Tacrolimus Combination Immunosuppression in Living Donor Liver Transplantation. (Abstract # P-546)

Hyeyoung Kim, Nam-Joon Yi, Juyeun Lee, Min-Su Park, YoungRok Choi, Geun Hong, Hae Won Lee, Kwang-Woong Lee, Kyung-Suk Suh. Seoul, Korea.

P-547 Prolonged Release Tacrolimus in De-Novo Liver Transplantation: A Single Centre Experience. (Abstract # P-547)

Francesco Lupo, Elena Mazza, Francesco Tandoi, Damiano Patrono, Renato Romagnoli, Mauro Salizzoni. Turin, Italy.

P-548 A Single-Center Experience With Once-Daily Prolonged-Release Tacrolimus in Liver Transplantation. (Abstract # P-548)

Giuseppe Tarantino, Nicola Cautero, Nicola De Ruvo, Roberto Ballarin, Valentina Serra, Fabrizio Di Benedetto. Modena, Italy.

P-549 Chelerythrine Attenuated the Rejection of MHC Fully-Mismatched Cardiac Allografts in Mice. (Abstract # P-549)

Qiyi Zhang, Yang Tian, Sheng Yan, Yuan Ding, Shusen Zheng. Hangzhou, China.

Living Donor

- P-550 Straddling the Fence With Middle Hepatic Vein for Living Liver Donors. (Abstract # P-550)**
Ramesh K. Batra, Kunam S. Reddy, Winston R. Hewitt, Jr, Nitin N. Katariya, David C. Mulligan, Adyr A. Moss. Phoenix, AZ, USA.
- P-551 Development of an iPhone Facebook App to Help Waitlisted Candidates Identify a Living Donor. (Abstract # P-551)**
Andrew M. Cameron, Elizabeth King, Dorry L. Segev. Baltimore, MD, USA.
- P-552 Impact of Early Biliary Complications on Long Term Graft and Patient Survival after Right Lobe Living Donor Liver Transplantation (LDLT). (Abstract # P-552)**
Jennifer Leiting, Timothy L. Pruett, Martin L. Freeman, David M. Radosevich, Keshav Mangalick, Raja Kandaswamy, William D. Payne, Julie A. Thompson, Mohamed A. Hassan, John R. Lake, Srinath Chinnakotla. Minneapolis, USA.
- P-553 Outcome of Living Liver Donors in LDLT: A First Report from Pakistan. (Abstract # P-553)**
Faisal S. Dar, Haseeb H. Zia, Abdul W. Dogar, Amna Liaqat, Minhali Pervaiz, Husnanin A. Ilyas, Muhammad O. Querishi, Nasir A. Khan, Najam Ul Hassan Shah, Mohamed Rela. Islamabad, Pakistan; Chennai, Tamil Nadu, India.
- P-554 Vascular Anatomy in Living Donor Liver Transplantation. (Abstract # P-554)**
Manuel E. De Guglielmo, Elena Pestana, Hildemaris Atienza, Bruno Díaz, Nelson Covarrubias, Damelys Marín, Miguel Vasallo, Carlos Rodríguez, Tomoaki Kato, Pedro Rivas. Caracas, Distrito Capital, Venezuela; New York, NY, USA.
- P-555 Evaluation of Histopathological Findings Among Living Donors for Liver Transplantation and Assessment of Their Impact on the Outcome of the Donors and Recipients. (Abstract # P-555)**
Naglaa Allam, Wael Abdel-Razek, Asmaa Ibrahim, Nermine Ehsan, Dina Alazab, Imam Waked. Shebeen El Kom, Egypt.
- P-556 Laparoscopic Left Lateral Hepatectomy for Living Donor Liver Transplantation in Pediatrics: A Single Center Experience. (Abstract # P-556)**
Yasser M. Elsheikh, Hamad Albahili, Ahmed Algohary, Dieter Broering. Riyadh, Saudi Arabia.
- P-557 Post Cholecystectomy Status Is Not a Contraindication for Right Lobe Liver Donation. (Abstract # P-557)**
Parthasarathy Govindaraju, Neerav Goyal, Manav Wadhavan, Subhash Gupta. New Delhi, India.
- P-558 Refining Technique of Hepatic Duct Transection in LRLT. (Abstract # P-558)**
Neerav Goyal, Subash Gupta. New Delhi, Delhi, India.
- P-559 How Much Could We Cool Inside of the Liver Graft by Slush/Ice Bath during the Back-Table Procedure? (Abstract # P-559)**
Sinan Hatipoglu, Adil Baskiran, Cuneyt Kayaalp, Sezai Yilmaz. Malatya, Turkey.
- P-560 Experience of Female Spouses as a Living Liver Donor. (Abstract # P-560)**
Jung Ja Hong, Hea Seon Ha, In Ok Kim, Kyung Choon Lim, Myung Sun Yi, Shin Hwang. 88, Olympic-Ro 43-Gil, Songpa-Gu, Seoul, Republic of Korea; 76 Dobong-Ro, Kangbuk-Gu, Seoul, Republic of Korea; Seoul, 103 Daehak-Ro, Jongno-Gu, Republic of Korea; Seoul, 88, Olympic-RO 43-GIL, Songpa-Gu, Republic of Korea.
- P-561 Long-Term Outcome of Living Donor Liver Transplantation for Patients With Alcoholic Liver Disease. (Abstract # P-561)**
Shin Hwang, Chul-Soo Ahn, Deok-Bog Moon, Tae-Yong Ha, Gi-Won Song, Dong-Hwan Jung, Gil-Chun Park, Sung-Gyu Lee. Seoul, Korea.
- P-562 Volumetry Guided Right Hepatectomy in the Presence of Hypoplastic Left Lateral Segment in the Living Donor. (Abstract # P-562)**
Sorabh Kapoor, Sharad Maheshwari, Barun Nath, Vibha Varma, Ankur J. Shah, Vinay Kumaran. Mumbai, Maharashtra, India.
- P-563 Outcome of Left Lobe Grafts with the Caudate Lobe in Donor Hepatectomy for Living Donor Liver Transplantation: A Single Japanese Center Experience. (Abstract # P-563)**
Shozo Mori, Mitsugi Shimoda, Takatsugu Matsumoto, Takayuki Shiraki, Takayuki Kosuge, Yukihiro Iso, Masato Kato, Junji Kita, Keiichi Kubota. Tochigi, Japan.
- P-564 Outcome of LDLT With Grafts from Obese Donors. (Abstract # P-564)**
N. Vijai Anand, Sanjay Goja, Amit Rastogi, Balachandran Menon, Arvinder Singh Soin, Ravi Mohanka. Gurgaon, Haryana, India.
- P-565 Intraoperative 'No Go' Donor Hepatectomy in Living Donor Liver Transplantation: A Single Center Experience. (Abstract # P-565)**
Ahmed Hussein Khalil, Karim Adel Hosny, Tamer Elbaz, Dina Omar, Elsayed Abdelhalim, Ezz Eldeen Korashy, Mostafa Elshazly, Ayman Salah, Hesham Aboueisha, Ahmed Nabil, Adel Hosny. Cairo, Egypt.

- P-566 Intra-Operative Contrast Cholangiography and Preoperative Magnetic Resonance Cholangiography in Right Lobe Living Donors, Evaluation of Results and Clinical Impact. (Abstract # P-566)**
Duilio Pagano, Marco Spada, Marco Paci, Davide Cintorino, Sergio Li Petri, Roberto Miraglia, Calogero Ricotta, Pasquale Bonsignore, Bruno G. Gridelli, Salvatore Gruttadauria. Palermo, Italy; Pavia, Italy.
- P-567 Distal Splenorenal Shunt for Portal Vein Thrombosis after Liver Transplantation. Status after 10 Years Follow Up. (Abstract # P-567)**
Rebeca M. Sanabria, Alejandro Manrique, Iago Justo, Naim Fakih, Alberto A. Marcacuzco Q, Oscar M. Caso, Jorge Calvo, Felix Cambra, Alvaro Garcia Sesma, Carmelo Loinaz, Carlos Jimenez. Madrid, Spain.
- P-568 Preoperative Prediction of Short-Term Prognosis after Adult-to-Adult Living Donor Liver Transplantation: A Way to Zero-Mortality. (Abstract # P-568)**
Tsuyoshi Shimamura, Masato Fujiyoshi, Tomomi Suzuki, Kenichiro Yamashita, Takeshi Aoyagi, Ryouichi Goto, Toru Takahashi, Yasuyuki Koshizuka, Masahiko Taniguchi, Hiroyuki Furukawa, Satoru Todo. Sapporo, Japan; Asahikawa, Japan; Kurume, Japan.
- P-569 Living Donor Liver Transplantation for Alcoholic Steatohepatitis: Survival and Recidivism. (Abstract # P-569)**
Ravichand C. Siddachari, Neerav Goyal, Manav Wadhawan, Subash Gupta. Delhi, India.
- P-570 Surgical Outcome of Living Donor Hepatectomy: Single-Center Experience. (Abstract # P-570)**
Aydin Dalgic, Hakan Sozen, Osman Yuksel, Gokhan Yagci, Billur Demirogullari. Ankara, Turkey.
- P-571 Effectiveness of Continuous Wound Infusion of Ropivacaine for Postoperative Pain Management after Donor Hepatectomy in Living Donor Liver Transplantation. (Abstract # P-571)**
Suk-Won Suh, Jeong-Moo Lee, YoungRok Choi, Nam-Joon Yi, Kwang-Woong Lee, Kyung-Suk Suh. Seoul, Korea.
- P-572 † Recent Advancements and Perspectives of Donor Operation in Living Donor Liver Transplantation: Single-Center Experience of 886 Patients in 13 Years. (Abstract # P-572)**
Kyung-Suk Suh. Seoul, Korea.
- P-573 The Analysis of the Changes of Immunologic Factors in Long-Term Adult ABO-Incompatible Living Donor Liver Transplantation. (Abstract # P-573)**
Mitsuhisa Takatsuki, Masaaki Hidaka, Akihiko Soyama, Tomohiko Adachi, Amane Kitasato, Tamotsu Kuroki, Susumu Eguchi. Nagasaki, Japan.

Malignancies

- P-574 The Role of Liver Transplantation for Hilar Cholangiocarcinoma: A Single-Center Experience. (Abstract # P-574)**
Linping Cao, Jian Wu, Lei Geng, Weilin Wang, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-575 Pre-Transplant Downstaging for T2 Hepatocellular Carcinoma. (Abstract # P-575)**
Laura Coletti, Paolo De Simone, Irene Bargellini, Alessandro Silvestri, Giulia Lorenzoni, Daniela Campani, Carlo Bartolozzi, Franco Filippini. Pisa, Italy.
- P-576 The Fate of Intra-Ductal Papillary Mucinous Neoplasms of the Pancreas after Liver Transplantation. (Abstract # P-576)**
Laura Coletti, Paolo De Simone, Paola Carrai, Davide Ghinolfi, Giovanni Tincani, Gabriele Catalano, Alessandro Silvestri, Daniela Campani, Carlo Bartolozzi, Franco Filippini. Pisa, Italy.
- P-577 NUC Therapy in HBV- Related Chronic Liver Diseases: Any Impact on HCC Development? (Abstract # P-577)**
Massimo De Giorgio, Silvia Pecere, Luisa Pasulo, Maria Grazia Luca', Vittoria Vero, Giulia Magini, Giovanna Gaffuri, Davide Bitetto, Stefano Fagioli. Bergamo, Italy.
- P-578 Liver Transplantation for Hepatocellular Carcinoma (HCC): Customization of Immunosuppression and Close Follow Up Yields Better Outcomes. (Abstract # P-578)**
Sukru Emre, Roger Patron-Lozano, Amy Kim, Katarzyna Cartiera, Michael Schilsky, Manuel I. Rodriguez-Davalos. New Haven, CT, USA.
- P-579 Liver Transplantation for Combined Hepatocellular Carcinoma and Cholangiocarcinoma a Case Match Analysis. (Abstract # P-579)**
Enrico Gringeri, Francesco E. D'Amico, Egle Perissinotto, Claudia Mescoli, Domenico Bassi, Marina Polacco, Riccardo Boetto, Giacomo Zanusi, Massimo Rugge, Umberto Cillo. Padova, Italy.
- P-580 A New Score Based on Inflammatory Markers and Alpha-Fetoprotein for the Selection of Patients With Hepatocellular Cancer Waiting for Liver Transplantation. (Abstract # P-580)**
Quirino Lai, Edward Castro Santa, Juan M. Rico Juri, Rafael S. Pinheiro, Jan Lerut. Brussels, Belgium.
- P-581 Not All the Times Morphology Tells the Entire Story: AFP Slope and Radiological Progression Improve HCC Recurrence Prediction in Milan Criteria-In Patients. (Abstract # P-581)**
Quirino Lai, Gerd Otto, Ivo Graziadei, Alfonso W. Avolio, Giuseppe Tisone, Massimo Rossi, Jan Lerut. Brussels, Belgium; Rome, Italy; Mainz, Germany; Innsbruck, Austria.

- P-582** **Salinomycin Enhances the Therapeutic Efficiency of Doxorubicin By Preventing Epithelial-Mesenchymal Transition via Inhibiting Wnt Signaling in Hepatocellular Carcinoma Cells. (Abstract # P-582)**
Chao Liang, Wei Chen, Xiao Zhi, Xueli Bai, Tingbo Liang. Hangzhou, China.
- P-583** **Is Sequential Liver Transplantation a Reasonable Approach for Curatively Resected Hepatocellular Carcinoma? (Abstract # P-583)**
Chih-Che Lin, Chih-Chi Wang, Shih-Ho Wang, Yueh-Wei Liu, Chee-Chien Yong, Ting-Lung Lin, Wei-Feng Lee, Yu-Hung Lin, Tsan-Shiun Lin, Chao-Long Chen. Koahsiung, Taiwan.
- P-584 †** **Influence of the Type of Calcineurin Inhibitor on HCV Recurrence after Liver Transplantation. Results of a Prospective Randomized Study. (Abstract # P-584)**
Laura Llado, Joan Fabregat, Carme Baliellas, Emilio Ramos, Jaume Torras, Lluís Secanella, Jose Castellote, Rosa Rota, Juli Busquets, Nuria Pelaez, Xavier Xiol, Teresa Serrano, Antoni Rafecas. Barcelona, Spain.
- P-585** **Living Donor Liver Transplantation With Partial Nephrectomy for End-Stage Liver Disease With Incidentally Detected Renal Cell Carcinoma - A Case Report. (Abstract # P-585)**
Vivek Mangla, Shailendra Lalwani, Ajay Sharma, Piyush Ranjan, Sunita Bhalla, Samiran Nundy, Naimish N. Mehta. New Delhi, Delhi, India.
- P-586** **Case Report and Review of the Literature – Inexplicable Outcome of Early Appearance of De Novo HCC in the Allograft after DDLT. (Abstract # P-586)**
Benjamin Navarro, Kwang-Woong Lee, Kyung-Suk Suh, Nam-Joon Yi, YoungRok Choi. Seoul, Korea.
- P-587** **The 18-FDG-Positron Emission Tomography Is Useful in the Assessment of Transarterial Chemoembolization in Patients With Hepatocellular Carcinoma Awaiting Liver Transplantation. (Abstract # P-587)**
Pablo Ramirez, María del Rocío González, Erik Llacer-Millán, Pedro Cascales, Jesús De la Peña, José Luis Navarro, Matilde Fuster, Francisco Sánchez Bueno, Ricardo Robles, José Antonio Pons, Manuel Miras, Pascual Parrilla. El Palmar, Murcia, Spain.
- P-588** **Response To Transarterial Chemoembolization in Candidates With Hepatocellular Carcinoma Within Milan Criteria Does Not Predict Post-Transplant Disease Free Survival. (Abstract # P-588)**
Paolo R. Salvalaggio, Guilherme E. Felga, Bianca Della Guardia, Marcio D. Almeida, Marcelo B. Rezende. São Paulo, Brazil.
- P-589** **Liver Transplantation for Liver Metastases from Ocular Melanoma. (Abstract # P-589)**
Jon Magnus Aa Solheim, Morten Hagness, Pål-Dag Line, Svein Dueland, Aksel Foss. Oslo, Norway.
- P-590** **Bridging the Gap -An Analysis of Bridging Therapies in Liver Transplantation for Hepatocellular Carcinoma. (Abstract # P-590)**
Chun Han, Nigel Tan, Yu Yue, Yan Rui, Nicholas Tan, Krishnakumar Madhavan, Iyer Shridhar Ganapathi, Kin Yong, Stephen Chang, Wei Chieh, Alfred Kow. Singapore, Singapore.
- P-591** **Criteria-Specific Long-Term Survival Predicting Model for Hepatocellular Carcinoma Patients after Liver Transplantation: A Single-Center Experience. (Abstract # P-591)**
Fei Teng, Xiaomin Shi, Wenyuan Guo, Guoshan Ding, Zhengxin Wang, Zhiren Fu. Shanghai, China.
- P-592** **Impact of Portal Hypertension in Patients Waiting for Liver Transplantation for Hepatocellular Carcinoma on Cirrhosis. (Abstract # P-592)**
F. Faitot, R. Adam, D. Castaing, D. Cherqui, A. Sa Cunha, D. Samuel, E. Vibert. Villejuif, France.
- P-593** **Analysis of Prognostic Factors Affecting Tumor Recurrence and Patient Survival after Liver Transplantation for Hepatocellular Carcinoma Without Macrovascular Invasion. (Abstract # P-593)**
Guo-Ying Wang, Yang Yang, Hua Li, Shu-Hong Yi, Gen-Shu Wang, Jian Zhang, Gui-Hua Chen. Guangzhou, China.
- P-594** **Family History May Not Influences the Early Onset of Hepatocellular Carcinoma. (Abstract # P-594)**
Qiang Wei, Xiao Xu, Yangbo Zhu, Qi Ling, Qinghong Ke, Weiling Wang, Shusen Zheng. Hangzhou, Zhejiang, China.

Outcomes

- P-595 †** **In LDT for HCC, Results of UCSF Criteria Are Inferior Compared To Milan Criteria. (Abstract # P-595)**
Shaleen Agarwal, Neerav Goyal, Manav Wadhawan, Giriraj Bora, Subash Gupta, Shishir Pareek, Muhammad Naeem, Subash Gupta. Delhi, India.
- P-596 †** **Liver Trasplantation for Hcc, Does the Type of Donor Graft Really Matter? Survival and Recurrence Meta-Anlysis. (Abstract # P-596)**
Ibrahim Al Hasan, Jean C. Emond. Riyadh, Saudi Arabia; New York, USA.

- P-597** **Impact of Preexisting Diabetes Mellitus on Outcomes of Liver Transplantation in Patients With Hepatocellular Carcinoma. (Abstract # P-597)**
Ibrahim Al Hasan, Albert C.Y. Chan, Kenneth S.H. Chok, See Ching Chan, Chung Mau Lo. Hong Kong, Hong Kong.
- P-598** **Pre-Operative Predictors of Renal Replacement Therapy after Orthotopic Liver Transplant for Chronic Liver Disease. (Abstract # P-598)**
A. Athale, E. Kontis, K. Menon, A. Prachalias, P. Srinivasan, W. Jassem, H. Vilca-Melendez, W. Bernal, G. Auzinger, C. Villars, A. Sanchez-Fueyo, A. Suddle, K. Agarwal, V. Aluvihare, N. Heaton J. Wendon. London, United Kingdom.
- P-599** **Endoscopic Management of Post Live Donor Liver Transplant Biliary Strictures: A Prospective Study from Tertiary Centre in India. (Abstract # P-599)**
Piyush Ranjan, Rinkesh Kumar Bansal, Naimish Mehta, Shailender Lalwani, Vinay Kumaran, Munish Sachdeva, Mandhir Kumar, Samiran Nundy. New Delhi, Delhi, India.
- P-600 †** **Predictors of Survival in Patients With Hepatocellular Carcinoma Accepted for Living Donor Liver Transplantation Beyond the “Size-Number” Criteria. (Abstract # P-600)**
P. Bhangui, T. Piplani, D. Gautam, S. Saigal, A.S. Soin. Delhi NCR, India.
- P-601** **Cardiopulmonary Exercise Testing Predicts Hospital, but Not Intensive Care Unit Length of Stay. (Abstract # P-601)**
Nibras Bughrara, Ahmet Gurakar, Stuart Russel, Aliaksei Pustavoitau. Baltimore, MD, USA.
- P-602** **BAR Score Is Better Predictor of Sort and Long-Term Survival in Liver Transplantation? (Abstract # P-602)**
Ivan Dias Campos Junior, Elisabete Yoko Udo, Raquel Silveira Bello Stucchi, Maria Fátima Trovato Mei, Ilka Fátima Santana Ferreira Boin. Campinas, São Paulo, Brazil.
- P-603** **De Novo Hepatitis B Infection from HBcAb-Positive Donor during Hepatitis B Immune Globulin Prophylaxis. (Abstract # P-603)**
Seong-Hwan Chang. Seoul, Korea.
- P-604** **Outcome of Liver Transplantation in Alcoholic Liver Disease. (Abstract # P-604)**
Wontae Cho, Choon Hyuck David Kwon, Jin Young Choi, Seung Hwan Lee, Kyo Won Lee, Eunmi Gil, Byunggon Na, Dong Kyu Oh, Jinsoo Rhu, Jong Man Kim, Jae-Won Joh, Suk-Koo Lee. Seoul, Republic of Korea.
- P-605** **Clinical Factors for Intraoperative Bleeding in Emergency Liver Transplantation for Patients in KONOS Status 2A. (Abstract # P-605)**
Gyu-Seong Choi, Ju Ik Moon. Seoul, Republic of Korea; Daejeon, Republic of Korea.
- P-606** **Complication Rates and Longterm Outcome Following Liver Transplantation With an Arterial Conduit. (Abstract # P-606)**
Christian Denecke, Jannis Rorarius, Claudia Boesmueller, Matthias Biebl, Felix Aigner, Stefan Schneeberger, Johann Pratschke, Oellinger Robert. Innsbruck, Austria.
- P-607** **The Impact of Body Mass Index in the Long Term Outcome of Liver Transplanted Patients. (Abstract # P-607)**
Itxarone Bilbao, Cristina Dopazo, Lluís Castells, Jose Luis Lazaro, Mireia Caralt, Sofia de la Serna, Gonzalo Sapisochin, Ramón Charco. Barcelona, Spain.
- P-608** **High-Altitude Liver Transplantation: Pulmonary Pressure and Its Implication on Mortality. (Abstract # P-608)**
Sergio Enderica-Gonzalez, Juan C. Aguilar, Harry Dorn, Juan J. Suarez, Vladimir Ullauri, Paul Astudillo, Frans Serpa. Quito, Ecuador; Cumbaya, Ecuador.
- P-609** **Liver Transplantation in Lebanon: A Hard Lesson To Learn (Updates). (Abstract # P-609)**
Walid Faraj, Ghattas Khoury, Samar Jabbour, Ali Haydar, Ali Shamseddine, Abdallah Abou Nijaj, Mohamed Khalife. Beirut, Lebanon.
- P-610** **Different Score Systems To Predict Mortality: Which Is the Winner? The Experience of an Egyptian Centre for Living Donor Liver Transplant. (Abstract # P-610)**
Mona ElAmir, Hadeel GamalElDeen, Shreef Megawer, Gamal Esmat, Mostafa ElShazly, Noaman ElGarem, Mohammed Said, Ayman Salah, Adel Hosny. Cairo, Egypt.
- P-611 †** **Progressive Renal Dysfunction While on the Liver Wait List May Be an Indication for Simultaneous Liver-Kidney Transplantation. (Abstract # P-611)**
Muhammad Muneeb, Marc Heronemus, Aditi Gupta, Amna Ilahe, Timothy Schmitt, Bruce Kaplan, Richard Gilroy. Kansas City, KS, USA.
- P-612** **Elderly vs Non-Elderly Donors for Liver Transplantation Among Different Expended Criteria: A Meta-Analysis. (Abstract # P-612)**
Zhiyong Guo, Weiqiang Ju, Dongping Wang, Shengwen Deng, Ye Xu, Xiaoshun He. Guangzhou, China.

- P-613 De Novo Hepatitis B Virus Infection after Adult Liver Transplantation Using a Positive Hepatitis B Core Antibody Graft. (Abstract # P-613)**
Jae Hyun Han, Dong Goo Kim, Eun Young Kim, Soo Hoo Lee, Young Kyoung You, Tae Ho Hong. Seoul, Republic of Korea.
- P-614 Nursing Experience of Anticoagulation Therapy after Multi-Organ Transplantation of Upper Abdominal. (Abstract # P-614)**
Xiaofeng He, Huili Ye, Qiaoling Zeng. Guangzhou, China.
- P-615 Improving Outcomes of Liver Retransplantation for End-Stage Alcoholic Liver Disease: An Analysis of Trends and Risk Factors. (Abstract # P-615)**
Zhenhua Hu, Zhiwei Li, Jie Xiang, Jie Zhou, Jian Wu, Sheng Yan, Lin Zhou, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-616 Risk Factors for 3 Months Mortality Following Liver Transplantation in Romanian Transplant Program. (Abstract # P-616)**
Liana Gheorghe, Speranta Iacob, Carmen Ester, Razvan Cerban, Corina Pietrareanu, Dana Tomescu, Gabriela Droc, Doina Hrehoret, Vlad Brasoveanu, Irinel Popescu. Bucharest, Romania.
- P-617 Frequent Appearance of HBs Escape Mutant after Successful Posttransplant Vaccination in Both HBV Carriers and Non-HBV Patients Received Grafts from HBcAb Positive Donors. (Abstract # P-617)**
Masatoshi Ishigami, Takashi Honda, Yoji Ishizu, Yasuharu Onishi, Hideya Kamei, Yasuhiro Ogura, Hidemi Goto. Nagoya, Japan.
- P-618 Long-Term Course of Five Patients Who Underwent Liver Transplantation With Small-For-Size Grafts With a Hemi-Portocaval Shunt. (Abstract # P-618)**
Eitaro Ito, Taiji Tohyama, Jota Watanabe, Masahide Hatano, Hitoshi Inoue, Shoichi Kageyama, Tetsuya Mizumoto, Akihiro Takai, Fumiki Kushihata, Yasutsugu Takada. Toon, Japan.
- P-619 Influence of Body Mass Index (BMI) on Liver Transplantation. (Abstract # P-619)**
Dinesh Jothimani, Sanjay Govil, Srinivas Reddy, Mohamed Rela. Chennai, Tamilnadu, India.
- P-620 Early Experience of the Use of Ringed PTFE Graft for Middle Hepatic Vein Reconstruction for Living Donor Liver Transplantation. (Abstract # P-620)**
Kwan Woo Kim, Jeong-ik Park, Sung-Gyu Lee. Busan, Korea; Seoul, Korea.
- P-621 The Effects of Early Enteral Feeding Within 48hrs after Living Donor Liver Transplantation: The Retrospective Review of 117 Cases. (Abstract # P-621)**
Eun Young Kim, Dong Goo Kim, Tae Ho Hong, Gun Hyung Na, Jae Hyun Han, Soo Ho Lee, Young Kyoung You. Seoul, Republic of Korea.
- P-622 Living-Donor Liver Transplantation for Progressive Familial Intrahepatic Cholestasis. (Abstract # P-622)**
Izumi Kirino, Tomohide Hori, Hiroto Egawa, Aya Miyagawa-Hashimoto, Tohru Yorifuji, Yukihide Yonekawa, Shinji Uemoto. Kyoto City, Kyoto, Japan; Kyoto-City, Kyoto, Japan; Tokyo, Japan.
- P-623 Liver Transplantation and Overlap Syndromes – A 10-Year Experience. (Abstract # P-623)**
D. Klintman, J. Bustamante, S. Kriese, M. Muñoz Tornero, I. Cadden, N. McDougall, G. Whitehouse, A. Quaglia, J.G. O'Grady, N.D. Heaton, A. Sanchez Fueyo, Ma Heneghan. London, United Kingdom; Malmo, Sweden; Baracaldo, Spain; Murcia, Spain; Belfast, United Kingdom.
- P-624 Abdominal Multiple Organ Transplantation on Postoperative Nursing Care of Early Application of Immunosuppressant. (Abstract # P-624)**
Xinchun Luo, Lihan Rui, Qiaoling Zeng. Guangzhou, China.
- P-625 Good Outcome in Elderly Transplant Recipients: Experience from a High Volume Living Donor Liver Transplant Centre. (Abstract # P-625)**
R. Mohanka, S. Saigal, N. Saraf, N. Choudhary, A. Rastogi, S. Goja, P. Balachandran, P. Bhargui, S. Ramchandra, P. Singla, R. Babu, G. Shetty, V. Raut, S. Thiagarajan, A. Soin. Gurgaon, India.
- P-626 † Management of Extensive Non-tumorous Portal Vein Thrombosis in Adult Living Donor Liver Transplantation. (Abstract # P-626)**
Deok-Bog Moon, Sung-Gyu Lee, Chul-Soo Ahn, Shin Hwang, Ki-Hun Kim, Eol Choi, Ja-Hyun Kwon, Gil-Chun Park, Hyung-Woo Park, Yo-Han Park, Bo-Hyun Jung, Sung-Hwa Kang. Seoul, Korea.
- P-627 Outcome of High Risk Recipients in Living Donor Liver Transplantation - Choosing the Best of the Worst. (Abstract # P-627)**
N. Sachidananda, P. Balachandran Menon, Punit Singla, Sumana R. Kolar, Prashanth Bhargui, Sanjay Goja, Amit Rastogi, Ravi Mohanka, Neeraj Saraf, Sanjiv Saigal, Vijay Vohra, Arvinder Singh Soin. Gurgaon, Haryana, India.
- P-628 Meta-Analysis on the Endoscopic Treatment of Liver Transplantation Biliary Stricture. (Abstract # P-628)**
Lucas S. Nacif, Wanderley M. Bernardo, Luca Bernardo, Wellington Andraus, Lucas Torres, Eleazar Chaib, Luiz C. D'Albuquerque, Fauze Maluf-Filho. Sao Paulo, Brazil.

- P-629 The Risk of Delisting Or Death in Liver Transplant Candidates Increases Following Infections: Results from the NACSELD Consortium. (Abstract # P-629)**
J. G. O'Leary, J. S. Bajaj, F. Wong, P. S. Kamath, S. W. Biggins, H. M. Patton, M. B. Fallon, G. Garcia-Tsao, R. M. Subramanian, B. J. Maliakkal, R. Malik, L. R. Thacker, K. R. Reddy. TX, USA; VA, USA; ON, Canada; MN, USA; CO, USA; CA, USA; CT, USA; GA, USA; NY, USA; MA, USA; PA, USA.
- P-630 Initial Experience of Liver Transplantation in PNUIH. (Abstract # P-630)**
Sang Ho Bae, Young Mok Park, Kwang Ho Yang, Ki Myung Moon, Je Ho Ryu, Chong Woo Chu, Jeong Hee Kang, Seo Yeon Oh. Yangsan, Republic of Korea; Chunan, Republic of Korea.
- P-631 An Experience of Liver Transplantation in Patients With Nodular Regenerative Hyperplasia. (Abstract # P-631)**
Yenkata Rajanikanth Patcha, Elissaios Kontis, Yamen Jabri, Parthi Srinivasan, Andreas Prachalias, Krishna Menon, Wayel Jessum, Hector Vilca-Melendez, Kosh Agarwal, Abid Suddle, Varuna Aluvihare, Michael Heneghan, John O'Grady, Alberto Quaglia, Yoh Zen Mohammed Rela Nigel Heaton. London, United Kingdom.
- P-632 Towards a Predictive Score of Enhanced Recovery and Early Discharge from Hospital after Liver Transplantation (ERALT). (Abstract # P-632)**
Federico Piñero, Martín Fauda, Manuel Mendizabal, Ariel Gonzalez Campaña, Diego Arufe, Silvina Montal, Franco Nievas, Mariano Barreiro, Pía Raffa, Oscar Andriani, Marcelo Silva, Luis G. Podesta. Pilar, Buenos Aires, Argentina.
- P-633 Learning Curves Analysis of the Liver Transplant Program in Uruguay. (Abstract # P-633)**
Karina Rando, Jimena Prieto, Josemaria Menendez, Marcelo Valverde, Martín Abellieira, Jorge Castelli, Paola Scalone, Solange Gerona, Alejandro Leites, Julio Medina, Alejandro Ettlin, Gustavo Grecco, Victoria Mainardi, Adriana Roca, Martín Harguindeguy. Montevideo, Uruguay.
- P-634 Long Way To Go for Deceased Donor Liver Transplantation in India: Comparison of Outcomes of Living Donor and Deceased Donor Liver Transplantation from a Single Centre. (Abstract # P-634)**
Metu S. Reddy, Akila Rajkumar, Manoj Shrivatsav, Rajesh Rajalingam, Joy Vargese, Thomas Cherian, Vivekanandan Shanmugham, Rajasekhar Perumalla, Olithselvan Olithselvan, Dinesh K. Jothimani, Mohamed Rela. Chennai, Tamil Nadu, India.
- P-635 Negative Fluid Balance with CRRT during Orthotopic Liver Transplantation. (Abstract # P-635)**
Hyun Su Ri, Sang-Wook Shin, Chong Woo Chu, Je Ho Ryu, Ki Myung Moon, Kwang Ho Yang, Young Mok Park. Yangsan, Gyeongnam, Korea.
- P-636 Nurse Experience in Simultaneous Pancreas and Kidney Transplantation for Liver Transplant Recipients With Diabetes and Uremia. (Abstract # P-636)**
Lihan Rui, Qiaoling Zeng, Yingcui Liu. Guangzhou, China.
- P-637 Hepatic Resection Versus Liver Transplantation in Treatment of HCC. (Abstract # P-637)**
Tarek Salah, Mohamed Wahab, Mohamed Morsy Shoubary, Ahmed Mohamed Soutan, Amr M. Yassen, Mohamed Saadany, Usama Shiha. Mansoura, Dakahlia, Egypt.
- P-638 Referral Patterns, Adherence to AASLD Guidelines and Outcomes in Patients Referred for a Liver Transplant. (Abstract # P-638)**
Jayshri Shah, Ankur Shah, Vinay Kumaran. Mumbai, India.
- P-639 Preoperative Elevated Alpha Fetoprotein Increases Tumor Recurrence of Hepatocellular Carcinoma after Liver Transplantation. (Abstract # P-639)**
Guangqin Xiao, Shu Shen, Jiayin Yang, Lunan Yan. Chengdu, China.
- P-640 Living Donor Liver Transplantation in Acute-on-Chronic Liver Failure- Selection, Timing and Outcome. (Abstract # P-640)**
P. Singla, N. Saraf, V. Velayutham, V. Raut, E. Kumaran, P. Bhangui, S. Ramachandra, B. Menon, S. Goja, A. Rastogi, R. Mohanka, N. Mohan, S. Saigal, A. Soin. Gurgaon, India.
- P-641 † Quality of Life in Liver Transplant Candidates: Frailty May Be a Better Indicator Than Severity of Liver Disease. (Abstract # P-641)**
Angela E. Thelen, Jordan E. Derck, David C. Cron, Jeffrey F. Friedman, Ashley D. Gerebics, Michael J. Englesbe, Christopher J. Sonnenday. Ann Arbor, MI, USA.
- P-642 DIAMOND: Preserving Renal Function (RF) Over 24 Wks with Prolonged-Release Tac in De Novo LTx Pts by Baseline (BL) eGFR/MELD. (Abstract # P-642)**
G. Tisone, J. Klempnauer, W. Bechstein, J. Pirenne, S. Friman, A. Zhao, H. Isoniemi, L. Rostaing, U. Settmacher, M. Brown, N. Undre, P. Trunecka. Italy; Germany; Belgium; Sweden; Russian Federation; Finland; France; USA; United Kingdom; Czech Republic.

- P-643 †** **Impact of New Onset Comorbidities Following Liver Transplantation on Long-Term Survival. (Abstract # P-643)**
Chutwichai Tovikkai, Susan C. Charman, Raaj K. Praseedom, Alexander E. Gimson, Jan van der Meulen. London, United Kingdom; Cambridge, United Kingdom.
- P-644** **Management of Infection and Selective Intestinal Decolonization of Carbapenem-Resistant Enterobacteriaceae in Liver Transplant Recipients. (Abstract # P-644)**
Anita Verma, Nigel Heaton, Marie O'Meara, John O'Grady, Anil Dhawan. London, United Kingdom.
- P-645** **Association between Donor Liver LXR Gene Polymorphisms and Cholesterol Disarrangement after Liver Transplantation in a Chinese Han Population. (Abstract # P-645)**
Kai Wang, Xiao Xu, Qi Ling, Di Lu, Penghui Xiang, Chao Wang, Shusen Zheng. Hangzhou, Zhejiang Province, China.
- P-646** **Efficacy of Post Liver Transplant Hepatitis B Booster Vaccination in Chronic Hepatitis B Recipients With Prior Immune Response. (Abstract # P-646)**
Tiffany C.L. Wong, James Y.Y. Fung, Kenneth S.H. Chok, Tan To Cheung, Albert C.Y. Chan, Jeff W.C. Dai, William Sharr, Simon H.Y. Tsang, Cindy K.Y. Cheung, See Ching Chan, Chung Mau Lo. Hong Kong, Hong Kong.
- P-647** **Long - Term Therapy With NUC's in Liver Transplant Recipients. (Abstract # P-647)**
Ekaterina Yaroshenko, Maxim Kornilov, Yan Moysyuk. Moscow, Russian Federation.
- P-648** **Microbial Epidemiology and Risk Factors for Infections after Liver Transplant Recipients. (Abstract # P-648)**
MangLi Zhang, Jun Xu, WeiLin Wang, Min Zhang, Yan Shen, Lin Zhou, Xiao Xu, Jian Wu, Li Zhuang, XiangYan Liu, ShuSen Zheng. Hangzhou, China.
- P-649** **Prognostic Role of EpCAM in Patients With Hepatocellular Carcinoma after Liver Transplantation. (Abstract # P-649)**
Zhiyun Zheng, Li Zhao, Zhe Yang, Bingyi Lin, Sheng Gao, Zhou Lin, Shusen Zheng. Hangzhou, Zhejiang, China.
- P-650** **A Rare Complication of Upper Abdominal Organ Cluster Transplantation: Acute Granulocytic Leukemia. (Abstract # P-650)**
Jian Zhou, Xiaopeng Yuan, Weiqiang Ju, Ming Han, Chuanbao Chen, Xingyuan Jiao, Xiaoshun He. Guangzhou, China.

Patient Selection/Organ Allocation

- P-651** **Donor/Recipient Gender Mismatch Modifies the Impact of Donor Age on Graft Survival Following Liver Transplantation. (Abstract # P-651)**
Davide Bitetto, Silvia Pecere, Martina Gambato, Alberto Ferrarese, Luisa Pasulo, Maria Grazia Luca', Edoardo Poli, Stefano Ginanni Corradini, Umberto Baccarani, Patrizia Burra, Pierluigi Toniutto, Stefano Fagiuoli. Bergamo, Italy; Padua, Italy; Rome, Italy; Udine, Italy.
- P-652 †** **External European Validation of a Multicenter Model for Donor-Recipient Matching in Liver Transplantation Based on Artificial Neural Networks. (Abstract # P-652)**
Ruben Ciria, Maria Dolores Ayllon, Roberto Valente, Manuel Cruz-Ramirez, Maria Perez-Ortiz, Cesar Hervas, Mohammed Rela, John O'Grady, Manuel de la Mata, Nigel D. Heaton, Javier Briceno. Cordoba, Spain; London, United Kingdom.
- P-653** **Predictive Value of Pre-Transplant Serum Alpha-Fetoprotein and Des-Gamma-Carboxy Prothrombin Levels on Hepatocellular Carcinoma Recurrence after Liver Transplantation. (Abstract # P-653)**
Hyung Soon Lee, Dong Jin Joo, Gi Hong Choi, Dae Ryong Kang, Juhan Lee, Myoung Soo Kim, Jin Sub Choi, Soon Il Kim. Seoul, Korea.
- P-654** **Comparison between Living Donor Liver Transplantation Recipients Who Met the Milan and UCSF Criteria after Successful Down-Staging Therapies. (Abstract # P-654)**
Jianyong Lei, Lunan Yan, Wentao Wang. Chengdu, Sichuan, China.
- P-655** **Nutrition Status Using Subjective Global Assessment (SGA) Independently Predicts Outcome of Patients Waiting for Living Donor Liver Transplant. (Abstract # P-655)**
R. Mohanka, S.K. Yadav, N. Bakshi, N. Saraf, P. Balachandran, S. Saigal, A. Rastogi, S. Goja, P. Bhangui, S. Ramchandra, P. Singla, A. Soin. Gurgaon, Haryana, India.
- P-656** **Patients Maintained on Opioid Substitutes Undergoing Liver Transplantation: A Single Centre Experience. (Abstract # P-656)**
Huyen-Ly Nguyen-Adams, Ian Webzell, Deepak Joshi, James Bell, Abid Suddle, Varuna Aluvihare, Michael Heneghan, John O'Grady, Kosh Agarwal. London, United Kingdom.
- P-657** **Chronologic Changes of Explanted Liver Volume and the Use of Ursodeoxycholic Acid in Patients With End-Stage Primary Biliary Cirrhosis. (Abstract # P-657)**
Tomohiro Tanaka, Noriyo Yamashiki, Yasuhiko Sugawara, Sumihito Tamura, Minoru Nakamura, Nobuhisa Akamatsu, Junichi Kaneko, Taku Aoki, Yshihiro Sakamoto, Kiyoshi Hasegawa, Norihiro Kokudo. Tokyo, Japan; Nagasaki, Japan.

P-658 Factors Influencing Unsuccessful Donation of 46 Potential Solid Organ Donors. (Abstract # P-658)
Xiaoping Wang, Min Hang, Xiaopeng Yuan, XingYuan Jiao, Jian Zhou, Xiaoshun He, Yanna Gao, Min Gao. Guangzhou, Guangdong, China; Shenzhen, Guangdong, China.

P-659 Risk Factors Analysis of Early Graft Dysfunction and Posttransplant Complications after Liver Transplantation from Deceased Organ Donation at a Single Chinese Organ Transplant Center. (Abstract # P-659)
Qiang Zhao, Zhiyong Guo, Xiaoshun He, Weiqiang Ju, Dongping Wang. Guangzhou, Guangdong, China.

Pediatrics

P-660 MTOR Inhibitors and Longitudinal Growth of Pediatric Liver Transplant Recipients. (Abstract # P-660)
Cigdem Arikian, Gulay Aksu, Senol Kafa, Murat Zeytinlu, Murat Kilic. Izmir, Turkey; Nicosia, Cyprus.

P-661 Transplantation for Liver Tumors in Children: Our Experience. (Abstract # P-661)
Guillermo Cervio, Diego Aredes, Esteban Halac, Marcelo Dip, Luis Rojas, Roxana Martinotto, Andrea Bosaleh, Maria Davilla, Oscar Imventarza. Ciudad de Buenos Aires, Argentina.

P-662 Successful Abdominal Closure in Pediatric Liver Transplantation Using a Step Wise Reduced Silastic Patch. (Abstract # P-662)
Uta Herden, Enke Grabhorn, Andrea Briem-Richter, Bjoern Nshan, Lutz Fischer. Hamburg, Germany.

P-663 Hepatic Artery Thrombosis after Pediatric Liver Transplantation – Description of a High Volume Transplant Center and Long-Term Follow-Up. (Abstract # P-663)
Uta Herden, Enke Grabhorn, Andrea Briem-Richter, Knut Helmke, Jochen Hermann, Bjoern Nshan, Lutz Fischer. Hamburg, Germany.

P-664 Sequential Living Donor Kidney and Liver Transplantation for Type I Primary Hyperoxaluria: A Case Report. (Abstract # P-664)
Dong-Sik Kim, Young-Dong Yu, Sung-Won Jung, Sung-Ock Suh. Seoul, Korea.

P-665 Ductal Plate Malformations and Bile Cysts in Ex-Plants of Children With Biliary Atresia. (Abstract # P-665)
Priya Ramachandran, Naresh P. Shanmugam, Mukul Vij, Mohamed Rela. Chennai, Tamilnadu, India; 12 a Nageswara Rd, Chennai, Tamilnadu, India.

P-666 ABO Incompatible Living Donor Liver Transplantation in Pediatric Patients. (Abstract # P-666)
Ko Hun Seo, Jin Min Cho, Seak Hee Oh, Kyung Mo Kim. Seoul, Korea.

P-667 Pediatric Liver Transplantation: Gazi University Experience. (Abstract # P-667)
Hakan Sozen, Billur Demirogullari, Gokhan Yagci, Sinan Sari, Odul Egritas, Buket Dalgic, Aydin Dalgic. Ankara, Turkey.

P-668 Parenteral Nutrition Supplementation in Children With Biliary Atresia Awaiting Liver Transplantation. (Abstract # P-668)
Robert S. Venick, Sue V. McDiarmid, Marjorie Guerra, Susan Feist, Laurie Reyen, Laura J. Wozniak, Jorge H. Vargas, Douglas G. Farmer, Ronald W. Busuttil. Los Angeles, CA, USA.

P-669 Novel Technique of Portal Vein Reconstruction in Pediatric Liver Transplantation with Portal Vein Hypoplasia. (Abstract # P-669)
Nam-Joon Yi, Jeong-Moo Lee, Suk-Won Suh, YoungRok Choi, Kwang-Woong Lee, Kyoung-Suk Suh, Ung Sik Jin, Chul-Woo Jung. Seoul, Korea.

Radiology

P-670 Contrast-Enhanced Ultrasound Provides Better Assessment of the Microwave Ablations in an Ex Vivo Perfused Liver Model. (Abstract # P-670)
Ahmed Alzarraa, Wen Yuan Chung, Bruno Morgan, Kevin West, Ashley Dennison, David Lloyd. Leicester, United Kingdom.

P-671 † Evaluation of 11C-Acetate and 18F-FDG PET Scan With Contrast CT on Pathological and Prognosis Prediction in HCC Patients before Liver Transplantation- A Single-Institute-Experience. (Abstract # P-671)
Tan To Cheung, See Ching Chan, Garret C.L. Ho, Keneth S.H. Chok, Albert Chan, William Sharr, Sirong Chan, Ronnie Poon, Sheung Tat Fan, Chung Mau Lo. Hong Kong, Hong Kong.

P-672 Contrast Enhanced Ultrasonic Cholangiography via T-Tube Following Liver Transplantation. (Abstract # P-672)
Sascha S. Chopra, Daniel Seehofer, Christian Grieser, Peter Neuhaus, Timm Denecke. Berlin, Germany.

P-673 A Specimen Quality Analysis between Interventional Radiology and Gastroenterology from a Single Center. (Abstract # P-673)
Maura O'Neil, Sean Kumer, Marc Heronemus, Timothy Schmitt, Beenish Ahmed, Philip Johnson, Steven Lemons, Ryan Taylor, Zach Collins, Richard Gilroy. Kansas City, KS, USA.

P-674 **Measurement of Hepatic Vascular Arrival Times at Immediate Post-Transplantation Period Using Contrast Enhanced Ultrasonography. (Abstract # P-674)**
Woo Kyoung Jeong, Ji Hye Min, Won Jae Lee, Kyoung Won Kim. Seoul, Korea.

P-675 **Diagnostic Efficiency of CT Perfusion Imaging for Detection of the Cirrhosis-Associated Hepatocellular Carcinoma in Patients With Liver Transplant Candidates. (Abstract # P-675)**
Mecit Kantarci, Berhan Pirimoglu, Leyla Karaca, Aylin Okur, Bulent Aydinli, Betul Gundogdu. Erzurum, Turkey.

P-676 † **Interventional Therapy of Recurrent Tumor after Liver Transplantation for HCC. (Abstract # P-676)**
Jun-Hui Sun, Yue-Lin Zhang, Chun-Hui Nie, Guan-Hui Zhou, Shu-Sen Zheng. Hangzhou, Zhejiang, China.

Recurrent Disease/Pathology

P-677 **Impact of Graft Type on the Survival Outcome of Salvage Liver Transplantation for Recurrent Hepatocellular Carcinoma. (Abstract # P-677)**
Albert Chan, See Ching Chan, Kenneth Chok, Tan To Cheung, Chung Mau Lo. Hong Kong, Hong Kong.

P-678 † **Prevalence of Donor Specific Antibodies in Liver Transplantation Recipients With Unexplained Liver Graft Abnormalities Is Significantly Higher Than in Control Groups. (Abstract # P-678)**
Ainad Ghandir, Marynnovick Carmagnat, Elie Serge Zafrani, Françoise Roudot Thoraval, Philippe Mavier, Monika Hurtova, Ariane Mallat, Dominique Desvaux, Cyrille Feray, Caroline Suberbielle, Christophe Duvoux. Creteil, France; Paris, France.

P-679 **Tuberculosis in Liver Transplant Recipients- Experience from a South Indian Liver Transplant Center. (Abstract # P-679)**
Arikichenin Olithselvan, Vivekanan Shanmugam, Mukul Vij, Naresh Shanmugam, Gomathy Narasiman, Rajsekar Perumalla, Srinivas Reddy, Joy Vargese, Dinesh Jothimani, Mohamed Rela. Chennai, India.

P-680 **Severe Steatosis As the Initial Histologic Manifestation of Early Recurrent Hepatitis C. (Abstract # P-680)**
Neeraj Saraf, Narendra S. Choudhary, Sanjiv Saigal, Dheeraj Gautam, Ravi Mohanka, Amit Rastogi, Sanjay Goja, P. Balachandran Menon, Arvinder S. Soin. Gurgaon, Haryana, India; Gurgaon, India.

P-681 **Indolent T-Lymphoblastic Proliferation (iT-LBP) in Hepatocellular Carcinoma (HCC): A Novel Prognostic Marker? (Abstract # P-681)**
Mei Kong, Jimin Liu, Xiaodong Teng, Hongtian Yao, Ming Zhao, Chaozhe Jiang, Zhaoming Wang. Hangzhou, Zhejiang, China; Ningbo, Zhejiang, China; Hamilton, ON, Canada.

Surgical Techniques/Complications

P-682 † **Abnormal Hemostatic Function One Year after Orthotopic Liver Transplantation Can Be Fully Attributed To Endothelial Cell Activation. (Abstract # P-682)**
Freeha Arshad, Jelle Adelmeijer, Hans Blokdzjil, Aad P. van den Berg, Robert J. Porte, Ton Lisman. Groningen, Netherlands.

P-683 **Living Donor Liver Transplantation With Total Vascular Exclusion: A Bloodless Alternative. (Abstract # P-683)**
Bulent Aydinli, Gurkan Ozturk, Unal Aydin, Nazim Dogan, Ilker Ince, Sukru Arslan, Sabri Selcuk Atamanalp, Ercan Korkut, Bunyami Ozogul. Erzurum, Turkey; Izmir, Turkey; Erzurum, Turkey.

P-684 **Is Living Donor Liver Transplantation an Alternative for Patients With Non-Resectable Hepatic Alveolar Echinococcosis. (Abstract # P-684)**
Bulent Aydinli, Gurkan Ozturk, Sabri Selcuk Atamanalp, Sukru Arslan, Ercan Korkut, Abdullah Kisaoglu, Aysenur Dostbil, Nazim Dogan, Kemalettin Ozden, Omer Yilmaz, Nesrin Gursan, Mecit Kantarci, Onder Tan. Erzurum, Turkey; Erzurum, Turkey.

P-685 † **The Impact of Consecutive Liver Transplant Operations Started Within 12 Hours on Graft and Patient Survival – Do We Get It Right? (Abstract # P-685)**
Mayank Bhandari, Moustafa Mourad, Hynek Mergental, John Isaac, Paolo Muiesan, Simon Bramhall, Darius Mirza, Thamara Perera. Birmingham, United Kingdom.

P-686 **A Rare Case of Refractory Ascites Following Liver Transplantation: Report of a Case. (Abstract # P-686)**
Sacit Coban, Fahrettin Yildiz, Murat Taner Gulsen, Vahap Saricicek, Nurullah Aksoy. Gaziantep, Turkey.

P-687 **Liver Proposed for Splitting in a Situation of Multiple Vascular Anomalies. (Abstract # P-687)**
Francesco D'Amico, Riccardo Boetto, Alessandra Bertacco, Domenico Bassi, Enrico Gringeri, Alessandro Vitale, Francesco Tuci, Umberto Cillo. Padova, Italy.

P-688 **Nursing of Combined Pancreas and Kidney Transplantation during Perioperative Period after Liver Transplantation. (Abstract # P-688)**
Qiujiang Dou, Quan Qian, Furu Zhang, Haidan Ye. Guangzhou, China.

- P-689** **Nursing Care of Patients Complicated With Diabetic Ketoacidosis after Liver Transplantation. (Abstract # P-689)**
Qiujiang Dou, Yingcui Liu, Bing Chen, Haidan Ye. Guangzhou, China.
- P-690** **Orthotopic Liver Transplantation for Polycystic Liver Disease. (Abstract # P-690)**
Ming Han, Xiaoping Wang, Xiaopeng Yuan, Jian Zhou, Xiaoshun He. Guangzhou, Guangdong, China.
- P-691** **Re-Adaptation of Full-Right-or-Full-Left Split Liver Grafts in an Allocation Network. (Abstract # P-691)**
Hermien Hartog, Anya Adair, Andrew Butler, Carla Lloyd, Khalid Sharif, Darius Mirza, Thamara Perera, John Isaac, Paolo Muiesan. Birmingham, United Kingdom; Edinburgh, United Kingdom; Cambridge, United Kingdom.
- P-692** **Unusual Migration of Ringed Polytetrafluoroethylene Middle Hepatic Vein Graft into the Stomach in a Patient Undergone Living Donor Liver Transplantation. (Abstract # P-692)**
Sung-Hwa Kang, Shin Hwang, Sung-Gyu Lee, Eol Choi, Jae-Hyun Kwon. Seoul, Korea.
- P-693** **Bile Duct Complications Following Living Donor Liver Transplantation By Beginner Using Right Liver Graft. (Abstract # P-693)**
Jong Man Kim, Jin Yong Choi, Seunghwan Lee, Wontae Cho, Choon Hyuck D. Kwon, Jae-Won Joh, Suk-Koo Lee. Seoul, Korea.
- P-694** **A Safe and Reproducible Technique for Performing the Hepatic Arterial Anastomosis in Living Donor Liver Transplantation: The “W” Technique. (Abstract # P-694)**
Vinay Kumaran, Sorabh Kapoor, Barun Nath, Ankur J. Shah, Tushar Pawar, Vibha Varma. Mumbai, Maharashtra, India.
- P-695 †** **Treatment Experience of Fully Covered Self-Expandable Metal Stents in Biliary Stricture after Liver Transplantation. (Abstract # P-695)**
Qiyong Li, Yunsheng Qin, Fuchun Yang, Jing Jin, Kangjie Chen, Shusen Zheng. Hangzhou, Zhejiang Province, China.
- P-696** **Pediatric Simultaneous Liver–Kidney Transplantation from One Living Donor. (Abstract # P-696)**
Sergey S. Gautier, Artem R. Monakhov, Olga M. Tsirulnikova, Yan G. Moisuk, Khizri M. Khizroev. Moscow, Russian Federation.
- P-697 †** **How to Restore Portal Flow Using Pericholedochal Varix in Adult Living Donor Liver Transplantation for Complete Portal Vein Thrombosis Patients. (Abstract # P-697)**
Deok-Bog Moon, Sung-Gyu Lee, Shin Hwang, Ki-Hun Kim, Chul-Soo Ahn, Tae-Yong Ha, Gi-Won Song, Dong-Hwan Jung, Gil-Chun Park, Sung-Hwa Kang, Bo-Hyun Jung, Wan-Jun Kim, Min-Ho Shin, Young-In Yun. Seoul, Korea.
- P-698** **Development of Massive IVC Thrombus Due To the Ligation of Large Porto-Systemic Shunt during Deceased Donor Liver Transplantation. (Abstract # P-698)**
Yasuhiro Ogura, Hideya Kamei, Masatoshi Ishigami, Yasuharu Onishi. Nagoya City, Aichi Prefecture, Japan.
- P-699** **Budd Chiari Syndrome: Transplantation and Beyond. (Abstract # P-699)**
Shishir Pareek, Subash Gupta, Neerav Goyal, Manav Wadhawan, Sandeep Vohra. New Delhi, Delhi, India.
- P-700** **New Surgical Procedure, Splenic Devascularization Is an Alternative Procedure To Splenectomy in Patient With Hypersplenism Secondary To Liver Cirrhosis. (Abstract # P-700)**
Gilchun Park, Sunggyu Lee, Deokbok Moon, Chulsoo Ahn, Taeyong Ha. Seoul, Korea.
- P-701** **Biliary Reconstructions Using Intraductal Stenting and Complications in 100 Liver Transplantations Performed in a Single Center for 3 Yr. (Abstract # P-701)**
Jeho Ryu, Chongwoo Chu, Kwangho Yang, Kimyung Moon, Youngmok Park, Jeonghee Kang, Seoyeon Oh. Yangsan, Republic of Korea; Yansan, Republic of Korea.
- P-702 †** **Influence of Back Table Portal and Arterial Flushing with HTK and Tacrolimus on the Incidence of Liver Graft Dysfunction. (Abstract # P-702)**
Aliaksei E. Shcherba, Andrew F. Minou, Denis J. Efimov, Sergey V. Korotkov, Olga A. Lebedz, Alexander M. Dzyadzko, Ala Karytka, Evgeni O. Santotski, Oleg O. Rumo. Minsk, Belarus.
- P-703** **A Retained Surgical Guaze 30 Years after Laparotomy. (Abstract # P-703)**
Miaoda Shen, Jian Xu, Min Zhang, Shusen Zheng. Hangzhou, China.
- P-704** **Vascular Complications after Adult to Adult Living Donor Liver Transplantation: Single Center Experience. (Abstract # P-704)**
Emad Hamdy Salem, Ahmed Elshawadfy Sherif, Hosam Solyman, Mohammed Elwarraky, Khaled AbouElela, Tarek Ibraheem, Koichi Tanaka. Shebei Elkoum, Egypt; Kobe City, Japan.

- P-705 Portal Vein Rescue during Living Donor Liver Transplantation in a Patient With Previous Splenectomy and Mesocaval Shunt. (Abstract # P-705)**
T. Y. Tamang, P. Singla, A. N. Rastogi, J. John, S. K. Ramachandran, P. V. Bhangu, B. Menon, S. Goja, N. Saraf, R. Mohanka, S. Saigal, S. Baijal, A. S. Soin. Sector-38, Gurgaon, Haryana, India.
- P-706 † Results of Endovascular Therapy of Hepatic Artery Stenosis after Liver Transplantation. (Abstract # P-706)**
 M. Rajakannu, S. Awad, K. Araki, R. Adam, D. Cherqui, A. Sa Cunha, D. Samuel, M. Lewin, D. Castaing, E. Vibert. Villejuif, France.
- P-707 † Comparison of J-Shaped Incision and Mercedes Incision for Liver Transplantation. (Abstract # P-707)**
Julio C. Wiederkehr, Mauro R. Igreja, Nelson Gonçalves, Marcelo S. Nogara, Amanda P. Sequinel, Ana L. Sampaio, Gabrielle P. Montemuzzo, Henrique A. Wiederkehr, Matheus P. Wassen. Blumenau, Santa Catarina, Brazil; Curitiba, Parana, Brazil.
- P-708 † Hepatic Ischemic Preconditioning Attenuates Pulmonary Injury after Small-for-Size Liver Transplantation in Rats. (Abstract # P-708)**
 Qinlong Liu, Hasibur Rehman, Yasodha Krishnasamy, John Lemasters, Zhi Zhong. Charleston, USA.
- P-709 Long-Term Efficacy of Simultaneous Pancreas and Kidney Transplantation in Liver Transplant Recipient. (Abstract # P-709)**
Jian Zhou, Linwei Wu, Weiqiang Ju, Ming Han, Xiaoping Wang, Chuanbao Chen, Xingyuan Jiao, Xiaoshun He. Guangzhou, China.

Pediatrics

Predictors and Outcomes of Acute on Chronic Liver Failure in Patients with Biliary Atresia. (Abstract # LB-40)
Thaddaeus May, Sanjiv Harpavat, Girish Hiremath, Charles Ho, Ross Pepper, Jacob Smith, Jesal Shah, Ross Shepherd. Houston, TX, USA.

Fulminant Liver Failure

AB0 Incompatible Liver Transplantation for Fulminant Liver Failure – Single Centre Experience. (Abstract # LB-41)
Jiri Fronek, Libor Janousek, Martin Oliverius, Milos Kucera, Eva Kieslichova, Ondrej Viklicky, Pavel Trunecka. Prague, Czech Republic.

Patient Selection/Organ Allocation

Survival Outcomes Following Orthotopic Liver Transplantation Using the Balance of Risk Score (BAR) in a Transplant Center in Chile. (Abstract # LB-42)
Jean P. Bächler, Juan F. Guerra, Alejandra Cancino, Javier Méndez, Carlos Benítez, Rodrigo Wolff, Rosa M. Perez, Nicolás Jarufe, Jorge Martinez. Santiago, Chile.

Recurrent Disease/Pathology

Treatments of Hepatocellular Carcinoma Recurrence After Liver Transplantation: A Single Center Experience. (Abstract # LB-43)
Nicola de'Angelis, Alexis Laurent, Daniel Azoualy. Creteil, France.

Immunosuppression

A Prospective Study On Conversion From Twice- To Once-Daily Tacrolimus With a Four Years Follow Up: Efficacy, Safety, Adherence and Quality of Life Evaluation in Liver Transplant Recipients. (Abstract # LB-44)
Luca Toti, Tommaso M. Manzia, Fazzolari Laura, Camilli Silvia, Sforza Daniele, Tisone Giuseppe. Rome, Italy.

Surgical Techniques/Complications

Strategies and Outcomes of Liver Transplantation in Patients with Portal Vein Thromboses. (Abstract # LB-45)
Akira Mori, Taku Iida, Junji Iwasaki, Toshimi Kaido, Hideaki Okajima, Shinji Uemoto. Kyoto, Japan.

Single Center Respective Cohort Study of Liver Transplantation and Medical Treatment for Hepatitis B Cirrhosis. (Abstract # LB-46)
Jinyan Zhang, Zhaowen Wang, Fan Zhang, Zhihai Peng. Shanghai, China.

Malignancies

Hepatocellular Carcinoma Patient Extended Waiting Times for Liver Transplantation: Clinical and Financial Implications. (Abstract # LB-47)
Hoylan Fernandez, Giuliano Testa, Ali Dabous, Robert Goldstein, Goran Klintmalm. Dallas, TX, USA.

Living Donor

Living Related Donor Liver Transplantation with Atrio-Caval Anastomosis of Inferior Vena Cava Graft Stored in Deep-Freeze for Budd-Chiari Syndrome: A Case Report.

(Abstract # LB-48)

Faik Yaylak, Volkan Ince, Bora Barut, Bulent Unal, Mehmet Kilic, Sezai Yilmaz. Malatya, Turkey.

Collateral Circulation after Late Term Hepatic Artery Trombosis. (Abstract # LB-49)

Kemal Baris Sarici, Volkan Ince, Fatih Ozdemir, Ilknur Varol, Ramazan Kutlu, Ayse Selimoglu, Sezai Yilmaz. Malatya, Turkey.

Evaluation of Quality of Life of Donors After Hepatectomy for Living Donor Liver Transplantation – A Prospective Study.

(Abstract # LB-50)

Piyush Kumar Sinha, Kishore G.S. Bharathy, Senthil Kumar, Viniyendra Pamecha. New Delhi, Delhi, India.

Anesthesia/Critical Care Medicine

Quantity and Mode Intraoperative Calcium Replacement and Outcomes in Liver Transplant Recipients. (Abstract # LB-51)

Jana Hudcova, Tomas Cvrk, Michael Kaufman, Robin Ruthazer, Roman Schumann. Burlington, USA; Boston, USA.

First Report of Over 100 Living Donor Liver Transplants in a Public Sector Hospital in India. (Abstract # LB-52)

Viniyendra Pamecha, Senthil Kumar, Kishore G.S. Bharathy, Tushar Kanti Chattopadhyay, Piyush Kumar Sinha, Chandrakant Pandey, Seema Alam, Amar Mukund, Shiv Kumar Sarin. New Delhi, Delhi, India.

Split Liver Transplantation Including Full Split for Fulminant Liver Failure: Single Centre Experience. (Abstract # LB-53)

Jiri Fronek, Libor Janousek, Martin Oliverius, Milos Kucera, Pavel Trunecka. Prague, Czech Republic.

**The 2014 Joint International Congress of
ILTS, ELITA & LICAGE**

**June 4 – 7, 2014
London, United Kingdom**

ABSTRACTS

All presenters are required to disclose relevant conflicts of interest.
All such disclosures are published within the Abstract Book following each abstract.
Any presenters who have nothing to disclose have been omitted from the disclosure listing.

RISING STAR SYMPOSIUM

Abstract # O-1

Human Liver Transplantation Using Normothermic Machine Preservation. Reena Ravikumar¹, Constantin C. Coussios², David Holroyd², Nigel Heaton³, Peter J. Friend¹, Wayel Jassem³. ¹Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom; ²Institute of Biomedical Engineering, University of Oxford, Oxford, United Kingdom; ³Kings College Hospital, London, United Kingdom

Background:

Liver transplant waiting list mortality is rising in the Western world because of a shortage of donor organs. Current cold preservation limits the use of marginal donors by mediating ischaemia reperfusion injury (IRI). Experimental evidence suggests that preservation under physiological conditions of temperature and oxygenation abrogates pre-retrieval, preservation and IRI. We present here the first cohort of liver transplants performed using a normothermic machine perfusion (NMP) device that enables transport and storage of an organ in a fully functioning state at 37°C.

Methods:

Adult patients with end stage liver disease on the Kings College Hospital (KCH) liver transplant waiting list were consented to take part in the study. Standard retrieval of DBD livers with cold UW solution was followed, still at the donor hospital, by back table cannulation of the inferior vena cava, portal vein, hepatic artery and common bile duct; meanwhile the perfusion device was primed with blood and additives and brought up to temperature. Donor livers were connected immediately and, after a period of stabilisation, transported to KCH for transplantation. The device provides automated control of pressures/flows, oxygen/air delivery and heating to maintain a physiological environment.

Results:

Between February to August 2013, 10 patients were transplanted with DBD livers preserved using NMP. Mean donor age was 60.9 (range 44-78) years. Mean NMP time was 10.8 (range 4.2-16.5) hours. Mean recipient age was 56.2 (range 40 – 64) years. Mean recipient MELD was 17.1 (range 11-27). Indication for transplantation were decompensated cirrhosis (8), retransplant for hepatic artery thrombosis (1), HCV (1). Mean recipient ITU stay was 2.7 (range 2 – 5) days; mean hospital stay was 13.4 (range 8-26) days. Peak AST occurred on day 1 in every case, with a mean of 468.1 (range 160-1188). All grafts and patients survived 30 days.

Discussion:

This first-in-man report of livers transplanted with NMP deliberately included relatively low risk donors and recipients. It demonstrates the safety and feasibility of combining standard organ retrieval practice, back-bench preparation at the donor hospital, normothermic transportation and storage and successful transplantation.

DISCLOSURE: Coussios, C.C.: Other, Organox, Technical Director., Friend, P.J.: Other, Organox, Medical Director.

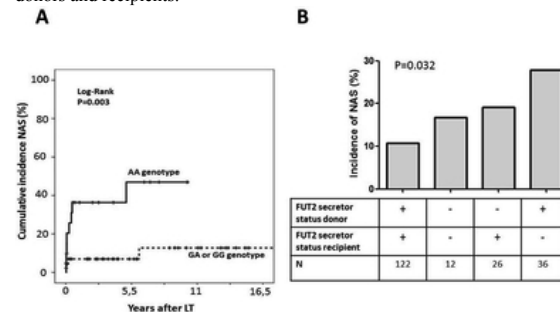
Abstract # O-2

Fucosyltransferase-2 Non-Secretor Status Is Associated With Non-Anastomotic Biliary Strictures after Liver Transplantation in Recipients With Primary Sclerosing Cholangitis. C. J. Verhoeven¹, L. Maroni², P. Gadjradj¹, D. Tolenaar², E. de Mare-Bredemeijer¹, S. Mancham¹, S. van de Graaf², R. Oude Elferink², U. Beuers², H. J. Metselaar¹, J. Kwekkeboom¹, L. J.W. van der Laan¹. ¹Dept. Surgery and Gastroenterology & Hepatology, Erasmus University Medical Center, Rotterdam, Netherlands; ²Dept. of Gastroenterology & Hepatology, Tytgat Institute, AMC, Amsterdam, Netherlands

Non-anastomotic biliary strictures (NAS) are the second cause for graft loss after liver transplantation. Because of the similarities seen between NAS and Primary Sclerosing Cholangitis (PSC), it is thought that both conditions share pathophysiology. Recently, GWAS analysis identified the polymorphism rs601338 (G>A) in the Fucosyltransferase-2 (FUT2) gene as a risk factor for PSC by generating a dysfunctional FUT2 enzyme, affecting epithelial glycocalyx integrity. The aim of this study was to investigate whether FUT2 genotype is a risk factor for NAS after liver transplantation.

Genotyping of n=258 donors and n=343 recipients was performed by qPCR on isolated DNA from blood or spleen cells. FUT2 Secretor (GA or GG) and non-secretor (AA) status of separate and paired donors and recipients were compared between recipients who developed NAS and recipients who did not. Incidence of FUT2 non-secretor status was 21.5%. Cox-regression analysis showed no association between NAS and FUT2 status in donors. In PSC recipients (n=67) however, AA-genotype was associated with an increased incidence of NAS (Figure A, P=0.003, HR:5.1), while this association with FUT2 genotype was not seen in non-PSC recipients. Analysis of paired donors and recipients disclosed that mismatch between FUT2-secretor donors and FUT2-non-secretor recipients gives the highest risk to develop NAS (Figure B, P=0.032), suggesting that an aggravated immune response could be triggered by implanting a liver graft with functional FUT2 proteins into PSC recipients with dysfunctional FUT2.

Conclusion FUT2 genotype in PSC patients strongly influences the risk to develop NAS after liver transplantation. This is potentially related to an aggravated immune response induced by FUT2 mismatching between donors and recipients.

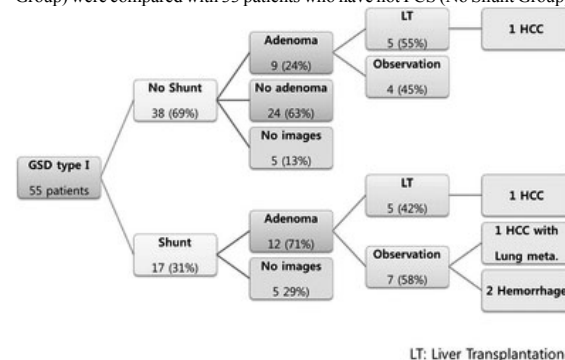


Abstract # O-3

Hepatic Adenoma and Its Complication in Patients with Glycogen Storage Disease Type I after Portocaval Shunt before Liver Transplantation. YoungRok Choi, Nam-Joon Yi, Hyeoung Kim, Suk-Won Suh, Jeong-Moo Lee, Hae-Won Lee, Kwang-Woong Lee, Kyung-Suk Suh. *Surgery, Seoul National University College of Medicine, Seoul, Korea*

[Purpose] This study aims to analyze the risk for development of hepatic adenoma and its related complications after portocaval shunt (PCS) as a bridge therapy before liver transplantation in patients with glycogen storage disease (GSD) type I.

[Patients and Methods] We retrospectively reviewed 55 patients (M : F = 37 : 18) with GSD type I between 1975 and 2013. After excluding 10 patients who had no follow-up images, twelve patients who underwent PCS (Shunt Group) were compared with 33 patients who have not PCS (No Shunt Group).



[Results] Hepatic adenoma was developed in 9 patients (27%) of No Shunt Group at the mean age of 12.7 years. It developed in 12 patients (100%) of Shunt Group at the mean age of 14.3 years, median 30 months after PCS. Its incidence was significantly different ($P=0.000$). 5 patients with multiple adenomas underwent liver transplantation and one hepatocellular carcinoma was diagnosed in each group. One case of hepatocellular carcinoma with multiple lung metastasis and two cases of hepatic adenoma hemorrhage were detected only among the remaining patients with adenoma during median follow-up of 82 months in the Shunt Group.

[Conclusions] The risk for development of hepatic adenoma was high significantly after PCS in GSD type I. When PCS is indicated in GSD type I, early liver transplantation should be considered.

Abstract # O-4

Alginate Microencapsulated Human Hepatocytes Optimised for Clinical Transplantation. Suttiruk Jitraruch, Anil Dhawan, Robin D. Hughes, Celine Filippi, Daniel Soong, Sharon Lehec, Maria S. Longhi, Ragai R. Mitry. *Institute of Liver Studies, King's College London, London, United Kingdom*

Encapsulation of human hepatocyte in alginate microbeads (HMB) supports their function and prevents immune attack of the cells. Intraperitoneal transplantation of HMBs is an attractive option for the management of acute liver failure. Aim: to establish an optimised protocol for preparation of HMBs using GMP grade materials and investigate their suitability for clinical application in vitro and in vivo.

Methods: microbeads were produced using sterile, highly purified sodium alginate. Physical stability of HMBs using different polymerisation times was studied. Cell content in HMBs was optimised using four densities. HMBs diameter and morphology, cell viability FDA/PI staining, MTT activity, albumin, urea and cytochrome P450 were evaluated. Cell number and viability across HMBs was determined using 3D confocal microscopy. To determine immune activation, FACS analysis of peripheral blood mononuclear cells (PBMCs) after co-culture with empty microbeads (EMBs) and HMBs was carried out. Optimised microbeads were transplanted intraperitoneally into two groups of rats; HMBs (n=3) and EMBs (n=3) and followed up for 7 days.

Results: HMBs were of uniform shape and size ($583.5 \pm \text{SEM} 1.1 \mu\text{m}$). Polymerisation for 15min gave significant mechanical stability compared to 10 and 20min ($p < 0.001$). Cell density of 3.5×10^6 cells/ml provided the highest viability compared to the other three groups ($p = 0.01$). Hepatocytes were evenly distributed within HMBs with similar cell viability. Hepatocyte-specific functions were not significantly different between the different polymerisation times and cell densities. The levels of activation marker expression on PBMCs co-cultured with empty or hepatocyte microbeads were comparable to controls except for monocyte CD14+CD25+ which was considerably decreased on PBMCs co-cultures with HMBs ($2.66 \pm 0.80\%$) compared to controls ($45.65 \pm 10.98\%$, $p < 0.001$). In vivo, human albumin was detected in serum of rats transplanted with HMBs. A large percentage of the transplanted microbeads (60-80%) were retrieved from the rats after 7 days. Microbeads were intact and less than 1% of EMBs had few adherent host cells. Explanted HMBs still showed viability, albumin and urea synthesis in culture.

Conclusion: An optimised method using GMP grade materials provided high quality immune-inert human hepatocyte microbeads suitable for use in clinical transplantation.

Abstract # O-5

Decellularized Liver Scaffolds Preferentially Induce Foxp3+ Regulatory T Cells and Inhibit Allogenic T Cell Activation.

Zhongjie Lu, Jun Pan, Sheng Yan, Shusen Zheng. *Department of Hepatobiliary and Pancreatic Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, A Key Laboratory of Combined Multi-Organ Transplantation, Ministry of Public Health, Hangzhou, Zhejiang, China*

Background. Mice liver has long been described immunosuppressive, although the mechanisms underlying this phenomenon are incompletely understood. The "liver tolerance effect" has been attributed to specialized resident cells expressing anti-inflammatory mediators and inhibitory cell surface ligands for T cell activation, however none of studies investigated the role of hepatic extracellular matrix on liver immune tolerance. Decellularized liver scaffolds, maintaining the three dimensional structure and extracellular matrix of liver, precisely mimick the liver micro-environment. We hypothesized that hepatic extracellular matrix took part in liver immune tolerance, and can be potentially used in transplantation as an immunosuppressive material.

Methods and Results. We show here that decellularized liver scaffolds,

histological confirmed cellular clearance, removes nucleic and cytoskeletal components and widespread preserves extracellular molecules. This scaffold preferentially converted naive CD4+ T cells to CD4+FOXP3+ Tregs, also coculture of CD4+ T cells and allogeneic DC cells in the context of liver scaffold strongly inhibited allogeneic CD4+ T cell activation. In addition, islets transplantation within decellularized liver scaffold improved islet survival compared to control groups.

Conclusion. We conclude that decellularized liver scaffolds preferentially induce FOXP3+ Tregs and play important roles in the tolerogenic nature of the liver. Also, decellularized liver scaffolds can be utilized as immunosuppressive materials for transplantation.

Abstract # O-6

Liver Transplantation With Allografts Recovered from Donors after Circulatory Death Using In-Situ Normothermic Regional Perfusion (NRP).

Andrew L. Sutherland¹, Lucy Randle², Paulo Muiesan³, Andrew Butler², Tamara Perera³, John R.L. Forsythe¹, Chris Watson², Oniscu C. Gabriel¹. ¹Royal Infirmary of Edinburgh, Edinburgh, United Kingdom; ²Addenbrooke's Hospital, Cambridge, United Kingdom; ³Queen Elizabeth Hospital, Birmingham, United Kingdom

Background: Livers recovered from DCD donors suffer a period of warm ischaemia before cold storage leading to shorter survival and greater risk of complications after transplantation. The aim of this study was to evaluate the impact of in-situ normothermic regional perfusion (NRP) on liver recovery rates from controlled DCD donors and subsequent transplant function.

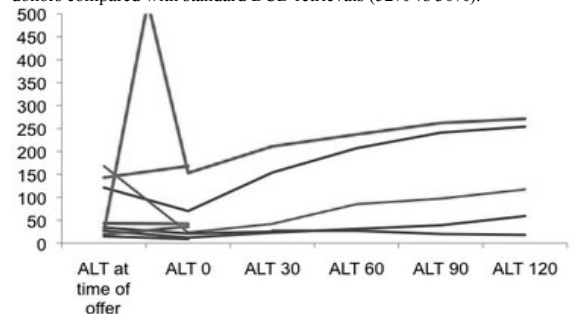
Methods: 21 NRP DCD retrievals were performed at 3 UK centres. NRP was established post-asystole via laparotomy, aortic and IVC cannulation and maintained for two hours prior to organ retrieval. Blood gases and biochemistry were monitored every 30min to assess liver function. Livers were considered for transplantation if the functional warm ischaemic time was < 30 minutes, and the ALT < 4 times the upper limit at the end of the NRP period.

Results: The median donor functional warm ischaemic time was 25m (16m-48m) whilst the time from asystole to NRP was 15m (10m-23m). The median donor age was 39 years old (19-74). The ALT changes during normothermic perfusion are illustrated below (blue lines showing utilized liver grafts).

Eleven patients received a liver transplant with a median CIT of 6h2m (2h49m-7h30m). The median age of the recipients was 62.5 years (43-67). The median peak ALT during 1st week post-transplant was 389 u/L (58-3043). One patient had PNF requiring re-transplantation.

Seven recipients had a mean follow-up of 12.6 months (range 6-32 months) with no clinical or radiological evidence of ischaemic type biliary lesions at the time of reporting. The other three recipients are within one month of transplantation.

There was a significantly higher liver recovery rate from NRP assisted DCD donors compared with standard DCD retrievals (52% vs 30%).



Conclusions: This initial experience indicates that NRP increases liver recovery rates with beneficial short and intermediate term outcomes compared to standard DCD retrievals.

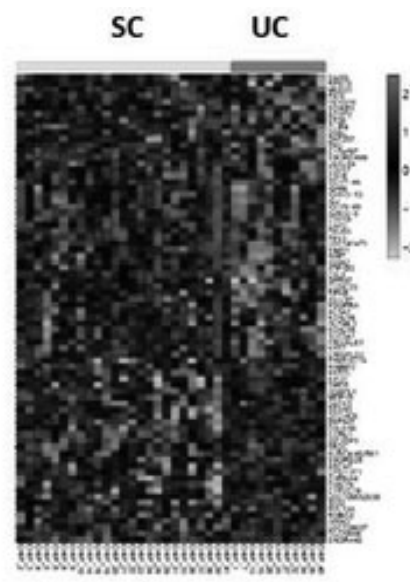
ORAL ABSTRACT SESSION:
IMMUNOSUPPRESSION**Abstract # O-7****Meta-Analysis of Steroid-Containing Versus Steroid-Sparing Immunosuppression for Liver Transplanted Patients: Preliminary Findings of a Cochrane Review.** Cameron J. Fairfield¹, Ewen M. Harrison², Luit Penninga³, James J. Powell², Stephen J. Wigmore². ¹College of Medicine and Veterinary Medicine, University of Edinburgh, Edinburgh, United Kingdom;²Edinburgh Transplant Unit, Royal Infirmary Edinburgh - NHS Lothian, Edinburgh, United Kingdom; ³Centre for Clinical Intervention Research, Rigshospitalet, Copenhagen, Denmark**Background:** For many years steroids have formed a cornerstone of immunosuppression following liver transplantation. Now that newer, more potent immunosuppression is available, the use of steroid-sparing immunosuppression for liver transplant has been widely investigated.**Objectives:** To assess the benefits and risks of steroid-containing and steroid-sparing immunosuppression for liver transplanted patients. **Methods:** a systematic review and meta-analysis following the Cochrane methodology were performed. Electronic databases (CENTRAL, MEDLINE, Embase, Transplant Library, Science Citation Index and WHO International Trials Registry Platform) and bibliographies were searched. **Selection Criteria:** Randomised and quasi-randomised trials comparing steroids versus placebo or steroid-free immunosuppression for liver transplanted patients. **Data Collection:** Four authors independently assessed trial quality, extracted data and collected adverse events information. Trials were pooled by meta-analysis to provide summary effects (risk ratio [RR]) with 95% confidence intervals (CI) using a fixed-effect model. **Results:** 15 trials involving 1285 patients were included; 10 trials compared steroid-containing immunosuppression vs. steroid-free immunosuppression and 5 compared long-term vs. short-term steroids. Acute rejection (AR) and corticosteroid-resistant rejection (CRR) were significantly lower in the steroid-containing group (RR 0.74, CI 0.60-0.92, p=0.007; and RR 0.40, CI 0.21-0.78, p=0.007). Hypertension and diabetes mellitus were significantly higher in the steroid-containing group (RR 1.41, CI 1.17-1.69, p=0.04; and RR 1.33, CI 1.03-1.71, p=0.003). No significant differences in patient or graft survival, HCV recurrence or chronic rejection were found. **Conclusions:** Despite an increase in AR and CRR with steroid-sparing immunosuppression there was no measurable effect on survival. There were significant reductions in cardiovascular risk factors with steroid-sparing immunosuppression. Steroid-sparing immunosuppression may be justified in patients with low risk of rejection or high risk of cardiovascular complications.**Abstract # O-8****The Expression of Genes Related to B Cells Are Associated to a Successful Conversion from Calcineurin Inhibitor (CNI) Based Immunosuppression to Mycophenolate Mofetil (MMF) Monotherapy in Liver Transplant Recipients.** Blanca Norero¹, Carolina Serrano¹, Rosa María Pérez¹, Ignacio Duarte², Marco Arrese¹, Alejandro Soza¹, Nicolás Jarufe³, Jorge Martínez³, Juan Francisco Guerra³, Carlos Benítez¹. ¹Gastroenterology, Pontificia Universidad Católica de Chile, Santiago, Chile; ²Digestive Surgery, Pontificia Universidad Católica de Chile, Santiago, Chile**Introduction:** Conversion from CNI to MMF based immunosuppression (IS) after liver transplantation is associated to an improvement in renal function and cardiovascular risk although it carries a risk of acute rejection. There are no available predictors to discriminate those recipients who will undergo successful conversion from those who will develop acute rejection upon CNI withdrawal. The purpose of this study is to identify transcriptional biomarkers to predict a successful conversion (SC).**Methods:** 40 stable liver recipients were prospectively enrolled. IS was changed gradually from ICN to MMF monotherapy. Protocol liver biopsy samples were obtained at baseline from all patients. After 12 months follow up patients that remained with stable liver tests were diagnosed as SC to MMF while those that developed an acute rejection were labeled as unsuccessful conversion (UC). Whole genome transcriptional profiling from baseline liver tissue was performed employing Affymetrix Human Gene 10.ST chip.**Results:** In the 36 samples evaluated (25 SC/11 UC) 76 genes were differentially expressed between both groups, 26% were associated with immune function, and of these 40% were B cell related.

Figure 1. Heatmap showing 76 genes (rows) differentially expressed between recipients with a successful conversion (SC-green columns) and unsuccessful conversion (UC-pink columns) to MMF monotherapy.

Here we report the most informative genes including fold change (FC) and diagnostic accuracy (AUC): IGHM (FC 1.99, p=0.001, AUC 0.82), CCDC23 (FC 1.45, p=0.001, AUC 0.79), TRDC (FC -1.43, p=0.001, AUC 0.82), FBXO16 (FC 1.34, p=0.001, AUC 0.88).

Conclusions: SC to MMF was associated to a differential expression of 76 genes. Several of them were related to immunity, specifically to B cells. Several genes seem to have a high discriminative power and could be potentially useful as predictors of a SC. These results must be validated in an independent cohort.

Abstract # O-9**Early Introduction of Everolimus in De Novo Liver Transplantation: 3-Months Final Results (Primary Endpoint) of a Multicenter Randomized Clinical Trial (EPOCAL).**

Umberto Cillo¹, Alessandro Vitale¹, Mauro Salizzoni², Michele Coledan³, Giorgio Rossi⁴, Umberto Baccarani⁵, Luciano De Carlis⁶, Alessandra Bertacco¹, Laura Saracino¹, Rafael Ramirez Morales¹, Salvatore Agnes⁷. ¹Centro Trapianti di Fegato, Azienda Università di Padova, Padova, Italy; ²Azienda Ospedaliera-Universitaria S. Giovanni Battista di Torino Ospedale Molinette, Torino, Italy; ³Ospedale Riuniti Bergamo, Bergamo, Italy; ⁴Ospedale Maggiore Policlinico Milano, Milan, Italy; ⁵Azienda Ospedaliera "S.M. Misericordia" Udine, Udine, Italy; ⁶Ospedale Niguarda- Ca Granda Milano, Milan, Italy; ⁷Policlinico Universitario Agostino Gemelli Roma, Rome, Italy

INTRODUCTION. There are no prospective randomized trials analysing safety and efficacy of early introduction of Everolimus in patients undergoing liver transplantation (LT).

METHODS. We performed a spontaneous, phase 2, multicenter, randomized, open label, clinical trial. Patients were randomized in POD 7 in two possible arms using a 2:1 ratio, the study group (with Everolimus introduction in POD 8 and Tacrolimus reduction/weaning), and a control group (conventional immunosuppression).

Primary endpoint: incidence of biopsy proven acute rejection (BPAR) and graft loss in the first 3 months after LT. **Secondary endpoints:** renal function, suspension of Tacrolimus, incidence of adverse events in a 24 months follow-up.

Calculated sample size: 117 patients evaluable for the primary endpoint, 79 in the study group and 38 in the control group (BPAR<25% within 3 months in the study group).

We present the final 3-months (primary endpoint) results of the trial carried out in November 2013.

RESULTS. Up to November 2013, 140 patients were enrolled in the study group (122 patients evaluable at 3 months for the primary endpoint, 80 in the study group and 42 in the control group). The primary endpoint in the study group vs. controls has been so far observed: BPAR 19% vs. 5% (p= 0.04), graft loss, 2% vs. 2% (p>0.05). Although the significant difference in BPAR, the primary endpoint of the study was achieved. The number of adverse events was also comparable between the two groups with the exception of incisional hernias. The weaning of tacrolimus at 3 months in the study group was successful in 46% of cases. There was a trend towards a better renal function at 3 months in the study group than in controls.

CONCLUSIONS. Everolimus seems safe and effective when introduced early after LT.

Abstract # O-10

The H2304E1 Study: Efficacy and Safety of Everolimus With Reduced Tacrolimus Versus Standard Tacrolimus in De Novo Liver Transplant Recipients at 36 Months. P. De Simone, G. M. Kaiser, L. De Carlis, H. J. Metselaar, C. Duvoux, F. Nevens, L. Fischer, J. Fung, G. Dong, B. Rauer, G. Junge, F. Saliba. *H2304E1 Study Group, Pisa, Italy*

Purpose: The 12- and 24-month (M) H2304 study results demonstrated that everolimus (EVR)+reduced tacrolimus (rTAC) compared with the standard exposure TAC (TAC-C) provided superior renal function and comparable efficacy and safety. Here, we present the 3-year efficacy and safety data of EVR+rTAC in *de novo* liver transplant recipients (LTxR).

Methods: Patients in the H2304 study that were randomised at M1 after LTx to EVR+rTAC (EVR C0 3–8 ng/mL+TAC C0 3–5 ng/mL; n=245) or TAC-C (TAC C0 6–10 ng/mL; n=243) and those who completed 24M study treatment could enter the extension phase on same treatment regimen (EVR+rTAC, n=106; TAC-C, n=125). The key endpoints were composite efficacy failure rate [treated biopsy-proven acute rejection (tBPAR), graft loss (GL), or death], renal function [estimated glomerular filtration rate (eGFR); MDRD4 formula], and incidence of adverse events (AEs) and serious AEs (SAEs).

Results: At M36, incidence of composite efficacy failure in the EVR+rTAC arm was similar with that in the TAC-C arm. A significantly lower incidence of acute rejection (AR), treated AR, and BPAR was observed in the EVR+rTAC arm compared with the TAC-C arm. Incidence of tBPAR was numerically lower with less severe Banff gradings in EVR+rTAC arm. Difference in mean eGFR between EVR+rTAC and TAC-C arms was 15.2 mL/min/1.73m², in favour of EVR+rTAC (p<0.001).

During the extension period, there were 2 deaths (sudden death and hypoglycaemia; not related to the study drug) and no GL, AR, treated AR, and tBPAR events in the EVR+rTAC arm. Incidence of AEs (82.1% vs 76.8%) and SAEs (30.2% vs 22.4%) in the EVR+rTAC and the TAC-C arms were comparable (p=0.335 and p=0.228, respectively).

Conclusion: Early initiation of EVR+rTAC in LTxR results in comparable composite efficacy failure rates, but significant lower BPAR rates compared to TAC-C. In the EVR+rTAC arm, superior renal function was higher by 15.2 mL/min/1.73m² and was maintained for 3 years after LTx. Safety was comparable in the two regimens.

Table. Incidence rates of efficacy endpoints at Month 36

Efficacy variable	Since randomisation (Kaplan-Meier incidence rates)				P-value
	EV+reduced TAC N=245 (n, %)	TAC control N=243 (n, %)	Risk difference (95% CI)	97.5% CI	
Composite efficacy failure: tBPAR, graft loss or death	26 (11.5)	32 (14.4)	-3.2	(-10.5, 4.2)	0.3337
Graft loss	9 (3.9)	8 (4.0)	0.0	(-4.3, 4.3)	0.9873
Death	14 (6.5)	10 (4.4)	2.1	(-2.9, 7.0)	0.3483
Acute rejection	11 (4.8)	31 (14.3)	-9.5	(-15.8, -3.1)	0.0008
Treated acute rejection	8 (3.5)	19 (8.7)	-5.2	(-10.4, 0.0)	0.0249
tBPAR	15 (7.3)	34 (17.7)	-10.4	(-19.0, -1.9)	0.0064
tBPAR	11 (4.8)	20 (9.2)	-4.4	(-9.9, 1.2)	0.0162

Efficacy variable, n (%)	Since M24 baseline (raw incidence rates)		Risk difference	97.5% CI	P-value
	EV+reduced TAC N=106	TAC control N=125			
Composite efficacy failure: tBPAR, graft loss or death	2 (1.9)	3 (2.4)	-0.5	(-2.4, 3.2)	NA
Graft loss	0 (0.0)	1 (0.8)	-0.8	(-2.4, 0.8)	NA
Death	2* (1.9)	0 (0.0)	1.9	(-0.7, 4.5)	NA
Acute rejection	0 (0.0)	3 (2.4)	-2.4	(-5.1, 0.3)	NA
Treated acute rejection	0 (0.0)	2 (1.6)	-1.6	(-3.8, 0.6)	NA
tBPAR	1 (0.9)	5 (4.0)	-3.1	(-7.0, 0.8)	NA
tBPAR	0 (0.0)	2 (1.6)	-1.6	(-3.8, 0.6)	NA

tBPAR, biopsy-proven acute rejection; CI, confidence interval; EVR, everolimus; RM, Kaplan-Meier; NA, not available; TAC, tacrolimus; tBPAR, treated biopsy-proven acute rejection. *Two deaths (sudden death, hypoglycaemia) were considered unrelated to the study drug.

DISCLOSURE: *De Simone, P.*: Other, Novartis, Consultant., *Kaiser, G.M.*: Grant/Research Support, Novartis, Astellas, Roche, Pfizer; Other, Novartis, Astellas, Roche, Pfizer, Travel support., *Metselaar, H.J.*: Grant/Research Support, Novartis, Astellas, Biotest; Speaker's Bureau, Novartis, Astellas, Biotest., *Duvoux, C.*: Grant/Research Support, Novartis, Astellas, and Roche; Speaker's Bureau, Astellas; Other, Novartis, Astellas, and Roche, Advisory boards, Novartis, Data Safety Monitoring Board Member., *Nevens, F.*: Grant/Research Support, Ipsen, Roche, MSD, Jansen, CAF, Astellas, Ferring, Eumedica, Boston Scientific., *Fischer, L.*: Grant/Research Support, Novartis, Astellas; Speaker's Bureau, Gilead Sciences; Other, Novartis, Advisory

Committee., *Fung, J.*: Other, Novartis, Advisory Committee, Vital Therapies, Consultant., *Dong, G.*: Employee, Novartis., *Rauer, B.*: Employee, Novartis., *Junge, G.*: Employee, Novartis., *Saliba, F.*: Grant/Research Support, Novartis, Astellas, Roche, Gambro; Speaker's Bureau, Schering Plough, MSD, Gambro; Other, Novartis, Astellas, Roche, Genzyme, Viropharma, Advisory Committee, Vital Therapies, Advisory Committee.

Abstract # O-11

Everolimus Monotherapy after Tacrolimus Withdrawal at Month 4 after Liver Transplantation: 3-Year Results from the H2304 Study Extension. J. Fung, H.J. Metselaar, B. Koneru, M. Bartels, G. McCaughan, K. Chavin, G. Dong, B. Rauer, G. Junge, L. Fischer. *For H2304E1 Study Group, Cleveland, OH, USA*

Background: Elimination of calcineurin inhibitors (CNIs) after transplantation or minimisation of CNIs in combination with other immunosuppressive agents are two different strategies for mitigating CNI-related toxicity. The H2304 study showed that everolimus (EVR)-facilitated tacrolimus (TAC) withdrawal or minimisation helped to preserve renal function over 24 months (M) in liver transplant recipients (LTxR). Here, we report 3-year results of the TAC withdrawal (TAC-WD) arm from the H2304 study extension.

Methods: The H2304 study enrolled 719 patients, randomised 1M after LTx to EVR (C0 3-8ng/mL) with reduced TAC (C0 3-5ng/mL; EVR+rTAC), EVR (C0 6-10ng/mL) with TAC withdrawal at M4; or TAC control (C0 6-10ng/mL; TAC-C). Enrolment of the TAC-WD arm was stopped early due to higher acute rejection (AR) rates, clustered during TAC withdrawal. Patients already randomised to TAC-WD and without efficacy failure event for >180 days were allowed to continue this regimen up to M36 (H2304E1 [NCT01150097]; N=51). The key endpoints were renal function (estimated glomerular filtration rate [eGFR]; MDRD4), composite efficacy failure rate (treated biopsy proven AR [tBPAR], graft loss or death) and incidence of adverse events (AEs) and serious AEs (SAEs). No statistical comparison for TAC-WD vs. TAC-C was done.

Results: At M36, mean EVR C0 was 8.17±3.01ng/mL and 62.5% of patients were within the protocol defined EVR C0 range (6-10ng/mL). During M24 to M36, the composite efficacy failure was reported in 1 and 3 patients for TAC-WD and TAC-C, respectively. The number of patients with BPAR (1 vs. 5), tBPAR (1 vs. 2) and graft loss (0 vs. 1) were lower for TAC-WD vs. TAC-C; with no fatal event in TAC-WD arm. Mean eGFR was 85.5±28.1mL/min/1.73m² in the TAC-WD arm, with a difference of 22.0mL/min/1.73m² in favour of TAC-WD compared to TAC-C. Proteinuria was <0.5g/day in 87.5% vs. 92.1% of patients for TAC-WD vs. TAC-C arms. The incidence of AEs and SAEs were 94.1% vs. 76.8% and 31.4% vs. 22.4% for TAC-WD vs. TAC-C, respectively.

Conclusion: While the higher rate of AR observed shortly after TAC withdrawal suggests that EVR-monotherapy may not represent an optimal strategy shortly after LTx, the 3-year results in this group does support the use of EVR-monotherapy as an alternative option to minimise long-term CNI-associated nephrotoxicity.

DISCLOSURE: *Fung, J.*: Speaker's Bureau, GSK; Other, BMS, Advisory Committee, Vital Therapies, Consultant., *Metselaar, H.J.*: Grant/Research Support, Astellas, Biotest and Novartis; Speaker's Bureau, Astellas, Biotest and Novartis., *Koneru, B.*: Grant/Research Support, Proteonomix Inc; Speaker's Bureau, Novartis., *Dong, G.*: Employee, Novartis., *Rauer, B.*: Employee, Novartis., *Junge, G.*: Employee, Novartis., *Fischer, L.*: Grant/Research Support, Novartis and Astellas; Speaker's Bureau, Gilead Sciences; Other, Novartis, Advisory Committee.

Abstract # O-12

Population Pharmacokinetics and Pharmacogenetics of Once Daily Tacrolimus Formulation in Liver Transplant Patients.

Dirk J.A.R. Moes¹, Sebastiaan A.S. van der Bent², Jesse J. Swen¹, Tahar Straaten¹, Hein W. Verspaget², Henk-Jan Guchelaar¹, Jan den Hartigh¹, Bart van Hoek². ¹*Department of Clinical Pharmacy and Toxicology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands;* ²*Department of Hepatology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands*

Background: The once daily formulation of tacrolimus is an important immunosuppressive drug metabolized by CYP3A enzymes. Inter-patient variability in tacrolimus metabolism has been related to both the CYP3A4 and CYP3A5 genotype. However, in liver transplants, both donor and recipient genotypes may affect pharmacokinetics. The aim of this study

was to investigate the effect of CYP3A4*22 and CYP3A5*3 of both donor and recipient on once daily tacrolimus pharmacokinetics in liver transplant recipients.

Methods: Stable liver transplant patients receiving once daily tacrolimus (N=49) were included. Blood concentrations were determined with liquid chromatography tandem mass spectrometry. Population pharmacokinetic analysis was performed and demographic factors, CYP3A4*22 and CYP3A5*3 were tested as covariates. Moreover a limited sampling model was developed.

Results: Tacrolimus once daily formulation pharmacokinetics was best described by a two compartment disposition model with delayed absorption. CYP3A5*1 carrying recipients engrafted with a CYP3A5*1 carrying liver had a 1.65 fold higher clearance compared to non-carriers. CYP3A5*1 carrying recipients engrafted with a CYP3A5*1 non-carrying liver or vice versa showed a 1.13 fold higher clearance compared to non-carriers. CYP3A4*22 was not associated with once daily tacrolimus pharmacokinetics. A limited sampling model using 0, 1 and 3 hours postdose resulted in a significantly improved prediction of tacrolimus exposure.

Conclusions: Dose adjustments based on CYP3A5 genotype of both donor and recipient are indicated. In contrast CYP3A4*22 appears not suitable as biomarker for tacrolimus pharmacokinetics. 0, 1 and 3 hours postdose as limited sampling model can be used to accurately estimate tacrolimus once daily formulation exposure in liver transplantation.

Abstract # O-13

Safety and Pharmacokinetics of Mizoribine in Adult Living Donor Liver Transplantation. Yusuke Katsuki, Masahiro Shinoda, Osamu Itano, Hideaki Obara, Minoru Kitago, Hiroshi Yagi, Yuta Abe, Ken Hoshino, Tatsuo Kuroda, Yuko Kitagawa. *Department of Surgery, Keio University School of Medicine, Tokyo, Japan*

A combination immunosuppressive therapy consisting of calcineurin inhibitors, steroid, and anti-metabolites is sometimes used after living donor liver transplantation (LDLT). In this study, we assessed short term clinical outcomes of recipients whose immunosuppressive therapy for LDLT involved mizoribine (MIZ) or mycophenolate mofetil and investigated the pharmacokinetics of MIZ. Fifty-three recipients received a combination immunosuppressive therapy that included anti-metabolite after undergoing LDLT, and 16 recipients were subjected to a pharmacokinetics study. We assessed postoperative incidences of rejection and virus infection in the 53 recipients. We also determined the serum levels of MIZ (C0, C3, C4, and C10) on post-operative days 3, 7, and 21 in the 16 recipients. We assessed area under the concentration time curve (AUC) (hour.µg/ml), normalized serum concentration (NSC, concentration/dose) at C0, and estimated glomerular filtration rate (eGFR). There were no differences in the incidences of acute cellular rejection, antibody mediated rejection, and cytomegalovirus among the groups of MIZ (n=29), mycophenolate mofetil (n=10) and combination (n=14). The MIZ concentration showed increases at C3 and C4 followed by a decrease at C10 on all days. AUC was 8.7, 11.9, and 16.6 on days 3, 7, and 21, respectively. NSC at C0 increased for 3 weeks after LDLT. There was a significant correlation between the NSC at C0 and eGFR on day 21. MIZ may be safely used as anti-metabolites in LDLT. The finding that the pharmacokinetics of MIZ is affected by post-operative day and renal function would be a useful guide when MIZ is used in LDLT.

Abstract # O-14

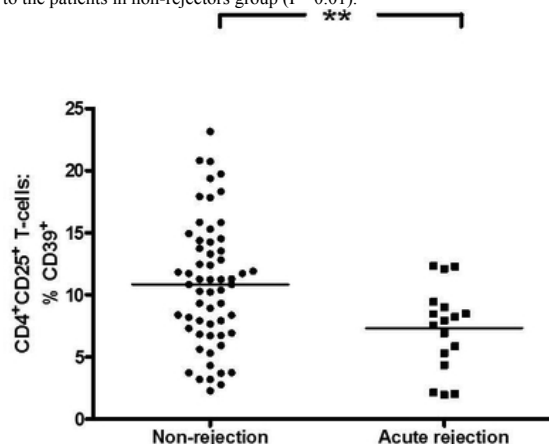
Decrease of CD39 on Peripheral Regulatory T Cells in Liver Transplant Recipients during Acute Cellular Rejection. Hua Fan, Dong-Dong Han, Jian-Tao Kou, Ping Li, Qiang He. *Department of Hepatobiliary Surgery, Beijing Chaoyang Hospital, Capital Medical University, Beijing, China*

Purpose: To study the clinical significance CD39 on regulatory T cells (Treg) in peripheral blood (PB) of patients following liver transplantation and evaluate the relationship between levels of CD39+Treg cells in the PB and acute rejection.

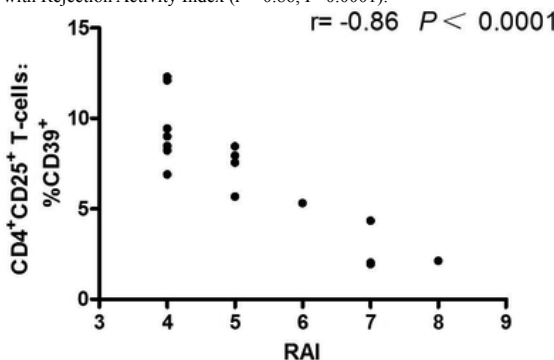
Methods: A prospective study compared CD39+Treg cells from 76 consecutive benign end-stage liver disease patients who underwent orthotopic liver transplantation from 2008 to 2013. PB samples were collected at different time points post-transplant within one year. Blood samples and liver biopsy were also collected at the diagnosis of acute rejection. Percentages of CD39 within CD4+CD25+ T cells, FoxP3 within CD4+CD25+CD39+ T cells were measured by using flow cytometry. Liver transplant patients were classified into two groups: rejection group contained 17 patients who had an episode of acute rejection, and the nonrejection group had the remaining

59 patients with no acute rejection episodes. Percentages of CD39 within CD4+CD25+ T cells, FoxP3 within CD4+CD25+CD39+ T cells were compared between the two liver transplant groups and controls.

Results: Percentages of CD39 within CD4+CD25+ cells were significantly lower in the patients in rejectors group during acute rejection as compared to the patients in non-rejectors group (P=0.01).



The Percentages of CD39 within CD4+CD25+ cells was negatively correlated with Rejection Activity Index ($r = -0.86$, $P < 0.0001$).



Conclusion: Percentages of CD39 within CD4+CD25+ T cells were significantly lower in the patients in rejectors group during acute rejection and were negatively correlated with Rejection Activity Index.

Abstract # O-15

Quantification of Donor DNA in the Circulation after Liver Transplantation As a Potential Universal Rejection Biomarker Using Digital Droplet PCR. Jan E. Slotta¹, Julia Beck², Sarah Birau², Stefan Balzer², Reiner Andag³, Philipp Kanzow³, Jessica Schmitz^{2,3}, Jochen Gaedcke¹, Onnen Mörer⁴, Philip Walson³, Michael Oellerich³, Eckehardt Schütz², Otto Kollmar¹. ¹Department of General, Visceral and Pediatric Surgery, University Medical Center Göttingen, Göttingen, Germany; ²Chronix Biomedical, Göttingen, Germany; ³Department of Clinical Chemistry, University Medical Center Göttingen, Göttingen, Germany; ⁴Department of Anaesthesiology, University Medical Center Göttingen, Göttingen, Germany

Background: Cell free DNA (cfDNA) from organ grafts in the circulation of transplant recipients is a potential biomarker of rejection. Its usefulness was reported after heart transplantation during the maintenance phase, using microarrays and parallel sequencing of donor and recipient DNA. Major drawbacks of such sequencing methods are high costs, long turnaround time and need for donor DNA. Therefore, a method using digital droplet PCR (ddPCR) was developed overcoming these drawbacks.

Methods: Plasma samples were collected from stable patients after liver transplants (LTx, n=10) as well as from six additional LTx patients within the first weeks after surgery. Known SNPs were selected for high minor allelic frequencies, of which 41 Taqman assays were established. The plasma cfDNA was preamplified, followed by conventional real-time PCR to define

informative (heterologous) SNPs, which were then used for quantification (percentage) of graft cfDNA using ddPCR.

Results: At 2% minor allele the mean recovery was 94% (SD:13%) with a total imprecision of 4-14%. Graft cfDNA in stable patients was <6.8% (LTx) and <15% by 10 days post surgery in most (3/6) LTx patients. In two patients with biopsy proven rejection cfDNA increased to >50%, contrary in cholestasis no elevation was seen.

Conclusion: A novel, cost effective, rapid technique was developed to quantify graft DNA in cfDNA of transplant patients. This technique makes graft cfDNA a promising potentially universal biomarker for early detection of rejection, which could potentially enable more effective therapeutic interventions.

DISCLOSURE: Beck, J.: Employee, 2) Chronix Biomedical; Stockholder, 2) Chronix Biomedical., Birau, S.: Employee, 2) Chronix Biomedical., Balzer, S.: Employee, 2) Chronix Biomedical., Andag, R.: Employee, 2) Chronix Biomedical., Schmitz, J.: Employee, 2) Chronix Biomedical., Schütz, E.: Employee, 2) Chronix Biomedical; Stockholder, 2) Chronix Biomedical.

ORAL ABSTRACT SESSION: LIVING DONOR

Abstract # O-16
Update on Worldwide Causes of Morbidity and Mortality in Living Donor Liver Transplantation. Allan M. Concejero^{1,2}, Chao-Long Chen¹. ¹Liver Transplant Program and Department of Surgery, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan; ²Department of Surgery, University of the Philippines College of Medicine, Manila, Philippines

Objective: Donor safety is paramount in any living donor liver transplant (LDLT) operation. The donor benefit and risk must equate with perceived recipient urgency of need and benefit. Our aim is to present an update on worldwide donor morbidity and mortality in LDLT as we advocate for greater transparency among transplant centers in reporting donor complications and death.

Methods: Literature from published international reports, registries, committee reports, internet, printed materials, and personal communications were reviewed and analyzed. A 2012 update was compared to last published reports in 2006 and 2009.

Results: In 2006, there were 15 mortalities directly related to the operation (4 in Americas, 6 in Asia, 5 in Europe); in 2012, this increased to 21 (7 in Americas, 7 in Asian, 6 in Europe, 1 in Africa). In 2006, there were 6 deaths that were probably unrelated to the operation (3 in Americas, 2 in Asia, 1 in Europe); in 2012, this increased to 7 (3 in Americas, 3 in Asia, 1 in Europe). With regards to lobe donated, there were 14 right, 2 left, and 3 unspecified lobe donor mortalities in 2009. In 2012, there were 16 right, 2 left, and 3 unspecified lobe donor mortalities. There was an inferential observation that right lobe donation is associated with more complications and death. The causes of death were shown in Table 1. There were 5 reported rescue of donor by liver transplantation. In a 2012 survey involving 71 liver transplant programs doing LDLT in 21 countries (Cheah YL et al, Liver Transpl 2012), the overall morbidity rate was 24% and the overall mortality rate was 0.2% based on 11,553 donor hepatectomies performed.

Table 1. Causes of death until 2012			
Sepsis	=3	Biliary sepsis	=1
Pulmonary embolism	=2	Pancreatitis sepsis	=1
Myocardial infarction	=1	Anaphylactic shock	=1
Cardiac arrhythmia	=1	Subarachnoid hemorrhage	=1
NASH	=1	Liver lipodystrophy	=1
Small remnant	=1	Undiagnosed myeloma	=1
Duodeno-caval fistula	=1	Perioperative bleeding	=1
Gastric gas gangrene	=1	Unknown	=3

Conclusion: Reporting of live liver donor morbidities and mortalities is advocated to define the ethical, moral, social, and legal obligations of live donor transplantation. With increasing numbers in LDLT, donor complications and death have increased in recent years; albeit, at still acceptable limits.

Abstract # O-17
Hemiportocaval Shunts: A Panacea for Low GRWR Grafts in Adult Living Donor Liver Transplantation ? Sumana Ramachandra¹, J. George¹, R. Mohanka¹, A. Rastogi¹, S. Goja¹, B. Menon¹, A. Joly², V. Vohra², P. Bhangu¹, P. Singla¹, S. Baijal³, A. Soin¹. ¹Liver Institute, Medanta Liver Institute, Gurgaon, NCR, India; ²Liver Anaesthesia, Medanta, Gurgaon, NCR, India; ³Interventional Radiology, Medanta, Gurgaon, NCR, India

Background

While the recommended lower limit of graft to recipient weight ratio (GRWR) for successful living donor liver transplantation (LDLT) remains 0.8, many believe grafts with a lower GRWR may suffice, especially in low MELD patients without severe portal hypertension. Others and we have previously reported that high post-perfusion portal pressures (PP) and/or flow adversely affect recipient outcome, especially in smaller grafts. We compared the outcome in recipients of low GRWR grafts with and without hemiportocaval shunts (HPCS) used as inflow modulation.

Material and methods

Based on our earlier experience, after May 2011, PP were routinely measured, and HPCS done using venous conduits, for GRWR < 0.8 if MELD > 20 or PP≥20, or for <0.75 irrespective of MELD or PP. Patients with LDLT and HPCS in the 2 year period after May 2011 (Group A; n= 28) were compared with a GRWR matched historical cohort without HPCS from 2009-2011 (Group B; n=28), with respect to post-operative liver function, sepsis, hospital and icu stay, morbidity and mortality.

Results

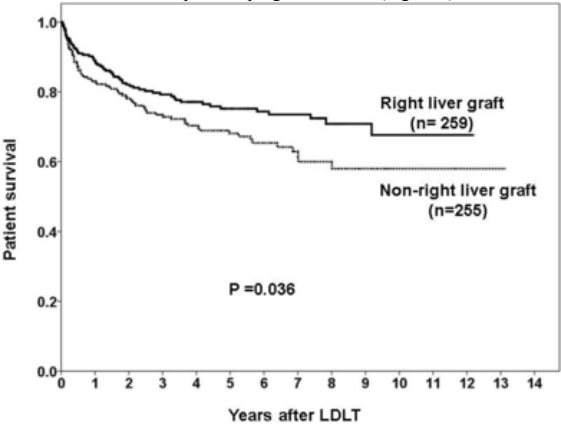
Mean pre- and post shunt pressures in Group A were 23.6 and 18.5 mmHg respectively. Post-reperfusion flow in the shunt was maintained at 1/3 the total volume of portal flow. The mean hepatic PV flow/100g was 254ml and shunt flow was 733 ml/min. Both groups were matched for donor and recipient age, liver steatosis, and CTP and MELD scores. Serum bilirubin on day 7 (4.1 ± 4.9 vs 8.1 ± 4.1; p= 0.005) ICU stay (7.9±4.8 vs 5.8±1.7;p= 0.05) and the operative mortality(16.9% vs 4.5%; p=0.002). were higher in Group B. Sepsis was higher in Group B but not statistically significant .

Conclusion

Graft inflow modulation to reduce the portal pressure and portal flow by HPCS reduces the occurrence graft dysfunction and results in better patient survival in low GRWR LDLT compared to non-shunted recipients.

Abstract # O-18
Outcomes after Living Donor Liver Transplantation for HCV Positive Recipients in Japan: Results of a Nationwide Survey. Nobuhisa Akamatsu, Yasuhiko Sugawara, Taku Aoki, Yoshihiro Sakamoto, Norihiro Kokudo. Dept. of Artificial Organ and Transplantation, University of Tokyo Hospital, Tokyo, Japan

Japanese nationwide survey of living donor liver transplantation (LDLT) for hepatitis C virus (HCV) positive recipients was performed in Japan. Totally 514 recipients were reported and included in the study. The cumulative patient survival rate at 5 and 10 years were 72% and 63%, respectively. 142 patients (28%) were lost at the end of the observation, among which the leading cause was recurrent hepatitis C (42 cases). According to Cox regression multivariate analysis, the donor age (>40), non-right liver graft (Figure 1), the acute rejection episode, and the absence of sustained virological response (SVR) were revealed as an independent prognostic factor (Figure 2).



Univariate analysis	Hazard ratio (95% confidence interval)	p value
Recipient age: ≥ 60 years versus <60 years	1.388 (0.921-2.092)	0.118
Recipient gender: male versus female	1.081 (0.71-1.646)	0.718
Pretransplant antiviral treatment: yes versus no	0.994 (0.679-1.453)	0.974
HCV genotype: 1b versus other types	1.122 (0.669-1.881)	0.663
Co-existence of HCC: yes versus no	0.922 (0.622-1.367)	0.686
MELD score: ≥ 15 versus <15	1.076 (0.823-1.456)	0.778
Carcinurine Inhibitor: Tac versus CsA	0.963 (0.642-1.446)	0.857
Steroid withdrawal : yes versus no	0.999 (0.64-1.559)	0.995
Splenectomy: yes versus no	0.981 (0.644-1.494)	0.929
Episode of acute rejection: yes versus no	3.047 (1.911-5.732)	<0.001
Steroid bolus injection: yes versus no	2.346 (1.459-3.612)	<0.001
Achievement of SVR: yes versus no	0.178 (0.131-0.267)	<0.001
Donor age: ≥ 40 years versus <40 years	2.211 (1.398-3.234)	<0.001
Type of graft: right liver versus non-right liver	0.449 (0.332-0.671)	0.036
Multivariate analysis		
Episode of acute rejection: yes versus no	3.247 (1.867-5.646)	<0.001
Achievement of SVR: yes versus no	0.189 (0.128-0.279)	<0.001
Donor age: ≥ 40 years versus <40 years	2.143 (1.464-3.139)	<0.001
Type of graft: right liver versus non-right liver	0.501 (0.338-0.741)	0.001

361 out of all 514 recipients have undergone antiviral treatment mainly with pegylated-interferon and ribavirin (preemptive treatment in 211 and treatment for confirmed recurrent hepatitis in 150). The dose reduction and the discontinuation rate was 40% and 42%, respectively, with the SVR rate of 43%. In conclusion, the patient survival after LDLT for HCV positive recipients and the prognostic factors were comparable with those reported in deceased donor liver transplantation in Western countries. Right liver graft is preferable for HCV positive recipients in LDLT setting.

Abstract # O-19

Intraoperative Terlipressin Therapy Is Associated with a Reduced Incidence of Postoperative Acute Kidney Injury after Living Donor Liver Transplantation. Ahmed Mukhtar¹, Ihab Mahmoud¹, Gihan Obayah¹, Ahmed Hasanin¹, Fawzia Aboul Fetouh¹, Hany Dabbous², Rasha Refaie², Ibrahim Mostafa³, Mohamed Bahaa², Hany Saeed², Amr Abdelaal², Mohamed Fathy², Mahmoud El Meteni². ¹Cairo University, Cairo, Egypt; ²Ain Shams University, Cairo, Egypt; ³Theodor Bilharz Research Institute, Cairo, Egypt

Purpose

Acute kidney injury (AKI) defined by Acute Kidney Injury Network (AKIN) is a frequent and serious complication following living donor liver transplant (LDLT). Its incidence has been reported to be 60% with eight fold increase in mortality. Till now there is no pharmacological treatment has been proved to be beneficial in preventing AKI post liver transplant. We recently demonstrated that perioperative terlipressin infusion was able to maintain kidney function in early post liver transplant. The objective of this retrospective study was to evaluate the effect of intraoperative terlipressin infusion on the incidence of AKI following LDLT

Methods

We retrospectively reviewed the medical records of 303 patients who underwent LDLT between January 2007 and June 2013. Patients were divided into two groups depending on intraoperative therapy with terlipressin. The primary outcome was AKI based on AKIN (Risk, Injury, Failure, Loss, End-stage) criteria. Secondary outcomes included the requirement for postoperative dialysis and hospital mortality. Multivariable logistic regression models were developed for the primary and secondary outcomes.

Results

The incidence of AKI was 38% (n=115). AKI occurred in 24 (24.2%) patients received telipressin versus 91 (44.6%) in the control group (P=0.001). The incidence of postoperative dialysis was 9.2% (n=28). Postoperative dialysis was needed in 8 patients (8.1%) in terlipressin group compared with 20 patients (9.8%) in the control group (p=0.62). In multivariate logistic regression analysis terlipressin was found to have protective effects against AKI (odds ratio [OR]:0.4, 95% confidence interval [CI]:0.2-0.8, p=0.013) but not on need of dialysis OR 0.7, 95% CI (0.2-2.2) (p=0.53) or the hospital mortality OR 0.7 95% CI (0.34-1.7) (p=0.57). Adjustment using propensity score, did not alter the association between the use of terlipressin and AKI reduction with OR 0.8, 95% CI (0.7-0.89) (p< 0.0001).

Conclusion

The results suggested that intraoperative terlipressin therapy was associated with significant reductions in the risk of AKI in patients undergoing LDLT.

Abstract # O-20

Profiling of NAFLD Patients Among Cryptogenic Cirrhotics Undergoing Living Donor Liver Transplantation: New Insights. Biswanath P. Gouda, Sanjiv Saigal, Narendra Chaudhary, Neeraj Saraf, Ravi Mohanka, Sanjay Goja, Amit Rastogi, P. B. Menon, Arvinder S. Soin. *Medanta Liver Institute, Medanta, The Medicity, Gurgaon, Delhi (NCR), India*

Background: Non- alcoholic fatty liver disease (NAFLD) has emerged as one of the important causes of End-Stage Liver disease globally, and is among the leading indications for liver transplantation. We present our experience on a cohort of NAFLD patients who underwent Living Donor Liver Transplantation (LDLT).

Methods: From Jan 2005 till Aug 2013, a retrospective analysis of a prospectively collected database was done to identify patients with NAFLD undergoing LDLT. Among patients with cryptogenic cirrhosis, a diagnosis of NAFLD was made based on modified Adult Treatment Panel III 2012 guidelines (one or more of following: BMI > 25 kg/m², past or ongoing history of diabetes mellitus, hypertension or obesity, high density lipoprotein values < 40 mg% or triglyceride values >150mg%). We identified 165 patients (66.7%) as NAFLD from a subset of 247 cryptogenic patients who underwent LDLT.

Results: In the NAFLD group, there were 84.8% males and 15.2% females with mean age of 51 yrs. The mean BMI was 26.14 $\pm$ 9.3SD, Child-Turcotte-Pugh mean score of 9.91 $\pm$ 1.8 SD and MELD mean score of 19.24 $\pm$ 6.04SD. Pre-transplant presentation included jaundice, hepatic encephalopathy, upper gastrointestinal bleeding and ascites at 58.8%, 41.8%, 32.1% and 72.2% respectively. Obesity (61.2%) was commonest, followed by diabetes (33.3%) and hypertension (17%) as a co-morbidity in NAFLD group. In the post operative course, biliary complications were seen in 12.7%, cellular rejection was seen in 11.6%, sepsis in 11.5% and vascular in 2.4%. The 5-year survival in this group was 84.6% which was comparable to the survival in the non-NAFLD group.

Conclusions: NAFLD accounts for two thirds of patients labeled as cryptogenic cirrhosis who undergo liver transplantation. It has emerged as one of the leading indications for liver transplantation in India as in the West, and LDLT offers acceptable outcome which is similar to other etiologies.

Abstract # O-21

Elevated Portal Venous Pressure after Living Donor Hepatectomy Negatively Influences Postoperative Synthetic Liver Function and Increases Postoperative Complications. Sanjay Govil, Vivekanandan Shanmugam, Mohamed Safwan Mohamed Ilias, Arikichenin Olithselvan, Gomathy Narasimhan, Kota Venugopal, Srinivas Reddy, Anand Bharthan, K. Rajesh, Mohamed Rela. *Institute of Liver Diseases and Transplantation, Global Hospitals and Health City, Chennai, Tamil Nadu, India*

OBJECTIVE: To determine whether Portal Venous pressure (PVP) after Donor Hepatectomy influences liver function and frequency of complications postoperatively.

METHODS: PVP was measured before and after Donor hepatectomy in 100 consecutive liver donors at our institution from January 2012 to October 2013. PVP after resection was correlated with residual liver volume (RLV%), hepatic venous outflow status, postoperative liver function, fluid balance and postoperative complications.

RESULTS: The mean baseline PVP was 5.8mmHg (SD 1.1, range 3-8) and rose to 10.1mmHg (SD 2.3, range 5-16) after hepatectomy. Post-resection PVP correlated with peak postoperative INR (p<0.001), peak postoperative Total Bilirubin (p=0.0015), RLV% (p<0.001), total intraoperative colloid transfusion (p<0.001) and operative blood loss (p=0.005) on univariate analysis. Peak postoperative liver enzymes and middle hepatic vein (MHV) status did not correlate with PVP after resection. Total Intraoperative Colloid transfusion (p=0.03) and RLV% (p<0.001) remained significant on multivariate analysis. PVP after hepatectomy above 10.5mmHg was associated with Grade a ISGLS liver dysfunction. Greater levels of PVP after hepatectomy were significantly associated with postoperative complications of Clavien-Dindo Grade 2 and above (p=0.015).

CONCLUSION: Portal Venous Pressure after Resection is a determinant of postoperative synthetic liver function and is influenced by RLV% and Intraoperative Colloid Transfusion – the former being non-modifiable and the latter potentially modifiable in the setting of Donor Hepatectomy. Greater levels of PVP after resection were also associated with more postoperative complications.

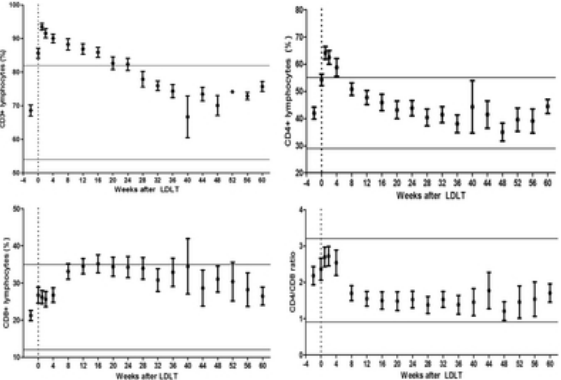
Abstract # O-22

Kinetics of B, T, NK Lymphocytes and Isoagglutinin Titers in ABO Incompatible Living Donor Liver Transplantation Using Rituximab and Basiliximab. Seung Duk Lee, Seong Hoon Kim, Young-Kyu Kim, Sang-Jae Park. *Liver Cancer Center, National Cancer Center, Goyang-si, Korea*

Background: ABO incompatible (ABO-I) living donor liver transplantation (LDLT) has been developed with various desensitizing protocols. We investigated the kinetics of isoagglutinin titers and lymphocyte subpopulations after ABO-I LDLT.

Methods: From January 2012 to March 2013, consecutive ABO-I LDLT patients were enrolled at National Cancer Center. Our desensitizing protocol was single dose of rituximab (300mg/m²) at preoperative 2 weeks, followed by several times of plasma exchange, basiliximab, and intravenous immune globulin without graft local infusion and splenectomy.

Results: Sixteen patients (11 males, 5 females) underwent ABO-I LDLT due to HCC (n=12) or liver cirrhosis (n=4). There was no hyperacute and antibody-mediated rejection among patients. CD 19+ B cells were rapidly eliminated after rituximab and suppressed during 8 months after LDLT. CD 3+ and CD4+ T cells were elevated higher than CD 8+ T cells and CD4/CD8 ratio was increased during 1 month postoperatively. (Figure 2) Interestingly, CD16+CD56+ NK cells were decreased after transplantation and return to original range at postoperative 5 months (Figure 1).



Among 6 recipients with O+, 4 patients showed that non-antidonor isoagglutinin titers were restored quickly to normal range although antidonor titers were suppressed well after surgery. Among 16 patients, we experienced 3 deaths. Two patients experienced tumor recurrence within 1 year (1 within Milan and 1 beyond Milan). One patient showed quickly HCV recurrence and intractable ascites after transplantation. No HBV recurrence was showed with the combination prophylaxis of hepatitis B immunoglobulin and antiviral agent. There were 4 patients with extrahepatic biliary stricture, one CMV, and one HSV infection. However, there was no serious bacterial and viral infection after surgery.

Conclusions: We did successful ABO incompatible LDLT with only medical desensitizing protocol except any surgical additional procedures. However, the suppression of B and NK cell after surgery might be risk factor for tumor recurrence and HCV viral activation.

Abstract # O-23

Using Small-For-Size Grafts in Recipients With High MELD Scores in Living Donor Liver Transplantation: Our Experience. Hongyu Li, Yonggang Wei, Lynan Yan, Wentao Wang, Bo Li, Tianfu Wen. *Liver Transplantation Center, West China Hospital, Sichuan University, Chengdu, Sichuan, China*

Aims: To evaluate the impact of small-for-size grafts (SFSG) in adult-to-adult living donor liver transplantation (AALDLT) on outcomes of recipients with different model for end-stage liver disease (MELD) score in a single liver transplant center.

Materials and methods: Clinical data of 118 patients underwent right-lobe AALDLT from January 2004 to December 2011 were retrospectively analyzed. Patients were divided into Group L (MELD score ≤25) and Group H (MELD score >25) according to MELD score. The patients were further stratified into Group LS (MELD score ≤25, GBWR <0.8%), Group LN (MELD score ≤25, GBWR ≥0.8%), Group HS (MELD score >25, GBWR <0.8%), and

Group HN (MELD score >25, GBWR ≥0.8%) to investigate the impact of graft size on recipients' complications and outcomes. Peri-operative parameters and survival were analyzed.

Results: MELD scores between the two groups were significant different (12.4±4.9 vs 34.5±7.5, P=0.026). There was no significant difference in peri-operative parameters between two groups. The 1- and 3- year survival were similar between group H and group L.

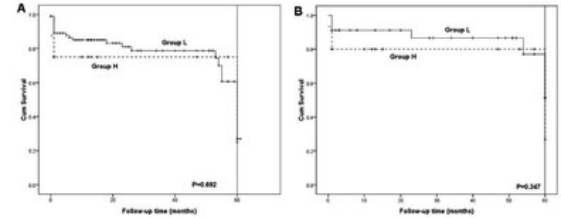


Figure 1 (A) Comparison of the 1- and 3- year survival rates between group L and group H; (B) Excluding HCC recipients, comparison of the 1- and 3- year survival rates between group L and group H.

When recipients were further stratified into group LS, LN, HS, and HN, no significant difference was found among groups in 1- and 3- year survival rate.

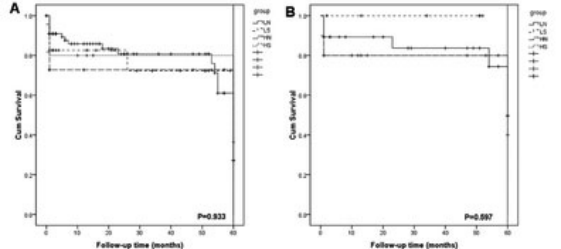


Figure 2 (A) Comparison of the 1- and 3- year survival rates among group LS, LN, HS, and HN; (B) Excluding HCC recipients, comparison of the 1- and 3- year survival rates among group LS, LN, HS, and HN.

In multivariate analysis, HCC was not a predictor for long term survival.

Table. Risk Factors Multivariate Analysis			
Covariate	OR	95.0% C.I.	P-Value
Accompanied HCC	1.921	(0.671, 5.498)	0.599
GBWR	1.571	(0.355, 6.959)	0.553
MELD scores	1.039	(0.986, 1.095)	0.156

Conclusion: Our single institution experience demonstrates that it is safe to use SFSGs in high pre-MELD score recipients with the improvement of intensive care and the selection of listing criteria.

Abstract # O-24

Right Posterior Sector Graft Has Fewer Septic Complications As Compared To Modified Right Lobe Graft Even When GRBWR Is Lesser. Giriraj Bora, Neerav Goyal, Subash Gupta. *CLBS, Apollo Hospital, New Delhi, India; CLBS, Apollo Hospital, New Delhi, India; CLBS, Apollo Hospital, New Delhi, India*

Background: Right Posterior Sectoral liver graft (RPSG) is usually considered when the remnant liver volume is less. However the outcome of the two grafts have not been compared so far, mainly because (RPSG) is technically more challenging. Conceptually it may be a better graft because the vessels and bile duct are single and may avoid the problem of anterior sector congestion.

Aim: To analyze outcome of Right Posterior Sectoral Liver graft verses modified Right Lobe Liver graft in patients with comparable MELD scores.

Methods: Records of all the patients who received RPSG (group 1) between January to October 2013 were analyzed retrospectively from a prospectively maintained database. Group 2 consisted of patients who underwent modified right lobe graft but had a similar MELD score during the same period. The two groups were analysed for etiology, age, sex, and outcome.

Results: A Total of 14 patients received RPSG liver graft during the study period with a mean MELD score of 17.64 (8-26). Eighty-one patients with a mean MELD of 18 (8-26) underwent modified right lobe liver transplant during the same period. The two groups were comparable in terms of age, sex and etiology. There were 4 HCC in group 1 and 22 in group 2 (p=0.913). Mean GRBWR was 0.81 (0.56-1.12) in Group 1 and 1.0 (0.61-1.71) in Group 2 and it was significantly lower for RPSG group as compared to right lobe group (p< 0.001). Early graft dysfunction was seen in 2 patients in Group 1 and 7 patients in Group 2 (p=0.191). Major complications were seen in 4 patients in

group 1 and 22 patients in Group 2 ($p=0.872$). Mortality was similar in both the groups (2 deaths in group 1 and 10 in group 2, $p = 0.814$). Unexplained sepsis was major cause of death in right lobe (6 patients) in comparison to RPSG group (no death from sepsis). Recurrent PVT was unique complication in one patient in RPSG group and was ascribed to technical issues as a cuff had not been placed in the donor portal vein. Hospital stay was comparable, 19.9 days in group 1 and 20.3 days in group 2, ($p=0.835$) in both the groups. Conclusion: RPSG in our experience is an excellent alternative to conventional right lobe liver graft. Besides increasing donor pool, graft can provide a comparable outcome (irrespective of low GRBWR) to whole right lobe liver and has fewer septic complications possibly by avoiding anterior sector congestion.

ORAL ABSTRACT SESSION: OUTCOMES

Abstract # O-25

Liver Transplant Outcomes in Recipients with High BMI. Sherilyn Gordon Burroughs¹, Ashish Saharia¹, Anju Rajaraman¹, Joy Nolte¹, Emad Asham¹, David Victor², Howard Monsour², Robert McFadden², Joseph Galati², A. O. Gaber¹, R. M. Ghobrial¹. ¹Surgery, Houston Methodist Hospital, Houston, TX, USA; ²Surgery, Houston Methodist Hospital, Houston, TX, USA

Background: As a result of reports suggesting increased morbidity and mortality in obese patients undergoing liver transplantation (LT), many authors have advocated pretransplant bariatric surgical (BS) intervention to normalize body mass index (BMI) however, major surgical procedures in this population are generally poorly tolerated. In order to measure the potential benefit of BS while awaiting LT, we first sought to characterize short and long-term survival differences between LT recipients stratified by BMI.

Methods: We conducted a retrospective analysis of outcomes after LT at our institution based upon 3 categories: Normal Weight, Group I, (BMI<24.9, n=76), Overweight, Group II, (BMI 25-29.9, n=77), and Obese, Group III, (BMI>30, n=86). Median follow up was 25.1 months. Statistical analyses included Kaplan-Meier survival, log rank, ANOVA, Chi square and Fisher's exact tests.

Results: Despite statistically higher difference in MELD score and presence of hepatocellular carcinoma in Group III, there was no statistical difference in patient survival in Group III v Group I or Group II, nor rate of culture-proven sepsis rate or length of stay.

Survival by BMI			
BMI Group	1-yr Survival (%)	3-yr Survival (%)	5-yr Survival (%)
I	89	77	70
II	97	85	76
III	95	87	81

30-day Sepsis Rate and Length of Stay (LOS)		
BMI Group	30-day Sepsis rate(%)	Mean Post-op LOS (days)
I	1.4	16.7
II	1.5	13.6
III	1.5	15.05

Summary: Obesity represents an increasingly prevalent comorbidity in the pre-LT population, however does not confer increased rate of complications or mortality. Given the risk of general surgery in this population, BS cannot be justified and should be considered only as a post-transplant strategy to mitigate complications of obesity contributing to long term complications.

Abstract # O-26

Impact of Biological MELD Scores over 40 on Functional Status Post Liver Transplantation. Maha Boktour, Howard P. Monsour Jr, Emad Asham, Ashish Saharia, Sherilyn Gordon-Burroughs, David W. Victor III, Robert S. McFadden, Ahmed O. Gaber, Mark R. Ghobrial. *JC Walter Jr. Transplant Center, Houston Methodist Hospital, Houston, TX, USA*

Purpose: To evaluate the impact of biological MELD score on functional capacity of recipients post orthotopic liver transplant (OLT).

Methods: Records of 191 consecutive patients who received single first OLT between April 2008 and November 2012 were reviewed. Those with extremely high MELD ≥ 40 were compared to high MELD (30-39), moderate MELD (20-29) and low MELD <20. Functional status was analyzed according to the Karnofsky Index (KI).

Results: Median age was 57yr, (range, 21-77), 125 (66%) patients were male and 131 (69%) were Caucasians. Extremely high MELD ≥ 40 (median 43; range, 40-49) was observed in 26 (14 %), whereas high MELD (median 33;

range, 30-39) was observed in 40 (21%), moderate MELD (median 25; range, 20-29) in 40 (21%) and low MELD (median 12; range, 6-19) in 85 (44%) of patients at time of OLT. Patients in the extremely high MELD group were more likely to be admitted to the ICU pre-OLT (100% vs. 68% vs. 18% vs. 0%; $p=<0.001$), to receive HD (85% vs. 43% vs. 5% vs. 1%; $p=<0.001$) directly prior to OLT. Extremely high bio-MELD patients had poor KI at time of listing ($p=<0.001$) and at time of transplant ($p=<0.001$). Post transplant KI scores were comparable between all MELD groups at 6-months and 1-year post OLT ($p=NS$), table 1. One-year patient survival was 94% (median F/U 29 months). Survival for extremely high MELD group was compatible with lower MELD groups (89% vs. 93% vs. 95% vs. 98%, respectively, $p=NS$).

Table 1. Functional status (Karnofsky Index) of patients according to biological-

MELD scores				
Time period	MELD>40	MELD 30-39	MELD 20-29	MELD<20
Baseline Listing*	44±30	44±29	64±25	81±12
Transplant Surgery*	13±7	15±8	40±22	50±19
6-months*	89±12	85±23	85±21	91±11
1-year*	89±11	88±17	86±20	92±12

*KI, mean $\pm$ SD

Conclusion: OLT survivors with extremely high biological MELD experienced functional improvement and independence similar to low MELD patients. Patients with biological MELD scores over 40 should not be an obstacle to experiencing a good-functional status and physical capacity post-OLT.

Abstract # O-27

The Effect of Transplant Center Volume on Mortality of Liver Transplant Recipients. Aliaksei Pustavoiu, Allan Massie, Dorry Segev. *Johns Hopkins University School of Medicine, Baltimore, MD, USA*

Study purpose: Over the last decade, procedural center volume was associated with mortality after major surgical procedures. Patients undergoing pancreatectomy, esophagectomy and cystectomy in high volume centers had lower mortality compared to those having procedures in low volume centers. In the pre-MELD era, low center volume was associated with increased 1-year mortality of whole deceased donor liver transplant recipients compared to high center volume. In our study, we analyzed the association between procedural volume of the liver transplant center and liver recipient mortality in the MELD era, overall and in strata of age and functional capacity.

Methods: We analyzed data from the Scientific Registry of Transplant Recipients (SRTR), from all United States transplant centers, from January 1, 2003, to December 31, 2011. We classified centers as low, intermediate-low, intermediate-high or high volume based on the annual number of adult liver transplants. We defined poor functional capacity based on full assistance with activities of daily living. We used Cox regression to analyze the association between center volume and all-cause mortality in adult liver recipients, overall and stratified by age category and functional capacity. We used multiple imputation method to handle missing data.

Results: we identified 44,537 adult whole deceased donor liver transplant recipients. Compared to high-volume centers, low-volume centers had no observed differences in mortality among all liver recipients (HR 0.98, 95% CI 0.85-1.14), patients with poor functional capacity (HR 1.02, 95% CI 0.78-1.33), or adults older than 65 years of age (HR 0.78, 95% CI 0.58-1.09). There was no observed difference in mortality between high-volume centers and intermediate-low volume centers (HR 1.03, 95% CI 0.93-1.14) or intermediate-high volume centers (HR 0.98, 95% CI 0.89-1.06). There were no differences in mortality between older adults and patients with poor functional capacity undergoing their procedure in intermediate-low and intermediate-high volume centers compared to high volume centers.

Conclusions: There is no evidence of association between center volume and liver recipient mortality in the MELD era, either overall or among older adults or adults with poor functional capacity. Factors other than center volume explain observed differences in mortality.

Abstract # O-28

Could Transient Elastography (FibroScan®) Predicts Nonviral Liver Graft Damage in Liver Recipients? Bianca Della-Guardia¹, Andreia S. Evangelista¹, Guilherme E.G. Felga¹, Lidiane V. Marins², Paolo R.O. Salvalaggio¹, Marcelo B. Rezende¹, Marcio D. Almeida¹. ¹Liver Transplantation, Hospital Israelita Albert Einstein, Sao Paulo, SP, Brazil; ²Anatomopathology Laboratory, Hospital Israelita Albert Einstein, Sao Paulo, SP, Brazil

Introduction: Liver biopsy (LB) is the gold standard for diagnosis of liver allograft injury. Transient elastography (TE) has largely replaced LB for

monitoring of recurrent hepatitis C in liver transplantation (LT) recipients and can identify nonviral liver allograft injury (NVLAI).

Objective: To determine the accuracy of TE in identifying NVLAI in a population of LT recipients.

Patients and method: LB was requested for the evaluation of unexpected elevation of liver enzymes or annually according to our protocol in LT performed at Hospital Albert Einstein. NVLAI was defined as one of the following histologic diagnosis: recurrent disease, de novo AIH, idiopathic post-LT hepatitis, steatohepatitis, acute or chronic rejection or chronic hepatobiliary disease. The median value of ten successful measurements was considered as representative of the liver stiffness with standard deviation less than 30%. The performance of TE for the identification of NVLAI was assessed with ROC curves with 95% of confidence interval. The Youden test was used to select the cut-off point with maximum sensitivity and specificity. **Results:** LB was performed in 149 patients. 97 of 149 LB analyzed presented with NVLAI: acute or chronic rejection (47%) and chronic biliary disease (21.3%). The AUROC for TE for the identification of NVLAI was 0.749 ($p < 0.001$, CI95% 0.667-0.831). TE ≥ 6.5 kPa identified correctly 74 patients. Of these 24 (32.4%) had normal ALT. The optimal liver stiffness cutoff value and diagnostic performance are summarized in table 1.

Operative characteristics of TE in diagnosing liver graft damage (endpoint: lesion;

criteria: Youden; n° cases: 93)

cutoff	sensitivity	specificity	PPV	NPV	PLR	NLR
6.45	77.1%	62%	79.6%	58.5%	2.0	0.4

*PPV=positive predictive value; NPV=negative predictive value; PLR=positive likelihood ratio; NLR=negative likelihood ratio

Discussion: The performance of TE in detecting NVLAI does not seem to be influenced by underlying graft disease but for the presence of necroinflammation or histological cholestasis. For being a non-invasive method, TE is a useful method to diagnose NVLAI. TE may allow the early identification of patients who need further histological assessment of the liver allograft, even with normal levels of ALT.

Abstract # O-29

Endothelial Function in Patients With End-Stage Liver Disease As a Potential Predictor of Outcome before and after Liver Transplantation. Kymberly D. Watt, Matthew Plevak, Ross Dierkhising, Amir Lerman, W.R. Kim. *Mayo Clinic, Rochester, MN, USA*

Background: Endothelial dysfunction is strongly associated with coronary artery disease and chronic kidney disease. In patients with end stage liver disease (ESLD), dysregulation of vasoactive substances mediates splanchnic vasodilation and renal vasoconstriction. Whether those changes correlate with peripherally measurable endothelial function is not known.

Methods: Reactive hyperemia peripheral artery tonometry (RHI) was performed in 71 outpatients with end-stage liver disease awaiting liver transplantation. The results were compared with asymptomatic controls without known liver disease, matched 2:1 by age and gender (N=142).

Results: The mean ($\pm$ standard deviation) age was 54.7 ± 10.1 and 59.2% were male in both ESLD and control subjects. The mean MELD score was 20 ± 8 in the ESLD group. ESLD patients had a higher frequency of diabetes (35% compared to 13%), lower systolic blood pressure (113 ± 14 vs 126 ± 20 mm Hg) and lower plasma LDL cholesterol (97 ± 53 vs 107 ± 33 mg/dL) whereas the frequency of obesity was not significantly different (38.0% vs 42.3%). RHI scores were higher in ESLD patients (2.27 ± 0.67) than controls (1.96 ± 0.54), with the prevalence of endothelial dysfunction (RHI < 1.67) being lower in the former (18.3%) than the latter (37.3%). In a multivariable analysis, ESLD was associated with higher mean RHI compared to controls after adjustment for relevant covariates (mean difference=0.35, 95% confidence interval [CI]=0.15-0.55, $p < 0.001$). Within the ESLD group, higher MELD score was not significantly associated with RHI (slope=0.007, CI=-0.012-0.026, $p=0.45$). Elevated serum creatinine (≥ 1.5 mg/dL) was associated with increased RHI in ESLD patients (mean difference=0.41 for ≥ 1.5 vs < 1.5 , CI=0.004-0.82, $p=0.048$), but not in controls ($p=0.95$).

Conclusion: ESLD patients have higher RHI than a control population of similar age and gender, likely reflecting the vasodilated and hypolipidemic state. Renal impairment associated with higher RHI suggesting further investigation of RHI in predicting renal dysfunction in cirrhotic patients may be warranted. Longitudinal studies are on-going to determine the threshold of RHI for prediction of renal dysfunction and cardiovascular complications before and after liver transplantation.

Abstract # O-30

Renal Function after Orthotopic Liver Transplantation in Patients with a MELD Score 35 or Greater: A Look into the UNOS Share 35 Era. David W. Victor, Howard P. Monsour, Maha R. Bektour, Emad H. Asham, Sherilyn Gordon Burroughs, Robert S. McFadden, Ashish Saharia, A. Osama Gaber, R. Mark Ghobrial. *JC Walter, Jr Transplant Center, Houston Methodist Hospital, Houston, TX, USA*

Aim: Renal failure after liver transplant (OLT) is associated with increased mortality. The United Network for Organ Sharing (UNOS) Share 35 policy was recently adopted to better allocate liver donations. We examined the post transplant renal function in patients with a MELD score of 35 (MELD 35+) and above to those with a MELD score < 35 .

Methods: Data from 197 patients undergoing OLT between April 2008 and December 2012 were reviewed. Demographic, clinical data, survival outcomes and post-operative complications were analyzed based on recipient's biologic MELD scores. Patients were maintained on primarily calcineurin immunosuppression. MELD 35+ recipients (35-49; n=42) were compared to those who had MELD < 35 (6-34; n=155).

Results: 197 patients received OLT in this period. Mean age was 56 years, 67% were male, and 69% were Caucasian. Pretransplant calculated glomerular filtration rate (GFR) < 30 was more likely with MELD 35+ 19/42 (45%) than if the MELD < 35 (10/155 (7, $p < 0.001$). The preoperative creatinine (2.36 ± 1.39) and blood urea nitrogen (BUN) (40 ± 23) were also significant higher in the MELD 35+ group ($p < 0.001$). MELD 35+ patients required more pretransplant dialysis (81% vs. 9%) and vasopressors (41% vs. 7%), ($p < 0.0001$). MELD 35+ patients more needed more post-OLT renal replacement therapy ($p < 0.001$)

Median follow up was 29-months, 1, 2, and 3 year survival in MELD 35+ group was 89%, 82% and 78% while in MELD < 35 group were 96%, 89%, and 85% respectively, Log-rank=NS. At 6 months post transplant patients with GFR < 30 were no different in the two groups 14% vs. 7%, creatinine 1.4 ± 0.69 vs. 1.27 ± 0.57 ($p=0.23$) or BUN 26 ± 13 vs. 25 ± 10 ($p=0.6$). One-year outcomes showed a higher serum creatinine in the MELD 35+ group 1.79 ± 1.26 vs. 1.36 ± 0.99 ($p=0.03$), but difference was not seen in the BUN or patients with GFR of < 30 . At three years there is no difference in the patients with GFR < 30 (15 vs. 10%), Cr (1.52 ± 0.32 vs. 1.51 ± 1.22) or BUN, ($p=NS$).

Conclusion: Renal Failure is a serious complication in liver transplant patients. As higher MELD patients are transplanted with the UNOS Share 35 policy, the pre-operative renal function may be compromised. Our data shows that these patients can be safely transplanted with adequate renal function.

Abstract # O-31

Prevalence and Risk Factors for Pneumocystis Jiroveci Pneumonia (aka PCP) in Liver Transplant Recipients. Travis Winston, Cedric Spak, Linda Jennings, James F. Trotter. *Baylor University Medical Center, Baylor Simmons Transplant Institute, Dallas, TX, USA*

Background: Pneumocystis jiroveci pneumonia (aka, pneumocystis pneumonia (PCP)) has been recognized as a complication of immunosuppressive therapy in liver transplant recipients. Some studies have suggested that its incidence has decreased due, in part, to less use of corticosteroids. We evaluated the prevalence of PCP in a large single center liver transplant cohort over a three-decade time period and evaluated risk factors for its occurrence. **Methods:** The Baylor Simmons Transplant Institute has performed liver transplant since 1984 and has kept a prospectively managed database recording outcomes in its recipients. We used this database to determine the prevalence of PCP and identify associated risk factors for patients transplanted between 1984 and December 31, 2012. Prophylaxis for PCP started in the late 1980's in our program with bactrim for one year in all recipients. **Results:** Of the 3622 liver recipients transplanted over this time, 39 (1.1%) were diagnosed with PCP. All but 6 cases (33/39 or 85%) were diagnosed within the first 12 months post-transplant. Twenty nine cases occurred in the first decade of the program 1985-1994, 8 in the second decade 1995-2004 and only 2 in the remaining 8 years 2005-2012. The incidence of PCP occurring in all liver transplant during each respective era was: 2.7% between 1985-1994, 0.6% between 1995-2004 and 0.2% from 2005-2012. In univariate analysis, PCP was significantly more likely to occur in patients with autoimmune liver disease, re-transplantation, transplant before the year 2000, acute rejection, induction therapy and continued administration of corticosteroids up to one year post-transplant, all $p < 0.05$. Factors not associated with PCP included recipient race, gender and steroid-resistant rejection. There were insufficient outcomes to perform meaningful multivariate analysis. **Conclusion:** 1) PCP has become much less common in current liver transplant recipients due in

part to prophylaxis and lower immunosuppression and less corticosteroid use. 2) Patients requiring corticosteroids for rejection or autoimmune liver disease have a higher risk for PCP. 3) We suggest that patients without these characteristics may not require PCP prophylaxis.

Abstract # O-32

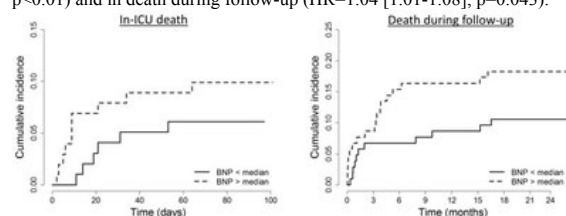
Preoperative BNP Level As a Predictor of ICU Mortality after Liver Transplantation. Amelie Toussaint^{1,2}, Etienne Gayat^{2,3}, Paer Abback^{1,2}, Federika Dondero^{1,2}, Linda Khoy-Ear^{1,2}, Catherine Paugam-Burtz^{1,2}. ¹APHP, HUPNVS, Beaujon Hospital, Clichy, France, Metropolitan; ²Paris 7 Denis Diderot University, Sorbonne, Paris, France; ³Inserm UMR-S 942, Paris, France

Liver transplantation (LT) substantially improves the prognosis of patients with end-stage cirrhosis or acute liver failure but perioperative mortality remains a matter of concern. Few data are currently available to predict post LT survival. Brain Natriuretic Peptide (BNP) is a cardiac biomarker that might be a useful predictor of perioperative prognosis in high risk surgery. Pre LT serum levels of BNP has never been assessed in this setting. The aim of this study was to evaluate the ability of pre LT BNP serum level to predict post LT mortality in Intensive Care Unit (ICU).

Methods :

We performed a retrospective analysis of a prospective database including all LT from January 2011 to November 2013. Consecutive patients with a serum dosage of BNP in the hours before LT were included regardless of the reason of LT. In case of early retransplantation, second LT was considered. Results :

296 patients received a LT during this period. 196 had a pre LT BNP serum dosage. LT was performed because of cirrhosis (46%), HCC (32%), ALF (8%), others (14%). Median Model of End stage Liver Disease score was 18 [11-26]. The ICU mortality was 8.6% (n=17) and the long-term mortality was 15% (n=30) with a median of follow up of 577 days [184-1022]. Median pre LT BNP level in the cohort was 81.5 pg/ml, 83 [32-182] pg/ml in the ICU survivors versus 170 [58-827] pg/ml in ICU deaths (p=0.016) and 76 [32-181] pg/ml in the long term survivors versus 152 [60-606] pg/ml in the group of deceased (p=0.035). An increase in 100pg/ml in BNP level was associated with an increase in in-ICU mortality (Hazard Ratio (HR)=1.10 [1.04-1.15], p<0.01) and in death during follow-up (HR=1.04 [1.01-1.08], p=0.043).



Conclusion :

Pre LT BNP level is associated with in ICU and long term mortality with increased risk for every 100pg/mL.

Abstract # O-33

Unexplained Early Allograft Dysfunction in Living Donor Liver Transplantation: Predictive Factors and Outcomes. K. Elankumaran, M. Balachandran, Singla Punit, Bhangui Prashant, R. K. Sumana, S. Goja, A. Rastogi, R. Mohanka, N. Saraf, S. Saigal, A. S. Sooin. *Institute of Liver Transplantation, Medanta - The Medicity, Gurgaon, Haryana, India*

Background: Early graft dysfunction (EGD) after liver transplantation is an important cause of morbidity and mortality. We sought to evaluate the incidence of EGD, its predictive risk factors and impact on post-transplant outcomes.

Methods: Prospectively collected data of 1202 patients between Jan2007 to August 2013 after excluding biliary, rejection and vascular complications was retrospectively analyzed. Mortality within one week (n=26), combined liver kidney (n=14) and dual lobe transplants (n=7) were further excluded. EGD was defined as bilirubin (Bil)> 10 and International normalization ratio (INR) > 1.5 on day 7. Donor and recipient (age ≥60 years, BMI ≥30 and sex, recipient model of end-stage liver disease score (MELD), renal compromise 2 weeks prior to surgery, sepsis – (Sepsis defined as fever>38°F, TLC>12,000

and positive culture in previous 2 weeks), etiology, cold and warm ischaemia times, preoperative – TLC, Creatinine, Bil, Liver enzymes were analyzed. Univariate and multivariate analysis was done for factors effecting EGD and also for predictors of mortality in the EGD group.

Results: Overall 1, 3 and 5-year survival was 89, 86 and 83% respectively. Overall incidence of EGD was 119/1202 (10 %) and mortality in this group was 48/119 (40 %). For factors causing EGD - donor age (p0.01) and BMI (p0.00), recipient MELD (p0.04), sepsis (p0.00), HCC (p0.01), alcohol (p0.07), TLC (p0.03) and bilirubin (p0.00) on univariate analysis and donor BMI (p0.00) and pre-operative bilirubin levels in the recipient (p0.00) were significant on multivariate analysis. For predictors of mortality in the EGD subgroup - GRWR (p0.09), CTP score (p0.07), sepsis (p0.00), TLC (p0.08) and Bilirubin (p0.00) on univariate analysis and preoperative bilirubin (0.00) and sepsis were significant (p0.00) on multivariate analysis.

Conclusion: Early graft dysfunction is a serious problem in living donor liver transplantation with high rates of graft loss and mortality and is lesser with grafts from younger and lower BMI donors and is more in patients with higher preoperative bilirubin. Preoperative sepsis should be treated aggressively for better postoperative outcome.

ORAL ABSTRACT SESSION: PATIENT SELECTION/ORGAN ALLOCATION

Abstract # O-34

Liver Transplantation for Hepatocellular Carcinoma Beyond the Milan Criteria. Xiao Xu¹, Di Lu¹, Qi Ling¹, Xuyong Wei¹, Jian Wu¹, Lin Zhou¹, Sheng Yan¹, Liming Wu¹, Lei Geng¹, Qinghong Ke¹, Feng Gao¹, Zhenhua Tu¹, Weilin Wang¹, Min Zhang¹, Yan Shen¹, Haiyang Xie¹, Weishi Jiang², Haibo Wang², Shusen Zheng¹. *Department of Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China; ²China Liver Transplant Registry, Shenzhen, China*

Backgrounds: Liver transplantation is the ultimate treatment for hepatocellular carcinoma (HCC). The stringent organ allocation system driven by the Milan criteria has been challenged by alternative sets of expanded criteria. Careful assessments are required for these criteria in the liberation of candidate selection beyond the Milan criteria.

Methods: This study collectively reviewed 6939 HCC patients from the China Liver Transplant Registry. Expanded criteria were evaluated to characterize an optimized expansion with acceptable outcomes beyond the Milan criteria. **Results:** 37.8% of the 6939 patients fulfilled the Milan criteria. Compared to the Milan criteria, the Valencia, UCSF, CUN, and Hangzhou criteria provided an expansion of 12.4%, 16.3%, 19.6%, and 51.5%, respectively. Patients fulfilling the expanded criteria had comparable prognosis to those fulfilling the Milan criteria. In regards to the time-dependent net reclassification improvement (NRI) value estimated for the 4 sets of expanded criteria, the Hangzhou criteria were the most distinguished in the improvement of recurrence-risk reclassification (versus Milan). Consistently, the analysis of the time-dependent AUROC, and Akaike information criterion (AIC) showed that the Hangzhou criteria had the greatest prognostic capacity. In the patients exceeding Milan but fulfilling the Hangzhou criteria (N=1352), AFP>100ng/mL and tumor burden>8cm were the only two independent risk factors for recurrence by multivariate Cox regression (P<0.01). Accordingly, the Hangzhou criteria were stratified as Type a (tumor burden≤8cm, or tumor burden>8cm but AFP≤100ng/mL) and Type B (tumor burden>8cm but 100ng/mL<AFP≤400ng/mL). The 5-year tumor-free survival rates were 69.5% and 38.8% for Type a (N=3536) and B (N=151), respectively (P<0.01). Patients in both Type a and B had significantly better prognosis than those exceeding the Hangzhou criteria.

Conclusion: The Hangzhou criteria can achieve the greatest expansion to the Milan criteria as well as excellent predicting ability for tumor recurrence. The prognostic stratification system based on the Hangzhou criteria serves as a hierarchy of transplant candidates for HCC.

Abstract # O-35

Validation of the Barcelona Clinic Liver Cancer Staging Prognostic Ability in Predicting the Survival Benefit of Liver Transplantation for Patients With Hepatocellular Carcinoma.

Alessandro Vitale¹, Teh-La Huo^{2,3}, Franco Trevisani⁴, Yun-Hsuan Lee^{2,3}, Fabio Farinati⁵, Umberto Cillo¹. ¹Department of General Surgery and Organ Transplantation, Hepatobiliary Surgery and Liver Transplantation Unit, University Hospital of Padua, Padua, Italy; ²National Yang-Ming University, Taipei, Taiwan; ³Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan; ⁴Department of Clinical Medicine, St. Orsola Hospital, Alma Mater Studiorum – University of Bologna, Bologna, Italy; ⁵Division of Gastroenterology, University Hospital of Padua, Padua, Italy

Background. We recently demonstrated the Barcelona Clinic Liver Cancer (BCLC) staging peculiar ability to predict the survival benefit of liver transplantation (LT) in patients with hepatocellular carcinoma (HCC). The aim of this study was to validate the prognostic impact of BCLC system on 5-year transplant benefit.

Methods. Differences from the previous model: a) post-LT survival was predicted by using the alpha-fetoprotein (AFP) score, based on preoperative variables (AFP values, nodules' diameter and number); b) non-LT survival was predicted by including AFP score covariates plus Child Pugh classes in a Cox model applied to a large international study population of 2600 non-LT HCC patients (1557 from the updated ITA.LI.CA database, period 1996-2012, and 1043 from Taiwan, period 2002-2012). Selection criteria: absence of macroscopic vascular invasion and/or metastases, and age lower than 70 years. LT survival benefit for a given candidate was calculated using Monte Carlo simulation analysis as that candidate 5-year life expectancy with LT minus his/her 5-year life expectancy without LT.

Results. In the Cox non-LT survival model, calculated hazard ratios (95% confidence interval) were: Child class B vs. A 1.61 (1.43-1.81), child C vs. A 3.63 (3.01-4.34); AFP 100-1000 vs. AFP <100 1.26 (1.09-1.45), AFP > 1000 vs. AFP < 100 1.77 (1.47-2.12); size 3-6 vs. < 3 cm 1.28 (1.14-1.45), > 6 vs. < 3 cm 1.92 (1.63-2.26); > 3 vs. < 3 nodules 1.81 (1.59-2.05). Cross validation and calibration of the model were performed.

Mean 5-year transplant benefit in months (95% confidence interval) significantly increased according to BCLC stage: BCLC 0 = 10.02 (9.52-10.53), a = 12.77 (12.46-13.08), B-C=15.96 (15.63-16.29), D=27.49 (26.70-28.28).

Conclusions. We validated the prognostic effect of BCLC staging on 5-year transplant benefit.

Abstract # O-36

Liver Retransplantation Associated With Kidney Transplantation for End Stage Liver Graft Disease and Chronic Renal Insufficiency: Results of a Bicentric Study. François Cauchy¹, Eric Vibert², Denis Castaing², Astrid Schielke¹, Fabiano Perdigo¹, Didier Samuel², Filomena Conti¹, Daniel Azoulay², Lilian Schwarz¹, René Adam², Olivier Soubrane¹, Olivier Scatton¹. ¹HPB Surgery and Liver Transplantation Unit, Hopital Saint Antoine, Paris, France; ²HPB Surgery and Liver Transplantation Unit, Hopital Paul Brousse, Villejuif, France

Background. In the event of end-stage liver graft disease with chronic renal insufficiency, liver retransplantation associated with kidney transplantation (ReLT-KT) might be required. Yet, the characteristics, operative results and long-term outcomes of these patients are poorly described.

Methods. Among 3060 patients undergoing liver transplantation at two units between 1994-2012, 45 (1.5%) underwent ReLT-KT. Their characteristics were retrospectively analyzed in order to assess risk factors for postoperative mortality and long-term survival.

Results. The rate of ReLT-KT grew from 0.3% to 2.4% of all LT performed between 1994-1999 and 2007-2012 respectively (p=0.003). Thirty patients (67%) were males and median age was 52 (17-74) years. Time from primary liver transplantation to ReLT-KT was 151 (7-282) months. Liver retransplantation was indicated for recurrence of the primary liver disease, cholangitis and chronic rejection in 15 (33%), 15 (33%) and 11 (24%) cases respectively. Cirrhosis was present in 30 (67%) patients and median MELD score was 23 (9-40). Renal insufficiency was related to calcineurin inhibitors toxicity in 38 (84%) cases and the median preoperative glomerular filtration rate was 24 (5-72) ml/mn. After ReLT-KT, 12 (27%) patients died postoperatively, 3 (7%) required kidney graft removal and 1 (2%) underwent urgent liver retransplantation. On ROC curve analysis for D-MELD score

(Donor age x recipient MELD), a value of 1039 had the highest (78%) sensibility/specificity (78%/70%) for postoperative mortality. On multivariate analysis, a D-MELD>1039 was the only factor associated with postoperative mortality (HR 8.03, 95%CI 2.39-18.22, p=0.026). Follow-up was 40 (0-160) months. The only factor associated with poorer survival was a D-MELD>1039 (47%, 39% and 32% vs. 89%, 84% and 77% at 1, 3 and 5 years, p=0.005). Conclusions: This study, which is the first to focus on liver retransplantation associated with kidney transplantation, shows that these procedures are increasingly performed. Adapting donor's age to recipient's MELD is crucial to improve both operative results and long-term outcomes.

Abstract # O-37

Understanding the Role of Coronary Angiography in Pre-Liver Transplant Cardiac Evaluation in a Singapore Liver Transplant Institution. Jia Hao Law¹, Ning Qi Pang², Ling Te Terry Pan², Boon Leng Kieron Lim², Wei Chieh Alfred Kow². ¹Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore; ²General Surgery, National University Hospital, Singapore, Singapore

Background: Liver transplant(LTx) patients with significant coronary artery disease(CAD) have poorer outcomes. Assessing cardiac risk in pre-LTx patients using coronary angiography(CA) has potential complications. This study aims to identify predictors of abnormal CA and to evaluate pre-LTx cardiac assessment for potential recipients.

Methods: 146 patients underwent pre-LTx cardiac evaluation from January 2006 to June 2013, of which 122 had CA based on current transplant protocol. Patient demographics, cardiac investigation details and short-term survival were compared.

Results: 41(33.6%) patients had abnormal CA. Univariate analysis showed that age≥50(p=0.039), cryptogenic cirrhosis(p=0.046), cardiac co-morbidities(p=0.027), left ventricular hypertrophy(LVH) (p=0.004), hypertension(p=0.002), diabetes mellitus(DM)(p=0.017), dyslipidemia(p<0.001), metabolic syndrome(p=0.003), ≥2 CAD risk factors (p=0.001) and high Framingham Risk Score (FRS)(hard CAD risk, p=0.018; cardiovascular disease: lipids, p= 0.002; BMI, p<0.001) were significant predictors of abnormal CA. Using multivariate analysis, dyslipidemia (OR:4.8, p=0.028) and LVH (OR:4.2, p=0.040) were shown to be independent predictors of abnormal CA.

Factor	Univariate analysis	Multivariate analysis		
	p-value	OR	95% CI	p-value
DM	0.017	1.356	0.189 - 1.528	0.344
Hypertension	0.002	1.013	0.204 - 1.666	0.314
Dyslipidemia	<0.001	4.827	0.059 - 0.851	0.028
Metabolic syndrome	0.003	0.294	0.209 - 2.429	0.588
Cryptogenic cirrhosis	0.046	0.748	0.209 - 1.836	0.387
Age > 50 years old	0.039	1.118	0.108 - 1.947	0.290
LVH	0.004	4.212	0.083 - 0.944	0.040
Cardiac comorbidities	0.027	0.818	0.143 - 2.046	0.366
FRS (lipids)	0.002	-	-	-
FRS (BMI)	<0.001	-	-	-
FRS (hard CAD)	0.018	-	-	-
≥2 CAD risk factors	0.001	-	-	-

9(7.4%) patients were rejected for LTx due to significant CAD. Among patients who had CA and were subsequently transplanted (n=51), patients with abnormal CA (mean=62.7±12.0 months) and normal CA (mean=82.5±17.7 months) had comparable mean overall survival(p=0.863). However, intra/post-LTx coronary event were 4 times more likely to occur in patients with abnormal CA(p=0.043).

Conclusion: Selected patients ≥50 years old with dyslipidemia, LVH, ≥2 CAD risk factors and high FRS should benefit from CA as part of the pre-LTx work-up.

Abstract # O-38

U.S Temporal Trends in Liver Transplant (LT) in Patients with Human Immunodeficiency Virus (HIV). Isabel Campos-Varela, Jennifer L. Dodge, Norah A. Terrault. University of California—San Francisco, San Francisco, USA

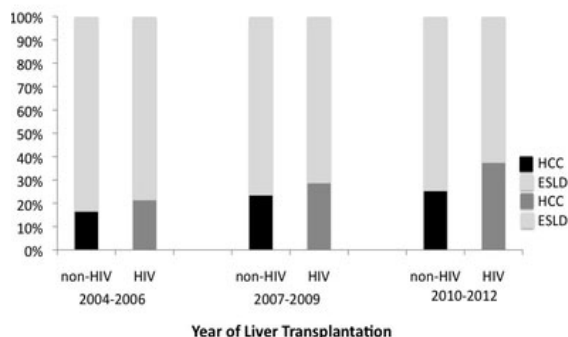
Background: HIV is no longer considered a contraindication to LT. Several cohorts report survival rates comparable to older non-HIV LT recipients. Whether these positive results have resulted in increased rates of LT among HIV patients is unknown.

Aim: To evaluate the temporal trends in LT among persons with HIV, with particular focus on those with hepatocellular carcinoma (HCC) and hepatitis C virus (HCV) as indications for LT.

Methods: We analyzed primary LT recipients from 2004-2012 using data from the United Network for Organ Sharing (UNOS) comparing time trends in HIV and non-HIV patients. The Cochran-Armitage trend test was used to assess time trends.

Results: 39,913 individuals were transplanted during the study period (67% male, median age 55 years); 206 (0.52%) were infected with HIV (80% male, median age 51 years). Median MELD at LT for non-HIV patients was 20 (IQR: 14-28), with a significant increase between 2004 to 2012 ($p<0.001$). Among HIV patients, the median MELD at LT was 20 (IQR 13-30) but with no significant change in MELD in later cohorts ($p=0.92$). The proportion of LTs in HIV patients did not change over time (0.45% in 2004 to 0.37% in 2012, $p=0.34$). Among all LTs, 9,128 (23%) were listed for HCC; 30% of HIV and 22.8% of non-HIV LT recipients, with both HIV ($p=0.03$) and non-HIV rates ($p<0.001$) of LT for HCC increasing over time.

$p=0.25$ (HIV vs. non-HIV over time)



Among the HCV subgroup, the proportion of patients transplanted with HCC increased over time in both HIV (23% in 2004 @ 38% in 2012, $p<0.001$) and in HIV-HCV (12% in 2004 @ 45% in 2012, $p=0.02$).

Conclusions: Patients with HIV account for less than 1% of all LTs in the US, and without any increase in recent years despite reports of positive outcomes. Since 2010, 30-50% of LTs in HIV persons have been for HCC, suggesting that selection of "less sick" HCC patients for LT may be occurring. This is supported by the stable MELD scores among HIV LT patients (compared to rising MELD in non-HIV) over time. Overall, barriers to LT for HIV patients appear to persist and greater efforts to make this life-saving therapy available to HIV patients are needed.

Abstract # O-39

Simultaneous Liver and Thoracic Transplantation Is a Life-Saving Procedure. Laurens J. Ceulemans¹, Sébastien Strypstein¹, Diethard Monbaliu¹, Johan Vanhaecke², Bart Meyns³, Geert Verleden⁴, Dirk Van Raemdonck⁵, Frederik Nevens⁶, Jacques Pirenne¹. ¹Abdominal Transplant Surgery, University Hospitals Leuven, Leuven, Belgium; ²Cardiology, University Hospitals Leuven, Leuven, Belgium; ³Cardiac Surgery, University Hospitals Leuven, Leuven, Belgium; ⁴Pneumology, University Hospitals Leuven, Leuven, Belgium; ⁵Thoracic Surgery, University Hospitals Leuven, Leuven, Belgium; ⁶Hepatology, University Hospitals Leuven, Leuven, Belgium

Aim Report indications/results of simultaneous liver/thoracic transplantation (LiThTx) at a single center.

Methods LiThTx (4/00-11/13) were prospectively collected and analysed for: recipient/donor demographics, indications, immunosuppression, acute/chronic rejection, patient/graft survival.

Results Nine patients (1% LiThTx-program) underwent LiThTx: 5 liver-lungTx (LiLuTx), 3 liver-heartTx (LiHTx), 1 liver-lung-heartTx (LiLuHTx). One patient was listed for LiLuHTx, but due to difficult LuHTx the LiTx was postponed and the patient died 2mo later. Mean patient age was 38y(20-62). Male/female rate was 4/5. Mean donor age was 37y(27-53). **Liver** indications were: cystic fibrosis (CF)-induced cirrhosis(3), familial amyloidosis (FA) (2), cardiac cirrhosis(1), HCV cirrhosis(1), tuberculostatics-induced liver failure(1), hemangio-epithelioma(1). Mean lab-MELD was 15(6-44). **Pulmonary** indications were: CF(3), COPD(1), hemangio-epithelioma(1). **Cardiac** indications were: FA(2), restrictive cardiomyopathy(1). **Pulmonary+cardiac** indication was portopulmonary hypertension(1).

Heart/lungs were transplanted prior to liver, except for 1 case (acute liver failure-COPD) in whom the liver was transplanted first in order to correct the poor coagulation. In this case the lungs were normothermically oxygenated

ex vivo (OCS lung device, Transmedics). All patients received tacrolimus immunosuppression with MMF(8) or azathioprine(1) and steroids(9). The 3 LiHTx received ATG induction.

Overall patient survival is 89% with a mean follow-up of 5y8mo(3mo-13.5y). One patient (LiHTx) died to myocardial infarction 4mo postTx. One liver (LiLuTx) was lost to hepatic artery thrombosis and successfully retransplanted 3mo later. In all 19 organs, 5 mild rejections occurred: liver (2 early); lung (3 late). The LiLuHTx patient developed bronchiolitis obliterans but is doing well 13.5y postTx. No chronic liver or heart rejection occurred. **Conclusion** For selected patients, LiThTx can provide excellent long-term results with low risk of rejection/graft loss.

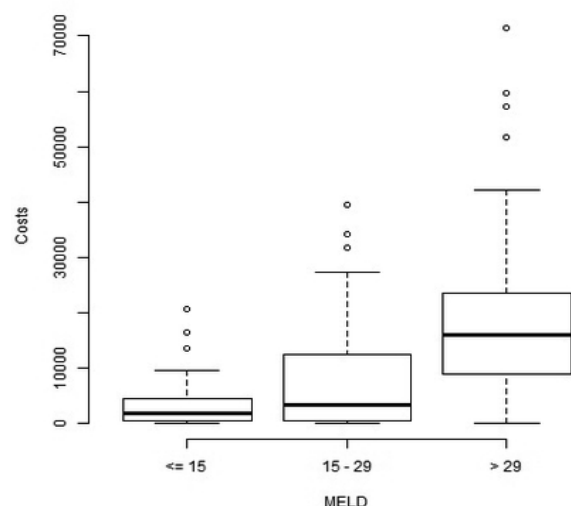
Abstract # O-40

Maintenance Cost of the Cirrhotic Patient on the Waiting List for Liver Transplantation. Impact of MELD, Gravity and Time on Waiting List. Jose Antonio Orellana Turri¹, Luciana Bertocco Paiva Haddad¹, Wellington Andraus¹, Marcio Augusto Diniz^{1,2}, Luiz Augusto Carneiro D'Albuquerque¹. ¹Gastroenterology, University of Sao Paulo Medical School, Sao Paulo, Brazil; ²Mathematical and Statistic Department, University of Sao Paulo Medical School, Sao Paulo, Brazil

Introduction: The cirrhotic patient care causes a high cost to the health system. The waiting time increase the treatment procedures and the costs. The aim of this study was to determine the costs of patients waiting list maintenance for liver transplantation (OLT) and the factors that increase it.

Methods: a economic evaluation with a microcost analysis was performed. It was included in this study all patients listed for OLT since January 2012 until November 2013. The costs of outpatient and hospitalization were analysed, including the human resources expenses, laboratory tests, medications, imaging tests, biopsies and dialysis.

Results: Data from 453 patients were analysed and 237 reached the endpoints and were included in this study. Among them, 117 patients were transplanted, 47 died and 73 were removed during the study. The total cost of transplanted patients was US\$5321.67 ± 4665.43; US\$7191.53 ± 7065.93 for patients who died and US\$3135.73 ± 5728.97 for those that were removed from the list ($p<0.001$). MELD values were 26.5 ± 9.4, 28.9 ± 11.7 and 16.1 ± 6.7 respectively. MELD score above 29 occurred in 37% of transplanted patients, 54.3% in those that died and 2.7% in the removed ones, with statistical difference between three groups ($p<0.001$). The total cost of patients with MELD scores above 29 was US\$9279.16 ± 7317.09, for MELD 15-29 was US\$4057.40 ± 4519.55 and for MELD score below 15 was US\$2079.84 ± 2830.28 ($p<0.001$). Time on waiting list was 203.8 days for the transplanted patients, 138.3 days for those that died and 131.4 days among patients who were removed ($p=0.003$).



Conclusions: Waiting list maintenance costs of cirrhotic patients are directly proportional to the MELD score. Patients with MELD scores above 29 have total cost and cost per day higher than others. Thus, the organ shortage increases the pre-transplant costs in the waiting list.

Abstract # O-41

Comorbidity Score As a Selection Criteria for LDLT in Elderly Patients. Arzu Oezcelik, Murat Dayangac, Necdet Guler, Yalcin Erdogan, Onur Yaprak, Yildiray Yuzer, Yaman Tokat. *General and Transplantation Surgery, Istanbul Science University, Istanbul, Turkey*

Introductions: Previous published data have shown that age alone is not a contraindication for living donor liver transplantation (LDLT). However a careful evaluation of the co-morbidities, in order to differentiate which patient benefit from LDLT, is essential for the survival in elderly patients. The aim of this study was to define a co-morbidity score as selection criteria for the decision whether a patient is suitable for LDLT.

Patients and Methods: Between October 2005 and June 2011, 280 patients underwent a LDLT. Out of this group, all recipients who were 60 years old or older, at the time of LT, were identified. The clinical characteristics, pre-, intra- and postoperative data, co-morbidities, graft and patients survival of these patients were retrospectively reviewed. The co-morbidity score was calculated for each patient according to the Charlson Co-morbidity score. The results were statistically analyzed.

Results: There were 94 patients (37%) in the age of 60 years or older. All patients received the right lobe of their donor in a standard technique. The donor and graft characteristics and the postoperative complications are shown in the TABLE.

Donor and Recipient Criteria	
Donor age	34 (IQR 29-40)
MELD score	15 (IQR 11-18)
Graft-to-recipient weight ratio	1.1 (IQR 1.1-1.3)
Graft ischemic time	105 Min. (IQR 89-120)
Post-LT biliary complication	27 Patients (28%)

The median co-morbidity score of all patients was three (IQR 2-3). Out of these patients 17 patients (18%) died in the median time of four month (IQR 1-12). The remaining 77 patients (82%) are alive and have a median survival of 33 month (IQR 16-52). The co-morbidity score of these 77 patients was significantly lower compared to the other 17 patients (2 vs. 5; $p=0.0001$). There were no other significant differences. None of the patients with a co-morbidity score above five survived longer than 12 month

Conclusion: It is known that the co-morbidity score gains on importance in elderly patients. Based on the results of our study we can conclude that the co-morbidity score of elderly patients should be below five in order to be selected as suitable for LDLT.

Abstract # O-42

Age and Outcome in Liver Transplantation for Acute Liver Failure. William S. Burnside, Philip Bayly. *Anaesthesia and Critical Care, Freeman Hospital, Newcastle, United Kingdom*

Introduction

Advancing age has been historically seen as a relative contraindication to liver transplantation (LT). While evidence grows to refute this in elective LT [1] there is less evidence regarding acute liver failure (ALF). February 2013 saw the 20th anniversary of LT at our institution compelling us to examine age and outcome in LT in acute liver failure.

Method

Data on all LTs in our institution are contemporaneously stored on a database. Data were examined for primary LT for ALF and 1 year mortality and divided into 4 age groups. Transplants performed up to August 2012 were included to allow for data to be accurate for 1 year mortality. Aetiology of ALF was also recorded.

Results

For the time period 107 cases were found with an age range from 14 to 68. One year mortality in all patients was of 22.4% while the mortality throughout all age groups was comparable, table below.

1 Year Mortality in Liver Transplantation for Acute Liver Failure					
Age	<30	30-39	40-49	50+	Total
N	35	30	18	24	107
Mortality	9	7	3	5	24
% Mortality	25.7	23.3	16.7	20.8	22.4

Aetiology of ALF varied with age, particularly regarding paracetamol (acetaminophen) overdose (POD). In the under 50 group aetiology of ALF was POD in 69.9% of cases, in the 50+ group it was 33.3%.

Discussion

ALF is a medical emergency with LT as a definitive treatment option. Our institutions experience would suggest 1 year mortality in those over 50 is consistent with all age groups. However, we have not considered those who did not receive a LT or examined comorbidities and functional capacity. We cannot exclude a selection bias to transplant sicker younger patients whilst

avoiding LT in higher risk older patients. Thus all age groups may not be directly comparable. Aetiology is important as causation of ALF differs by age. This could alter overall results if mortality varied by aetiology. In our data 1 year mortality in LT for POD was 27.3% compared with 14.6% in LT for other causes of ALF. Other factors that could affect mortality include the observed reduction in rejection episodes associated with increasing age [2].

Conclusions

Age, taken in isolation, should not be a barrier to LT in acute liver failure.

References

1. Kesmani RN, et al. Old Age and Liver Transplantation: A Review. *Liver Transpl.* 2004;10(8):957-967.
2. Cross TJ, et al. Liver transplantation in patients over 60 and 65 years: an evaluation of long-term outcomes and survival. *Liver Transpl.* 2007;13(10):1382-8.

ORAL ABSTRACT SESSION: PEDIATRICS

Abstract # O-43

Pediatric Liver Allograft Health with Normal Liver Function Test, 10 Years after Liver Transplantation : All Is Not Well!!! Saista Amin, Juliana Puppi, Bhaswati Acharyya, Corina Cotoi, Lara Souza, Alberto Quaglia, Anil Dhawan. *Pediatric Hepatology, King's College Hospital, London, United Kingdom*

Purpose of the Study: To Evaluate the Liver Histology in Children with Normal Tests of Liver Function and Radiology, 10 years after liver transplant. **Methodology:** 62 children, 10 years after Liver transplant with normal Liver functions (AST, ALT, GGT, Bilirubin, Albumin) who consented for Liver biopsy, were studied prospectively. Incidence and risk factors for abnormal graft histology were also evaluated.

Results: Of the 62 children (32 male), age being between 11 years and 25 years median age was 14 (+/- 2 years), at the time of biopsy; 53 (85.5%) children had abnormal histology (fibrosis/steatosis/both). On Ishak staging, stage 3 and 4 fibrosis was found in 23 (43.5%) children. 11 (20.7%) had stage 1 fibrosis, 17(32%) with stage 2. Recipient related risk factors evaluated were episodes of acute rejection, biliary and vascular complications, CMV infection, De Novo auto immune hepatitis and PTLT. Donor related risk factors evaluated were age, sex, CMV status, graft steatosis. Both donor and recipient risk factors were comparable with normal and abnormal histology groups

Conclusion: Normal liver biochemistry does not reflect graft histology. Hence a caution has to be observed while predicting allograft health without Liver Biopsy.

Abstract # O-44

Cognitive and Intellectual Function in Korean Pediatric Liver Transplantation Recipients; Cross Sectional Study in a Large Volume Living Donor Liver Transplantation Center. Nam-Joon Yi¹, Jeong-Moo Lee¹, Suk-Won Suh¹, YoungRok Choi¹, Hae Won Lee¹, Hyun-Young Kim¹, Kwang-Woong Lee¹, Kyung-Suk Suh¹, Jiwon Lee², Hee Gyung Kang², Jae-Won Kim³. ¹*Surgery, Seoul National University College of Medicine, Seoul, Korea;* ²*Pediatrics, Seoul National University College of Medicine, Seoul, Korea;* ³*Psychiatry, Seoul National University College of Medicine, Seoul, Korea*

Background: Cognitive and intellectual difficulties have been reported in children who received organ transplantation. However, these problems have not been known in Asian-living donor liver transplantation (LDLT) based populations. We observed the cognitive and intellectual function in Korean pediatric LT recipients.

Methods: Pediatric patients who received LT and followed up more than one year after LT at Seoul National University Hospital were collected. Among 95 pediatric LT recipients, 31 patients were included in this study; 29 children underwent a LDLT (93.5%). Each patient underwent neuropsychiatric evaluation including measuring intellectual and social quotients; attention-deficit-hyperactivity-syndrome (ADHD), mental retardation (MR, IQ<70), and lower-average intelligence (LI, IQ<90).

Results: The mean age of the patients was 3.0 years (8 months-11years) at transplantation and 11.0 (2.5-16) years at the time of neuropsychiatric evaluation. The average values of intellectual quotient and social quotient were 97.63 (59-132) and 101.1 (44-139). Five (16.1%) patients were diagnosed with ADHD and the other five patients were required of follow-up for ADHD. Five (12.9%) patients were documented MR (IQ<70) and 11 (35.5%) showed LI (IQ<90). One patient was diagnosed as pervasive

developmental disorder. The intellectual and cognitive indices were not related with pre-LT status, the type of graft, the age at the time of transplantation, and post-LT complications ($p>0.05$).

Conclusions: In this study, pediatric Korean LT recipients were exposed to increased risk of lower intelligence and ADHD; the incidence values were higher than reported one in general population (1% for MR and 3-8% for ADHD). Primary care physicians and family members should have attention to the cognitive and intellectual functions during follow-up of pediatric LT recipients.

Abstract # O-45

Outcomes of Late Re-Transplantation after Pediatric Liver Transplantation: From Child To Adulthood. Jules Kohaut, Ailton Sepulveda, Filomena Conti, Yvon Calmus, Denis Bernard, Fabiano Perdigao, Astrid Schielke, Olivier Scatton, Olivier Soubrane. *Hepato-biliary Surgery and Liver Transplant, St. Antoine Hospital, Paris, France*

Liver re-transplantation (re-OLT) is necessary for 10-30% of pediatric liver transplantation recipients and has been previously shown to carry an increased risk of death. Only few studies described outcomes after late re-transplantation. The aims of this study are to describe indications, technical aspects and outcomes of young adults undergoing liver re-transplantation many years after a first OLT in childhood. Between September 1988 and July 2011, our center proceeded to 214 re-OLT in 186 patients. 15 of these patients were identified as very late re-OLT (more than 50 months after first OLT). Median age at re-transplantation was 21 years old (range 18 to 35 years old). The two majors indications for re-transplantation were vascular lesion and chronic rejection. The median delay since first re-OLT was 192 months (range 57 to 268). There were no difference between intra-operative aspects, but piggy-back technique was two-fold more frequent in young adult recipients compared to other recipients (33,3% vs 15,2%). Survival rates after re-OLT in young adult group were better compared to others re-OLT (80% vs 57% after one year). Four of the 15 patients included in the study died after re-OLT, for 3 of them death occurs during the first month after re-OLT, demonstrating that patients with poor survival were more fragile before re-OLT. Actually, one had 2, and one had 3 liver transplantations, two had kidney transplantation before re-OLT. The causes of death were related to sepsis in 3 cases and to vascular complication probably due to fungal infection in the last case. In conclusion, patient transplanted in childhood and requiring very late re-OLT presented excellent survival, this subgroup might greatly benefit from elective re-OLT, in contrast, fragile patients with several liver transplantations, or previous kidney transplantation or with kidney and nutritional failure may have a poor outcome.

Abstract # O-46

The Assessment of Late Results of Pediatric Liver Transplantation With ABO Non-Identical Grafts. Piotr J. Kalicinski, Malgorzata Markiewicz-Kijewska, Joanna Teisserye, Hor Ismail, Anna Ostojka-Chyzynska, Marek Szymczak. *Department of Pediatric Surgery & Organ Transplantation, Children's Memorial Health Institute, Warszawa, Poland*

Organ shortage for pediatric liver transplant recipients results in occasional acceptance of ABO incompatible or compatible but not identical grafts. The aim of our study was to assess and compare results of transplants in these groups of patients.

Material and Methods: We analyzed all ABO non identical liver transplants performed in our center between 1997 and 2012. There were 138 ABO non-identical grafts transplanted and 55 ABO non identical-incompatible grafts performed in 54 children (group I) and 84 ABO non identical-compatible grafts were performed in 84 children (group II). Patients from group I were aged 0,2 – 20,6 years (median age 1,4 y), patients from group II - 0,12-17,39 years (median 2,38 yrs). 71% pts from group I were transplanted urgently, while only 36% from group II. MELD/PELD score was significantly higher in group I (7-58, median 23, vs 10-39, median 15). Almost all pts (51/54; 94,4%) from group I received induction with anti-IL2 receptor antibodies, while only 6/84; 7,14% pts from group II. We assessed indications for Tx, time of liver recovery after LTx (normalization of bilirubin and INR) and actual pts and graft survival and graft function. Statistical analysis was done with non parametric t test.

Results: The follow up in group I and group II is 1 d - 13,63 years and 3 days -15,95 years respectively. There were no significant differences in the early graft function between both groups. Actual patient survival is 41/54 (75,92%) and 75/82 (91,46%) in group I and group II. Late graft function is good in

most patients and similar in both groups. Median biochemical parameters in group I and II are: bilirubine 0,6 mg% v.0,52 mg%; ALAT 22 IU/ml v. 23 IU/ml; GGTP 20,5IU/ml v. 19 IU/ml.

Summary:

The higher mortality in recipients of ABO incompatible grafts can be explained by their more severe clinical status. We do not observe significant long term morbidity resulting from ABO mismatched transplants, late liver function in survivors does not differ between both groups indicating important role of non ABO identical transplantation in children, including ABO incompatible transplantation in most urgent patients.

Abstract # O-47

Serum and Tissue DSA Subclass, Stellate and Endothelial Phenotype Monitoring in ITN029ST Tolerant Pediatric Liver Transplant Recipients over 5+ Years of Follow-Up. Sandy Feng¹, A.J. Demetris², Kumiko Isse², Udeme Ekong³, Alin Gimita⁴, Sai Kanaparthi⁵, Carol Soppe⁶, Nadia Tchao⁷. ¹Surgery, UCSF, San Francisco, CA, USA; ²Pathology, U Pittsburgh, Pittsburgh, PA, USA; ³Pediatrics, Yale U, New Haven, CN, USA; ⁴Surgery, U of Cincinnati, Cincinnati, OH, USA; ⁵ITN, Bethesda, MD, USA; ⁶ITN, San Francisco, CA, USA; ⁷Medicine, UCSF, San Francisco, CA, USA

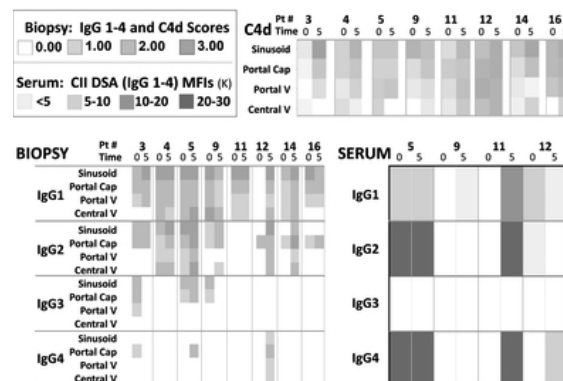
BACKGROUND: ITN029, a multicenter trial of immunosuppression withdrawal (ISW) in pediatric living donor liver recipients, identified 12 tolerant participants (pts) whose liver function remains normal off IS for 6.4(5.1-6.8)y. We followed serum and allograft Class II DSA subtype, C4d score, sinusoidal endothelial (LSEC) and stellate cell (SC) phenotype.

METHODS: We studied 8 tolerant pts with serum and biopsies obtained prior to (T=0) and 4+y (T=5) after ISW. Class II DSAs were typed using PE-conjugated, α -human IgG1-4. Modified ABC technique using α -human IgG1-4 (tonsil +control; normal liver -control) localized tissue IgG deposition. IgG1-4 and C4d staining (sinusoidal, portal capillary, portal vein, and central vein) were prospectively scored (0,1,2,3 for none, mild, moderate, severe). α -CD34 and α -SMA examined LSEC and SC phenotypes.

RESULTS: Eight tolerant pts (4 boys, 6 biliary atresia) were 0.6(0.3-2.4)y at transplant and 9.6(5.3-12.2)y at study entry. Over 5+y, C4d scores increased modestly (2.0; -0.75-4.25) (Fig). Before ISW, 2 had DSA: IgG1/2/4 in 2/2/1 pts; 5+y later, 4 had DSA: IgG1/2/4 in 4/2/3 pts. No pts had IgG3 DSA. Biopsies showed more ($\Delta>1$) IgG1/2/3/4 in 3/5/0/2 pts, less ($\Delta<-1$) in 1/0/2/0 pts and no change ($|\Delta|\leq 1$) in 4/3/6/6 pts. CD34/SMA staining detected no change in LSEC capillarization or SC activation.

CONCLUSIONS: DSAs persist and/or emerge and C4d scores increase with ISW. Serum IgG3 DSA, the strongest effector subtype, was NOT detected; allograft IgG3 was NOT detected or decreased over time. In contrast, serum IgG2/4 was stable and allograft IgG2/4 increased, but with no evidence of progressive tissue injury. Allograft tolerance may be associated with the emergence of distinctive DSA subtypes.

Yrs 0 & 5: C4d Scores, Biopsy IgG1-4 Scores, and CII DSA IgG1-4 MFIs



Abstract # O-48

Monitoring Post-Operative Complications With Microdialysis in Children after Liver Transplantation. Gisli B. Bergmann^{1,2}, Håkon Haugaa^{1,2}, Søren Pischke^{1,2}, Tor I. Tønnessen^{1,2}. ¹*Division of Emergencies and Critical Care, Oslo University Hospital, Rikshospitalet, Oslo, Norway;* ²*Faculty of Medicine, University of Oslo, Oslo, Norway*

We have previously shown that microdialysis catheters implanted in liver transplants may detect post-operative complications such as vascular occlusion and acute cellular rejection (ACR) with high sensitivity and specificity. The method is implemented as a standard monitoring of care in pediatric liver transplant recipients. We are now investigating the utility of implementing a clinical decision tree based on cutoff values for detecting ischemia (intrahepatic lactate >2.6 mM and lactate to pyruvate (L/P)-ratio >20) and rejection (intrahepatic lactate >2 mM with normal L/P ratio). We are also exploring if catheters placed in the abdominal cavity may detect postoperative complications such as biliary leakage and infections. At the end of surgery, one catheter is inserted in the liver graft and another is placed in the abdominal cavity. Lactate, pyruvate, glucose, and glycerol are analyzed every 30-60 minutes. Intrahepatic lactate >2.6 mM with an L/P-ratio >20 prompts an ultrasound Doppler evaluation of the graft circulation within the next 30 minutes. ACR is suspected and a liver biopsy is performed if lactate increases to >2.0 mM with an L/P-ratio <20 on 3 consecutive measurements. We have monitored 16 liver grafts so far. Eleven grafts have had a vascular event (including hepatic artery thrombosis or stenosis, portal vein thrombosis or stenosis, hepatic vein stenosis or hemorrhage/hematoma in the hilus of the liver). ACR was suspected in 8 grafts of which 5 were confirmed by biopsy, the remaining three had non-ischemic circulatory events. Two patients had a perforated small bowel and peritonitis. Disturbances in the graft circulation are detected several hours before circulating lactate and transaminases increase. ACR is detected several days before circulating transaminases and/or bilirubin increase. The abdominal catheters detect infectious complications and cases suggest that they may be useful in distinguishing thrombosis of the hepatic artery from portal vein thrombosis when the intrahepatic metabolism is monitored simultaneously.

Abstract # O-49

Limited Utility of PELD Score and Long Wait Time for Young Children with Chronic Liver Disease Listed for Liver Transplant. Girish Hiremath, Daniel Leung, Amrita Narang, Sanjiv Harpavat, Ryan Himes, Paula Hertel, Douglas Fishman, Beth Carter, John Goss, Ross Shepherd. *Texas Childrens Hospital, Houston, USA*

Background: There is growing concern that the actual Pediatric End-stage Liver Disease score (PELDs) infrequently leads to organ allocation in children <2 years (YC) with chronic liver disease (CLD) such as biliary atresia (BA), especially in the setting of limited deceased-donor (D-D) availability. To evaluate the scale of this problem, and identify areas where outcomes may be improved, we examined the utility of PELDs, waiting time to LT and its related clinical outcomes in YC listed for LT.

Methods: This retrospective study included 103 YC with CLD [BA=66, other chronic liver diseases (oCLD)=37] listed for first D-D LT between 2008-2013 in a high-volume pediatric liver transplant center. The outcome was defined as death on the waitlist, death after removal from the list for being too sick, or death ≤4 weeks after LT. Differences between medians and proportions were calculated for continuous and categorical variables, respectively.

Results: In all, 38% of YC listed for LT received exception PELD points of whom 10% died, and the majority (75%) of them died ≤4 weeks after LT. The waitlist mortality was comparable among BA and oCLD patients (15% vs 19%). There was trend towards longer wait time to LT or death in BA compared to oCLD (59 vs 38 days; p=0.08), with no difference between calculated PELD at listing or Δ-PELD (difference between PELD at outcome and listing). Among BA patients, those successfully transplanted (n=54) compared to those who died (n=12) had similar age at Kasai procedure (KP), but were older at listing (225 vs 202 days; p<0.05), had lower PELDs at listing (12 vs 20; p<0.05) and survived longer on the waitlist (63 vs 38 days; p<0.05). Those without KP (n=19) compared to those with failed KP (n=47), had higher PELDs at listing (19 vs 10; p<0.05) and at outcome (28 vs 26; p<0.05) but lower mortality rates (11% vs 17%; p<0.05).

Conclusions: Our experience draws attention to limited utility of calculated and exception PELDs, unacceptably long wait-times and alarmingly high rates of adverse outcomes in YC with CLD listed for LT, especially among children with BA who had failed KP. Adding KP status to PELDs may potentially

improve predictability for adverse outcomes in BA. Future research focusing on national data and revisiting donor allocation policies for this age group will be important.

Abstract # O-50

Post-Transplant EBV-DNAemia, Related Diseases and Effect of Therapy in a Cohort of Pediatric Liver Recipients. Cigdem Arikian^{1,2}, Latife Doganay¹, Nur Olgun³, Cahit Yilmaz¹, Murat Zeytun¹, Rasim Farajov¹, Murat Kilic¹. ¹*Izmir Kent Hospital Organ Transplantation Center, Izmir, Turkey;* ²*9 Eylul University, Izmir, Turkey*

Posttransplant lymphoproliferative disease (PTLD) remains a major complication after LT. EBV DNA monitoring is important to prevent the development of this particular complication.

AIM: determine prevalence of EBV DNAemia and related disease as well as the characteristics of patients within a cohort of 200 consecutive pediatric liver recipients during 4 years.

METHOD: The median age was 3.2 yr(0.1-18).EBV was periodically monitored by the use of a real-time quantitative PCR (cut-off value,102 copies/g DNA).The median follow-up period was 586 days (85-1376). If DNA viremia detected, the tacrolimus was decreased by 75% and m-tor inhibitors were introduced.If the values were persistently high (105copies/g DNA) or the symptoms were suspected for PTLD, further examinations of the suspected sites were performed.Symptomatic patients received 8 dose rituximab (RTX) 375mg/m2 weekly.

RESULTS: EBV DNA was checked in 148 patients (74%) and found positive in 48/148 patients (32.43%).EBV DNA was detectable in 6 months, 1 and 2 year after LT 72%, 26% and 2% of the patients, respectively.The median time to viremia was 124 day(27-346).The median EBV viral load was 8595 copies/g DNA(range 312- 1 800000).Of those who developed viremia, recipients 75% manifested symptoms related to their infection.PTLD was diagnosed in 6 patients at a median time of 270 (120-870) days following LT.The main presentation was invagination and ileus followed by diarrhea and weight loss.They received RTX and chemotherapy concomitantly as well as m-tor inhibitors.The mean EBV viral load in patients with PTLD was 69500 copies/Ig DNA, which was higher than in patients without EBV-related (5386 copies/g DNA)(p=0.01). 12/36 symptomatic patients received 6- month course of post-LT valganciclovir. 6 of the 12 recipients developed viremia while on valganciclovir. Two patient who had Evans's syndrome was treated by iv immunoglobulin.12 patients received RTX preemptively.Ten of them cleared their viremia with no recurrence median 16 months follow up (12-38).None of them developed PTLD.Hypogamaglobulinemia developed in 4 patients after RTX therapy.2 patients died.

CONCLUSION:The value of serial EBV DNA measurements for the surveillance of EBV related diseases is demonstrated in this cohort. Preemptive RTX seems promising to prevent the development of PTLD in symptomatic cases.

Abstract # O-51

Late Cytomegalovirus (CMV) Reactivation or Infection: High Incidence of Graft Hepatitis in D-R+ Pediatric Liver Transplant Recipients. Anita Verma, Giulia Cremonini, Nigel Heaton, Hector Vilca-Melendez, Anil Dhawan. *Institute of Liver Studies, King's College Hospital, London, United Kingdom*

Cytomegalovirus (CMV) is most common viral infection in transplant recipients. Donor derived infections are considered more invasive & cause of increased morbidity, however late CMV infections has not been studied systematically in children LT recipients.

We studied the incidence, risk factors and outcome for late CMV infections for 181 LT children at King's Hospital, London. Patients with CMV infection six month after liver transplantation (LT) was included in the study. The antiviral prophylaxis protocol included IV ganciclovir 5mg/kg twice daily for 2 weeks for D+R- starting at day 7 post transplant and weekly CMV DNA monitoring for D+R-, D+R+ till patient is discharged or when symptomatic. The overall incidence of late CMV infection in three high risk group (D-R+, D+R-, D+R+ excluding 50 D-R-) was 18/131 (13.7%). Most of these patients were very young young median age 1.5year, had > 2 admissions to hospital, prolonged length of hospital stay median of 21days (range 18- 167) days & had late post transplant complications. Late rejection was seen in 25% of patients mainly in D+R- & D-R+ group. The most important finding was, D-R+ group showed very high rate of hepatitis (36%) on liver biopsies in comparison to ≥15 % in D+R-, D+R+ group. All patients were negative for autoantibodies. Late CMV disease was present in 5/131 (3.8%), 2% patients

required the second line treatment with foscarnet. Patients with late CMV infection took longer time for clearing the virus when started on treatment.

Table: Characteristics for late CMV infection for 181 pediatric LTR, transplanted between 2004-2008

	D+R- (n=54)	D-R+ (n=41)	D+R+ (n=36)	D-R- (n=50)
Total patients (86/181)	36/54 (67%)	21/41 (51%)	24/36 (66%)	5/50 (10%)
1st CMV infection	8/54 (14.8%)	7/41 (17%)	3/36 (8.3%)	1/50 (2%)
Late CMV infection (after 6mo)	1.5 (0.2-16)	1.2 (0.2-3.7)	1.5 (1.4-8.5)	1
Age median (range) yrs	2/8 (25%)	1/7 (14%)	0/3	0
Late Rejection	2/8 (25%)	2/7 (29%)	1/3 (33%)	0
CMV Disease	8/8 (50%)	4/7 (57%)	2/3 (66%)	0
Persistent CMV viraemia >3 weeks after treatment	1/8	0	1/3	0
Treatment with foscarnet	8/54 (15%)	15/41 (36%)	6/36 (16.6%)	Not seen
Hepatitis on liver biopsies				

Late CMV recipients infection or reactivation was associated with increased morbidity with no mortality & D-R+ had increased incidence of graft hepatitis.

ORAL ABSTRACT SESSION: SURGICAL TECHNIQUES/COMPLICATIONS

Abstract # O-52

In Vivo Assessment of Hepatic Microcirculation Using Sidestream Dark Field Imaging: An Innovative Method To Predict Early Graft Function after Liver Transplantation. Carlo Pulitano^{1,2}, Phong Ho¹, David Joseph¹, Sandroussi Charbel¹, Deborah Verran¹, Geoffrey McCaughan^{1,2}, Nicholas Shackel^{1,2}, Michael Crawford¹. ¹Australian National Liver Transplantation Unit, Royal Prince Alfred Hospital, Sydney, Australia; ²Centenary Research Institute, Sydney, Australia

Introduction: The complex functions of the liver in metabolism, biosynthesis, clearance, and host defense are all closely dependent on microcirculation. Imaging of the human hepatic microcirculation in real-time has the potential to detect injuries and risk of graft failure. However, in vivo assessment of hepatic microcirculation by real time visualization has been technically impossible. The aim of this study was to evaluate the feasibility of studying the hepatic microcirculation in situ using Sidestream dark-field (SDF) imaging, a new non invasive technology that allow direct visualization of microcirculation using hand-held probe for direct contact with target tissue.

Methods: Twenty-nine patients undergoing cadaveric liver transplantations have been included in this study. Images were obtained using SDF imaging on the surface of the liver 5 min and 30 minutes after reperfusion in 4 different areas of right and left lobe. Images were captured intermittently during 10-sec apnea and recorded. Hepatic microcirculation measurement included a measure of vessel density (total and perfused vessel density [MVD]) two indices of perfusion of the vessels (proportion of perfused vessels and microcirculatory flow index [MFI]); and a heterogeneity index. Ventilation parameter and arterial and portal blood flow were recorded.

Results: Microvascular perfusion inversely correlates with postoperative AST, bilirubin, INR, and creatinine levels. MVD and MFI were significantly correlated with cold ischemic time and portal and hepatic artery flow. The time interval between portal venous and hepatic arterial reperfusion significantly correlated with MVD and MFI. Using a simple algorithm a new functional classification for initial graft function was developed based on post reperfusion microcirculation parameters.

Conclusions: The present study presents the first assessment of human hepatic microcirculation using SDF imaging. Microvascular hypoperfusion of the graft was correlated with delayed graft function. This finding may have implications in the use of new pharmacologic agents that target sinusoidal diameters, and flow velocity.

Abstract # O-53

Technical Options for Outflow Reconstruction in Domino Liver Transplantation. Sofia de la Serna, Laura Lladó, Joan Fabregat, Emilio Ramos, Jaume Torras, Carme Baliellas, Juli Busquets, Nuria Pelaez, Lluís Secanella, Antoni Rafecas. *Liver Transplant Unit, Hospital U. Bellvitge, Barcelona, Spain*

Introduction: Venous outflow is critical in liver transplantation (LT). The aim of this study is to describe our experience with different techniques of venous outflow reconstruction (VOR) in domino LT.

Patients and Methods: Retrospective analysis of 39 consecutive domino LT recipients between 1997 and 2013.

Results: 27 males and 12 females (mean age of 61.8 ± 4.3 years), underwent LT and accepted to receive a FAP (familial amyloid polyneuropathy) liver. Main underlying liver disease was HCC followed by HCV cirrhosis (mean MELD score of 16.8 ± 5.7). Total operating time was 366.8 ± 86.7 min and total ischemia time 558 ± 139 min. All recipients were transplanted with piggy-back technique. For VOR, T-L anastomosis without graft was performed in 16 cases (41%) and a latero-lateral (L-L) cavo-caval anastomosis in 6 patients (15%). In 11 cases (28%) a cadaveric venous graft was interposed between the hepatic veins (HV) stump of the FAP-liver and the recipient HV (5 Y-shaped iliac bifurcation-ICV, 4 IVC, and 2 auricles) and in one case an aortic graft was used. Since 2011, in 5 cases (13%) we have employed an arterial graft (cadaveric iliac or pulmonary artery is used to create the graft by opening the artery longitudinally, joining both ends transversally and suturing it to the junction of all 3 HV of the FAP-liver). No PNF occurred and postoperative mortality was nil. Arterial and portal complications presented in 2 (5.6%) and 4 (11.1%) patients respectively and were solved after endovascular and anticoagulation therapy. Postoperative outflow complications (postLT Budd-Chiari syndrome) occurred in 4 patients requiring endovascular stent placement; all of them had a venous interposed-graft for reconstruction. Outflow complication incidence was higher among patients with venous graft compared to arterial graft interposition (36.4% vs 0%; $p=0.119$). Patient overall survival at 1, 3, 5 and 10 years was 97.1%, 79.2%, 76% and 67% respectively.

Conclusion: Several technical options can be employed for VOR in domino LT. To the best of our knowledge this is the first study to report the use of arterial grafts for VOR in domino LT, and our newly proposed technique should be added to the already available surgical modalities. Outflow complications seem to be related to the type of vascular graft employed for reconstruction.

Abstract # O-54

Early Hepatic Artery Thrombosis (eHAT) after Living Donor Liver Transplantation: Not So Fatal Anymore! Pravin Agrawal, Ravi Mohanka, Amit Rastogi, Sanjay Goja, Balachandran Menon, Prashant Bhargui, Sumana Kolar, Punit Singla, Sanjeev Saigal, Neeraj Saraf, Tarun Piplani, S. Baijal, Arvinder Soin. *Institute of Liver Transplant & Regenerative Medicine, Medanta Medicity, Gurgaon, Haryana, India*

eHAT is a dreaded complication after LT. In the earlier years of LT, detection was late, graft failure was universal & emergency re-transplantation the only recourse. With the advent of living donor liver transplantation (LDLT), frequent monitoring led to earlier detection & higher rates of graft rescue rates. Of late, we & others have resorted to increasing number of non-re-transplant rescue options. The aim of the study was to analyse the changes in management & outcome of eHAT over the last 8 years.

Patients and methods:

Of 1347 LDLT recipients between 2005 and 2013, 36 developed eHAT. They were divided into two groups of equal number of cases – the first 18 & the last 18. Initially, protocol Doppler ultrasound (DUS) was done daily for 5 days & at discharge. From 2011, additional DUS was performed twice a day for a week for those with difficult arterial reconstruction during the LDLT. Diagnosis was confirmed by a CT angiogram. However, from 2011, DUS was followed by direct angiography for HAT after day 7, in the hope of an interventional solution in the same session. Demographics, diagnosis, rescue techniques, and outcome were compared between the groups.

Results	First 18	Last 18
Time Period	July 2005 to July 2011	Aug 2011 to Nov 2013
Number of LDLT	816	531
Incidence of eHAT	2.2%	3.3%
Adult/Pediatric	15/3	15/3
Type of Graft	Right Lobe:12, Left lobe:3, Left lateral segment:2, Dual lobe:1	Right lobe:14, Left lobe:0, Left lateral segment:3, Dual lobe:1
eHAT detected on Day (Mean)	6(+/-2.5)	5(+/-2.8)
Mode of presentation	Elevated transaminases: 7 (39%), Protocol Doppler: 11(61%)	Elevated transaminases:2 (11%), Protocol Doppler:16(89%)
Surgical Re-exploration	18	12
Interventional radiology(thrombolysis+/-stent) alone/ with surgery	0/0	5/4
Re-transplantation	3	0
Re-thrombolysis	5	2
Arterialisation of portal vein	0	4
ICU stay in days (Mean)	7 (+/-4)	7 (+/-5)
Hospital stay in days (Mean)	26 (+/-10)	22 (+/-8)
Alive	8 (44%)	14 (77%)

Conclusion: Our rescue rate of eHAT has significantly increased in the recent years (77% vs 44% $p = 0.01$) without resorting to re-transplantation. This may be attributed to early diagnosis, liberal use of radiological intervention & arterialisation of portal vein, in addition to surgical re-vascularisation.

Abstract # O-55

Multi-Modality Approach for Biliary Complication after Living Donor Liver Transplantation. Yu-Hung Lin, Yueh-Wei Liu, Chee-Chien Yong, Chih-Che Lin, Chih-Chi Wang, Tsan-Shiun Lin, Yi-Chun Chiu, Chao-Long Chen. *Liver Transplantation Program, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan*

Introduction
Biliary reconstruction is considered as "Achilles' heel" in liver transplantation (LT). The complication rates decrease from 30-50% to 10% as the technique improves in whole liver transplantation. The complication is still relative higher in reduced size LT, ranges from 16 to 67%.

Since March 22, 2006, we started routine microsurgical biliary reconstruction in liver transplantation. Our previous report showed the biliary complication rate was 6.79% and the need of intervention was 2.5%. The purpose of this study is to review our biliary complication rate and treatment approach.

Patients and Methods

From Jan. 1, 2007 to Dec. 31, 2011, there were totally 481 living donor LT in our institute. The overall biliary complication rate is 7.3% (35/481). There were 11 (2.3%) recipient with bile leak and/or biloma, 24 (5.0%) patients with biliary stricture.

There are 7 recipient treated with drainage, 10 patient treated with percutaneous transhepatic cholangiodrainage (PTCD) and 18 patient treated with endoscopic retrograde biliary drainage (ERBD) with plastic stents. The need of intervention was 5.8%.

Discussion

Our strategy to approach biliary complication is drainage for biloma and bile leak. ERBD with plastic stent is conducted for bile leak to facilitate the leak cessation and prevent from further stricture. As regarding to biliary stricture, we prefer to attempt ERBD first for recipients with duct-to-duct reconstruction. For recipients are with duct-to-jejunum or failed ERBD, we will do PTCD. If possible PTCD followed by ERBD (Rendezvous Procedure) is also considered.

Conclusion

Microsurgical biliary reconstruction decreases biliary rate significantly. And multi-modality approach to deal with biliary complication is required in order to improve the quality of life after transplantation.

Abstract # O-56

Robotic Right Lobectomy for Living Donor of Liver. Yao-Ming Wu, Rey-Heng Hu. *Department of Surg, National Taiwan University Hospital, Taipei, Taiwan; National Taiwan University Hospital, Taipei, Taiwan*

Background: a lot of surgical procedures can be performed by minimal invasive approach with the benefits of shorter hospital stay, better postoperative recovery and cosmesis of wound. The percentage of major liver resection via minimal invasive approach increased in the past five years contributed by both accumulated surgical experience and availability of instruments. But there are still some limitations by laparoscopic approach

for challenging procedures of liver resection, including right lobe harvest for living donor. Robotic surgical system has the advantages of 3D surgical vision and flexibility which have the potential to overcome these existed laparoscopic limitations.

Methods: We had set up the laparoscopic liver surgery program in NTUH since 2007, and performed 69 cases till the end of 2011. We initiated the program of robotic liver resection since the beginning of 2012, and finished 85 robotic liver resection in the past two years, including 4 living donor of liver harvested by robotic approach which will present here.

Results: Patients in our series with minimal invasive approach for liver resection have the benefits of shorter hospital stay, less postoperative pain and better cosmesis. We got increased percentage of major liver resection from 15% to 33% with the assistance of robotic system. We successfully performed four living donor harvest procedures by robotic minimal invasive approach, including 3 right lobes and 1 left lobe. We got smaller surgical wound over the suprapubic area (8-10 cm), shorter hospital stay (6 days after operation), but longer operation time (8 hours). The average blood loss during operation is 120 ml. These four case recovery well without any complications or blood transfusion. **Conclusions:** The previous experience of laparoscopic liver resection helps us to get used and handle this high technique robotic system quickly. The consistency, flexibility and three-dimensional vision of this robotic system are the potential benefits for minimal invasive liver resection in our preliminary experience. We showed that the feasibility and safety of the robotic liver resection, even for the challenging cases. The established technique for liver harvest from living donor by robotic approach will increase the percentage of minimal invasive surgery for living donor which will get the advantage of donor safety. But we need accumulated more experience to expand this new technology.

Abstract # O-57

Usefulness of Temporary Portocaval Shunt in Liver Transplantation. Umberto Maggi¹, Leonardo Centonze¹, Roberto Lauro¹, Gianluca Fornoni¹, Daniele Dondossola¹, Gianni Paone¹, Paolo Reggiani¹, Lucio Caccamo¹, Giorgio Rossi². ¹UO Chirurgia Generale e Trapianti di Fegato, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, MI, Italy; ²General Surgery and Liver Transplantation Unit, Department of Patophysiology and Transplantation, University of Milan, Milano, MI, Italy

Background

Intraoperative use of temporary porta-caval shunt (PCS) during liver transplantation (LT) is still under debate.

Patients and Methods

Data concerning 100 consecutive primary LTs performed in adults from February 2011 to September 2013 were retrieved from our prospective database.

All LTs were performed preserving recipient vena cava and confectioning a side-to-side caval anastomosis.

Fifty LTs were performed with a temporary porta-caval shunt (PCS) and 50 without it (no-PCS).

Data from donors, surgery and recipients were recorded.

Data concerning ischemia time, intraoperative consumption of packed red blood cells (PRC), fresh frozen plasma (FFP) and platelets units, postoperative biochemical values within the first week from LT concerning liver and renal function, one and six-month survival and Early Allograft Dysfunction (EAD) were recorded and compared.

P-values < .05 was considered statistically significant.

Results

The two groups were homogeneous for most donor, recipient and surgical parameters.

The main differences were worse basal serum creatinine levels in PCS group ($p=.04$) and higher basal ALT (alanine aminotransferase) levels in no-APC patients ($p=.04$).

The analysis of intra-operative parameters highlighted less FFP units consumption for PCS patients ($p=.012$) but no differences for other components.

Total ischemia time and hepatectomy time did not differ between the two groups.

In PCS patients we found significant lower levels of POD 1 ALT ($p=0.02$), but concurrent worse levels of renal function in POD 1, 4 and 5.

One-month survival was better in no-PCS patients (100% vs 90%, $p=.02$), but no differences in 6-months and 1-year graft survival were observed.

EAD rate was higher in no-PCS patients (30% vs 14%, $p=.05$).

Conclusion

Even though temporary PCS showed better results in terms of intraoperative FFP infusion, POD 1 ALT levels and EAD incidence, renal function was significantly worse within first week, but probably because of worse basal renal function in PCS group.

One month survival was worse if compared with no-PCS grafts, but 6 months and 1 year survival shows no significant differences.

The usefulness of a temporary PCS still remains uncertain.

Abstract # O-58

Surgical Technique of Left Lateral Section Liver Graft Replacement in Children. Sergey V. Gautier, Dmitry G. Akhaladze. *Abdominal Surgery and Transplantation, Federal Research Center of Transplantology and Artificial Organs named after V.I. Shumakov, Moscow, Russian Federation*

PURPOSE: estimation of surgical technique for vascular reconstruction of the LLS liver graft according to clinical and anatomic features of donor and recipient.

METHOD: 205 consecutive LLS transplantations during 2008-2013 years were performed in children, aging from 3 months to 6 years (mean: 11.9±14.1 months) with body mass 4-16 (mean 7.7±2.9) kg. Main indication was liver cirrhosis in biliary atresia and other cholestatic diseases. In 6 (2.9%) cases, of retrohepatic IVC absence the graft's left hepatic vein was joined end-to-end to liver hepatic veins orifices just below diaphragm. In rest 99 cases the hepaticocaval anastomosis was performed between graft's hepatic vein and orifice of three, or only with left and middle recipient's hepatic veins. In 26 (12.6%) cases of two hepatic veins the single venous orifice was created on the back table by suturing of medial walls of graft's hepatic veins.

For portal revascularization the own surgical technique was used to approximate different diameters of portal veins. In 8 (3.9%) cases of portal vein hypoplasia, the grafts portal vein was joined to superior mesenteric and splenic veins confluents. In 1 case of portal occlusion donor's inferior mesenteric vein was used as a graft.

Difficulties of arterial reconstruction were associated with shortage and small diameter of vessels. To increase the lumen of anastomosis, both arteries were dilated by longitudinal incision of 3-5mm. We had 184 grafts with 1 arterial branch and 21 with 2 arteries (from left hepatic artery and left gastric artery). Only in 1 case both vessels were reconstructed.

RESULTS: In all cases preoperative anatomical data were identical to intraoperative findings. The follow up is 3 months to 5.7 years. The 1 month mortality was 7% due to different complications. No hepaticocaval or portal vein anastomotic disorders were noted. 4 arterial thrombosis occurred with following successful reconstruction.

CONCLUSION: Successful implantation of LLS in children may be achieved by preoperative predicting of liver vascular anatomy, wide hepaticocaval and portal anastomoses using described technique with optic magnification.

Abstract # O-59

High Levels of VWF and CD163 Are Associated With Increased Blood Loss, RBC Transfusion Requirements and Risk for Transfusion in Orthotopic Liver Transplantation. Frecha Arshad, Ton Lismann, Robert J. Porte. *Surgery, University Medical Center Groningen, Groningen, Netherlands*

Background: Patients with liver disease undergoing orthotopic liver transplantation (OLT) often suffer from a bleeding tendency diathesis and require transfusion of blood products, which is associated with increased morbidity and mortality. It has been long assumed that the bleeding tendency during liver transplantation is for a large extent related to the preexisting coagulopathy which is secondary to the underlying liver disease and deteriorates further during OLT. However, there is increasing evidence that portal hypertension plays a major role in the increased bleeding risk during OLT. Although portal venous pressure is not measured routinely prior to or during liver transplant procedures, recent studies have shown that serum levels of von Willebrand factor (VWF) or soluble CD163 are markers of portal venous pressure.

Aim: To examine whether blood loss during OLT is associated with preoperative levels of VWF and CD163, as markers of portal hypertension.

Methods: We measured levels of VWF and soluble CD163 in preoperative serum samples of 169 adult patients undergoing a primary OLT between 1998 and 2012. Data on red blood cell (RBC) transfusion requirements and estimated blood loss were obtained from a prospectively maintained database.

Results: Preoperative serum VWF levels correlated significantly with estimated intraoperative blood loss ($r = 0.155$; $p = 0.044$) and total and

preanhepatic RBC transfusion requirement ($r = 0.192$; $p = 0.013$ and 0.222 ; $p = 0.008$ respectively). Patients with VWF or soluble CD163 levels above the median had a significantly increased blood loss and were more likely to receive RBC's compared to patients with low VWF or soluble CD163 serum levels (odds ratio 3.4 [95% CI 1.7-6.9] and 2.2 [95% CI 1.1-4.4] respectively).

Conclusion: High preoperative serum levels of VWF and CD163 were associated with higher blood loss and RBC transfusion requirements, and a higher risk for RBC transfusion, during OLT. Our data, indicates that portal hypertension is a significant contributor to blood loss and RBC transfusion during OLT.

Abstract # O-60

Hilar Anatomy in 1319 Living Liver Donors and Its Implications on Clinical Acceptability. Amit Rastogi, P. Singla, T. Piplani, P. Bhangui, K.R. Sumana, P.B. Menon, S. Goja, R. Mohanka, N. Saraf, N. Mohan, S. Saigal, A.S. Soin. *Medanta Liver Institute, Delhi-NCR, India*

INTRODUCTION

Hepatic hilar anatomy is crucial for Living Donor Liver Transplantation (LDLT). The aim-record arterial (HA), portal (PV) and biliary (BD) variations in healthy liver donors. Donors classified based on hilar anatomy, indicating suitability of donation. We also propose a new, functional-anatomical classification for Right and Left Hepatic Arterial and Right Biliary variations.

METHOD

Operative details and preoperative imaging of 1319 donors for LDLT.

Data recorded using Makuuchi's arterial, Nakamura's portal and Huang's biliary classifications. The new classification proposed for HA (right and left): Type 1 (single artery), Type 2 (double artery) and Type 3 (three arteries), with sub classification into a and B based on origins of the inflow trunk. The right BD was classified into Types 1 to 4 based on number of bile duct openings in the graft.

Donors were classified according to bench modifications needed: Class 1 – none, Class 2 – modifications with acceptable risk and Class 3 – modifications needed with unacceptable risk.

RESULTS

1161 (88.1%) right and 158 (11.9%) left (including left lateral sector) lobe grafts.

Arterial findings: Right HA Type 1 in 1243 (94%) (1A-1058, 85%, 1B-185, 15%), Type 2 in 74 (5.6%) (A-26, 35%, B-48, 65%) & Type 3 in 2 (A-1, B-1); Left HA Type 1 in 725 (55%) (1A-700, 96%, 1B-25, 4%), Type 2 in 560 (43%) (A-425, 76%, B-135, 24%) & Type 3 in 28 (2%) (A-10, 36%, B-18, 64%). Two hepatic arteries anastomosed separately or using a Y graft on the bench. Presence of >2 graft arteries on imaging would preclude donation (class 3 donor).

The portal venous types, A-1210 (91.7%), B-59 (4.4%), C-44 (3.3%), D-3 (0.2%). Two Portal vein openings required Y graft reconstruction. Donors with presence of significant crossover or with Type –E or few Type D totaling 3 (0.2%) were class 3.

Biliary types: Type 1 in 786 (59%), Type 2 in 506 (38%), Type 3 in 26 (2%) and Type 4 in 1. MRCP picture showing 4 graft ducts, or some variations of 3 ducts or cross-over drainage of remnant segment would be class 3 donors. The series had 844 (64%) class I donors, 457 (34.6%) class-II donors and 18 (1.4%) class-III donors. All class 3 donors in the series were intra-operative surprises; they would normally be rejected on evaluation.

CONCLUSION

The proposed classifications of anatomical variations and donors have direct implications on operative planning, donor suitability and safety.

ORAL ABSTRACT SESSION: VIRAL HEPATITIS

Abstract # O-61

Long Term Outcome of Mild Hepatitis C Recurrence after Liver Transplantation: A Large Prospective Study. Martina Gambato¹, Gonzalo Crespo¹, Maria Carlota Londoño¹, Zoe Mariño¹, Sabela Lens¹, Jose A. Carrión¹, Pablo Ruiz¹, Ignacio Alfaro¹, Jaume Bosch¹, Rosa Miquel², Miquel Navasa¹, Xavier Forns¹. ¹Liver Unit, Hospital Clinic, IDIBAPS, CiberEHD, Barcelona, Spain; ²Pathology Department, Hospital Clinic, IDIBAPS, Barcelona, Spain

Little is known about the long-term outcomes of HCV-infected liver transplant recipients with mild recurrence diagnosed 1 year after transplantation ("slow fibrosers"). The study population included 174 patients who underwent LT between 1999 and 2012 and were diagnosed with mild hepatitis C

recurrence 1 year after LT (METAVIR F=0-1, HVPg<6 mmHg, liver stiffness measurement [LSM] <8.7 kPa). Patients were followed prospectively in a single institution and all relevant transplant-related, donor and recipient variables were recorded. Endpoints were the development of cirrhosis (METAVIR F=4, HVPg≥10 mmHg, LSM ≥14 kPa) and HCV-related graft loss. Patients were followed for a mean time of 79 months after LT (IQR 41-116). Cumulative probability of HCV-related graft loss 5- and 10-years after LT were 3% and 10%, respectively. Cumulative probabilities of developing cirrhosis 5- and 10-years after LT, censoring patients who achieved SVR, were 10% and 30%, respectively. Univariate Cox regression analysis showed that donor age (p=0.012, HR 1.030) and LSM 24 months after LT (p<0.001, HR 1.423) were associated with the development of cirrhosis during follow-up. Our data strongly support that most patients with mild hepatitis C recurrence diagnosed 1 year after LT (slow “fibrosers”) have excellent long-term outcomes. Nevertheless, one third of these patients may develop cirrhosis overtime. A few simple variables are helpful at identifying these individuals, who might benefit from antiviral therapy.

Abstract # O-62

Post-Liver Transplant Fibrosis Progression Varies by Hepatitis C Virus (HCV) Genotype. Isabel Campos-Varela¹, Jennifer C. Lai¹, Elizabeth C. Verna², Jacqueline G. O'Leary³, R. Todd Stravitz⁴, Lisa M. Forman⁵, James F. Trotter³, Robert S. Brown², Norah A. Terrault¹.

¹University of California San Francisco, San Francisco, USA; ²New York Presbyterian Hospital-Columbia, New York, USA; ³Baylor University Medical Center, Dallas, USA; ⁴Virginia Commonwealth University, Richmond, USA; ⁵University of Colorado, Denver, USA

Background: In non-transplant patients with chronic HCV infection, HCV genotype (GT) has been linked with a differential response to antiviral therapy, risk of advanced fibrosis, hepatocellular carcinoma and all-cause mortality. **Aim:** To determine if HCV GT affects risk of advanced disease, response of HCV therapy, graft loss and mortality after LT.

Methods: HCV infected recipients with GT 1, 2 and 3 from 5 US centers (2002-2007) were included. Patients with HIV-coinfection, absence of GT and GT4-6, or receiving an HCV+ organ were excluded. Cox-regression analysis was performed.

Results: 745 patients (565 male, median age 53 yrs, 43% HCC) with median follow-up of 3.1 (0.3-8.0) years were included; 605 (81%) GT-1, 53 (7%) GT-2 and 87 (12%) HCV GT-3. GT-2 (HR=5.10; p=0.003) and GT-3 (HR=3.27; p=0.006) were also independently associated with sustained virologic response (SVR). The unadjusted cumulative rate of advanced fibrosis (F3-4) at 3 and 5 yrs were 36% and 54% for GT-1, 17% and 17% for GT-2, and 23% and 35% for GT-3 (p=0.001). In multivariate analysis, that included adjustment for antiviral therapy, GT-2 was associated with a 71% lower and GT-3 a 45% lower risk of advanced fibrosis than GT-1 (p=0.007 and p=0.02).

Table 1. Predictors of Advanced Fibrosis: Multivariable Analysis

Variables	HR (95% CI)	p value
HCV genotype 1	ref	--
HCV genotype 2	0.29 (0.12-0.71)	0.007
HCV genotype 3	0.55 (0.33-0.92)	0.02
Female recipient	1.48 (1.07-2.04)	0.02
Recipient age (per year)	0.96 (0.94-0.99)	0.002
Donor age (per year)	1.02 (1.01-1.03)	<0.001
Donor African American race	0.44 (0.26-0.76)	0.003
Post-LT HCV-treatment before advanced fibrosis	0.56 (0.38-0.83)	0.003
CMV infection	1.68 (1.13-3.52)	0.01

*Adjusted for center effect

Overall and HCV-specific adjusted cumulative 3 and 5-year rates of patient and graft survival did not differ significantly by GT (p≥0.1).

Conclusion: Risk of advanced fibrosis and response to therapy are strongly influenced by genotype. LT recipients with HCV GT-1 have the highest rate of advanced fibrosis and lowest SVR rate, with GT- 3 have an intermediate risk of advanced fibrosis and SVR and GT-2 have the best outcomes. Thus, LT recipients with GT-1 and 3 patients are important target groups for future preventive and treatment strategies.

Abstract # O-63

Usefulness of ELF, IP10, Fibroscan and Their Combinations in the Early Prediction of Severe Hepatitis C Recurrence after Liver Transplantation. Gonzalo Crespo¹, Martina Gambato¹, Olga Millán², Gregori Casals², Pablo Ruiz¹, Xavier Forns¹, Mercè Brunet², Wladimiro Jiménez², Miquel Navasa¹. ¹Liver Unit, Hospital Clinic, IDIBAPS, CIBEREHD, Barcelona, Spain; ²Biochemistry and Molecular Genetics, Hospital Clinic, IDIPABS, CIBEREHD, Barcelona, Spain

Background and aims. Early identification of severe hepatitis C recurrence after liver transplantation (LT) may help to indicate antiviral therapy before the disease is too advanced. We evaluated the performance of ELF, IP10 and transient elastography (Fibroscan) 6 months after LT to predict severe recurrence. **Methods.** Seventy-five HCV-infected LT recipients were included. Severe recurrence was defined as the presence of F≥2 and/or HVPg≥6 mmHg 12 months after LT. Elastography and serum levels of IP10 and ELF score were evaluated 6 months post-LT. **Results.** In thirty patients (40%) with severe recurrence at 12 months, IP10, ELF and elastography 6 months after LT were significantly higher than in patients with mild recurrence (p<0.001 for ELF and Fibroscan; p=0.006 for IP10). AUROCs of ELF, Fibroscan and IP10 6 months after LT to predict severe recurrence were, respectively, 0.805, 0.776 and 0.688. Negative (NPV) and positive (PPV) predictive values were 85% and 68% for ELF, 83% and 61% for Fibroscan and 73% and 53% for IP10. The combination of ELF with Fibroscan in cases where they agreed (61%), yielded NPV and PPV of 96% and 77%. The combination of Fibroscan and IP10 agreed in 60% of patients and yielded NPV and PPV of 87% and 71%. **Conclusions.** Noninvasive methods are able to early predict severe hepatitis C recurrence with moderate accuracy. Among the methods evaluated, ELF and Fibroscan were more accurate than IP10, and their combination was particularly reliable to predict a benign evolution of the recurrence.

Abstract # O-64

Impact of Anemia in Viral Response during Triple Therapy in Liver Transplant Recipients. Carmen Vinaixa^{1,2}, Audrey Coilly³, Maria Garcia^{1,2}, Angel Rubin^{1,2}, Victoria Aguilera^{1,2}, Jean Charles Duclos-Vallée³, Martin Prieto^{1,2}, Didier Samuel³, Marina Berenguer^{1,2}. ¹Hepatology and Liver Transplantation Unit, Hospital Universitario La Fe, Valencia, Spain; ²CIBEREhd, Valencia, Spain; ³Centre Hépatobiliaire, Hopital Paul Brousse, Villejuif, Paris, France

Background and aims: While in the immunocompetent population, anemia during dual therapy (Peg-interferon and Ribavirin-RBV-) was shown to impact sustained virological response (SVR), the same was not found in liver transplant (LT) recipients. Our aim was to describe the incidence and characteristics of anemia in LT recipients treated with triple therapy, factors associated with anemia and its impact on viral response.

Methods: Multicentric study, including LT recipients treated with triple therapy for recurrent Hepatitis C in 2 LT centers (La Fe, Valencia and Paul Brousse, Paris), between November 2011 and September 2013. Severe anemia (SA) was defined as >5g/dl drop from baseline haemoglobin (Hgb).

Results: A total of 62 patients were included, 82% men, median age at therapy: 59 years, 68% treated with Telaprevir (TVR). HCV genotype was 1b in 71% of cases and baseline viremia was high in 89%. 37% of patients were F3-F4 (Metavir), with a non-CC IL28B genotype in 81%. 53% of patients were on cyclosporine and 42% on tacrolimus.

89% of patients presented anemia, of which 25 (40%) developed SA, the majority (74%) within the first 12 weeks of treatment. The initial strategy in managing anemia was adding EPO (57%). RBV dose reduction and blood transfusions were needed in 63% and 40%, respectively. Mean nadir hemoglobin was 8,8 g/dl (6-12,1). SA was more frequent with TVR (54% vs 29%; p=0.09).

The only factor significantly associated with SA was baseline fibrosis (60% in F0-2 vs 21% in F3-4; p=0.006). Higher baseline Hgb and week-2 Hgb were also associated with SA. SA was associated with rapid and extended-rapid viral response but not with end-of-treatment or SVR.

Conclusions: Severe anemia during triple therapy in LT recipients is not predictive of SVR. The management of anemia varies between centers. A greater drop of Hgb is observed in those with higher baseline Hgb.

Abstract # O-65

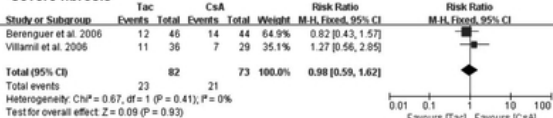
The Influence of Calcineurin Inhibitors Selection on the Outcome of HCV Recurrence in Liver Transplantation Recipients: A Meta-Analysis. Zhiyong Guo, Jianwen Lin, Weiqiang Ju, Dongping Wang, Xiaoshun He. *Organ Transplant Center, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Background and Objective a controversy exists over whether the selection of calcineurin inhibitors (CNIs), can influence the outcomes of liver transplant recipients with hepatitis C virus (HCV) infection. Here, we performed a meta-analysis on the outcomes of HCV infected liver transplant recipients treated with Tac or CsA.

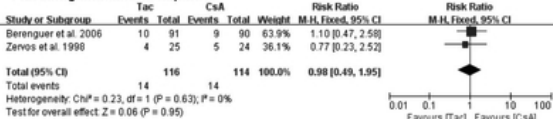
Methods We performed an electronic database search as well as a manual search of relevant journals until the end of 2012. The selection criteria were randomized controlled trials (RCT) with Tac and CsA treatment arms in which HCV-infected liver transplant recipients were included in the study population. Two authors identified and extracted data independently. Dichotomous data were expressed as relative risks (RR) and 95% confidence intervals (CI).

Results In all, eight RCTs with 734 patients were included in this study. No significant heterogeneity was detected among the pooled data (all P values > 0.1) and a fixed effects model was used to calculate the overall treatment effect size. Statistically significant differences between Tac and CsA groups were not found for the incidences of severe fibrosis (RR = 0.98, 95% CI = 0.59-1.62, $P = 0.93$), fibrosing cholestatic hepatitis (RR = 0.98, 95% CI 0.49-1.95, $P = 0.95$), patient mortality (RR = 0.70, 95% CI 0.49-1.01, $P = 0.06$) and graft survival (RR = 0.88, 95% CI 0.64-1.23, $P = 0.46$). Regarding the aspect of rejection, Tac group exhibited a lower incidence of acute rejection than CsA group (RR = 0.68, 95% CI 0.49-0.95, $P = 0.02$).

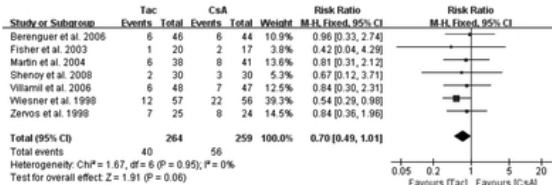
Severe fibrosis



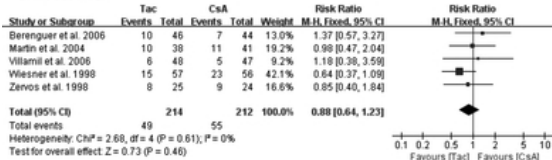
Fibrosing cholestatic hepatitis



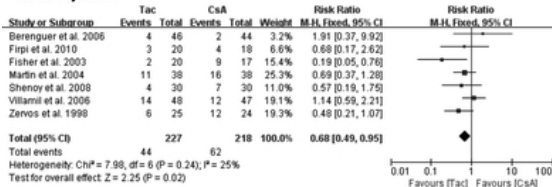
Patient mortality



Graft survival



Acute rejection



Conclusion: CNIs selection did not influence the outcome of liver transplant recipients with HCV infection. However, Tac can offer advantages over CsA in lowering the incidence of acute rejection.

Abstract # O-66

Influence of Immunogenetic Donor and Recipient Factors on the Outcome of Liver Transplantation for Hepatitis C Virus-Related Cirrhosis. Giorgia Rizza¹, Francesco Tandoi¹, Renato Romagnoli¹, Francesca Bertinetto², Paola Magistroni², Antonio Amoroso², Mauro Salizzoni¹. ¹Liver Transplant Center - University of Turin, Turin, Italy; ²Immunogenetic and Biology of Transplantation, Turin, Italy

Background: End-stage liver disease caused by hepatitis C virus (HCV) is a leading indication (40%) for liver transplantation (LT) in Western Countries. Viral recurrence in the graft is considered "universal" and represents a major cause of mortality and morbidity after LT. Many different donor and recipient factors influence the course of HCV recurrent hepatitis after LT. **Aim:** To evaluate the capability of factors known at the time of LT to determine graft survival and sustained viral response (SVR) after treatment with peg-interferon and ribavirin in HCV+ recipients. **Material&Methods:** Between Oct 02-Dec 09, 341 consecutive adult first LTs were performed in our Center in HCV+ recipients (72% genotype 1) from deceased heart-beating donors. Analyzed variables were: donor (age, sex, HBcAb positivity, macrovesicular steatosis, Class I and II HLA, IL28b rs12979860 polymorphism), recipient (MELD, Class I and II HLA, IL28b rs12979860 polymorphism), donor-recipient match (D-MELD, donor/recipient HLA-DRB1*11 positivity of at least 1 out of 4 HLA-DRB1 alleles, donor/recipient IL28b presence of at least 3 C alleles out of 4). **Results:** Graft survival was 87%, 62%, 53% at 1, 5, 10 years post-LT respectively. At univariate analysis, it was significantly related to donor (age < 65 yrs vs ≥ 65 yrs, $p = 0.02$; HBcAb-Neg vs Pos, $p = 0.0042$; HLA-DRB1*11 Pos vs Neg, $p = 0.02$), recipient (MELD 6-14 vs 15-24 vs 25-40, $p = 0.0001$; HLA-DRB1*11 Pos vs Neg, $p = 0.03$), and donor-recipient match (D-MELD < 1600 vs ≥ 1600 , $p = 0.0048$; donor/recipient HLA-DRB1*11 Pos vs Neg, $p = 0.0073$) features. At Cox-regression, independent risk factors for graft survival were D-MELD (HR = 1.1 for each additional 100 points), donor HBcAb positivity (HR = 1.4) and donor/recipient HLA-DRB1*11 negativity (HR = 1.7). Among patients with graft functioning > 90 days, biopsy-proven HCV-recurrent hepatitis occurred in 76%. In 154 out of the 163 patients treated with dual antiviral regimen, IL28b polymorphism was known in the donor/recipient pair. SVR was 30% when 3 or 4 C alleles were present, and 10% with 0, 1, 2 C alleles ($p = 0.0043$). **Conclusion:** Immunogenetic donor and recipient factors influence the outcome of LT for HCV-related cirrhosis: donor/recipient HLA-DRB1*11 match affects graft survival, while IL28b polymorphism match determines SVR.

Abstract # O-67

Applicability of Triple Therapy in Cirrhotic Population: Validation of Cupic Data. Carmen Vinaixa¹, Carla Satorres¹, Maria Garcia¹, Salvador Benlloch¹, Angel Rubin¹, Victoria Aguilera^{1,2}, Martin Prieto^{1,2}, Marina Berenguer^{1,2}. ¹Hepatology and Liver Transplantation Unit, Hospital Universitario La Fe, Valencia, Spain; ²CIBERehd, Valencia, Spain

Background and aims: Anti-HCV triple therapy in cirrhotic patients is associated with severe adverse events(AE) and with lower efficacy results. Low platelet count(< 100,000/mm3)in combination with low albuminemia(< 3,5 g/dl)has been proposed as a threshold to use this treatment.We aimed to confirm whether this threshold applies in our cirrhotic treated population. Methods: All cirrhotic patients treated at our institution with triple therapy were included(n=94).Of these,52 had reached end-of-treatment,and 34 12th week post-treatment at time of analysis.Severe complications were defined as the development of an AE requiring drug discontinuation and/or death. Results: Baseline features were:70% men,mean age 55yrs,75% genotype 1b,21% diabetics,7.5% HIV coinfectd,high baseline HCV load(70%) and treatment experienced(70%,53% of which were null or partial responders),IL28B C/C:83%.Liver function was preserved in the majority(92%Child≤B7,97%MELD≤13).Telaprevir(TVR)was used in 63%,and lead-in was performed in 51% of cases.With regards to previously described risk factors,46% had platelet count≤100000/mm3,and 20% albuminemia< 3,5 g/dl,with 14% harboring the 2 risk factors.Our results confirm the CUPIC data both in the 52 patients who had reached end-of-treatment,as in the 34 with follow-up up to 12 weeks post-treatment.

Groups of risk

		Platelets ≤ 100000/mm3	Platelets > 100000/mm3
Albumin < 3,5 g/dl	Serious AE (%)	33% (2/6)	50% (1/2)
	ETR (%)	50% (3/6)	50% (1/2)
	SVR12 (%)	20% (1/5)	100% (1/1)
Albumin ≥3,5 g/dl	Serious AE (%)	12% (2/17)	19% (5/26)
	ETR (%)	61% (11/18)	77% (20/26)
	SVR12 (%)	55% (6/11)	71% (12/17)

In particular, severe complications were observed in 33% of the high risk group as compared to 19% of the low risk group, with sustained viral response reached by 20% and 71% of the groups, respectively.

Conclusions: Based on our findings in cirrhotic patients treated with triple therapy that confirm prior observations from CUPIC study,we do not recommend the use of triple therapy in the high risk group of patients with low platelet and albumin levels.

Abstract # O-68

Relevance of Chronic Hepatitis E in Liver Transplant Recipients: A Real-World-Setting. Antonio Galante, Sven Pischke, Melanie Lang, Marc Lütgehetmann, Susanne Polywka, Bjorn Nashed, Ansgar W. Lohse, Martina Sterneck. *Department of Medicine I, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany; Department of Hepatobiliary and Transplant Surgery, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany; Department of Medical Microbiology, Virology and Hygiene, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany*

BACKGROUND and AIM:

Chronic courses of hepatitis E virus (HEV) infections in liver transplant recipients (LTR) were described previously, but prospectively collected data is rare. We aimed to study the role of chronic hepatitis E in LTR in a real-world-setting.

METHODS:

Therefore 287 LTR (169 men (59%), age 18-78 years, median 56 years) were prospectively tested by HEV-PCR (LLoD= 10 IU/ml) irrespective of their level of liver enzymes.

RESULTS:

In four patients (1.4%) chronic HEV-infection was diagnosed. All four were male, got cyclosporine-based immunosuppression and their age (26-59 years, median 48.5 years, time since transplantation 3-115 months) and bilirubin level (0.4-12mg/dl, median 0.6 mg/dl) did not differ significantly from the total cohort. However, ALT and AST levels (38-646 IU/L, median 90 IU/L and 24-317 IU/L, median 45 IU/L) were significantly higher in HEV-infected patients versus non-infected patients (p=0.004 and 0.040, Mann-Whitney-Test). Infected patients were treated with ribavirin (400-800mg/day). In 2 patients dose reduction was necessary. All four patients responded to treatment by normalisation of transaminases. While three of the patients

cleared the infection within 3 months of ribavirin treatment, the fourth patient experienced viral relapse after discontinuation. Ribavirin medication was restarted and viral clearance occurred within 8 weeks.

CONCLUSION:

The risk of chronic HEV-infections in LTR in low-endemic countries should not be overestimated. No case of chronic hepatitis E was observed in patients with normal liver enzymes, indicating that general screening of all LTR can not be proposed. However, if chronic hepatitis E develops it can be treated effectively with ribavirin.

Abstract # O-69

Romiplostim's Effect to Optimize SVR with Telaprevir, Ribavirin, And Peg Interferon-alfa 2a in Thrombocytopenic Cirrhotics with Chronic Hepatitis C. A Placebo Controlled Prospective Clinical Trial: RESTRAINT C Trial. P. Patrick Basu^{1,2}, Niraj J. Shah³, Mark Aloysius², Ravi Siriki², Md Rahaman². ¹Columbia University College of Physicians and Surgeons, NY, 2NSLIJHS/ Hofstra North Shore LIJ School of Medicine, New York, NY, USA; ²NSLIJHS/ Hofstra North Shore LIJ School of Medicine, New York, NY, USA; ³James J. Peters VA Medical Center, Mount Sinai School of Medicine at Mount Sinai, New York, NY, USA

Objectives: Treating CHC (Chronic hepatitis C) cirrhotic patients with thrombocytopenia is often challenging; requiring dose reduction or even discontinuation of treatment to avoid complications. Significant dose reduction affects the response guided therapy (RGT); adversely affecting outcomes. Thrombopoietin (TPO) agonists are used to avoid disruption or therapeutic failure to optimize SVR (Sustained Virological response).

Methods: Total of Forty five (n=45) cirrhotic treatment experienced CHC-GT1 patients with a mean MELD of 16 and mean platelet count 95 thousand were recruited and subdivided into three groups. Group A- (n=15) Received placebo plus reduced dose of p-IFNα-2a with RBV and Telaprevir. Group B (n=15) Received Romiplostim 500 mcg lead in 1 month prior to initiation of therapy and SOC with Telaprevir. Group C (n=15) Received Eltrombopag 50mg orally daily lead in prior 15 days and SOC with Telaprevir for 12 weeks. RGT was analyzed with serial platelet counts, hemoglobin/hematocrit, absolute neutrophils count and platelet antibodies. HCV RNA quantitative count was measured at 1st, 2nd, 4th, 12th, 24th, 36th and 60th weeks for SVR.

RESULTS

	Group A	Platelet count (k)	Group B	Platelet count (k)	Group C	Platelet count (k)
Initial PC (k)		90		68		128
AVR 1 week	5/15 (33%)		7/15 (47%)		6/15 (40%)	
VRVR 2 week	7/15 (49%)		7/15 (47%)		6/15 (40%)	
RVR 4 week	9/15 (60%)	86	8/15 (53%)	210	7/15 (49%)	101
EVR 12 week	10/15 (67%)	76	10/15 (67%)	90	8/15 (53%)	102
MTVR 24 week	10/15 (67%)	84	10/15 (67%)	96		90
ETVR 36 week		98BT- 1/15 (7%)	10/15 (67%)	220	9/15 (60%)	80
ETVR 48 week	9/15 (60%)	96		180		108
SVR 60 week		R 1/15 (7%)	10/15 (67%)		9/15 (60%)	
SVR 72 week	8/15 (53%)	88		58		131

Conclusion: This study demonstrates the efficacy of Romiplostim in thrombocytopenic cirrhotics with treatment experienced CHC-GT1 in optimizing SVR (Group A- 53%, Group B- 67% and Group C- 60%). A larger trial is needed to validate.

PLENARY I

Abstract # O-70

Sofosbuvir and Ribavirin for the Treatment Chronic HCV with Cirrhosis and Portal Hypertension with and without Decompensation: Early Virologic Response and Safety.

Nezam Afdhal¹, Gregory Everson², Jose Luis Calleja³, Geoffrey McCaughan⁴, William T. Symonds⁵, Jill Denning⁵, Lindsay McNair⁵, John G. McHutchison⁵, Michael Charlton⁶, Rajender Reddy⁷, Tarik Asselah⁸, Edward Gane⁹, Xavier Forns¹⁰. ¹Beth Israel Deaconess Med Center, Boston, MA, USA; ²University of Colorado Denver, Aurora, CO, USA; ³Hospital Puerta de Hierro, Madrid, Spain; ⁴Royal Prince Alfred Hospital, University of Sydney, Sydney, Australia; ⁵Gilead Sciences, Foster City, CA, USA; ⁶Intermountain Med Center, Murray, UT, USA; ⁷University of Pennsylvania, Philadelphia, PA, USA; ⁸Hopital Beaujon, INSERM U773 and University Paris-Diderot, Clichy, France; ⁹Auckland City Hospital, Auckland, New Zealand; ¹⁰Liver Unit, Hospital Clinic, IDIBAPS and CIBEREHD, Barcelona, Spain

Background: Interferon-free therapy is desirable for HCV-infected patients with portal hypertension or decompensated cirrhosis due to the poor tolerability, low efficacy, and risk of infection and death from interferon in these patients. We evaluated the safety and efficacy of sofosbuvir and ribavirin in patients with HCV cirrhosis and portal hypertension (CPT 5-10). **Methods:** Patients were randomized to receive 48 weeks of open-label sofosbuvir 400 mg and ribavirin, or observation arm for 6 months (control). Controls crossed-over to 48 weeks of treatment. We examine the on-treatment virologic response, safety, and change in CPT, MELD, and HVP. Rapid virologic response at treatment weeks 4 (RVR4) and 8 (RVR8) were defined by HCV RNA <25 IU/mL.

Results: 50 patients (19 GT1a, 15 GT1b, 3 GT2, 10 GT3, 3 GT4) have enrolled (76% male, 90% white; 80% previously treated, mean baseline HCV RNA 6.1 log₁₀ IU/mL, 40% CPT 5-6, 60% CPT 7-10, 20% ≥14 MELD, mean HPVG 16.6mmHg). 35 patients (25 in active treatment, 10 in observation arm) received sofosbuvir+ribavirin for a mean of 18 weeks. RVR4 was 89% and RVR 8 was 97%. One patient was a non-responder; none experienced treatment breakthrough. ALT, platelets, albumin and CPT score improved from baseline to 24 weeks in the treatment arm. Three patients had serious AEs. Three patients discontinued treatment, 1 due to an AE. The most common AEs were nausea, fatigue, and dizziness.

Conclusions: Sofosbuvir+ribavirin in HCV-infected patients with cirrhosis, with and without decompensation achieved rapid virologic response and was well tolerated.

DISCLOSURE: Afdhal, N.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Everson, G.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Calleja, J.L.: Grant/Research Support, Gilead, McCaughan, G.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Symonds, W.T.: Employee, Gilead., Denning, J.: Employee, Gilead., McNair, L.: Other, Gilead, Consulting., McHutchison, J.G.: Employee, Gilead., Charlton, M.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Reddy, R.: Grant/Research Support, Gilead., Asselah, T.: Grant/Research Support, Gilead., Gane, E.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Forns, X.: Grant/Research Support, Gilead; Other, Gilead, Consulting.

Abstract # O-71

Sofosbuvir and Ribavirin for the Treatment of Recurrent Hepatitis C Infection after Liver Transplantation: Results of a Prospective, Multicenter Study.

Michael Charlton¹, Didier Samuel², Edward Gane³, Robert S. Brown, Jr.⁴, Michael P. Curry⁵, Paul Kwo⁶, Robert Fontana⁷, Richard Gilroy⁸, Lewis Teperman⁹, Andrew J. Muir¹⁰, John G. McHutchison¹¹, William T. Symonds¹¹, Jill Denning¹¹, Lindsay McNair¹¹, Sarah Arterburn¹¹, Norah Terrault¹², Xavier Forns¹³, Michael P. Manns¹⁴. ¹Intermountain Med Center, Murray, UT, USA; ²Université Paris-Sud, Villejuif, France; ³Auckland City Hospital, Auckland, New Zealand; ⁴Columbia University, NY, NY, USA; ⁵Beth Israel Deaconess Med Center, Boston, MA, USA; ⁶Indiana School of Medicine, Indianapolis, IN, USA; ⁷University of Michigan, Ann Arbor, MI, USA; ⁸Kansas University Med Center, Lawrence, KS, USA; ⁹NYU Med Center, NY, NY, USA; ¹⁰Duke University Med Center, Durham, NC, USA; ¹¹Gilead Sciences, Inc., Foster City, CA, USA; ¹²University of California, San Francisco, CA, USA; ¹³Liver Unit, IDIBAPS, CIBEREHD, Barcelona, Spain; ¹⁴Hannover Med School, Hannover, Germany

Background: Patients with recurrence of HCV infection after liver transplantation (LT) are at increased risk of graft loss and life-threatening complications. Sofosbuvir (SOF), a nucleotide HCV polymerase inhibitor, has a high barrier to resistance, no known interactions with immunosuppressive agents, and a favorable safety profile.

Methods: In this single-arm, open-label study, naïve and treatment-experienced patients with recurrent HCV ≥6 months post-transplantation received ≤24 weeks of SOF 400 mg and escalating RBV. The primary endpoint was SVR (HCV RNA <25 IU/mL) 12 weeks after treatment.

Results: Forty patients (22 GT1a, 11 GT1b, 6 GT3, 1 GT4) have been enrolled (78% male, 8% black, 3% Hispanic; 88% previously treated, mean baseline HCV RNA of 6.55 log₁₀ IU/mL, 40% cirrhotic). The mean duration of treatment was 23 weeks. Two patients discontinued treatment due to AEs (pneumonia and HCC progression). The interim SVR₁₂ rate is 27/35 (77%). There were no deaths, graft losses, acute or chronic rejection, or drug-drug interactions reported between SOF and immunosuppressive agents. The most common adverse events were fatigue, headache, arthralgia, and diarrhea.

Conclusions: SOF+RBV for 24 weeks after liver transplantation in the setting of established HCV recurrence was well tolerated and the majority of patients achieved undetectable virus 4 weeks after completion of treatment. Final SVR₁₂ results will be presented.

DISCLOSURE: Charlton, M.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Samuel, D.: Grant/Research Support, Gilead., Gane, E.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Brown, Jr., R.S.: Other, Gilead, Consulting., Curry, M.P.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Kwo, P.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Fontana, R.: Grant/Research Support, Gilead., Gilroy, R.: Grant/Research Support, Gilead., Teperman, L.: Grant/Research Support, Gilead., McHutchison, J.G.: Employee, Gilead., Symonds, W.T.: Employee, Gilead., Denning, J.: Employee, Gilead., McNair, L.: Other, Gilead, Consulting., Arterburn, S.: Employee, Gilead., Terrault, N.: Grant/Research Support, Gilead., Forns, X.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Manns, M.P.: Grant/Research Support, Gilead; Other, Gilead, Consulting.

Abstract # O-72

Successful Withdrawal of Immunosuppression by a Cell Therapy Using Donor Ag-pulsed Tregs in Living Donor Liver Transplantation: An Update on Clinical Trial.

Kenichiro Yamashita¹, Masaaki Zaitzu¹, Akihisa Nagatsu¹, Ryoichi Goto¹, Tetsu Oura¹, Masaaki Watanabe¹, Takeshi Aoyagi¹, Tomomi Suzuki¹, Tsuyoshi Shimamura¹, Toshiya Kamiyama¹, Norihiro Sato¹, Junichi Sugita¹, Kanako Hatanaka¹, Hisashi Bashuda², Ko Okumura³, Satoru Todo³. ¹Hokkaido University, Sapporo, Japan; ²Juntendo University, Tokyo, Japan; ³St. Mary's Hospital, Kurume, Japan

Purpose: We examined the efficacy and safety of the cell therapy using donor antigen-pulsed regulatory T cells (Tregs) in living donor liver transplantation (LDLT).

Methods: Ten LDLT donor and recipient pairs were enrolled: Tregs were generated *ex-vivo* from liver recipient's PBMCs (+splenocytes). They were pulsed with irradiated donor-PBMCs and cultured with αCD80+αCD86 mAbs

for 2 weeks. After LT, immunosuppression (IS) was initiated by steroid, MMF and tacrolimus (TAC) or cyclosporine (CYA). Cyclophosphamide was given on POD 5. Generated cells were infused on POD 13. Steroid and MMF was stopped within a month. TAC (CYA) was reduced to once daily at 6 months post-LTx, and then space-weaned to thrice-, twice- and once-weekly every 3 months, and finally terminated.

Results: After 2-week cell culture, CD25⁺Foxp3⁺ and CD127^{lo}Foxp3⁺ CD4⁺ T cells increased from 6.7% to 28.1% and 8.2% to 26.2%, respectively. Infusion of cells (mean: 2.3±1.7x10⁸ Tregs) increased circulating peripheral Tregs, while the cell infusion did not cause any adverse events. In 6 patients (60%), IS was successfully withdrawn without causing a sign of rejection, and their graft function is well maintained for 325±183 days. Two PBC patients experienced a mild ACR during IS weaning, and were replaced on regular IS. The other 2 recipients are under weaning process.

Outcome of Treg-based Cell Therapy in LDLT

Case	Age/ Gender	Disease	Infused CD4 ⁺ CD25 ⁺ cells (x10 ⁸)	Days after LDLT	AST/ALT (IU/L)	IS Status	Days after IS cessation
1	39/M	HCV	3.1	1110	23/18	Off	470
2	63/M	Alcoholic	46.6	1033	34/45	Off	466
3	56/M	NASH	9.4	1005	21/19	Off	442
4	59/M	HBV+HCC	44.1	900	13/8	Off	361
5	52/M	PBC	4.3	816	19/8	TAC 4 mg, qd	-
6	55/F	PSC	27.2	774	29/25	CYA 75 mg, x2/wk	-
7	59/F	NASH+HCC	31.8	753	28/27	Off	193
8	56/M	Alcoholic	30.4	676	23/22	Off	18
9	58/F	PBC	3.3	613	17/12	TAC 4 mg, qd	-
10	55/M	NASH+HCC	28.9	508	21/14	TAC 2 mg, x1/ wk	-

Conclusion: Cell therapy by *ex-vivo* generated Tregs allows early withdrawal and complete cessation of IS shortly after LDLT. Infusion of Ag-pulsed Tregs is effective for inducing tolerance in LDLT.

Abstract # O-73

Treatment of Donor Specific Antibodies: IVIG is Efficacious for Early but Not Late Pediatric Liver Graft Dysfunction.

Laura J. Wozniak¹, Robert S. Venick^{1,2}, Sarathi Bhattacharya¹, Bita Naini³, Elaine F. Reed³, Douglas G. Farmer², Sue V. McDiarmid^{1,2}.
¹Pediatric Hepatology, UCLA, Los Angeles, CA, USA; ²Transplant Surgery, UCLA, Los Angeles, CA, USA; ³Pathology, UCLA, Los Angeles, CA, USA

BACKGROUND: Mounting data shows HLA donor specific antibodies (DSA) are associated with early and late graft dysfunction after liver transplantation (LTx). Our aim was to describe the clinical characteristics and response to therapy in pediatric LTx recipients with DSA associated graft dysfunction.

METHODS: Between 9/1/12-12/15/13 we identified 6 pediatric LTx recipients followed at UCLA with DSA associated graft dysfunction. Pts had early acute antibody-mediated rejection (AMR) <6 months post-LTx (n=3) or late graft dysfunction >6 months post-LTx (n=3) based on the following criteria: abnormal liver tests, biopsy indicative of acute injury, and presence of DSA. Liver tests, immunogenetic tests, and immunosuppression were longitudinally assessed. Treatment modality was at the discretion of each pt's clinician.

RESULTS: Clinical characteristics of each pt are summarized in the Table. All 3 pts with early AMR showed a combination of class I and II DSA. Two pts were treated with intravenous immunoglobulin (IVIG) and rituximab, and the other with IVIG alone. All 3 exhibited normalization of graft function 1-4 weeks after treatment which has been sustained. All 3 pts with late graft dysfunction had class II DSA. All 3 pts were treated with IVIG, with minimal to no improvement in DSA MFI and liver tests.

Pt	Time since LTx	DSA (MFI)	Peak ALT (U/L)	Peak GGT (U/L)	Post- treatment DSA (MFI)	Post- treatment ALT (U/L)	Post- treatment GGT (U/L)
1	45 days	B44 (7051); DQ2 (7893)	478	67	None	18	11
2	9 days	A1 (1764); DQ5 (7809)	699	176	None	18	21
3	8 days	Cw7 (4946); Cw17 (2008); DR4 (2207); DR53 (1417); DQ8 (11910)	193	185	None	15	25
4	4.8 yrs	DR51 (17121)	208	301	DR51 (14676) DQ4 (18088); DQ7 (15160)	77	426
5	4.8 yrs	DQ4 (12458); DQ7 (10432)	126	526	DQ6 (5857)	177	573
6	19.9 yrs	DQ6 (6625)	63	362		113	618

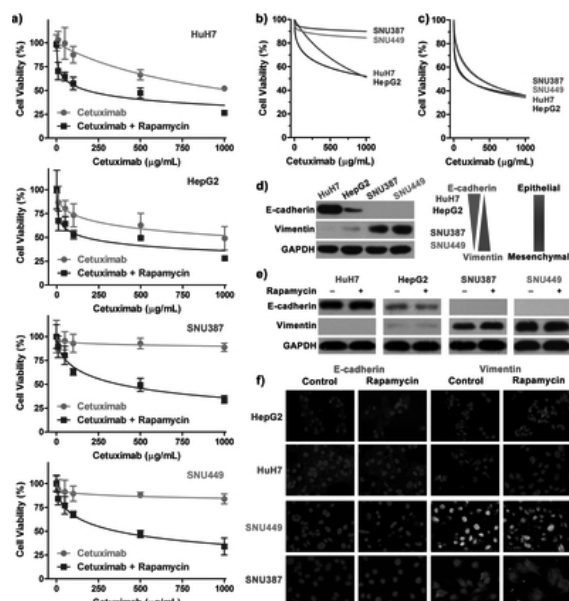
CONCLUSION: Early AMR is linked to both class I and II DSA, while DSA associated late graft dysfunction is more commonly seen with class II DSA. Our data suggest that IVIG alone and IVIG with rituximab can successfully treat early acute AMR. However, IVIG is less efficacious for DSA associated late graft dysfunction. Additional studies are needed to determine the optimal treatment protocols for DSA associated dysfunction in pediatric LTx recipients.

Abstract # O-74

Rapamycin Enhances Cetuximab Cytotoxicity By Inhibiting mTOR-Mediated Drug Resistance in Mesenchymal Hepatoma Cells. Wei Chen, Qida Hu, Chao Liang, Xueli Bai, Tingbo Liang. Hepatobiliary and Pancreatic Surgery, The Second Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China

The synergistic effect of combined drug therapy provides an enhanced treatment for advanced liver cancer. We aimed to investigate the underlying mechanism of cetuximab sensitization by rapamycin in hepatoma cells. Four hepatoma cell lines, HepG2, HuH7, SNU-387, and SNU-449, were treated with cetuximab or cetuximab plus rapamycin and growth inhibition was evaluated by measuring relative cell viability. The cell phenotype was determined for each hepatoma cell line by Western blot analysis of E-cadherin and vimentin expression and mTOR activation status. To identify the role of mTOR signaling in cetuximab sensitization, we used deferoxamine-mediated hypoxia to induce epithelial-mesenchymal transition (EMT) in HuH7 and HepG2 cells and measured mTOR activity after rapamycin treatment. Rapamycin significantly increased cetuximab cytotoxicity in hepatoma cell lines with differential sensitivities. Phenotypic differences among hepatoma cell lines, specifically epithelial (HuH7 and HepG2) and mesenchymal (SNU-387 and SNU-449), correlated with the efficacy of rapamycin cotreatment, although rapamycin treatment did not affect cell phenotype. We further showed that rapamycin inhibits mTOR in mesenchymal SNU-387 and SNU-449 cells. In addition, the induction of EMT in HuH7 and HepG2 cells significantly decreased cetuximab cytotoxicity; however, rapamycin treatment significantly restored cetuximab sensitivity and decreased mTOR signaling in these cells.

In conclusion, we identified significant differences in rapamycin-induced cetuximab sensitization between epithelial and mesenchymal hepatoma cells. We therefore report that rapamycin cotreatment enhances cetuximab cytotoxicity by inhibiting mTOR signaling in mesenchymal cells.



Abstract # O-75

Randomised Double Blind Placebo Controlled Trial of Perioperative Prostaglandin E1 Infusion in Live Donor Liver Transplantation. S. Sudhindran, Unnikrishnan Gopalakrishnan, Ramachandran N. Menon, Dinesh Balakrishnan. *Solid Organ Transplantation, Amrita Institute of Medical Sciences, Kochi, Kerala, India*

INTRODUCTION :- Prostaglandin E1 (PGE1) is strong vasodilator and may reduce vascular complications and ischemic reperfusion injuries affecting allografts following transplantation.

MATERIALS AND METHODS :- A prospective randomized, double blind, placebo controlled trial was designed to evaluate the role of perioperative PGE1 infusion in live donor liver transplantation (LDLT). PGE1 infusion at a dose of 0.025mcg/kg/hr was started one hour after graft reperfusion and continued for 96 hours post transplantation. The primary end point was Initial Poor Graft function (IPG), which was defined as any two of the following : 1) Bilirubin greater than the pretransplant value on Post transplant day five 2) Peak AST / ALT > 2000 within seven post transplant days 3) INR > 2 on postoperative day five. Secondary end points included peak, mean and median Bilirubin, INR and creatinine, vascular thrombosis, Primary non function, profound deterioration of renal function (defined as a post transplant rise in creatinine more than twice the preoperative value, or requirement for dialysis), biliary complications, ICU stay and 30 day mortality.

RESULTS :- Total of 100 patients were randomized equally into two groups-PGE1 and Placebo. The preoperative MELD, donor characteristics, graft type, degree of graft steatosis, Graft to recipient weight ratio, cold ischemia time, duration of surgery or perioperative blood loss were not significantly different between the two groups. Profound deterioration of renal function was significantly lower in the PG E1 group (27.6% vs 7.3%, $p=0.019$). Likewise peak, mean and median creatinine levels were significantly lower in the PGE1 group. The incidence of IPG showed a trend towards lower occurrence in the PGE1 group (24.3% in PGE1 vs 31.7%, in placebo $p=0.46$). The frequency of hepatic artery thrombosis (4.87% PGE1 vs 9.75% Placebo, $p=0.396$), biliary complications (12.19% PGE1 vs 26.8% Placebo, $p=0.095$) or overall mortality (26.8% PGE1 vs 31.7%, Placebo $p=0.627$), although lower in the PGE1 group, did not show any statistically significant difference when compared to placebo.

CONCLUSIONS :

Perioperative PGE1 infusion seems to confer a renoprotective effect in recipients following DLT. The role of PGE1 in improving early graft function and reducing the incidence of vascular and biliary complications is debatable.

Abstract # O-76

Liver Transplantation or Chemotherapy for Non-Resectable Colorectal Liver Metastases? Morten Hagness¹, Jon M. Solheim¹, Pål-Dag Line¹, Aksel E. Foss¹, Svein Dueland². ¹Section for Transplantation Surgery, Department of Transplantation Medicine, Oslo University Hospital, Oslo, Norway; ²Department of Oncology, Oslo University Hospital, Oslo, Norway

Background: Oncological treatment of non-resectable colorectal liver metastases (nrCLM) is palliative only; 5 year overall survival (OS) is less than 10%. We have demonstrated 5 year OS of 60% after Liver Transplantation (Lt) for nrCLM. (Hagness M et al. Ann Surg 2013). Here, we compare these results with nrCLM confined to liver from the chemotherapy study; Nordic VII. (Tveit KM et al. J Clin Oncol 2012; 30:1755-1762)

Materials/Methods: 47 patients with non-resectable, liver only metastases, age of less than 66 years and no BRAF mutations were identified from the NORDIC VII study database, a randomized multicenter phase III trial on Flox alone vs two different regimens on Flox and Cetuximab; there was no difference between study arms. These were compared with patients receiving Lt for nrCLM, the follow up time is two years longer than in the original report.

Results: Progression free survival and disease free survival was 7.8 months and 10.1 months in the chemotherapy and Lt population respectively. Five year OS was 9% in the chemotherapy group, 57% in the Lt group, ($p<0.001$) For patients that had progressed on all standard lines of chemotherapy, the median OS was 7 months in chemotherapy group ($n=26$), 41 months Lt group, 5 year OS was 44% ($n=6$) ($p=0.001$). (Figure 1)

Conclusion: For non-resectable liver only CLM; Lt seems superior to chemotherapy.

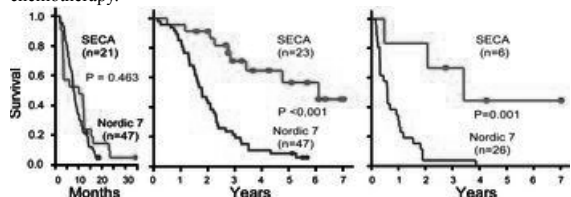


Figure 1 Liver transplantation (SECA trial; red line) vs. chemotherapy (Nordic VII trial; blue line) for non-resectable liver only colorectal metastases (nrCLM). Left panel shows progression free survival in patients with liver only metastases receiving chemotherapy (blue line), compared with disease free survival in patients receiving Lt (red line). Center panel shows overall survival in both groups. Right panel shows patients that had progressed on all standard lines of chemotherapy (After 3rd line for Kras wild type, and after 2nd line for Kras mutants), Kaplan-Meier estimates, p values calculated by log rank method.

Abstract # O-77

Sphingosine Kinase-2 (SK2) Plays an Important Role in Injury to Liver Grafts from Non-Heart-Beating Donors. Yanjun Shi¹, Hasibur Rehman¹, Yasodha Krishnasamy¹, John Lemasters¹, Charles Smith^{1,2}, Zhi Zhong¹. ¹Medical University of South Carolina, Charleston, USA; ²Apogee Biotechnology Corporation, Hummelstown, USA

Background & Aim: Our previous studies showed that SK2 knockdown decreases death of cultured hepatocytes after anoxia/reoxygenation and that the novel specific SK2 inhibitor ABC294640 attenuates hepatic warm ischemia/reperfusion (I/R) injury in vivo. Liver grafts from non-heart-beating donors (NHBG) are exposed to extended warm ischemia before harvesting and exhibit higher risk of non-function after transplantation (LT) compared to grafts from heart-beating donors (HBG). Accordingly, this study investigated the role of SK2 in NHBG injury. **Methods:** Rat livers were explanted after 30-min aorta clamping and implanted after 4-h cold storage. ABC294640 was added to UW storage solution (100 μM) and injected into recipients (50 mg/kg, ip). Mitochondrial depolarization and cell death were detected using intravital multiphoton microscopy of Rh123 and propidium iodide fluorescence, respectively, in living recipients at 3 h after LT. **Results:** Sphingosine-1-phosphate (S1P) increased from 34 to 41 and 75 pg/mg protein in HBG and NHBG, respectively, indicating higher SK activity in NHBG. ABC294640 decreased S1P in NHBG by 59%. Serum ALT increased from 100 to 1800 and 7800 U/L, TUNEL-positive cells increased from 0.2% to 0.8% and 3.3%, and necrotic areas increased from 0% to 4% and 19% in HBG and NHBG, respectively, at 18 h after LT, demonstrating more severe injury in NHBG. ABC294640 blunted ALT release by 41%, apoptosis by

62% and necrosis by 59%. Mitochondrial dysfunction plays an essential role in I/R injury. Mitochondrial depolarization increased markedly in hepatocytes of NHBG at 3 h after LT. At this time, the majority of hepatocytes with depolarized mitochondria were viable, indicating that mitochondrial depolarization precedes cell death. Mitochondrial depolarization in NHBG was blunted by ABC294640. Reactive nitrogen species stimulate the mitochondrial permeability transition. ABC294640 suppressed iNOS expression and 3-nitrotyrosine formation in NHBG. ABC294640 also inhibited TNF α formation and neutrophil infiltration in NHBG. **Conclusions:** These data indicate that SK2 plays an important role in NHBG injury. SK2 inhibition attenuates this injury, most likely by protecting mitochondria and inhibiting inflammation. ABC294640 is a promising new therapy to prevent graft failure after non-heart-beating LT (NHBG).

DISCLOSURE: Smith, C.: Other, Apogee Biotechnology Corporation, Founder and CEO.

Abstract # O-78

Long-Term Liver Transplantation Survival in Patients With Angiographically-Proven Coronary Artery Disease: A Single Center Study. Christopher L. Wray, Jennifer C. Scovotti, Randolph H. Steadman. *Department of Anesthesiology, David Geffen School of Medicine at University of California Los Angeles, Los Angeles, CA, USA*

In a multi-institutional study we previously demonstrated that there was no significant difference in short-term survival between OLT recipients with and without obstructive CAD. Historically, cardiovascular complications have been shown to be a major cause of long-term mortality following OLT. To date there have been no studies that have reported long-term (3 years and greater) survival in OLT recipients with angiographically-proven CAD. We undertook a study to determine long-term survival following OLT in patients with CAD.

We performed a retrospective review of all adult patients who underwent OLT at a single center over a nine-year period ending in June 2010. There were 223 OLT patients that underwent pre-transplant angiography. Of these, there were 31 patients with obstructive CAD ($>50\%$ stenosis of any coronary artery, the CAD + group) and 192 patients without obstructive CAD ($<50\%$ stenosis, the CAD - group).

There was no significant difference in age, Model End Stage Liver Disease (MELD), gender, dialysis, life-support, donor risk index, malignancy, prior abdominal surgery, or portal vein thrombosis between the two patient groups. There were 83 deaths in the entire group (15 deaths in the CAD + group, 68 deaths in the CAD - group). We compared survival between the two groups after adjustment for the above covariates. There was no difference in adjusted survival between the CAD + and CAD - groups (adjusted HR= 1.22; 95% CI: 0.691-1.62, $p=0.49$).

Our study demonstrated no difference in long-term post-OLT survival in patients with and without obstructive CAD. Aggressive preoperative risk stratification and CAD treatment including percutaneous coronary intervention may have beneficial effects on long-term outcomes in OLT recipients with advanced CAD. Further studies incorporating multi-center data are required in this unique population.

References

1. Wray C. Am J Transplant. 2013;13 (1): 184-191
2. Watt KDS. Am J Transplant. 2010;10 (6): 1420-1427.

ORAL ABSTRACT SESSION: ANESTHESIA/ CRITICAL CARE MEDICINE

Abstract # O-79

Does the Severity of Portopulmonary Hypertension (POPH) Matter in the Intensive Care Unit (ICU) Post Liver Transplant (LT)? Alice Gallo de Moraes, Rodrigo Cartin-Ceba, Michael J. Krowka. *Pulmonary and Critical Care Medicine, Mayo Clinic, Rochester, MN, USA*

Introduction: Moderate to severe POPH has been associated with adverse LT outcomes. Sparse data are available regarding the immediate postoperative period. It is unclear whether the degree of POPH affects weaning from mechanical ventilation (MV) or length of stay (LOS) in the ICU following LT.

Patients and Methods: All patients diagnosed with POPH from January/2002 to November/2013 who underwent LT at our institution were included. The diagnosis was based on standard right heart catheterization (RHC) criteria.

POPH was classified as severe and not-severe, according to measured mean pulmonary arterial pressure (MPAP): equal or greater than 45 or less than 45mmHg, respectively.

Baseline data included etiology of cirrhosis, MELD score, pulmonary hemodynamic data obtained during RHC, use of pulmonary arterial (PA) targeted therapy prior and after LT, LOS in the ICU after transplantation, number of days on MV and vasopressors requirements.

Results: a total of 14 patients were identified (10 women). Median age at POPH diagnosis was 50 years (range: 12-64 years). Alcoholic cirrhosis was the most common cause of portal hypertension (4 patients, 29%). Six (43%) patients had severe POPH. MELD score was not found to correlate with the degree of POPH. Median LOS in the ICU for patients with severe POPH was 3 days (range 1-25 days) compared to 2 days for non-severe POPH (range 0-21 days, $p=0.2$). Median days on MV were the same on both groups, 1 day. Ranging from 0-4 days in the severe POPH group and 0-21 days in the non-severe ($p=0.59$). All patients were transferred to the ICU on low dose vasopressors following LT. The most frequently used was norepinephrine. Only 16% of the patients with severe POPH required two or more pressors, compared to 83% in the non-severe POPH group. All but one patient, were on PA targeted therapy at the time of ICU admission; prostacyclin was the most commonly used (8 patients, 58%), followed by ambrisentan (3 patients, 21%). Only 2 patients (one with severe POPH) required addition of a new PA targeted therapy during ICU stay. Weaning from PA targeted therapy did not occur while in the ICU.

Conclusion: There were no significant differences regarding LOS and ventilated days in the ICU following LT in patients with severe or non-severe POPH. Requirements for low dose vasopressors were also similar in both groups. ICU outcomes were not related to severity of POPH.

Abstract # O-80

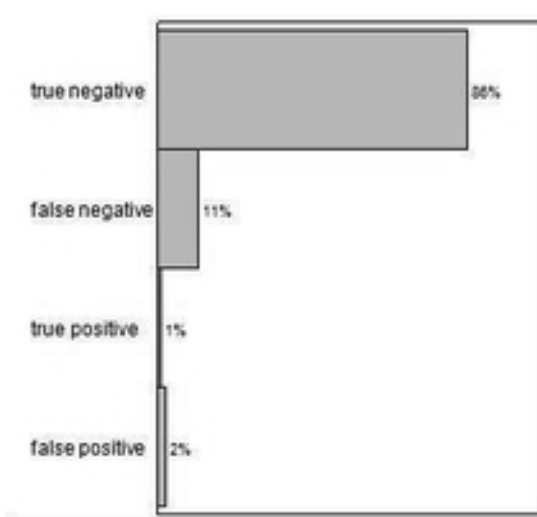
Target Dobutamine Stress Test (tDSE) in Predicting Adverse Cardiac Events (PACE) Within One Year Following Liver Transplantation (LT). Marina Gitman, Ramona Nicolau, Donald Ganier, Krish Sekar, Bobby Nossaman. *Anesthesiology, Ochsner Medical Center, New Orleans, LA, USA*

Background: American College of Cardiology (ACC) and The American Heart Association (AHA) stated that noninvasive testing is effective as a prognostic tool for mortality but noted limitation for detecting coronary artery disease in LT (1).

Methods: After IRB approval, 389 adult LT charts were retrospectively analyzed. The accuracy of 187 tDSE results (peak heart rate-pHR $\geq 85\%$ predicted) in PACE within one year post LT were analyzed. An adverse cardiac event is defined as patient with: acute coronary syndrome (ACS), new onset heart failure (HF), arrhythmia (AR) and cardiac death (CD). Logistic regression and recursive partitioning analyzed the roles of pHR and rate-pressure product (RPP) on adverse cardiac events.

Results: tDSE had a low sensitivity (9%) and positive predictive value (33%), but a high specificity (98%) and negative predictive value (88%) in PACE.

Figure 1: Target DSE as a predictor for postoperative cardiac events during the 1st year post transplant



Twenty-three patients had at least one adverse cardiac event within one year following LT: 11 ACS (6 ACS occurred during the first month), 11 HF, 13 AR and 6 CD (1 ACS, 1 HF, 2 sudden and 2 intraoperative deaths). pHR achieved during tDSE was risk-associated for ACS (Likelihood-Ratio ChiSquare (LR_{χ^2}) 7.4, $p=0.0065^*$). Recursive partitioning identified the critical pHR cut off value that increased ACS risk from 3.4% (pHR ≥ 140) to 21.7% (pHR < 140). RPP was risk-associated for HF (LR_{χ^2} 5.2, $p=0.023^*$) and AR (LR_{χ^2} 8.8, $p=0.003^*$). Recursive partitioning identified the critical RPP cut off values that increased the HF risk from 1% (RPP $\geq 17,500$) to 11% (RPP $< 17,500$) and AR risk from 5.6% (RPP $\geq 12,000$) to 60 % (RPP $< 12,000$).

Conclusion: Although these results suggest that tDSE is not effective in PACE, the high specificity and relatively high negative predictive values support little to no development of adverse cardiac events within one year following LT.

Reference:

Lentine KL et al. Cardiac disease evaluation and management among kidney and liver transplant candidate: A scientific statement from AHA and ACC. J Am Coll Cardiol 2012.

Abstract # O-81

Impact of Early Pre-Transplant Sepsis on Post Liver-Transplant Outcome in Cirrhotic Patients. Linda Khoy-Ear^{1,2}, Agnès Périer^{1,2}, Mathilde Eurin^{1,2}, Amélie Toussaint^{1,2}, Emmanuel Weiss^{1,2,4}, Richard Moreau^{2,4}, Juliette Kavafyan^{1,2}, Federica Dondero^{2,3}, François Durand^{2,4,5}, Catherine Paugam-Burtz^{1,2,4}. ¹Anesthesiology and Critical Care, Beaujon Hospital, Clichy, France; ²Denis Diderot University, Sorbonne Paris Cité, Paris, France; ³Hepato-Biliary Surgery and Liver Transplantation Unit, Beaujon Hospital, Clichy, France; ⁴INSERM U773, CRB3, Paris, France; ⁵Hepatology, Beaujon Hospital, Clichy, France

Sepsis is common in end-stage liver disease patients awaiting liver transplantation (LT). Data about infections occurring before LT are scarce. Our objective was to assess the impact of sepsis occurring shortly before transplantation on post-transplant outcome in cirrhotic patients.

Methods:

Retrospective observational single-center cohort study including consecutive cirrhotic patients who underwent LT between January 2010 and June 2012 from a prospective database. Pretransplant sepsis (PTS) was defined by a bacterial infection within 15 days before LT. Data were reported as median [interquartile ranges (IQR)] and number (%). Six-month survival was assessed with the Kaplan-Meier method and significance tested by log-rank test analysis and Cox regression.

Results:

Among 199 LT for cirrhosis, 41 (21%) had PTS: 54% spontaneous bacterial peritonitis, 17% urinary tract infections, 17% pneumonia. 9 (22%) were in septic shock and 25 (61%) in severe sepsis. Preoperative and post-LT data are shown on Table 1.

PREOPERATIVE DATA	PTS- (n=158)	PTS+(n=41)	p (value)
Status before LT home	129 (83)	5 (12)	<0.0001
Status before LT Ward	19 (12)	10 (24)	<0.0001
Status before LT ICU	8 (5)	26 (63)	<0.0001
PreLT mechanical ventilation	1 (0)	10 (24)	<0.0001
PreLT vasopressor therapy	0	8 (20)	<0.0001
PreLT renal replacement therapy	3 (2)	9 (22)	<0.0001
PreLT MELD score	17 [11-24]	32 [28-36]	<0.0001
POSTTRANSPLANT DATA			
Post transplant infection	59 (38)	32 (80)	<0.0001
Length of vasopressor therapy (days)	1 [1-1]	2 [1-4]	<0.0001
Renal replacement therapy	14 (9)	17 (42)	<0.0001
Mechanical ventilation (days)	1 [0-2]	5 [1-15]	<0.0001
Hospital length of stay (days)	27 [21-36]	43 [33-64]	<0.0001

Kaplan-Meier analysis showed a 6-month survival decrease after transplantation in patients with PTS (log rank test $p=0.008$). After adjustment on MELD score, PTS was not significantly associated with an increased 6-month mortality (hazard ratio of 2.3, 95% CI 0.921-5.714, $p=0.07$)

Conclusion:

PTS before LT is associated with higher morbidity and a trend toward higher mortality. These results deserve further studies to determine optimal treatment of PTS before LT.

Abstract # O-82

Comparison of Three Surgical Techniques in Liver Transplantation: Caval Cross Clamp (CCC), Piggyback (PB) and Piggyback Plus Cavoportal Shunt (PB+ CPS). Giulia Malara, Ben Clevenger, Maria Armstrong, Susan V. Mallett. *Department of Anaesthesia, Royal Free Hospital, London, United Kingdom*

Aim: The objective of this study was to compare three different surgical methods in orthotopic liver transplantation (OLT): Caval cross Clamp (CCC), Piggyback technique (PB) and Piggyback technique plus Cavoportal shunt (PB+CPS) in order to determine if there were any differences in hemodynamic stability, metabolic parameters and preservation of renal function during the perioperative period.

Methods: We performed a retrospective review of OLT patients at the Royal Free Hospital London UK, between 2008-2012. We have matched 3 cohorts of 30 patients for gender, age, MELD and etiology of end-stage liver disease. No patient underwent Veno-veno-Bypass (VVBP).

Results:

Demographic and Outcome Data

	CCC (N=30)	PB (N=30)	PB+CPS (N=30)
AGE (median) y	59.2	58.7	58.4
MELD (median)	16.6	14.6	15.7
INOTROPIC SUPPORT (%)	90	100	96.7
POST REPERFUSION SYNDROME (%)	6.6	6.6	3.3
	CRISTAL-LOID / COLLOID	TOTAL	CRISTAL-LOID / COLLOID
FLUID THERAPY (median) ml	1801 / 1266	3067	1742 / 1051
TRANSFUSION (%)	73.3	66.7	63.3
URINE OUTPUT (median) ml	239.3	254.5	326.5
ANHEPATIC + POSTREPERFUSION PHASE			
RENAL PERFUSION PRESSURE MAP-IVC (mmHg)	34.1	44	45.8
ANHEPATIC FASE LACTATE (median) end of ANHEPATIC PHASE out of range 0.5-2 mmol/l	3.9	3.8	3.6
BASE EXCESS (median) end of ANHEPATIC PHASE out of range +/-2.5 mmol/l	-7.1	-6.0	-5.9
	PRE-OLT	POST-OLT	PRE-OLT
CREATININE > 120 Umol/l (%)	13.3	40	6.7
ALBUMIN ≤ 20 g/l (%)	0	80	60

Data for 24 hours post-OLT an Intensive care

	CCC	PB	PB+CPS
CVVH (%)	20	13.3	6.7
NORADRENALINE SUPPORT > 10 h (%)	66.7	53.3	46.7

Conclusion: Previous studies have shown PB to be superior compare to CCC, however this was in the context of VVBP. We have demonstrated that PB and especially PB+CPS, compared to CCC, appeared to give improved hemodynamic stability, less metabolic derangement and better preservation of renal function.

Abstract # O-83

The Association of Promotor Gene Polymorphism of the Tumor Necrosis Factor- α and Interleukin-10 With Severity of Lactic Acidosis during Liver Transplantation Surgery. Fawzia M. Aboulfetouh¹, Ahmed Mokhtar¹, Osama Farahat¹, Maged Salah¹, Heba Baz², Dalia Labib². ¹Anesthesia, Cairo University, Cairo, Egypt; ²Clinical Pathology, Cairo University, Cairo, Egypt

Background. Orthotopic liver transplantation (OLT) is a major operation, causing cytokine release and other inflammatory responses that can contribute to postreperfusion syndrome occurrence. During the systemic inflammatory response syndrome, increased lactate levels result from excessive cytokine production despite normal oxygen delivery and carbohydrate metabolism. The goal of the study was to determine the relationship between genetic polymorphisms in interleukin (IL)-10 (1082G/A) or tumor necrosis factor (TNF)- (376 G/A) and lactate levels in patients during OLT surgery.

Patients and Methods. This prospective observational study in 40 consecutive adult patients who underwent OLT documented lactic acid levels at 5 times: Immediately after induction of anesthesia, at the end of the pre-anhepatic phase, at the end of the anhepatic phase, 1 hour after reperfusion, and at the end of surgery. Polymerase chain reaction (PCR; RFLP methodology) was used to examine IL-10 (1082G/A) and TNF- (376 G/A) gene polymorphisms. Results. Carriers of the IL-10/TNF- genotype combination GG/GG showed significantly different changes in lactate levels at 1 hour after reperfusion and

at the end of surgery. Lactate levels were significantly higher among patients heterozygous for TNF- (AG genotype) compared with patients homozygous for TNF-(GG genotype) at same times. In contrast, there was no significant difference among IL-10 polymorphic genotypes (082G/A). Conclusion. Genetic factors play a role in the development of lactic acidosis after OLT. IL-10 (1082G/A) and TNF- (6 G/A) gene polymorphisms could influence the variability of lactate levels after liver transplantation surgery.

Abstract # O-84

Effects of Vasoactive Agents on Blood Loss and Transfusion Requirements during Orthotopic Liver Transplantation.

Alexander A. Vitin, Kenneth Martay, Youri L. Vater, Gregory A. Dembo. *Anesthesiology, University of Washington, Seattle, WA, USA*

Objective: to evaluate and compare the effects of low-dose vasopressin and phenylephrine infusions, on blood loss / transfusion requirements during orthotopic liver transplantation.

Methods: A retrospective analysis of 110 orthotopic liver transplantation (OLT) cases was performed. The variables studied were: blood loss before and after reperfusion of the liver graft; blood volumes returned by cell-saver and amounts of transfused blood products; amounts of infused colloids and crystalloids; hemodynamic parameters such as MABP, MPAP, CO/CI, SVR; dosage of vasoactive drugs. Short- and long-term outcome measures included length-of-stay (LOS), ICU LOS, 48-hours return to the OR rate, incidence of the primary non-function of the liver graft, amounts of fresh frozen plasma (FFP) and cryoprecipitate, administered in the ICU, and 1-year mortality. The study subjects were allocated in two groups. Study group consisted of 15 patients that received a low-dose (0.04U/min) vasopressin infusion alongside with phenylephrine and epinephrine. Control group consisted of 95 patients, that received the same vasoactive agents except a low-dose vasopressin infusion. Anesthetic and transfusion managements in both groups were otherwise identical.

Results: The estimated blood loss before reperfusion of the liver graft was in 50.2% lower ($p=0.0094$) and total blood loss was in 38.8% lower ($p=0.0548$) in the vasopressin group in comparison with control group of subjects of the same age, sex and with the same MELD score. No statistically significant differences neither in hemodynamic parameters between the two groups, nor in transfusion requirements and volumes of crystalloid and colloids infused, were detected. No differences were found also in long-term outcome parameters.

Conclusions: The decrease in blood loss in the vasopressin group may be attributed to the use of a vasopressin infusion. A low-dose (0.04U/min) vasopressin infusion may be an effective technique for blood loss reduction during the pre-reperfusion stages in orthotopic liver transplantation.

Abstract # O-85

Applicability of Rapid Thrombelastography and Functional Fibrinogen Assay in Adult Liver Transplantation. Shu Yang Lu, Kenichi A. Tanaka, Ezeldeen Abuelkasem, Raymond M. Planinsic, Tetsuro Sakai. Department of Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA

Despite its usefulness as a point-of-care coagulation monitoring, conventional kaolin thrombelastography (k-TEG®) can take up to an hour to obtain complete results, and is difficult to distinguish hypofibrinogenemia from thrombocytopenia. Rapid TEG (r-TEG®) and functional fibrinogen TEG (ff-TEG®) have been proposed to address these drawbacks. However, the applicability of these new TEG variants in LT has not been fully examined. A prospective observational study was performed on 27 consecutive adult patients who underwent isolated LT. TEG assays (k-TEG, r-TEG, and ff-TEG) and traditional coagulation assays including plasma fibrinogen level were simultaneously performed after induction of general anesthesia (baseline) and at 30 minutes after graft reperfusion (III+30). Coagulation indices [maximum amplitude (MA), reaction time (R), K time (K), alpha angle (α)] between k-TEG and r-TEG were compared, and plasma fibrinogen level and the functional fibrinogen level obtained via ff-TEG were compared using Spearman's correlation analysis, respectively. The time to measure the coagulation indices and the frequency of measurement errors were compared between k-TEG and r-TEG. At baseline, r between k-TEG and r-TEG was 0.09 ($p=0.67$), 0.53 ($p<0.01$), 0.4 ($p=0.06$), 0.9 ($p<0.01$) for R, K, α , and MA, respectively. At III+30, r between k-TEG and r-TEG was 0.04 ($p=0.87$), 0.51 ($p<0.05$), 0.46 ($p<0.05$), and 0.80 ($p<0.01$) for R, K, and α , and MA. The r between serum fibrinogen level and fibrinogen level measured via ff-TEG was 0.9 ($p<0.01$) at baseline and 0.58 ($p=0.01$) at III+30. On average, ff-TEG

overestimated plasma fibrinogen level. The time required to measure MA via r-TEG was decreased compared to k-TEG from 29.7 minutes to 21.6 min. at baseline (22% reduction) and 29.6 min. to 22.9 min. at III+30 (23% reduction). The overall machine/operator error rate for k-TEG vs. r-TEG was 0% vs. 3.8% (baseline) and 7.4% vs. 20.0% (III+30). In conclusion, r-TEG resulted in more than 20% reduction in test time compared to k-TEG with a relatively higher incidence of measurement error. A strong correlation was found only in MA between the two TEG modalities. ff-TEG offered a predicted fibrinogen level which correlated strongly with plasma fibrinogen level at the beginning of LT; however, the correlation became weaker after reperfusion of liver graft.

Abstract # O-86

Epidural Anaesthesia Is Safe and Effective for Donor Hepatectomies - Our Experience With 169 Cases. Akila Rajakumar, Ilankumaran Kaliamoorthy, Shivalika Gupta, Mettu Srinivas Reddy, Mohamed Rela. Institute of Liver Disease and Transplantation, Global Health City, Chennai, India; Institute of Liver Disease and Transplantation, Global Health City, Chennai, India; Institute of Liver Disease and Transplantation, Global Health City, Chennai, India; Institute of Liver Disease and Transplantation, Global Health City, Chennai, India; Institute of Liver Disease and Transplantation, Global Health City, Chennai, India

Background: Donors are healthy individuals with low pain threshold. Epidurals for donor hepatectomies has been a controversial issue because of the risks involved. We retrospectively reviewed the anaesthetic records of donor hepatectomies performed in our institution between November 2009 to September 2013.

Methods: Pain control, mobilization and oxygenation, evidence of chest infections, International Normalised Ratio (INR), platelet counts and liver function tests for 5 postop days, intraoperative fluids and blood transfusions were analysed. We specifically looked for epidural related complications.

Results: A total of 169 donor hepatectomies- 103 right lobe (RL), 49 left lateral segment (LLS) and 17 left lobe (LL) have been performed. 157 donors had epidural inserted. Epidural was not attempted in 7 and was attempted and abandoned in 5 because of technical difficulty. These patients received fentanyl infusions. Inadequate epidural block (8) was managed with fentanyl supplementation. Pain scores were significantly less in patients receiving epidural compared to fentanyl infusion. Mean INR on Day 3 in RL donors was 1.74 ± 0.41 and 1.43 ± 0.26 on day 4. Mean platelets on Day 3 in RL donors were 168000 ± 47000 . LL and LLS donors had acceptable coagulation parameters on Day3 for epidural removal. We were able to remove epidurals at a median of 4 days in RL and 3 days in LL and LLS donors. 2 patients required plasma and 1 required platelet transfusion for epidural removal. Epidural related complications were pruritus in 6 and self limiting back pain in 2 donors. We did not observe any neurological complications despite coagulation derangements. One RL donor without epidural developed severe pneumonia and had prolonged ICU stay.

Conclusions: In our study, donors are more comfortable with epidurals and no epidural related complications are seen. Appropriate timing of epidural catheter insertion and removal and strict observation can prevent complications. Further larger studies are warranted regarding safety of epidurals in donors.

Abstract # O-87

Liver Transplant from Uncontrolled DCD Donors: A Challenge in Coagulation Management. Annabel Blasi¹, Constantino Fondevila², Amelia Hessheimer², Javier Fernandez⁴, Joan Beltran¹, Graciela Martinez-Palli¹, Jaume Balust¹, Pilar Taurà¹, Juan Carlos Garcia-Valdecasas². ¹Anesthesia, Hospital Clinic, University of Barcelona, Barcelona, Spain; ²Surgery, Liver Transplant Unit, Hospital Clinic, University of Barcelona, Barcelona, Spain; ³Hepatology, Hospital Clinic, University of Barcelona, Barcelona, Spain

Background: Perioperative management of uncontrolled donation after circulatory determination of death (uDCD) recipients is a multidisciplinary challenge given the graft dysfunction that commonly arises after reperfusion. Aim: Analyze postreperfusion hemodynamic and coagulation disorders and the immediate postoperative course of uDCD recipients.

Methods: Liver transplants from uDCD donors performed between 2003-2012 were included. A 2:1 matched-pair analysis was performed with contemporary recipients of livers from donation after neurological determination of death

(DND) donors; matching variables included age, sex, BMI, Child score, and liver transplant indication. Demographic, intraoperative, and immediate postoperative parameters were recorded.

Results: Thirty nine uDCD recipients were evaluated. Median age was 55 (IQR 49-60), 25 were men (64%), and median Child score was 9 (7-11). In comparison with the matched group of DND recipients (N=80), mean arterial pressures and systemic vascular resistances measured upon graft reperfusion were significantly lower in the uDCD group, and a significantly greater proportion required infusion of vasoactive substances (69% uDCD vs. 33% DND, $P<0.01$). Among uDCD recipients, perioperative blood loss and administration of blood products were also significantly greater. Standard coagulation tests as well as rotational thromboelastometric (ROTEM®) analyses demonstrated marked consumption of platelets and fibrinogen after reperfusion in the uDCD group. Finally, rates of early allograft dysfunction (uDCD 51% vs. DND 20%), renal replacement therapy (15% vs. 3%), and hospital stay [22 (15-43) vs. 16 days (13-21)] were all significantly higher in the uDCD group ($P<0.01$ for all comparisons).

Conclusion: The perioperative management of uDCD recipients is complex. Given an increased risk for post-reperfusion hemodynamic and coagulation abnormalities, special care should be taken to ensure adequate levels of platelets and fibrinogen, in particular, prior to reperfusion in order to avoid overt coagulopathy and subsequent hemorrhagic complications.

ORAL ABSTRACT SESSION: MALIGNANCIES

Abstract # O-88

Clinical Significance of Serum Aminoacylase 1 Expression in Human Hepatocellular Carcinoma and Liver Transplantation.
Xuyong Wei¹, Xiao Xu², Haiyang Xie², Qi Ling², Di Lu¹, Jianguo Wang¹, Lin Zhou², Shushen Zheng². ¹Zhejiang University, Hangzhou, China; ²Division of Hepatobiliary and Pancreatic Surgery, First Affiliated Hospital, Zhejiang University, Hangzhou, China

Aminoacylase 1 (ACY1) has been found a tumor suppressor role in hepatocellular carcinoma (HCC). The aim of the present study was to explore the molecular mechanism and determine the clinical significance of serum ACY1 expression in HCC and liver transplantation (LT). The antitumor effect of ACY1 on tumorigenicity was further verified in vivo, and microarray analysis was performed to explore candidate genes related to ACY1. Serum ACY1 expression was examined in 21 healthy volunteers, 91 HCC patients and 49 LT patients with ELISA assay. The relationship between clinicopathological features and serum ACY1 expression was also analyzed. The results revealed that overexpression of ACY1 could suppress HCC tumorigenicity in vivo, and tumor caused a rise of serum concentration of ACY1. Microarray analysis showed 1726 differentially expressed genes in ACY1-silenced cell line SMMC7721 and 83 differentially expressed genes in ACY1-overexpressed cell line BEL7402 (fold change ≥ 1.5 , $p<0.05$). Ten of the same differentially expressed genes were found. ACY1 was significantly higher in HCC patients than healthy volunteers ($p<0.001$). ACY1 expression was significantly associated with serum AFP ($p=0.021$). Compared with postoperative day 1, there was a significant decrease of serum ACY1 concentration on postoperative day 7 for the 49 LT patients, especially liver cirrhosis patients. Taken together, our data suggest that ACY1 could be served as a potential biomarker for detection of HCC. However, further investigation for prognostic value of ACY1 on overall survival and disease-free survival of HCC and LT patients is also needed.

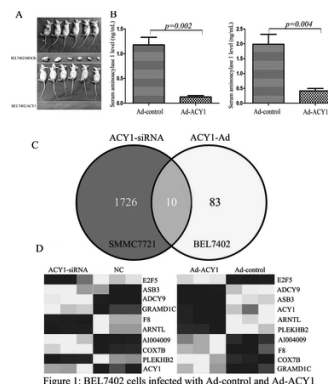


Figure 1: BEL7402 cells infected with Ad-control and Ad-ACY1 were injected into nude mice. At the end of the experiment, the animals were sacrificed and the tumors were excised. (A): Photographs of dissected tumors from the nude mice. (B): Tumor caused a rise of serum concentration of ACY1. (C): Microarray analysis showed 1726 differentially expressed genes in ACY1-silenced cell line SMMC7721 and 83 differentially expressed genes in ACY1-overexpressed cell line BEL7402 (fold change ≥ 1.5 , $p<0.05$). (D): Ten of the same differentially expressed genes were found, such as ADCY9, E2F5 and F8.

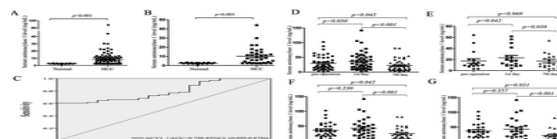


Figure 2: (A): ACY1 was significantly higher in HCC patients (n=91) than healthy volunteers (n=21). (B): ACY1 was significantly higher in AFP-negative HCC patients (n=35) than healthy volunteers (n=21). (C): ROC curve of ACY1 for diagnosis of HCC. (D): Serum ACY1 concentrations on pre-LT, postoperative day 1 and postoperative day 7 in different groups. (E): Serum ACY1 concentrations in all the patients (n=49) with LT. (F): Serum ACY1 concentrations in HCC patients (n=17) with LT. (G): Serum ACY1 concentrations in non-HCC patients (n=32) with LT. (H): Serum ACY1 concentrations in liver cirrhosis patients (n=26) with LT.

Table 1: Relationship between serum ACY1 expression and clinicopathological features of 91 patients with HCC.

Clinicopathologic variables	number of each group	low	high	p value
Age(years)				
<60	63	41	22	
≥60	28	14	14	0.175
Gender				
Male	85	51	34	
Female	6	4	2	0.747
Tumor size(cm)				
≤3	71	42	29	
>3	20	13	7	0.637
≤5	38	22	16	
>5	53	33	20	0.674
≤6	17	9	8	
>6	74	46	28	0.483
Histological differentiation				
Well/Moderate	27	12	15	
Poor	37	16	21	0.924
HBV				
Negative	36	17	19	
Positive	14	8	6	0.784
Serum AFP				
≤40	56	31	25	
>40	35	24	11	0.21
≤100	39	18	21	
>100	52	37	15	0.036*
≤200	36	17	19	
>200	55	38	17	0.037*
Microvessels				
low	10	6	4	
Yes	81	49	32	0.976

Abstract # O-89

Effects of Locoregional Treatments before Living Donor Liver Transplantation on Overall Survival and Disease Free Survival.
Gun Hyung Na, Dong Goo Kim, Jae Hyun Han, Soo Ho Lee, Eun Young Kim, Tae Ho Hong, Young Kyoung You. Department of Surgery, Seoul St. Mary's Hospital, The Catholic University of Korea, Seoul, Republic of Korea

Background

Liver transplantation (LT) is the treatment of choice for selected patients with hepatocellular carcinoma (HCC) and cirrhosis. When patients with HCC beyond the Milan criteria were treated with current treatment modalities other than LT, the results were disappointing. Because of the scarcity of liver donor, pretransplant locoregional treatments were used for preventing tumor progression or decreasing tumor volume to meet the selection criteria in hepatocellular carcinoma (HCC) patients awaiting LT. Therefore it is important to evaluate the response to pretransplant locoregional treatments and to predict the result of pretransplant locoregional treatments preoperatively.

Methods

From December 2003 to December 2012, 130 patients who were newly diagnosed with HCC at our hospital underwent living donor liver transplantation (LDLT) for HCC at our transplant center. We evaluated the effect of pretransplant locoregional treatment on survival in LDLT, the survival after LDLT in successful downstaged patients, and the most accurate

method for predicting survival after LDLT among the several methods such as the Milan criteria, the mRECIST criteria, the change of tumor markers, and tumor necrosis in explants.

Results

Pretransplant locoregional treatments for HCC were performed in 86 patients. Of the 33 patients with HCC beyond the Milan criteria initially, 12 (36.4%) experienced successful downstaging, and the 5 year DFS and OS of the 12 patients in whom downstaging was successful were 81.8% and 75.0%, respectively. Bad responder (SD or PD) according to the mRECIST criteria ($p = 0.042$) and the increased AFP level ($p = 0.004$) during pretransplant locoregional treatments were independent risk factors for HCC recurrence after LT in multivariate analysis. The response to pretransplant locoregional treatments can predict tumor biology such as microvascular invasion.

Conclusion

The mRECIST criteria and serum AFP level change are better selection criteria for LDLT in patients who have received locoregional treatments than the initial assessment of tumor size or number. LT may be considered after successful downstaging in patients with HCC beyond the Milan criteria initially.

Abstract # O-90

Novel Adjuvant Immunotherapy Using Liver Natural Killer Cells for Preventing Recurrence of Hepatocellular Carcinoma in Liver Transplantation. Masahiro Ohira¹, Kohei Ishiyama¹, Seigo Nishida², Andreas G. Tzakis², Hideki Ohdan¹. ¹Hiroshima University, Hiroshima, Japan; ²University of Miami, Miami, FL, USA

Development of an effective adjuvant therapy to prevent HCC recurrence after liver transplantation (LT) is an important medical requirement. Most immunosuppressants reduce the proportion of adaptive components of cellular immunity while maintaining the innate components. Natural killer (NK) cells play a central role in innate immunity against neoplastic cells; therefore, their augmentation is a promising immunotherapeutic approach against HCC recurrence. We propose that adoptive transfer of IL-2-stimulated TRAIL+ NK cells extracted from donor liver graft perfusate can mount an anti-tumor response without causing toxicity to intact recipient tissues. Since 2006, we have successfully performed NK-cell immunotherapy in 30 living donor LT (LDLT) recipients with HCC in Japan. The median follow-up period is 44 months. We also applied the proposed approach to the deceased donor LT (DDLT) recipients in collaboration with US since 2009. This phase I study included 17 subjects with a median follow-up of 21 months. No study related adverse events were noted in either of the studies.

In the series of LDLT with HCC, among the 52 patients who met the Milan criteria (MC) on preoperative imaging (NK group n=25; control group n=27), 18 patients (35%) had HCC exceeding MC on postoperative pathology. Of these 18 patients, the recurrent free survival (RFS) rates were significantly improved in the NK group (n=10) as compared to those in the control group (n=8). Their 5 year-RFS were 79% and 14%, respectively ($p=0.004$). A sub-analysis showed that the incidence of bacteremia significantly decreased in the NK group ($p=0.012$). After infusion of NK cells, the NK cytotoxicity and the proportion of TRAIL+ NK cells in the peripheral blood of patients increased significantly ($p<0.05$). The inoculated donor NK cells could be confirmed up to 1 month through the analysis of peripheral blood chimerism. In the series of DDLT with HCC, among the 17 patients who met MC on preoperative imaging, 9 patients (53%) had HCC exceeding MC on postoperative pathology. None of the patients have shown any symptom of HCC recurrence. Thus, the administration of IL-2-stimulated NK cells derived from both living and deceased donor liver allografts was safely applied and is therefore a potential novel adjuvant immune treatment after LT in HCC patients.

Abstract # O-91

Prediction of Recurrence after Liver Transplantation for HCC: Validation of the AFP Model in an Italian Cohort.

A. Notarapalo^{1,10}, G. Bizouard², M. Gambato³, R. Montalti⁴, G. Magini⁵, L. Miglioresi⁶, A. Vitale⁷, G. Vennarecci⁸, C. D'Ambrosio⁶, P. Burra³, F. Manenti⁹, S. Fagioli⁵, G.M. Ettore⁸, A. Andreoli⁶, U. Cillo⁷, S. Katsahian², F. Roudot-Thoraval², C. Duvoux¹. ¹Hepato-Gastroenterology, Henri Mondor Hospital APHP, University of Paris-Est, Creteil, France; ²Public Health & Biostatistics, Henri Mondor Hospital APHP, University of Paris-Est, Creteil, France; ³Multivisceral Transplant Unit, Padova University Hospital, Padova, Italy; ⁴Chirurgia dei Trapianti, Ospedale Policlinico, Modena, Italy; ⁵Gastroenterology and Transplant Hepatology, Papa Giovanni XXIII Hospital, Bergamo, Italy; ⁶UOC di Epatologia, Ospedale San Camillo di Roma, Roma, Italy; ⁷Hepatobiliary Surgery and Liver Transplant Unit, Padova University Hospital, Padova, Italy; ⁸Multiorgan Transplantation Program-General Surgery and Transplantation Unit, Ospedale San Camillo di Roma, Roma, Italy; ⁹Gastroenterologia, Ospedale Policlinico, Modena, Italy; ¹⁰Arcispedale Santa Maria Nuova, Reggio Emilia, Italy

The AFP model (pre LT AFP, size, number), was shown superior to Milan criteria for prediction of HCC recurrence in a French population. Our aim was to test the AFP model in an Italian population of HCC candidates.

Methods: 560 patients transplanted for HCC (2002-2010) in 4 Italian centres were studied.

AFP score was assessed at last evaluation before LT (median waiting time: 8.8 mths). Probabilities of recurrence and death were estimated by the log rank test or competing risk analysis and compared according to the AFP score cut-off of 2.

Results: Study population: males: 86%, age: 56+/-7 yrs, median AFP: 9 (range 0.4-17500), median tumour number and size: 2 & 2.5 cms, pts beyond Milan criteria: 24%, pre LT treatment: 86%, post-operative mortality: 7.1%.

Five-year probabilities of recurrence:

Milan in vs Milan out : 14.1% vs 27.4% ($p<0.001$)

AFP score < 2 vs > 2 : 11.4% vs 40.2 % ($p<0.001$, competing risk analysis) overall,

13.2% vs 36.4%, for pts within Milan ($p<0.005$).

Five-year survival rates according to AFP score < 2 or > 2:

73.5% vs 40.4% ($p<0.001$).

Censoring HCC-related deaths, competing risk analysis show similar incidence of non HCC-related deaths in both groups (19.0% and 21.9% for AFP score < 2 and >2).

Conclusions: The AFP model discriminates better than Milan criteria between patients at low and high risk of recurrence in a non French population of HCC candidates.

The AFP model can be proposed as a new selection tool in an Italian population.

Abstract # O-92

Long-Term Outcome of Salvage Liver Transplantation for HCC Recurrence after Liver Resection: University of Bologna Experience. Massimo Del Gaudio, Matteo Cescon, Giorgio Ercolani, Alberto Balduzzi, Sara Pellegrini, Matteo Ravaioli, Alessandro Cucchetti, Valentina Rosa Bertuzzo, Chiara Zanfi, Maria Cristina Morelli, Antonio Daniele Pinna. Liver Transplantation Unit Prof. A.D. Pinna, S. Orsola-Malpighi Hospital University of Bologna, Bologna, Italy

Background: Liver resection (LR) first and liver transplantation (LT) as salvage therapy after LR for hepatocellular carcinoma (HCC) still represents a controversial strategy.

Methods: Between January 1996 and July 2013 1300 HCC patients were referred our Liver Transplant Center: 635 were listed for LT, 368 was treated by primary LT (PLT) and 45 by salvage LT (SLT). The remaining 665 were submitted to LR and 233 (35%) of these were transplantable at the time of LR. Considering PLT vs SLT patients, no differences resulted in terms of gender, age, MELD score and etiology of cirrhosis. Preoperative TACE was performed in 44.8% vs 40.9% ($p=ns$), RFA in 12.7% vs 36.4% ($p=0.03$) and combined TACE/RFA in 8.2% vs 18.2% ($p=0.003$) in PLT and SLT group, respectively. HCC G3 was present in 57.3% vs 50% and G4 in 2.8% vs 10.2% in PLT vs SLT group, respectively ($p=0.007$).

Results: Post-operative mortality was 0% vs 3.3% in SLT vs PLT group (p=NS). No differences were observed in terms of median time on waiting list (202 days vs 304 days), intraoperative red blood cells infusion (1850 vs 1500 cc), HCC recurrence (12% vs 15.5%) in PLT vs SLT group, respectively (p=NS).

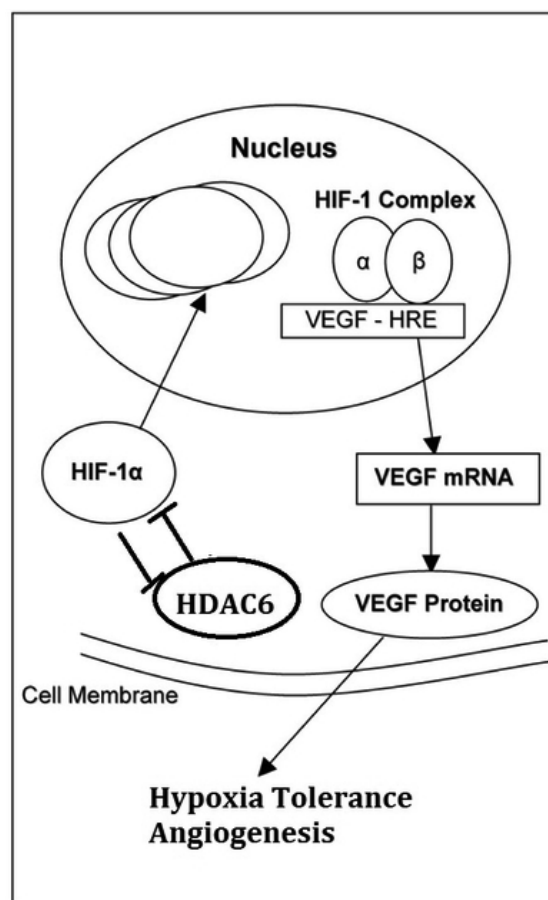
Five-year intention-to-treat survival of HCC listed patients vs LR transplantable patients was 58% vs 70% (p=NS). Overall survival at 1-, 3- 5- and 10-years was 87.3%, 78%, 71.7%, 69% vs 85.9%, 78.5%, 78.5%, 68.9% for PLT vs SLT group, respectively (p=NS). Disease-free survival at 1-, 3-, 5- and 10-years was 85.5%, 75.4%, 70.8%, 65.7% vs 77%, 73.8%, 73.8%, 65% for PLT vs SLT group, respectively (p=NS).

Conclusion: LR should be the first-line treatment in patients with small HCC and compensated cirrhosis, with salvage LT offered at the time of HCC recurrence or liver decompensation as a safe and effective approach.

Abstract # O-93

Downregulation of HDAC6 Induces Hypoxia Tolerance and Angiogenesis in Hepatocellular Carcinoma Cells and Predicts a Poor Prognosis of Hepatocellular Carcinoma Patients with Liver Transplantation. Jian Wu^{1,2}, Zhen Lv^{1,2}, Chengli Du^{1,2}, Heng Xiao^{1,2}, Chaofeng Ding^{1,2}, Lin Zhou^{1,2}, Haiyang Xie^{1,2}, Shusen Zheng^{1,2}. ¹Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang, China; ²Key Laboratory of Combined Multi-Organ Transplantation, Ministry of Public Health, Zhejiang University, Hangzhou, Zhejiang, China

Background: HDAC6, a member of histone deacetylation family, is reported to play critical roles in transcription regulation, cell cycle progression and cancer development. Our study was focused on the role of HDAC6 in hepatocellular carcinoma (HCC) hypoxia tolerance, angiogenesis and prognosis of HCC patients with liver transplantation. Methods: HDAC6-si stable transfected HCC cells were used to explore its effects on hypoxia tolerance and angiogenesis, and the tumorigenicity in vivo and in vitro. Tissue samples from HCC patients who underwent liver transplantation (LT) were examined immunohistochemically for HDAC6 expression. Multivariate and univariate analysis were used to investigate the relationship between HDAC6 expression and prognosis of HCC patients with LT. Results: In vitro and in vivo experiments showed that knockdown of HDAC6 could inhibit HCC tumorigenicity in normoxia, but suppress HCC cell apoptosis and promote cell proliferation in hypoxia. Further study indicated that HDAC6 could significantly up-regulated expression of HIF-1 α and VEGF in vivo and in vitro, which facilitated HIF-1-mediated hypoxia tolerance and angiogenesis in HCC. In clinical samples, levels of HDAC6 was significantly down-regulated in HCC tissues (p=0.025), and low expression of HDAC6 was significantly associated with recurrence (p=0.006) and predicted a poor recurrence-free survival (p=0.047) for HCC patients with liver transplantation (LT). Conclusions: Our findings suggested Loss of HDAC6 could possibly play a role in the hypoxia tolerance and angiogenesis in HCC, and might serve as a recurrence predictive factor for HCC after LT and a therapeutic target.



Abstract # O-94

Prolonged Waiting-List Time Does Not Have a Negative Impact in the Post-Transplant Survival of Patients With Hepatocellular Carcinoma. Paolo R. Salvalaggio, Guilherme E. Felga, Bianca Della Guardia, Marcio D. Almeida, Marcelo B. Rezende. *Hospital Israelita Albert Einstein, Sao Paulo, Brazil*

INTRODUCTION: The amount of time that patients with hepatocellular carcinoma (HCC) within the Milan criteria (MC) can safely remain on the waiting list for liver transplantation (LT) is unknown.

AIM: We investigated whether a long waiting list (>6-months) impacts the post-transplant survival of HCC recipients.

METHODS: This is a single-center retrospective study of adults with HCC within the MC, who were treated with TACE while on the waiting for a deceased donor LT. Patients were divided in groups according to waiting-list time (<3-months, 3-6months, 6-9 months, >9-months). The main endpoint was post-LT survival.

RESULTS: 292 patients were selected as potential candidates and were listed for LT. A total of 187 patients underwent LT and met the eligibility criteria of the study. The median waiting time for LT for the entire cohort was 256 days (51-415 days). Mean follow-up after LT of the entire cohort of study was 2.2 years. There was a preponderance of white, middle-aged males with HCV with a biological MELD score of 13±5.2. Donors were usually middle-aged men, who died of cerebrovascular accident, and were transplanted at an average of 8.6±2 hours of cold ischemia. The average DRI was 1.6±0.3. Other donor and transplant characteristics were equivalent for all groups of the study. The dropout rate of the study cohort at 3, 6, and 12-months were 5.8%, 12.3%, and 16.1%, respectively. Post-LT survival did not differ based on the time on the waiting-list. Within the subgroup of patients with the longest waiting-list time, MELD score at transplant considerably influenced post-transplant survival, while alphafetoprotein level, tumor size, and response to TACE did not. Univariate and multivariate analysis failed to identify risk factors for worse survival on the subgroup of patients with long waiting-list time. The biological MELD was the only factor that independently impacted post-

transplant survival in our multivariate analysis ($p < 0.001$, HR=1.14). There was no linear relationship between waiting-list time and post-transplant survival (AUC=0.53, $p=0.62$).

CONCLUSION: Waiting-list time had no relation with post-LT survival. MELD impacts post-transplant survival of all HCC patients independently of waiting-list time. Allocation policies that prolong waiting-list time for HCC candidates may not impact post-LT survival.

Abstract # O-95

Treatment of Experimental Hepatocellular Carcinoma (HCC) Using a Novel Engineered Host Defence Peptide. Pål-Dag Line¹, Ji-Hua Shi¹, Gunnar Kvalheim¹, Baldur Sveinbjörnsson², Øystein Rekdal^{2,3}. ¹Division of Cancer, Surgery and Transplantation, Oslo University Hospital, Oslo, Norway; ²Institute of Medical Biology, University of Tromsø, Tromsø, Norway; ³Lytix Biopharma, Oslo, Norway

Immunogenic cell death is a prerequisite for invoking an anti-tumour response in cancer therapy. The aim of the present study was to test whether the chemically modified 9-mer peptide, LTX-315, could induce immunogenic cell death and be utilized as a novel immunotherapeutic agent for hepatocellular carcinoma in a rodent model

Human (BEL7402 & HEPG2) and rodent (JM1) hepatoma cells were exposed to LTX-315 and cell viability evaluated.

For in-vivo evaluation, tumours were induced in Fisher rats by injection of 1 million JM1 cells subcutaneously (s.c.) or into the liver (group A), and then treated by injection of 1 mg LTX-315 into the tumour for 3 or 7 consecutive days in liver and s.c. tumours respectively. In group B, s.c. tumours were sub-optimally treated by 4 injections and then surgically removed at day 30 and 60 in controls and treatment arm respectively. All animals were re-challenged with repeated inoculation of tumour cells at week 6-24.

LTX-315 created cell lysis and death of both human and rodent HCC cells at low concentrations, and was associated with release of ATP and HMGB1. Tumours in the intervention group were ablated in all animals, whereas controls developed a lethal tumour in the course of 3-4 weeks. Re-challenge with JM1 cells did not lead to tumour development in any case in LTX-315 treated animals. Histologic examination demonstrated an intense inflammatory reaction with CD3 positive cells surrounding and infiltrating the tumours.

In group B, LTX-315 treatment caused a retarded tumour growth but no total tumour necrosis. After surgical removal, the controls developed rapidly progressing tumours after re-challenge, whereas LTX-315 treated animals were resistant to repeated tumour cell inoculation.

To verify whether LTX-315 treatment invoked a transferrable anti-tumour response, naive animals were immune-ablated by total body irradiation and then reconstituted by infusion of splenocytes harvested from successfully treated animals. This led to complete resistance against tumour cell injection, whereas irradiated controls reconstituted with wild type splenocytes developed large lethal tumours.

Conclusion: Injection treatment of LTX-315 into experimental HCC tumours can induce specific, transferrable long lasting anti-tumour immune response.

Abstract # O-96

A Novel Classification of Hepatocellular Carcinoma Based on Long Noncoding RNA Signature: Implications for Prognosis Following Liver Transplantation. Zhe Yang, Lin Zhou, Chaofeng Ding, Zhiyun Zheng, Liming Wu, Shusen Zheng. *Hepatobiliary and Pancreatic Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China*

Aims: We aim to establish a long noncoding RNA (lncRNA) signature that can assess the prognosis of hepatocellular carcinoma (HCC) after liver transplantation (LT). **Methods:** One hundred and sixty consecutive liver transplant recipients with HCC were selected. The prognostic signature was established by Cox's proportional hazard model. **Results:** We identified seven lncRNAs (HOTAIR, MALAT1, ncRAN(L), ncRAN(S), lncRNA-HEIH, TUC338 and ANCR) that were overexpressed in HCC. The cumulative recurrence-free survival and overall survival in patients with a high expression level of seven lncRNA was significantly lower than those with low expression. Thus we established a model based on lncRNA ("lncRNA signature") that can assess the risk of tumor recurrence and prognosis after LT. Risk scores=(0.727×HOTAIR expression) + (0.603×MALAT1 expression) + (0.666×ncRAN(L) expression) + (0.455×ncRAN(S) expression) + (0.662×lncRNA-HEIH expression) + (0.699×TUC338 expression) + (0.605×ANCR expression), the patients were segregated into high/low risk

lncRNA signature groups based on ROC analysis (cut-off point 2.5). The 1, 3, 5-year cumulative recurrence-free survival rates and overall survival rates of the HCC patients with high risk lncRNA signature were much lower than those with low risk lncRNA signature. Cox multivariate analysis revealed that, besides accumulative tumor size and vascular invasion, lncRNA signature was an independent prognostic factor for predicting tumor recurrence and overall survival of patients with HCC after LT. When the patients were stratified according to the Milan or UCSF criteria, in patients who matched these criteria, those with low risk lncRNA signature revealed a significantly better prognosis, the 5-year cumulative recurrence-free survival rates were 89.8%, 88.6%, 83.8% respectively, and the 5-year overall survival rates were 82.1%, 80.7%, 79.8% respectively. The ROC analysis revealed that the area under the curve of lncRNA signature was larger than single lncRNA, tumor size, tumor number, AFP and vascular invasion, thus had the best predictive power. **Conclusions:** This is the first study to establish a novel classification of HCC based on lncRNA signature that could effectively evaluate the risk of post-transplant HCC recurrence and the overall survival of the patients.

ORAL ABSTRACT SESSION: RECURRENT DISEASE/PATHOLOGY

Abstract # O-97

Histological Outcome after Liver Transplantation for Chronic Hepatitis B Using Oral Antiviral Therapy Alone Without Hepatitis B Immune Globulin. James Fung^{1,2,3}, Regina Lo⁴, See-Ching Chan^{1,3}, Kenneth S.H. Chok¹, William W. Sharr¹, Wing-Chiu Dai¹, Tan-to Cheung¹, Albert C.Y. Chan¹, Tiffany Wong¹, Irene O.L. Ng^{3,4}, Man-fung Yuen^{2,3}, Chung-Mau Lo^{1,3}. ¹Department of Surgery, The University of Hong Kong, Hong Kong, China; ²Department of Medicine, The University of Hong Kong, Hong Kong, China; ³State Key Laboratory for Liver Research, The University of Hong Kong, Hong Kong, China; ⁴Department of Pathology, The University of Hong Kong, Hong Kong, China

Aim: To determine the histological outcome after liver transplantation for patients with chronic hepatitis B (CHB) receiving oral antiviral therapy without hepatitis B immune globulin (HBIG)

Methods: All patients transplanted for CHB-related complications from January 2003 to December 2012 were included. None of the patients received HBIG. All biopsies performed 3 months after transplantation were analyzed. Biopsies were performed on the basis of graft dysfunction. Immunohistochemical study with anti-hepatitis B surface antigen (HBsAg) antibody was performed.

Results: A total of 440 CHB patients underwent liver transplantation with a median follow-up of 58 months (range, 0-130). Of these, 139 (31.6%) patients underwent liver biopsy for graft dysfunction, with a total of 258 biopsies performed. The median time to biopsy was 10 months (range, 3-104). Forty-five patients had positive serum HBsAg at the time of biopsy, of which 6 were positive for HBsAg stain. All 6 patients were on lamivudine with known virological rebound due to resistance. In the remaining 39 patients with negative HBsAg stain, 7 patients had grade 1 fibrosis from non-HBV related causes. Forty patients were on entecavir monotherapy, of which 9 patients were positive for serum HBsAg at the time of biopsy and all were negative for HBsAg staining; only 1 had grade 1 fibrosis from non-hepatitis B cause. In the remaining 94 patients who were HBsAg-negative at the time of biopsy, none had histological evidence of recurrence of hepatitis B. **Conclusion:** For patients without virological rebound, positive serum HBsAg was not associated with histological evidence of recurrent hepatitis B infection after liver transplantation. For patients receiving entecavir monotherapy, no histological evidence of recurrent hepatitis B was observed irrespective of the serum HBsAg status.

Abstract # O-98

Diagnostic Value of Gd-EOB-DTPA-Enhanced MR Imaging for Detection of the Cirrhosis-Associated Hepatocellular Carcinoma in Patients With Liver Transplant Candidates. Mecit Kantarci¹, Berhan Pirimoglu¹, Gurkan Ozturk², Betul Gundogdu³. ¹Radiology, Ataturk University School of Medicine, Erzurum, Turkey; ²General Surgery, Ataturk University School of Medicine, Erzurum, Turkey; ³Pathology, Ataturk University School of Medicine, Erzurum, Turkey

Objective: The purpose of this study was to determine the diagnostic value of Gd-EOB-DTPA-enhanced magnetic resonance imaging (MRI) for differentiating cirrhosis-associated hepatocellular carcinoma (HCC) in patients with liver transplant candidates.

Materials and methods: Twenty-nine patients with liver transplant candidates and 51 focal liver lesions diagnosed using ultrasonography or computed tomography examination underwent hepatic gadoxetic acid disodium-enhanced MRI to confirm malignancy underwent MRI (3-T; dynamic and tissue-specific phase 20 min after application of Gd-EOB-DTPA). MR images were analyzed by two blinded radiologists. MRI findings were compared with results of biopsies.

Results: Hepatic lesions were verified by results of percutaneous biopsies (n=39, 76.4% HCC lesions; n=12, 23.6% metastasis) and obtained from pathologically elevated α -fetoprotein (AFP) values (>196 ng/ml) (n = 37 lesions). Gd-EOB-DTPA-enhanced MRI reached superior diagnostic efficacy: sensitivity 82.1%, specificity 83.3%, accuracy 82.3% (p<0.05). Thirty-two out of 39 lesions with HCC and 9 out of 12 lesions with metastasis were detected by the Gd-EOB-DTPA-enhanced MRI examinations (p<0.05).

Conclusions: Post contrast Gd-EOB-DTPA-enhanced MRI provided significantly higher overall detection rate and diagnostic accuracy in patients with liver transplant candidates before the transplantation procedure.

Abstract # O-99

Histologically Proven Nonalcoholic Fatty Liver Disease and Clinically Related Factors in Recipients after Liver Transplantation. Hyeyoung Kim¹, Kyoungbun Lee², Kwang-Woong Lee¹, Nam-Joon Yi¹, Hae Won Lee^{1,3}, Geun Hong¹, YoungRok Choi¹, Suk-Won Suh¹, Ja June Jang², Kyung-Suk Suh¹. ¹Surgery, Seoul National University College of Medicine, Seoul, Korea; ²Pathology, Seoul National University College of Medicine, Seoul, Korea; ³Surgery, Seoul Metropolitan Government - Seoul National University Boramae Medical Center, Seoul, Korea

Nonalcoholic fatty liver disease (NAFLD) affects a substantial proportion of the general population in the world, and its prevalence has been increasing. However, little is known about NAFLD in liver transplantation (LT) recipients. The study was aimed at evaluating the prevalence of NAFLD and peri-transplant risk factors for post-LT NAFLD. A retrospective review was performed for adult recipients who underwent late protocol liver biopsy (>1 year after LT) at our institution between August 2010 and December 2012. Hepatic steatosis was reviewed and graded by hepatic pathologists. The peri-transplant factors were analyzed for relationships to histologically proven NAFLD. Total 166 liver biopsies had been performed in 156 adult recipients. NAFLD (micro and macrovesicular lipid accumulations of more than 5%) were present in 27.1% of cases at a mean period of 35.4 months between LT and biopsy, moderate and severe steatosis ($\geq 33\%$) consisted of 28.9%. In multivariate analysis, pre-LT alcoholic cirrhosis (odds ratio [OR] 8.031, p=0.003), obesity at biopsy (OR 3.873, p=0.001), and pre-existing donor graft steatosis (OR 3.147, p=0.022) were significant risk factors for post-LT NAFLD. NASH (NAFLD activity score ≥ 5) was present in 8.9%, and metabolic syndrome in 26.7% of the steatosis group. In conclusion, NAFLD represented a considerable portion of liver transplant recipients, but this prevalence was not higher than those reported for general populations. Risk factors such as pre-LT alcoholic cirrhosis, obesity at biopsy, and pre-existing donor graft steatosis were significantly related to histologically proven NAFLD after LT. Post-LT recipients with these risk factors should be monitored for NAFLD. Furthermore, possible progression to NASH or fibrosis and metabolic syndrome should be considered in future studies.

Abstract # O-100

Conversion To Entecavir Monotherapy from Combination Therapy With Hepatitis B Immunoglobulin for Hepatitis B Prophylaxis in Long Term Survivor after Liver Transplantation: Prospective Single Center Trial. Nam-Joon Yi, Jeong-Moo Lee, Youngrok Choi, Suk-Won Suh, Kwang-Woong Lee, Kyung-Suk Suh. Department of Surgery, Seoul National University College of Medicine, Seoul, Republic of Korea

Methods: Between February 2009 and December 2011, 20 candidates (12.9%) were prospectively enrolled among 154 consecutive LT recipients for HB related liver disease. All patient (1) had HB related liver cirrhosis, (2) Survived more than 2-years after LT, (3) Underwent post-LT HB prophylaxis over one-year combination therapy with ETV (0.5mg daily) and ivHBIG (10,000 IU per 5 weeks). Additional inclusion criteria was any one of the follows; (a) NA-naïve patient, (b) If, have NA-treated history, Negative YMDD Mutation (c) Negative HBe antigen (HBeAg) and HBV DNA (<100 IU/mL). Primary endpoint was the 2-year recurrence rate of Hepatitis B (reappearance of HBsAg or HBV DNA).

Results: All patients were followed up without HB recurrence during the second year. Only one recipient (5%) experienced HBV DNA titer elevation at 37.3 month after conversion to ETV monotherapy. But it was decreased spontaneously without any intervention. 1 patients (5%) were dropped out during the second year due to advanced gastric cancer with liver metastasis. Recurrence free survival rate of the 19 patients were 100% at two-year post-transplant. No side effects related with ETV monotherapy were noted during the follow-up period.

Conclusion: ETV monotherapy after discontinuation of ivHBIG combination therapy 2-year after liver transplantation is safe and effective in selected patient.

Abstract # O-101

Predicting Recurrent Hepatocellular Carcinoma after Liver Transplantation with a New Clinical Score. Federico Piñero¹, Sebastián Marciano², Federico Orozco Ganem³, Margarita Anders³, Alina Zerega⁴, Carla Ramirez Cabrera⁴, Oscar Andriani¹, Octavio Gil⁴, Luis Podesta¹, Eduardo de Santibañes², Lucas McCormack³, Adrián Gadano², Marcelo Silva¹. ¹Liver Unit, Hospital Universitario Austral, Pilar, Argentina; ²Liver Transplant Program, Hospital Italiano, Buenos Aires, Argentina; ³Liver Unit, Hospital Alemán, Buenos Aires, Argentina; ⁴Liver Transplant Program, Sanatorio Allende, Córdoba, Argentina

Although risk factors for recurrence (R) of Hepatocellular carcinoma (HCC) after liver transplantation (LT) have already been evaluated, a clinical risk categorization of R is needed. Our aim was to identify risk factors and propose a clinical predictive score of R. Methods: From 763 consecutively transplanted adult patients in 4 LT centers from Argentina (2005-2011), we evaluated 129 with confirmed HCC in the explanted liver. Patients who died within 90 days post-LT (n = 13, 10.1%) were excluded. A prognostic risk score was assessed from the Hazard Ratios (HR) of independent risk factors (Cox regression analysis). Results: Overall incidence of HCC recurrence was 15% (n=17/111), median follow-up of 30 months. Pre-LT variables related to recurrence were: α -fetoprotein (AFP) >200 ng/ml HR 12 (3.9-34.8, P<0.0001) and beyond Milan HR 2.5 (0.86-7.45, P=0.09). Patients within Milan and AFP >200 ng/ml had higher risk of recurrence than those within Milan and AFP <200 ng/ml: 33 % vs. 6%, HR 6.3 (2.1-19.0, P=0.001). Post-LT (explanted liver) related risk factors were: beyond Up-to-7 criteria HR 5.2 (2.0-15.5, P=0.001), microvascular invasion HR 4.0 (1.4-11.8, P=0.011) and nuclear grade $>II$ (Edmonson-Steiner) HR 4.1 (1.2-13.4, P=0.02). Using risk factors from multivariate analysis a predicting R score was developed. Each of the predictors was assigned with points depending on the HR: Milan + AFP >200 ng/ml HR 5.1 (1.6-15.5, P=0.004), presence=2.5 points, beyond Up-to-7 HR 3.3 (1.2-9.3, P=0.02), presence=1.5 points; microvascular invasion HR 2.4 (0.8-6.8, P=0.09), presence=1 point. The proposed score (0-5 points) had an adequate discrimination power with a ROC curve of 0.82 (0.63-0.94, P<0.0001), having the best performance in those patients with a score ≥ 2 points (76% sensitivity, 84% specificity). Conclusions: This score might be a useful additional tool to identify patients at higher risk of HCC recurrence after LT. Prospective studies with external validation cohorts are needed to evaluate our model.

Abstract # O-102

Sexual Functioning in Patients With End-Stage Liver Disease before and after Liver Transplantation (LT). Beatriz Rodríguez-Medina^{1,2,3}, Agustín Ramos-Prol⁴, Carla Satorres¹, Carmen Vinaixa^{1,2}, Ángel Rubin^{1,2}, María García^{1,2}, Victoria Aguilera^{1,2}, Martín Prieto^{1,2}, Marina Berenguer^{1,2}. ¹Hepatology and Liver Transplantation Unit, Hospital Universitario La Fe, Valencia, Spain; ²Hepatology Unit, Hospiten Clínica Roca, Las Palmas, Spain; ³CIBERehd, Instituto de Salud Carlos III, Madrid, Spain; ⁴Endocrinology and Nutrition Unit, Hospital Universitario La Fe, Valencia, Spain

Background: Data on Sexual Dysfunction (SD) in cirrhotic patients are limited. Despite its relevance, it is rarely evaluated in clinical practice. Our aim was to evaluate the sexual function of patients with end-stage liver disease and to compare it with the results after LT and with that of a controlled group matched by age and gender. **Methods:** Changes in Sexual Functioning Questionnaire were used to evaluate SD in cirrhotic patients awaiting LT and in the post-LT setting 1 year after transplant. Clinical data and a complete set of sexual hormonal profile were obtained. Controls were given the same questionnaires. **Results:** 58 patients, 69% men, were included and compared to 58 controls, 92% of men presented SD during the waiting period for LT vs 63% of controls ($p < 0.01$). In women, of whom 88% were in menopausal stage, SD was present in 94% vs 72% of controls ($p = 0.7$). One year post-LT, SD decreased to 74% in men ($p = 0.09$) while no changes were detected in women. In men, sex hormones showed a pattern of central hypogonadism during the pre-LT period with a decrease in sex hormones (free testosterone in 83%, testosterone in 53%) and normal values of FSH and LH (72% and 81%). In addition, an increase of estradiol and prolactin in 86% and 72%, respectively, were observed. Levels of DHEA-Sulphate, an androgen produced in the adrenal gland, were decreased in 97% of men. Sex hormones results one year after LT showed FSH and LH values above the normal range, a significant increase with respect to the pre-LT period ($p < 0.01$); a decrease of prolactin and estrogen to normal levels ($p = 0.2$). There was an increase in testosterone and free testosterone levels ($P = 0.05$ and 0.2). Levels of DHEA-Sulphate remained low after LT. **Conclusion:** SD, an infra-estimated condition, is extremely common in cirrhotic patients awaiting LT. Besides central hypogonadism, the reduced levels of DHEA, possibly due to adrenal dysfunction, is an aspect that deserves further investigation. LT improves SD in men, demonstrated both subjectively (questionnaires) and objectively, with a normalization in sex hormone levels in most cases and the disappearance of central hypogonadism.

Abstract # O-103

Sarcopenic Obesity With Metabolic Syndrome: A Newly Recognized Entity Following Living Donor Liver Transplantation. Narender S. Choudhary¹, Sanjiv Saigal¹, Neeraj Saraf¹, Ravi Mohanka¹, Amit Rastogi¹, Sanjay Goja¹, Palat B. Menon¹, Sunil K. Mishra², Ambrish Mithal², Arvinder S. Soin¹. ¹Medanta Liver Institute, Medanta The Medicity, Gurgaon, Haryana, India; ²Endocrinology, Medanta The Medicity, Gurgaon, Haryana, India

Objective: Sarcopenia is common in patients with decompensated cirrhosis while weight gain and metabolic syndrome are common after liver transplant. There is limited data about sarcopenic obesity in liver transplant recipients. **Methods:** Living donor liver transplant recipients with at least 6 months of follow up were included. Metabolic syndrome was defined as ≥ 3 ATP III criteria with waist circumference modified for Asians (> 80 cm in females and 90 cm in males). Body composition was assessed by bioelectrical impedance. Immunosuppression included steroids (tapered over 3 months in all but hepatitis C patients), Mycophenolate and Calcineurin inhibitors (Tacrolimus or Cyclosporine). Data is shown as mean $\pm$ SD or median (25-75 IQR). **Results:** The study comprised of 82 patients (males 69), aged 50.5 ± 10.65 years, with a follow-up of 24 (12-38.5) months. Etiology for cirrhosis was alcohol in 29%, Hepatitis C in 22%, Hepatitis B in 17%, cryptogenic in 24% and others in 7%. Post-transplant sarcopenic obesity was present in 88.1% and metabolic syndrome was present in 52.4% of recipients with no significant difference among various etiologies. There was significant difference in pre and post transplant BMI, total cholesterol, triglycerides, HDL, LDL, prevalence of hypertension and diabetes as shown below in table 1.

comparison of pre and post transplant parameters

Parameter	Pretransplantation	Post transplantation	p value
BMI kg/m ²	25.4 $\pm$ 4.2	27.6 $\pm$ 4.1	0.001
Hypertension (%)	15	32	0.005
Diabetes (%)	16	46	0.000
Total cholesterol mg/dL	95.0 (73.0-117.0)	168.5 (140.7-196)	0.000
LDL mg/dL	35.0 (30.0-48.2)	99.8 (75.7-113.2)	0.000
Triglyceride mg/dL	70.0 (52.0-70.0)	132 (95.5-182)	0.000
HDL mg/dL	22.0 (12.0-36.2)	42.5 (35.0-53.0)	0.000

Conclusion: Despite resuming routine activities, majority of liver transplant recipients develop sarcopenic obesity and metabolic syndrome. Their importance and role of appropriate nutrition and physiotherapy after transplantation merit further investigation.

Abstract # O-104

Early Molecular Events Associated with Accelerated HCV Recurrence Post Liver Transplantation. Ricardo C. Gehrau, Valeria R. Mas, Danielle Ladie, Jihee L. Suh, Daniel G. Maluf. Surgery, UVA, Charlottesville, VA, USA

Hepatitis C recurrence (HCVrec) affects graft and patient outcome post liver transplantation (LT). This study aimed to investigate early molecular events post-reperfusion in HCV-infected LT recipients with and without accelerated HCVrec post LT.

Paired liver samples ($n = 84$) were collected at pre- and post-reperfusion (90 min) from 42 consecutive LT including recipients with ($n = 14$) and without ($n = 14$) accelerated HCVrec, and non-HCV-infected patients ($n = 14$). Accelerated HCVrec was defined as histological proven fibrosis stage 2 or above at 1 year post-LT. Total RNA was isolated and hybridized in gene expression arrays. Probeset summaries were obtained using RMA algorithm. Pairwise comparisons were fit using two-sample t-test. A p -value < 0.001 and a controlled FDR $> 10\%$ were considered for significant differentially expressed genes. Comparison analysis among gene expression profiles to determine affected molecular pathways were conducted using IPA tool. Top significant molecules were confirmed by RT-qPCR.

Results: No significant differences were observed for donor/recipient demographics and surgical characteristics among groups. L1 vs. L2 pairwise comparisons identified 703 significantly differentially expressed genes (non-HCV, 267 genes; without HCVrec, 163 genes; with HCVrec, 273 genes; respectively). HCV-infected LT recipients' gene expression profiles showed increased adhesion, migration, and differentiation of polymorphonuclear (PMN) immune cells and phagocytes, and increased differentiation of leukocytes. Expression levels of encoding genes for JUN, COX2 and chemokines CXCL1, CXCL2, CXCL3, and CCL3 were found increased post-reperfusion in patients with HCVrec. Interestingly, IL-8 expression levels increased 3-fold in patients with HCVrec when compared to those without HCVrec at post-reperfusion. Increased activation of NFkB complex and up-regulation of NFkBIA was also observed in this patient group. Over-expression of IL-8 and NFkB activation signaling suggested an increased trend for PMN cells recruitment post-reperfusion in LT recipients with severe HCVrec.

Conclusions: Post-reperfusion molecular profiles differ between LT-recipients with and without HCV. Moreover, early post-reperfusion molecular signatures differentiate HCV-LT patients with and without accelerated HCVrec progression at 1 year post-LT. Increased IL-8 expression post-reperfusion may represent a hallmark of accelerated HCVrec development post-LT.

Abstract # O-105

Sorafenib Use Pre Transplant Is Associated with Decreased Post Transplant Recurrence Rates in Patients Inside and Outside the Milan Criteria at 3 Years. Howard P. Monsour Jr, Emad H. Asham, Maha Boktour, David W. Victor III, Robert S. McFadden, Ashish Saharia, Sherilyn Gordon Burroughs, Ahmed O. Gaber, Mark R. Ghobrial. JC Walter Transplant Center, Houston Methodist Hospital, Houston, TX, USA

Background: The use of sorafenib in the pre-liver transplant (LT) setting and its effect on post-transplant recurrence has been scarcely studied. We retrospectively reviewed 100 OLT recipients with hepatocellular carcinoma (HCC) and compared post-liver transplant recurrence rates in patients receiving sorafenib to those who did not.

Methods: Patients undergoing OLT for HCC between April 2008 in June 2012 were retrospectively reviewed. Patients were divided into two groups: Inside Milan (IM) criteria and outside Milan (OM) criteria. Demographic,

clinical, pre-LT regional therapy, sorafenib use and explant characteristics were compared. Sorafenib use was determined at the multi-disciplinary review meeting if tumor progression was noted on radiology review.

Results: Between July 2008 in December 2012, 100 patients underwent OLT for HCC. 56 patients were IM criteria while 44 patients were OM criteria.

Patient characteristics: average age 60 (46–77), male 73 (73%), Caucasian 68 (68%), Hispanic 17 (17%), hepatitis C sero-positive 78 (78%), and history of diabetes in 41 (41%). Group characteristics were similar except the use of sorafenib was significantly higher in the outside Milan group. **Tumor characteristics:** Tumor number- IM: 1 (1-3); OM 3 (1-15); Tumor size (cm) – IM: 2.9 (±1.5); OM: 8.7 (±4); Multifocal – IM: 20/56; OM: 28/44; Vascular Invasion – IM: 3/56; OM: 8/44 (p=0.04). HCC recurrence at 3 years – IM 1/56 vs. OM 6/56 (p=0.05). Pre OLT local regional therapy (TACE or TACE/RFA)- IM: 47/56 (84%); OM: 38/44 (86%). **Recurrence rates at 3 years:** overall: 7/100 (7%); IM: 1/56 (2%); OM: 6/54 (14%). Time to recurrence (months) – IM: 29.8; OM: mean - 9.89 ± 5.2 median 9.9 (4.2-15.8). 5/56 patients IM criteria received sorafenib, 0 had recurrence. 14/54 patients OM criteria received sorafenib with 1/14 recurrence (7%) while recurrence in the non sorafenib treated patients was 5/30 (17%). Alpha fetoprotein (AFP) levels did not differ between those patients who had recurrence and those that did not recur.

Conclusion: The use of sorafenib may reduce recurrence rates in advanced hepatocellular carcinoma patients outside the Milan criteria.

DISCLOSURE: Monsour Jr; H.P.: Speaker's Bureau, Bayer/Onyx.

ORAL ABSTRACT SESSION: TISSUE INJURY & IMMUNOLOGY

Abstract # O-106

Plasmacytoid Dendritic Cell-Derived IFN- α Promotes Murine Liver Ischemia/Reperfusion (I/R) Injury Via Induction of Hepatocyte IRF-1. Antonino Castellana^{1,2}, Osamu Yoshida¹, Shoko Kimura¹, David A. Geller¹, Noriko Murase¹, Angus W. Thomson¹. ¹Starzl Transplantation Institute, University of Pittsburgh, Pittsburgh, USA; ²Gastroenterology Unit, University of Bari, Bari, Italy

Background and Aim: Plasmacytoid dendritic cells (pDC) are the body's principal source of type I interferon (IFN). Type I IFNs have been described as playing a role in liver I/R injury. Moreover, type I IFN have been shown to up-regulate hepatocyte expression of IFN regulatory factor 1 (IRF-1), a key transcription factor that regulates apoptosis and induces liver damage after I/R. Our aim was to ascertain the capacity of IFN- α released by liver pDC to induce liver damage through hepatic IRF-1 up-regulation after I/R injury. **Material and methods:** C57BL/6 mice were subjected to warm IR. Liver damage was assessed by measuring serum ALT level 6 hr after reperfusion. For pDC depletion, mice were injected for 3 consecutive days with anti-mPDCA-1 mAb (500 μ g, i.p.) or isotype control then 24 hr later underwent IR injury. For in vivo IFN neutralizing experiments, mice were injected with IFN α Ab 1hr before IR injury. Real-time PCR for IFN α , IFN β , IL6, TNF α , FasL, Fas, DR5 and IRF1 was performed on whole liver tissue after 6 hr reperfusion. mPDCA-1+ liver pDC were isolated 6 hr after IR or sham operation. Mouse hepatocytes were stimulated for 1 hr with supernatants from liver pDC cultured overnight with CpG ODN B (1 μ g/ml) or complete media alone and then IRF-1 production quantified by Western blot. **Results:** findings show that liver pDC mature and produce IFN- α in response to liver I/R. CpG-stimulated supernatants from liver pDC isolated after I/R induced elevated levels of IRF-1 production by hepatocytes compared with supernatants from liver pDC isolated from control. Hepatic IRF-1 expression was reduced significantly by neutralizing IFN- α . In vivo, IFN- α neutralization protected the liver from I/R injury by reducing hepatocyte apoptosis. This was associated with impaired expression of IRF-1 and pro-apoptotic molecules which are regulated by IRF-1. Furthermore, pDC-depleted mice failed to up-regulate hepatic IFN- α and displayed less liver injury associated with reduced levels of hepatic IL-6, TNF- α and hepatocyte apoptosis after I/R compared with controls. **Conclusion:** these data support the hypothesis that IFN- α derived from liver pDC plays a key role in the pathogenesis of liver I/R injury by enhancing apoptosis as a consequence of induction of hepatocyte IRF-1 expression.

Abstract # O-107

DAP12 Deficiency Enhances the Allostimulatory Capacity of Liver Dendritic Cells and Breaks Liver Transplant Tolerance.

Osamu Yoshida, Shoko Kimura, Lei Dou, Benjamin M. Matta, David A. Geller, Angus W. Thomson. *Surgery, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA*

Background: Liver dendritic cells (DC) may contribute to immune regulation and the induction of tolerance after liver transplantation. DNAX-activating protein of 12kDa (DAP12) is a transmembrane molecule that integrates activating or inhibiting signals through associated co-receptors. We hypothesized that DAP12 might play a key role in regulating the tolerogenicity of liver DC and in inducing liver allograft tolerance.

METHODS: Liver myeloid(m)DC were isolated from wild-type (WT) or DAP12KO B6 mice by immunomagnetic-sorting. Liver mDC were assessed for DC phenotype, proinflammatory cytokine production, allogeneic T cell stimulatory capacity and in vivo migratory ability. Allogeneic T cell stimulatory function in vivo was evaluated by DTH responses. WT or DAP12KO livers were transplanted orthotopically into C3H mice. Graft rejection was assessed by host survival and confirmed histologically. Donor-derived mDC migration to host spleens was analyzed by flow cytometry. Anti-donor T cell proliferative responses were evaluated by CFSE-MLR.

RESULTS: Liver mDC from DAP12KO expressed higher levels of costimulatory molecules, and produced more proinflammatory cytokines compared with WT liver mDC. DAP12KO liver mDC displayed stronger allogeneic T cell stimulatory activity and greater migratory capacity than WT liver mDC. Mice sensitized with allogeneic DAP12KO liver mDC showed evidence of enhanced T cell priming and greater DTH responses. Unlike WT grafts, DAP12KO livers failed to induce tolerance and were rejected. A greater incidence of donor-derived mDC was detected in the spleens of DAP12KO liver recipients compared with those given WT livers. T cells from DAP12KO liver recipients also showed greater proliferation and IFN- γ production against donor splenocytes.

CONCLUSIONS: Absence of DAP12 in liver mDC enhances their T cell stimulatory functions in vitro and in vivo. DAP12 deficient livers break tolerance with greater donor-derived DC migration and stronger anti-donor T cell responses. DAP12 may play a key role in restraining liver DC function and liver transplant tolerance.

Abstract # O-108

Hypothermic Oxygenated Machine Perfusion (HOPE) Down-Regulates the Immune Response in a Rat Model of Liver Transplantation. Andrea Schlegel, Philipp Kron, Rolf Graf, Pierre-Alain Clavien, Philipp Dutkowski. *Visceral surgery and Transplantation, University Hospital Zurich, Zurich, Switzerland*

Objectives
To evaluate the impact of a novel oxygenated perfusion approach on acute rejection after liver transplantation (LT) in a rodent model.

Background

Hypothermic Oxygenated Machine Perfusion (HOPE) was designed to prevent graft failure after LT. Preliminary clinical data have shown high success to protect grafts obtained by donation after cardiac death (DCD). One of the mechanisms is down-regulation of the Kupffer cells (*in situ* macrophages). We, therefore, designed experiments to test the effects of HOPE on the innate immune response in an allogeneic rodent model of OLT.

Methods

Livers from Lewis rats were transplanted into Brown Norway rats to induce acute liver rejection in untreated recipients (n=8 each group). In a second set of experiments, Brown Norway recipients were treated with adequate immunosuppression (1mg Tacrolimus/kg), while in a third group, Lewis liver grafts underwent HOPE for 1h prior to implantation, but recipients received no immunosuppression. Cold ischemia was kept minimal (1h) to investigate anti-rejection effects only.

Results

Allogeneic LT (Lewis donor-Brown Norway recipient) without immunosuppression led to death within 12 days after OLT in all animals due to severe acute rejection. Those recipients disclosed massive Kupffer cell and T cell activation in the graft. In contrast, 1h HOPE treatment protected from nuclear DAMPs release (HMGB1), and led to decreased Kupffer cell activation and T cell adhesion, a figure comparable to animals exposed to full immunosuppression. While allogeneic liver transplantation was lethal, the addition of 1h HOPE after procurement without further immunosuppression resulted in 100% recipient survival beyond 30 days.

Conclusions

This set of experiment demonstrates that allograft treatment by HOPE not only protects against preservation injury, but impressively down-regulates the innate immune system blunting the allo-immune response and rejection. Therefore, HOPE may offer many beneficial effects, not only to rescue marginal graft, but also by preventing rejection and the need for immunosuppression.

Abstract # O-109

Warm Ischemia & Reperfusion Causes Liver Microcirculatory Injury and Acute Endothelial Dysfunction. Simvastatin Pre-Treatment Prevents These Deleterious Events. Diana Hide, Sergi Vila, Giusi Marrone, Juan Carlos Garcia-Pagan, Jaime Bosch, Jordi Gracia-Sancho. *Barcelona Hepatic Hemodynamic Lab, Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS) - Hospital Clinic - CIBERehd - University of Barcelona Medical School, Barcelona, Spain*

Warm ischemia reperfusion (WIR) injury causes hepatic damage and may lead to graft dysfunction. The mechanisms involved remain partially unknown. We demonstrated that simvastatin, inducing the expression of the vasoprotective transcription factor KLF2, improves/prevents hepatic vascular damage in experimental models of cirrhosis and cold storage.

We herein aimed at characterizing the microcirculatory status and endothelial phenotype of livers undergoing WIR, and evaluate the applicability of simvastatin to improve/prevent WIR injury.

Methods

Rats received simvastatin, or vehicle, 30min before undergoing 60min of partial warm ischemia + 2h reperfusion. Afterwards, systemic and hepatic hemodynamics (mean arterial pressure-MAP, portal pressure-PP, portal blood flow-PBF and intrahepatic vascular resistance-IVR), hepatic injury (ALT, AST, LDH), and endothelial function (response to acetylcholine) and phenotype (KLF2-eNOS pathway) were evaluated.

Results

Livers undergoing WIR exhibited higher PP and reduced PBF compared to sham group, indicating a marked increase in IVR (+90%), without differences in MAP. This was accompanied by hepatic damage, marked endothelial dysfunction (-73% vasodilatation) and reduced expression/activity of KLF2-eNOS pathway (KLF2:-48%, eNOS: -20%, P-eNOS:-50%).

Simvastatin pre-treated animals showed less hepatic damage (AST:-55%, ALT:-66%, LDH:-49%) and reduced IVR (-37%) leading to increased hepatic perfusion level (PBF +34%). Endothelial function (+59%) and phenotype markers (KLF2:+100%, eNOS:+100%, P-eNOS:+98%) were markedly improved, being comparable to sham rats.

Conclusions

This study demonstrates that a short warm-ischemia+reperfusion period has deleterious effects on liver microcirculation and endothelial function. Simvastatin prevents liver damage and maintains a correct microcirculatory status.

Preservation of endothelial function and hepatic microcirculation should be considered as a key factor to reduce warm-ischemia+reperfusion injury.

Abstract # O-110

Immune-Regulatory Pathways Are Transiently Activated during the Spontaneous Establishment of Operational Tolerance Following Liver Transplantation. Richard Danger¹, Richard Taubert², María-Carlota Londoño³, Marta Martínez³, Juan José Lozano³, Antoni Rimola³, Michael P. Manns², Alberto Sánchez-Fueyo¹, Elmar Jaecel². ¹*Institute of Liver Studies, King's College Hospital, MRC Transplant Centre, King's College London, London, United Kingdom;* ²*Department of Gastroenterology, Hepatology and Endocrinology, Hannover Medical School, Hannover, Germany;* ³*Liver Unit and Bioinformatic Platform, Hospital Clinic Barcelona, IDIBAPS, University of Barcelona, Barcelona, Spain*

Immunosuppression (IS) can occasionally be discontinued from stable liver transplant recipients, a phenomenon known as operational tolerance. While biomarkers capable of predicting the outcome of IS withdrawal have been recently described, the immunological basis of operational tolerance remains unclear. In the current study, we conducted immune phenotypic and transcriptional analyses on sequential protocol liver biopsies obtained from adult liver recipients enrolled in a prospective multi-centre IS withdrawal trial. Liver samples were collected before the initiation of IS withdrawal, at the time of rejection, and 1 and 3 years after complete drug discontinuation.

The number of liver infiltrating T cell subsets did not predict the outcome of IS withdrawal (i.e. rejection versus tolerance). However, one year after drug withdrawal, liver infiltrating T cells accumulated in the portal tracts of the grafts from tolerant recipients. This was accompanied by an enrichment of regulatory CD4+Foxp3+ T cells and associated with up-regulation of immune activation and regulatory genes. These changes were transient and returned to baseline 3 years after IS withdrawal, while enlarged portal infiltrates with reduced numbers of cytotoxic T cells persisted. In contrast, no modification in markers associated with chronic immunologic damage was noted. These data indicate that operational tolerance is an active phenomenon in which IS withdrawal elicits dominant immunoregulatory mechanisms that restrain effector alloimmune responses.

Abstract # O-111

Endogenous Stem Cell Mobilization via CXCR4 Antagonism Allows for Drug Free Transplantation in a Large Animal Preclinical Model. Andrew M. Cameron, Russell Wesson, Andrew L. Singer, George M. Williams, Zhaoli Sun. *Surgery, The Johns Hopkins School of Medicine, Baltimore, MD, USA*

Organ Transplantation is lifesaving therapy for thousands of patients with end stage organ disease but requires lifelong immunosuppression with resultant morbidity. Current immunosuppressive strategies focus on inhibition of T cell activation and seek to avoid any donor-recipient engagement. Mobilized marrow derived endogenous stem cells have been shown to participate in organ regeneration and recovery in many injury scenarios and have also demonstrated immunomodulatory properties. However a role for endogenous stem cells post transplantation in graft survival has not been described, though recent small animal data is suggestive. Here we show that pharmacologic mobilization of endogenous stem cells immediately post kidney transplant leads to host repopulation of the graft and donor specific immunologic unresponsiveness allowing for subsequent immunosuppressive-free long term graft and recipient survival. We found in a series of maximally mismatched SLA defined miniature swine renal transplants indefinite survival and relatively normal graft histology after animals had received a short course of stem cell mobilization with the CXCR4 antagonist plerixafor and low dose tacrolimus. This ten-day treatment was repeated at 1 and 2 months after transplant, after which no further treatment was given. Three animals displayed long term normal graft function, minimal inflammatory changes on biopsy, and donor immunologic unresponsiveness, in contrast to control animals which expired of rejection and renal insufficiency relatively rapidly. Our results demonstrate that mobilization of endogenous stem cells in the post transplant setting allows for graft repopulation and immunoregulation in the absence of further immunosuppression. We anticipate that endogenous stem cell mobilization via CXCR4 antagonism may represent a novel post transplant strategy which would avoid the morbidities of current conventional immunosuppression.

Abstract # O-112

Injury of Peribiliary Glands and Vascular Plexus before Liver Transplantation Predicts Formation of Non-Anastomotic Biliary Strictures. Sanna Op den Dries^{1,3}, Andrie C. Westerkamp¹, Negin Karimian¹, Annette S.H. Gouw², James F. Markmann³, Ton Lisman¹, Heidi Yeh³, Korkut Uygur³, Paulo Martins³, Robert J. Porte¹. ¹*Department of Surgery, Section of Hepatopancreatobiliary Surgery and Liver Transplantation, University Medical Center Groningen (UMCG), Groningen, Netherlands;* ²*Department of Pathology, University Medical Center Groningen (UMCG), Groningen, Netherlands;* ³*Department of Surgery, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA*

Peribiliary glands of large bile ducts have been identified as a niche of progenitor cells that contribute to regeneration of biliary epithelium after injury. It is unknown whether injury of the peribiliary glands is a risk factor for the development of non-anastomotic biliary strictures (NAS) after liver transplantation. Moreover, it is unknown whether pretransplant biliary injury is different in livers donated after brain death (DBD) or cardiac death (DCD). In 128 liver transplant procedures, biopsies were taken from the extrahepatic bile duct and injury was assessed using a systematic histological grading system. Histological injury was correlated with the occurrence of posttransplant biliary strictures and a comparison was made between DBD (n=97) and DCD livers (n=29). Biliary epithelial loss >50% was observed in 91.8% of the grafts before transplantation, yet NAS occurred in 16.4%. Periluminal peribiliary glands were more severely injured than the deep peribiliary glands located near the fibromuscular layer (>50% loss in 56.9%

versus 17.5%, respectively; $p < 0.001$). Injury of deep peribiliary glands was more prevalent and more severe in livers that later developed NAS, compared to uncomplicated grafts (>50% loss in 50.0% versus 9.8%, respectively; $p = 0.004$). In parallel, injury of the peribiliary vascular plexus was more severe in livers that developed NAS, compared to uncomplicated grafts (>50% vascular changes in 57.1% versus 20.3%; $p = 0.006$). Comparison of DBD and DCD livers revealed significantly more vascular injury in the latter ($p = 0.005$). Conclusion: Injury of peribiliary glands and vascular plexus before transplantation is strongly associated with the occurrence of biliary strictures after transplantation. This suggests that insufficient regeneration due to loss of peribiliary glands and blood supply may explain the development of biliary strictures.

Abstract # O-113

Iron Regulates Intra-Hepatic Lymphocyte-Mediated Immune Responses. Eliano Bonaccorsi-Riani^{1,2}, Richard Danger¹, Marc Martinez-Llordella¹, Marta Martinez², Anna Rodriguez², Miquel Bruguera², Antoni Rimola², Hellen Collins¹, Alberto Sanchez-Fueyo^{1,2}. ¹Institute of Liver Studies, King's College London, London, United Kingdom; ²Hospital Clinic Barcelona, University of Barcelona, Barcelona, Spain

In clinical liver transplantation the differential expression of iron homeostasis genes (e.g. HAMP, TFR) in the liver predicts the success of immunosuppression withdrawal (operational tolerance), which suggests that the iron/hepcidin axis may influence intra-hepatic immune responses. To determine if iron status regulates intra-hepatic lymphocyte responses, we set up a murine model of acute lymphocyte and macrophage-mediated liver inflammation induced by Concanavalin A injection (15 mg/kg), in which C57Bl/6 male mice (four-week old) were fed with an iron-deficient (Ir-Def; <3mg iron/Kg) or an iron-balanced diet (Ir-Repl; carbonile iron 200mg/Kg). Comparing with the Ir-Repl diet, the use of the Ir-Def diet for 3 weeks did not influence body weight, but significantly reduced intra-hepatic hepcidin expression and serum iron levels ($p = 0.001$). After Con-A challenge, the severity of hepatitis was drastically reduced in Ir-Def as compared with Ir-Repl mice (median serum ALT levels at 12hrs after Con-A 498, 1UI/ml versus 3787 UI/ml; $p = 0.001$). This was associated with less hepatocyte necrosis, and reduced pro-inflammatory cytokine serum levels (e.g. IFN γ , TNF α , IL1 α , IL2 β) in Ir-Def, both at 6hrs and 12hrs after Con-A. Sequential intra-hepatic gene expression analyses by real-time PCR showed a shift in the balance of effector versus protective cytokines, with Ir-Def livers exhibiting decreased effector IL4 and TNF α expression and increased hepatoprotective IL6 expression as compared with in Ir-Repl. These findings were associated with a marked decrease in T and NKT cell activation following Con-A injection in Ir-Def mice. To determine whether these effects were attributed to low hepcidin or low iron, Con-A experiments were replicated after hepcidin or iron chelator administration. The use of hepcidin did not reverse the effect of Ir-Def diet. However, the use of an iron specific chelator inhibited Con-A hepatitis to a similar degree as the Ir-Def diet. These results suggest that small changes in iron homeostasis have a major effect in the regulation of intra-hepatic lymphocyte mediated responses. Future studies will address how these effects interfere with the intra-hepatic deletion of alloreactive T cells and the establishment of allograft tolerance.

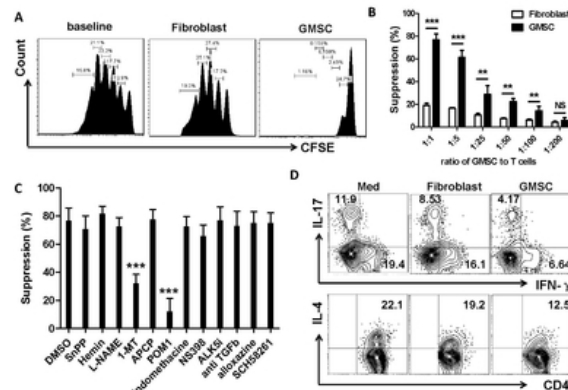
Abstract # O-114

Human Gingiva-Derived Mesenchymal Stromal Cells Inhibit Graft-Versus-Host Disease Through CD39 and IDO. Maogen Chen^{1,2}, Zhiyong Guo¹, Dongping Wang¹, Weiqiang Ju¹, Jian Gu², Homayoun H. Zadeh³, Songguo Zheng², Xiaoshun He¹. ¹Organ Transplant Center, 1st Affiliated Hospital of Sun Yat-sen University, Guangzhou, Guangdong, China; ²Division of Rheumatology and Immunology, Department of Medicine, University of Southern California, Los Angeles, CA, USA; ³Division of Periodontology, Diagnostic Sciences & Dental Hygiene, University of Southern California Ostrow School of Dentistry, Los Angeles, CA, USA

Graft-versus-host disease (GVHD) remains one of great barriers for allogeneic bone marrow and solid organ transplantation. The long-term survival is extremely low and new strategies are needed. We recently reported that human-derived gingival mesenchymal stem cells (GMSC) was capable to suppress Th17 cell-mediated collagen-induced arthritis. We aimed to further investigate the potential therapeutic efficacy of GMSC for human GVHD. Experiments were performed using a xeno-GVHD model in NOD/SCID mice. GMSC were cocultured with human T cells in the presence of anti-

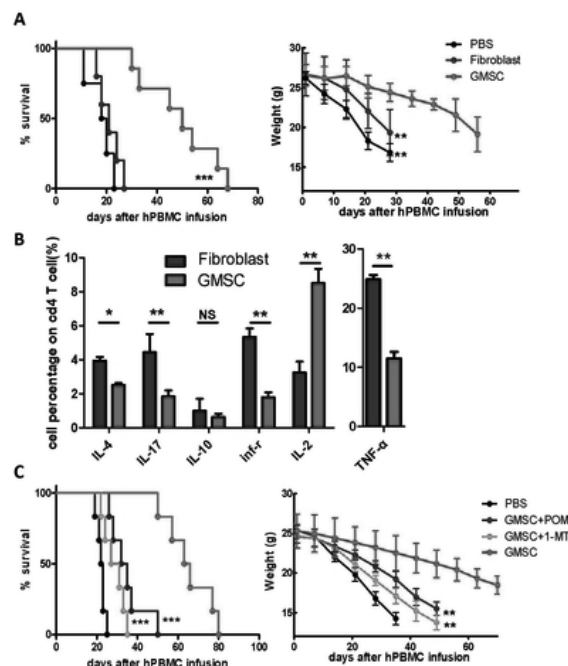
CD3 antibody for in vitro suppression assay. We found that GMSC potently suppressed the proliferation of T cells in vitro. GMSC also suppress Th1, Th2 and Th17 cell differentiation.

Figure 1. GMSC inhibits the proliferation of human T lymphocytes via CD39 or IDO pathway in vitro.



Co-transfer of human PBMC and GMSC significantly prolonged the survival of GVHD model. Pathologic score was significantly lower in GMSC treatment than control groups. The secretion of inflammatory cytokines, such as IFN- γ , TNF- α , IL-4 and IL-17, was inhibited by GMSC.

Figure 2. GMSCs inhibit xeno-GVHD in NOD/SCID mice via CD39 or IDO signaling pathway.



Moreover, GMSC did not impact the T cell proliferation in the presence of CD39 inhibitor POM1 or IDO suppressor 1-MT in vitro. And GMSC also lost its suppressive function when CD39 or IDO signal pathway was inhibited in vivo. In conclusion, GMSC could suppress GVHD via CD39 and/or IDO signaling pathway, offering a potential clinical option to be used for modulating GVHD and other autoimmune diseases.

ORAL ABSTRACT SESSION:
ACUTE LIVER FAILURE**Abstract # O-115**

The Spheroid Reservoir Bioartificial Liver: A Pilot Study. Jaime Glorioso¹, Shennen Mao¹, Hakon Haugaa², Brian Rodysill¹, Bruce Amiot³, Scott Nyberg¹. ¹Mayo Clinic, Rochester, MN, USA; ²University of Oslo, Oslo, Norway; ³Brami Biomedical, Inc, Minneapolis, MN, USA

This study investigates a novel therapy, the spheroid reservoir bioartificial liver (SRBAL), in an ambulatory porcine model of drug-induced acute liver failure.

A telemetry-based intracranial pressure monitor and central venous catheter were placed in 40kg pigs. One week later, animals received an infusion of 0.75 g/kg D-galactosamine, a hepatotoxic agent. Animals remained ambulatory and were monitored for symptoms of hepatic encephalopathy for up to 90 hours after drug infusion. Animals were randomized into two groups: no therapy (n=5) or SRBAL device (n=6). SRBAL treatments were up to 24 hours in duration. Porcine hepatocyte spheroids used in the SRBAL device were formed by rocker technique after isolation by two-step collagenase perfusion. There was no difference in the level of liver failure between groups prior to the initiation of treatment. A significant survival benefit was observed with SRBAL compared to the no therapy group (83% vs. 0%, p=0.004). Animals treated with the SRBAL maintained stable plasma ammonia levels during treatment compared to the animals in the no therapy group who demonstrated increasing ammonia levels (8.8 mg/L/hr vs. 0.25 mg/L/hr, p=0.002) between 48 and 72 hours following D-galactosamine administration. Additionally, peak ICP measurements were lower in the SRBAL treated animals (18 mmHg vs. 27 mmHg). The dose of hepatocyte spheroid aggregates ranged from 59g to 173g, (mean = 117g) for SRBAL therapy. The rate of ammonia detoxification during SRBAL treatment increased with increasing dose of hepatocytes seeded into the device.

The current study demonstrates that the SRBAL loaded with hepatocytes as spheroid aggregates improves survival in an allogeneic model of acute liver failure. Survival benefit correlated with the rate of ammonia detoxification and intracranial pressure suggesting that porcine hepatocyte spheroids prevented the cerebral manifestations of acute liver failure (i.e., brain swelling, increased intracranial pressure, and brain herniation). The SRBAL may provide therapeutic benefit to individuals with reversible acute liver failure or serve as a bridge to transplantation if the injured liver shows no signs of recovery.

DISCLOSURE: Nyberg, S.: Stockholder, Liver Cell Therapies.

Abstract # O-116

A Proof of Concept, Phase II European Trial Demonstrates the Efficacy of a Novel, Extracellular Matrix-Targeted, Antioxidant in Patients With HBV- and Autoimmune Hepatitis (AIH) Related Acute on Chronic Liver Diseases. D. Samuel^{1,2,3}, P. Ichai^{1,2,3}, N. Carbonell⁴, M. Rudler⁵, G. Gerken⁶, P. Mathurin⁷, F. Durand⁸, C. Duvoux⁹, D. G. Larrey¹⁰, F. Zoulim¹¹, M. P. Manns¹², C. Trautwein¹³, V. Leroy¹⁴, B. Nalpas¹⁵, N. Moniaux^{2,3}, J. Faivre^{1,2,3}, L. Jamot¹⁶, C. Brechot^{2,3}, G. Amouyal¹⁶, P. Amouyal¹⁶. ¹AP-HP Hopital Paul Brousse, Villejuif, France; ²Inserm, Villejuif, France; ³Univ Paris-Sud, Villejuif, France; ⁴AP-HP Hopital Saint Antoine, Villejuif, France; ⁵AP-HP Hopital Pitie Salpetriere, Paris, France; ⁶University Hospital Essen, Essen, Germany; ⁷CHRU Lille, Lille, France; ⁸AP-HP Hopital Beaujon, Clichy, France; ⁹AP-HP Hopital Henri Mondor, Creteil, France; ¹⁰CHU Hopital Saint-Eloi, Montpellier, France; ¹¹HCL Hopital Croix-Rousse, Lyon, France; ¹²Medizinische Hochschule Hannover, Hannover, Germany; ¹³University Hospital Aachen, Aachen, Germany; ¹⁴CHU Grenoble, Grenoble, France; ¹⁵AP-HP Hopital Cochin, Paris, France; ¹⁶Alfact Innovation, Villejuif, France

ALF5755 is a recombinant protein of the human protein HIP/PAP with in vivo therapeutic effect on a fas model of Acute Liver Failure. It binds the extracellular matrix, is a strong anti-oxidant and a survival and mitogenic factor.

Methods: 57 patients with prothrombin time (PT) <50% and encephalopathy grade <3 were randomized in this double blind controlled trial. They were assigned to 2 pre-determined subgroups: 22 acute-on-chronic patients, 35

acute patients. Ten mg ALF-5755 i.v. was administered every 12 hours from inclusion to day 3. Primary end-point: PT over 3 days (PT slope). Secondary end-points: liver transplantation (LT) rate and hospitalization time.

Results: No safety issues were observed. Acute on chronic subgroup showed the most severe pattern. For them, ALF-5755 allowed a significant recovery at 12H (P=0.03), at the end of the treatment (P=0.04), until day 8 (P=0.007). Hospitalization time for patients who did not require LT was shortened (P=0.02). In the global population a trend for early efficacy was observed 0-12H PT slope=0.36 versus 0.19, and hospitalization time was shortened for patients who did not undergo LT (placebo: 12 days, treated: 8 days). There was no difference in LT. However, Gc-Globulin value at inclusion identified a group of patients in whom ALF5755 avoided LT (GcGlob≥155: ALF-5755 0/14 and placebo 2/13).

Conclusions: This phase 2 study shows that ALF -5755 leads to a significant improvement of patients with acute on chronic liver diseases.

DISCLOSURE: Jamot, L.: Employee, Alfact Innovation., Brechot, C.: Stockholder, Alfact Innovation., Amouyal, G.: Stockholder, Alfact Innovation., Amouyal, P.: Stockholder, Alfact Innovation.

Abstract # O-117

3, 4-Methylenedioxymethamphetamine (MDMA/ 'Ecstasy') Ingestion and Acute Liver Failure. Zubair U. Mohamed, Chris Willars, Georg Auzinger, Michael Heneghan, Nigel Heaton, Julia Wendon, William Bernal. *Institute of Liver Studies, King's College Hospital NHS Foundation Trust, London, United Kingdom*

Aim: To review the clinical features and outcome of patients with acute liver failure (ALF) after 3, 4-methylenedioxymethamphetamine (MDMA/ "ecstasy") ingestion.

Method: Retrospective analysis (1999-2011) of a tertiary hospital database. Statistical analysis was performed using R Statistic V 3.0.1.

Results: Nineteen cases were identified. 14 (74%) were caucasoid males, with a mean age of 24 years and admission APACHE II score 19. Presentation was most commonly seen within a week of drug ingestion. Six patients (32%) presented with non-specific symptoms of malaise, nausea, vomiting and abdominal pain whereas nine (47%) presented with seizures or decreased consciousness. 14 patients (74%) were frequent users of ecstasy; thirteen (68%) patients had also consumed either alcohol or a number of other illicit drugs, including cocaine, ketamine and cannabis. Core temperature at presentation ranged from 37 to 42°C, with 42% of the patients being severely hyperthermic on presentation (T ≥39°C). Biochemical parameters at presentation are given in Table 1. Sixteen patients (84%) had 2 or more organ system failures; 15 (79%) had acute kidney injury (AKI) requiring renal replacement therapy. 9/10 (90%) patients tested had creatine kinase >30,000 IU/l. Overall survival rate was 84%; four (21%) patients required liver transplantation and all of them survived to ITU discharge.

Table 1: Biochemical Parameters At Presentation

Parameter	Minimum	Maximum	Mean	Standard Deviation
Bilirubin (μmol/L)	9	552	142	145
ALT (IU/L)	42	9247	1612	2222
APTT (seconds)	1	2.9	1.8	0.6
INR	1	11	3.1	2.6
Lactate (mmol/L)	0.6	15	5.3	4.5
Blood Glucose (mmol/L)	2	9.5	5.4	2.3
Platelet (X10 ⁹ /L)	27	339	143	105
Creatine Kinase (IU/L)	33	87000	34429	26960

ALT, Alanine Transaminase; APTT, Activated Partial Thromboplastin Time; INR, International Normalised Ratio

Conclusion: Ecstasy exposure is a rare but potentially lethal cause of ALF, often occurring in the context of multi-drug exposure in frequent users of the drug. Presenting symptoms vary from non-specific to hyperpyrexia and major reduction in consciousness. Muscle and multi-organ involvement is common but despite this most patients recovered with medical management alone and only a small minority required transplantation.

Abstract # O-118

Minimizing Technical Complication of Auxiliary Orthotopic Liver Transplantation (AOLT) Should Not Extend Indications in Patients with Acute Liver Failure (ALF). Manuela Césaretti¹, Fédérica Dondéro¹, Safi Dokmak¹, Claire Francoz², Catherine Paugam³, François Durand², Jacques Belghiti¹. ¹HPB Surgery & Liver Transplantation, Beaulieu Hospital, Clichy, France; ²Hepatology, Beaulieu Hospital, Clichy, France; ³Anesthesiology, Beaulieu Hospital, Clichy, France

Introduction: Technical complexity of AOLT remains a limitation when considering this procedure for ALF. The aim of this study was to evaluate in a large unicentric series the evolution of these technical complications and their impact on post-operative outcome.

Patients and Methods: From 1992 to 2013, among 217 patients listed for ALF, 48 (22%) patients aged from 16 to 62 (mean 31) underwent 49 AOLT. ALF was considered to be severe when patient had renal failure requiring RRT, were placed on mechanical ventilation and/or received vasopressors (norepinephrine > 1.2 µg/kg/min). During the last period pretransplant arterial lactatemia was systematically assessed.

Results: The study period was divided in 3 consecutive intervals and technical changes progressively employed included: exclusive use of right graft (n=32), arterial anastomosis to the aorta with a graft (n=20), end-to-side portal anastomosis (n=31) and elimination of bilio-enteric anastomosis replaced by bilio-biliary anastomosis (n=18). Technical complications taken in consideration were vascular thrombosis and biliary leak.

As shown in the table the rate of technical complications decreased dramatically during the last period without improvement of post-operative mortality. During the last period the rate of patients transplanted with severe ALF significantly increased. Noteworthy, among the 4 patients with preoperative blood lactate > 10 mmol/l, only one survived.

	1992-1998	1999-2006	2007-2013
N° AOLT	16	13	20
vascular thrombosis	3 (19%)	2 (15%)	1 (5%)
biliary fistula	4 (25%)	3 (23%)	1 (5%)
preop ALF severity	4 (25%)	2 (15%)	8 (40%)
POD (postop death)	7 (43%)	5 (38%)	7 (35%)

Conclusions: The abolition of bilio-enteric anastomosis during AOLT was the main factor of technical improvement. However, greater confidence in the procedure should not extend the indication of AOLT in patients with ALF and multiple organ failure.

Abstract # O-119

Antigen-Specific Immunosorption: Current Experience and Longterm Results of Five ABO-Incompatible Adult Liver Transplantation. M. Gelu-Simeon^{1,4}, P. Ichai^{1,2,3,4}, T.M. Antonini^{1,2,3,4}, A. Coilly^{1,2,3,4}, M. Sebah^{1,2,3,4}, N. Kassis¹, E. Vibert^{1,2,3,4}, R. Adam^{1,2,3,4}, D. Castaing^{1,2,3,4}, D. Samuel^{1,2,3,4}, F. Saliba^{1,2,3,4}. ¹AP-HP, Hôpital Paul Brousse, Villejuif, France; ²Univ Paris-Sud, Villejuif, France; ³Inserm, Villejuif, France; ⁴DHU Hepatol, Villejuif, France

In the current situation of increased indications for liver transplantation (LT) without increasing the number of liver grafts, new techniques of LT are bound to develop. The aim of this study was to assess the safety and efficacy of the selective antigen-specific immunosorption (ASI) program in ABO-Incompatible liver transplantation (ABO-ILT).

Methods. Patients (pts) with acute liver failure undergoing ABO-ILT from June 2006 to January 2010 were evaluated in a single LT center. The hemagglutinin (HA) titers were monitored daily during the first three weeks. The immunosuppressive regimen consists of a quadruple immunosuppression regimen that includes induction with basiliximab, tacrolimus, mycophenolate mofetil and methylprednisolone. When graft rejection was suspected, a single dose of rituximab (anti-CD20) was given. Immunosorbent columns (GlycoSorb ABO, Glycorex®) were used for ASI. Immunosorption sessions were performed according to hemagglutinin (HA) titer in order to maintain below 1:16. None of the patients had a splenectomy or plasma exchange.

Results. Five pts (fulminant hepatitis in 4/5, acute on chronic liver failure in 1/5) received ABO-incompatible liver graft (A to O in 4/5, B to O in 1/5). At baseline, median Meld score elevated to 47 [34-55]. The initial pre-operative IgM anti-A and anti-B HA titers were 1:128 [32-4,000] and 1:20 [4-8,000], respectively. The results for IgG anti-A and anti-B HA titers were 1:40 [2-2,048] and 1:6 [2-4,000], respectively. In a median of 2 [1-4] immunosorption sessions and a delay of 15 [5-30] days, all HA titers of autoantibodies declined below 1:16. Three pts received one or two perfusions

of rituximab for suspected humoral rejection not confirmed on histology. In a median follow-up of 54.4 [42.3-66.6] months, 3/5 pts were still alive with neither acute nor chronic humoral or cellular rejection. IgG specific titers remained extremely low. Two pts died at day 26 (multiple organ failure) and month 7 (CMV and bacterial pneumonia) with a functioning graft. Conclusions. According with a strict immunosuppressive regimen and graft monitoring, the ASI seems to be a promising and safe option in order to avoid autoantibodies-mediated humoral hyperacute rejection.

Abstract # O-120

Outcome of Patients With Acute Liver Failure Meeting the Criteria of Liver Transplantation in a Recent Cohort: Impact of Albumin Dialysis With MARS® and Liver Transplantation. F. Saliba^{1,2,3}, G. Dahlqvist¹, A. Letierce⁵, P. Ichai^{1,2,3,4}, I. Ruiz¹, A. Coilly^{1,2,3,4}, M. Boudon^{1,2,3,4}, D. Samuel^{1,2,3,4}. ¹Centre Hepato-Biliaire, AP-HP, Hôpital Paul Brousse, Villejuif, France; ²Unit 785, Inserm, Villejuif, France; ³Univ Paris-Sud, Villejuif, France; ⁴DHU Hepatol, Villejuif, France; ⁵Cegedim, Boulogne-Billancourt, France

Despite recent improvements in the outcome of patients with acute liver failure (ALF) undergoing liver transplantation (LT) (85 to 90% 1-year survival), the overall mortality taking into account all patients meeting the criteria of LT admitted to a liver unit remains high.

Methods: A single centre retrospective analysis of all patients who were admitted to the liver ICU for ALF and met the criteria of LT. Patients with acute severe hepatitis who did not develop any neurological sign and recovered were excluded. 171 variables per patient were studied and included patient's characteristics, treatment and outcome.

Results: From December 2007 till November 2012, 72 patients (61.1% female) with a mean age of 45.1±16.1 years were admitted for acute liver failure and met either the Clichy-Paul Brousse criteria (70.8%) or the King's College criteria (77.8%) or both criteria (62.5%) for LT. Paracetamol etiology was present in 29 patients (40.3%). Hepatic encephalopathy was present at admission in 73.6% of the patients or developed early within 24-48 hours. 42 patients (58.3%) required mechanical ventilation. Mean MELD and SOFA scores were respectively 35.5±5.9 and 8.4±4.3. Forty-six patients (63.9%) received albumin dialysis treatment with MARS® with a median duration of 14.5 hours (range: 3-56). Patients treated with MARS had significantly higher INR {median (Q1;Q3): 7.6 (4.3-11.6) vs. 4.1(2.8;6.9; p=0.03} and lower CRP levels {median (Q1;Q3): 13 (5.0-22.0) vs. 33.6 (10.1;75.0; p=0.006} at admission when compared to those who did not receive MARS®. Only 32 patients (44.4%) underwent a liver transplantation. Survival was observed in 77.8% of the patients: 87.5% in transplanted and 70% in non-transplanted patients. The main marker differentiating those patients transplanted from those non-transplanted was the lactate level which was significantly higher in transplanted patients (8.2±7.9 vs. 4.5±3.8 mmol/L; p=0.03).

Conclusion: High lactates level at admission was the main predictive factor of severity of ALF and the need for LT. Optimal medical management combining MARS® treatment reduced the need for LT with an optimal survival.

Abstract # O-121

ALF/ACLF Versus CLD Group - Is the Outcome Different in Pediatric Living Donor Liver Transplantation (LDLT)? Neelam Mohan, Sakshi Karkra, M. Dhaliwal, V. Raghunathan, R. Mohanka, A. Rastogi, M. Balachandran, S. Goja, V. Vohra, A. Soin. Medanta Liver Institute, Medanta The Medicity Hospital, Gurgaon, Haryana, India

Aim: To analyze the etiology and outcome of Pediatric LDLT in ALF(Acute liver Failure)/ ACLF(Acute on Chronic Liver Failure) versus CLD(Chronic Liver Disease).

Design: The medical records of 130 consecutive pediatric LDLT from Sept 2004 to Nov 2013 were reviewed. Group 1 included ALF, ACLF patients while group 2 included CLD patients. Patients who did not fit in above groups (Citruellinemia, Maple syrup urine disease, Factor 7 deficiency, primary hyperoxaluria and giant hemangioma liver) were excluded.

Results: Group1 (ALF/ACLF) 43 patients with 28 males and mean weight of 29.9 Kg (6-66Kg) mean age 103 months(6-212 months). Etiology was cryptogenic 10, wilson disease 18 (2 had associated HEV), HAV 3, HEV 1, autoimmune hepatitis 6, tyrosinemia 4 and anti tubercular drug induced 1. The CLD group (Group2) had 87 patients with mean weight 16.8 Kg and mean age of 29 month (5-204 months). The diagnosis included cholestasis 59, metabolic 4, autoimmune hepatitis 6. Eight patients with diagnosis other than above groups were excluded. There was no significant difference

between intraoperative blood requirement in both groups ($p=0.8659$). The complications in group 1 and 2 were biliary 5 (11.6%), 8 (10%) ($p=0.79$), vascular nil, 15 (23%) ($p<0.005$), sepsis 22 (50%), 44 (50%) ($p=0.6367$) and acute rejection 11 (18%), 27 (22%) ($p=0.40$) respectively. The mean hospital stay was 27.3 days which was not significantly different from group 1 (24.7 days). In the group 1 and 2; 1 month and 1 year survival rates were 98%, 94% ($p=.08$) and 91%, 82% ($p<0.05$) respectively. There were statistically significant difference in survival rates between ALF versus ACLF ($p<0.0005$).

Conclusions: In children undergoing liver transplantation for ALF/ACLF, there was significantly better survival at 1 year compared to CLD group. Outcome was excellent in ALF patients compared to ACLF patients. At our centre vascular complications were none in group 1 while biliary complications were same.

Abstract # O-122

Role of Mycophenolate Mofetil (MMF) in Steroid Non Responsive Severe Acute Alcoholic Hepatitis: A Randomized Open Label Placebo Control Prospective Clinical Pilot Trial. P. Patrick Basu¹, Niraj J. Shah³, Mark Aloysius². ¹Columbia School of Physicians and Surgeons, New York, NY, USA; ²King's County Hospital Medical Center, New York, NY, USA; ³James J Peters VA Medical Center, Mount Sinai School of Medicine, New York, NY, USA

Objective: Severe alcoholic hepatitis (SAH) still remains a clinical challenge with mortality of 47% with steroid non-responsiveness immunosuppressives remains SOC. Mycophenolate Mofetil (MMF) is a immunosuppressive reduces B and T lymphocytic recruitment and immune injury. This study evaluates the role of MMF in steroid unresponsive SAH, reduction of necro-inflammation, acute liver decompensation needs transplantation which remains controversial

Methods:

Thirty patients aged 25-60 diagnosed with steroid unresponsive SAH, with severity score criteria (DF > 32%, ABCI > 12, Lile > 0.45, MELD > 26, Exclusion; hepatitis A, BC, GI bleed, hepatic Encephalopathy sepsis, Group A MMF 500 mg bid with Ptx 400 mg and Placebo orally for 30 days. Group B Prednisolone 30 mg plus Placebo (Vit D) and Ptx 400 mg orally 30 days.

Group C Prednisolone plus NMF and PTX orally for 30 days.

Results:

RESULTS

	Group A , Day 0	Group A , Day 90	Group B , Day 0	Group B , Day 90	Group C , Day 0	Group C , Day 90
T Bilirubin	14	1.3	13	8	15	2.1
INR	2.1	0.9	2.1	1	2.3	0.8
Albumin	2.3	3.3	2.4	3	1.9	3.1
Creatinine	1.8	0.7	1.5	0.8	2.4	1
Platelets	138	303	121	251	98	187
AST/ALT	321/187	31/23	341/157	39/25	421/299	34/36
TNF	9.7	0.4	8.9	1.1	12.2	0.3
IL 6	7.9	0.2	6.7	1	9.8	0.1
IL 8	5.3	0.03	4.9	0.6	11.4	0.8

Conclusion: This study postulates MMF is well tolerated, safe, and effective. MMF independently and precipitously reduced the necro-inflammatory score compared with the SOC. A larger trial needs to validate the singular role of MMF in AAH.

Abstract # O-123

Acute Liver Failure (ALF) Due To Yellow Phosphorous Poisoning. Dinesh Jothamani, Jayanthi Venkatraman, Vijaya Srinivasan, Guhan Muthamizh, Joy Vargese, A. Olithselvan, Mohamed Rela. *Institute of Liver Disease and Transplantation, Global Hospitals, Chennai, Tamilnadu, India; Institute of Liver Studies, King's College Hospital, London, United Kingdom*

Background: There is a considerable variation in the aetiology of ALF differs between the West and the East. Paracetamol toxicity is the commonest cause in the west, whereas, viral hepatitis is the commonest in Asia. ALF due to Yellow phosphorous (YP) poisoning is less reported in the literature. YP is a protoplasmic toxin used as rodenticides and for making firecrackers. Accidental or suicidal ingestion can result in acute liver failure.

Aim & objective: To evaluate the outcome of patients admitted with ALF due to YP poisoning at our centre.

Methodology: A retrospective case-note review of patients admitted to the liver intensive care unit with ALF was performed from January 2011 to November 2013. Primary outcome was defined as either recovery or transplant

or death. Data on time of presentation, clinical and biochemical parameters, Kings college Hospital (KCH) criteria and sequential organ failure assessment (SOFA) scores were evaluated.

Results: A total of 22 patients admitted with ALF of whom 11 patients had YP poisoning. In the YP poisoning cohort, the median age of presentation was 24 (17 to 38) years with 72% females. Median time from ingestion to presentation was 4 (2-8) days. Grade 3-4 hepatic encephalopathy was noted in 2 patients, others had grade 0-2 encephalopathy. Median SOFA score on admission was 10 (6-20), median peak INR 3.0 (1.1- 33.3). Median length of hospital stay was 8 (1 to 37) days. Over all the mortality due to YP poisoning was 36.3% (4 out of 11 patients). Six patients did not fulfill KCH criteria for liver transplantation of whom 5 survived. Five patients fulfilled KCH criteria of whom 2 survived without transplantation. Liver transplantation was performed in 1 patient. Compared to survivors, the non-survivors had higher median SOFA score (8 vs 14) and higher median AST (192 vs 824 U/ml). Sepsis related multi-organ failure was the commonest cause of death. Conclusion: YP poisoning is the commonest cause of ALF at our centre. King's college criteria and SOFA scores may predict survival. Large studies are required to identify patients who will benefit from liver transplantation.

ORAL ABSTRACT SESSION: EXTENDED CRITERIA DONORS/DISEASE TRANSMISSION

Abstract # O-124

Octogenarian Donors and Post-Liver Transplant Ischemic Type Biliary Lesions (ITBL): A Predictive Score Based on Donor Hemodynamic Instability and Bilirubin Peak. Davide Ghinolfi, Quirino Lai, Paolo DeSimone, Laura Coletti, Giovanni Tincani, Gabriele Catalano, Giuseppe Arenga, Emanuele Balzano, Paola Carrai, Giulia Leonardi, Daniele Tassinari, Dario Tartaglia, Franco Filippini. *Hepatobiliary Surgery and Liver Transplantation, University of Pisa Medical School Hospital, Pisa, Italy*

Introduction: Use of octogenarian donors to increase the donor pool in liver transplantation (LT) is controversial because advanced donor age is associated with a higher risk of graft non-function and ischemic-type biliary lesions (ITBL).

The aim of this study is to investigate the role of different pre-LT available markers as potential predictors of ITBL in a selected population of patients transplanted using grafts from octogenarian donors.

Methods: During the period Jan 2003-Dec 2012, 109 patients were transplanted using donors aged >80: exclusion criteria were a follow-up <6 months and no liver biopsy available. Eighty-six patients were finally enrolled for the study.

Median follow-up for the entire population was 3.8 years (range 1.7-5.4).

Twenty (23.2%) patients experienced a post-LT ITBL.

Results: Using a backward conditional Cox regression analysis, donor bilirubin peak (HR 1.1; P .02) and hemodynamic instability (HR 3.0; P .04) were the unique independent risk factors for ITBL. None of the biopsy-related covariates (steatosis, fibrosis, necrosis, inflammation and arteriolar thickening) was significant. According to the equation $0.136 \times \text{bilirubin}$ (for each increasing of 0.1 mg/dL) + 1.1 (if hemodynamic instability), patients with a score > 1.14 had a 3-fold ITBL rate (34.9 vs. 11.6%; log rank P .01).

Conclusions: Grafts from donors older than 80 years are related to high ITBL rates: however, optimal results can be provided when using good donor selection. Hemodynamic instability and high bilirubin values must be carefully evaluated in combination with histological aspects for selection in case of very aged donors.

Abstract # O-125

Pre-Arrest Heparinization Is Better Than Post-Arrest Fibrinolysis in DCD Liver Transplantation. Amelia J. Hesseheimer, Marina Vendrell, Javier Muñoz, Eduardo Flores, Ángel Ruiz, Pilar Taurá, Juan C. García-Valdecasas, Constantino Fondevila. *Hospital Clinic, Barcelona, Spain*

Background: Without previous heparinization, blood stasis during circulatory arrest (CA) leads to clot formation in donation after circulatory determination of death (DCD) donors.

Aim: Determine the effects of fibrinolytic therapy administered during a postCA period of normothermic regional perfusion (NRP) in a preclinical model of DCD liver transplantation.

Methods: Donor pigs were subjected to 60' CA followed by 60' heparinized NRP; three groups were performed: 1) no preCA heparin or tissue

plasminogen activator (tPA) given during NRP (control group); 2) no preCA heparin but bolus + infusion of tPA during NRP (tPA group); and 3) preCA heparinization, no tPA given (heparin group). Livers were recovered, cold stored 4h, and transplanted. Rotational thromboelastometric (ROTEM®) analysis was performed to monitor tPA's effects, with fibrinolysis measured in terms of maximum lysis (ML, normal <15%) and lysis at 30' after the start of the assay (LI30, normal 94-100%).

Results. Nine donors each were performed in the tPA and control groups, but 3 had to be discarded in each because NRP failed due to massive clotting of the abdominal vasculature. No livers had to be discarded in the heparin group. Ultimately, 6 transplants were performed in each group.

ROTEM® analysis demonstrated significant differences between the tPA and control groups in fibrinolytic parameters measured during NRP: median LI30 tPA 0 (IQR 0-58%) vs. control 98% (96-100%), $P=0.011$; ML 100% (100-100%) vs. 14% (12-17%), $P=0.002$. No ongoing fibrinolytic effect was detected in any recipient after reperfusion.

Though fibrinolytic therapy during NRP was adequate, no differences were detected between the tPA and control groups in hepatic transaminases or flows measured during NRP or after transplantation. When preCA heparinization was performed, however, hepatic flows during NRP and transaminases in the recipients were better than those measured in grafts without preCA heparinization, both with and without tPA treatment during NRP.

Conclusions. While it does not lead to ongoing effects in liver recipients, fibrinolytic therapy administered during NRP cannot effectively counter massive clot formation occurring during CA in porcine DCD donors. Based on this experience, preCA heparinization should be performed whenever possible to prevent the deleterious consequences of intravascular clotting during CA.

Abstract # O-126

MicroRNAs to Assess Warm Ischemic Injury during Machine Perfusion of Liver Grafts from Circulatory Death Donors. C. J. Verhoeven¹, D. Monbaliu², I. Habib¹, J. de Jonge¹, T. Wylin², I. Jochmans², V. Heedfeld², H. J. Metselaar¹, R. W.F. de Bruin¹, G. Kazemier¹, J. Ijzermans¹, J. Pirenne², L. J.W. van der Laan¹.

¹Dept. Surgery and Gastroenterology & Hepatology, Erasmus University Medical Center, Rotterdam, Netherlands; ²Dept. Abdominal Transplant Surgery, University Hospital KU Leuven, Leuven, Belgium

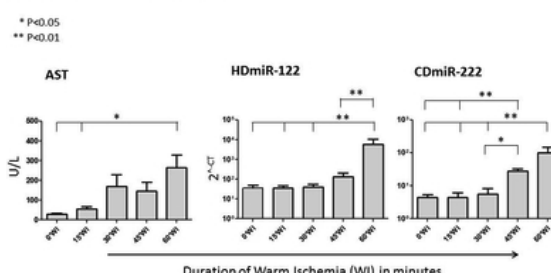
Donation after circulatory death (DCD) results in warm ischemic damage which varies in its extent and affects early graft function and -survival due to an increased risk of ischemic cholangiopathy. Hypothermic machine perfusion (HMP) may optimize DCD graft quality and allows objective assessment of graft quality before transplantation. Recently, hepatocyte and cholangiocyte-derived miRNAs (HDmiRs & CDmiRs) released during cold storage were shown to be predictive markers for biliary injury. In this study we investigated whether miRNAs are sensitive markers to assess graft injury during HMP of porcine DCD livers.

Porcine livers were subjected to warm ischemia (WI; 0-120 min, n=6 per group) and subsequently HMP preserved for 4h. Perfusates were collected during HMP and analysed on levels of AST and HDmiR-122 & CDmiR-222 by RT-qPCR. Biopsies were scored for morphology.

Cholangiocyte abundance of CDmiR-222 was confirmed by comparing expression levels in liver and bile duct tissue (8-fold enriched). Both HDmiRs and CDmiRs were detectable in perfusates during HMP. Levels of AST increased during HMP, but could not discriminate between grafts subjected to various WI times after 1h of HMP. In contrast, HDmiR-122 levels showed better discriminative power between various times of WI (Fig. 1, $P<0.01$) and stronger correlated with morphology in biopsies ($P=0.005$, $R=0.359$). Levels of CDmiR-222 showed best discriminative power for WI time ($P\leq 0.01$).

This study shows the superior discriminative power of HDmiRs and CDmiRs in perfusates during HMP of DCD liver grafts, compared to conventional markers. In particular the sensitivity of CDmiR-222 to distinguish grafts with various WI times corresponds with the fact that cholangiocytes are less tolerant for WI and indicates that CDmiRs are potential markers to evaluate the degree of biliary injury in DCD grafts.

Biomarker levels after 1 hour of HMP



Abstract # O-127

Outcomes Following Liver Transplantation Using Grafts from Elderly Donors: DBD vs DCD-UK Experience. Miriam Cortes, Wayel Jassem, Krishna Menon, Elissaios Kontis, Michael A. Heneghan, John O'Grady, Hector Vilca-Melendez, Parthi Srinivasa, Andreas Prachalias, Nigel Heaton. *Liver Transplantation, Institute of Liver Studies King's College Hospital, London, United Kingdom*
Background: The use of elderly donors in transplantation is on the rise, as a result of increased life expectancy coupled with a need for more donors. However, scepticism remains for outcomes from use of elderly grafts as a consequence of previous contradictory results. We report our experience following liver transplantation (LT) from elderly donors both after Brain Death (DBD) or Circulatory Death (DCD).

Study design: All LT's performed between 2002 and 2013 in our centre were reviewed. Inclusion criteria were: (1) DBD age ≥ 70 years (2) DCD age ≥ 60 years. Both groups were compared for donor characteristics: cause of death, ICU stay, use of vasopressors, sodium and cold ischemia time (CIT) and recipient characteristics: chronic vs acute liver disease, MELD and D-MELD score; post-LT complications (primary non-function (PNF), early allograft dysfunction (EAD), hepatic artery thrombosis (HAT), biliary complications and rejection. We compared patient and graft survival between DBD and DCD recipients.

Results: Of 2374 LT's, 149 cases met the inclusion criteria. Eighty-seven patients received a DBD graft (median donor age: 73, range: 70-86) and 62 patients a DCD graft (median donor age: 65, range: 60-79). Recipients of DBD grafts were found to have significantly longer CIT and ICU stay than DCD (Mann-Whitney(M-W) U test, $p<0.0005$ and 0.008 respectively). Regarding recipient characteristics, no differences were found in any variables. Regarding complications after LT, two patients who received a DCD graft had PNF and none in the DBD group - not statistically significant (Chi-square (Monte-Carlo method) $p=0.172$). The incidence of EAD was increased in DCD recipients (Chi-square, $p=0.0001$) as well as the occurrence of extrahepatic biliary stricture (Chi-square, $p<0.0005$), but there was no difference in terms of ischemic cholangiopathy. One, three and five year survival was 89%, 85% and 80% for DBD recipients and 91%, 91% and 85% for DCD recipients respectively - no statistical significant difference between the two groups (Wilcoxon (Gehan)=0.331, $p=0.565$).

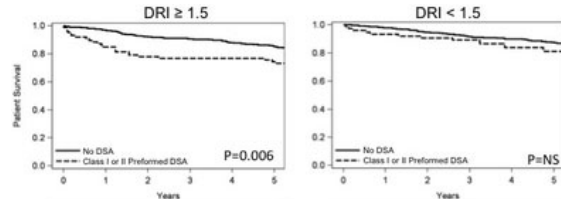
Conclusion: Our data suggest that although DCD grafts from elderly donors may have increased incidence of EAD and extrahepatic biliary stricture, overall survival was not affected when compared to elderly DBD grafts.

Abstract # O-128

2-Hit Hypothesis: A Second "Hit" Increases the Risk for Death in Liver Allograft Recipients with Preformed Donor Specific Alloantibodies. Jacqueline G. O'Leary¹, Hugo Kaneku², Peter T. Kim¹, Linda W. Jennings¹, Brian M. Susskind¹, Paul I. Terasaki³, Goran B. Klintmalm¹. ¹Annette C & Harold C Simmons Transplant Institute, Baylor University Medical Center, Dallas, TX, USA; ²Surgery, University of California, Los Angeles, Los Angeles, CA, USA; ³Terasaki Foundation Laboratory, Los Angeles, CA, USA

Aim: Not all patients with preformed Donor Specific Alloantibodies (DSA) experience adverse outcomes. We previously documented a high MELD (>23) at liver transplant to be a risk factor for death in the presence of preformed DSA ($p=0.04$) while lower MELD patients did not experience increased mortality after transplant in the presence of preformed DSA ($p=NS$). Although early antibody mediated rejection is seen in the absence of additional risk factors for graft loss, this is fortunately a rare event. Therefore, we hypothesized preformed DSA requires a second "hit" in the majority of

cases to result in adverse outcomes. In this analysis we evaluated the impact of preformed DSA on patient survival after liver transplant based on the Donor Risk Index (DRI). Methods: We analyzed all 919 adult recipients of a primary LT without another organ from 1/1/00 to 5/31/09 with a pre-LT sample available for analysis of DSA in our biorepository with LABScreen™ single antigen beads who had the data available to determine DRI. Patients with either class I or II preformed DSA (MFI $\geq$ 5000) were compared to those without DSA ever (MFI $<$ 5000) based on their DRI. Results: Patients who received a liver allograft with a DRI $\geq$ 1.5 had a lower survival in the presence vs. absence of preformed DSA ($P=0.006$), in contrast to patients who received a liver allograft with a DRI $<$ 1.5 whose mortality was unchanged by the presence or absence of preformed DSA ($P=NS$). Conclusion: Not all preformed DSAs lead to adverse outcomes in recipients of an isolated liver allograft; however, suboptimal liver grafts are likely more susceptible to DSA injury in particular in patients with advanced liver failure. If this observation is confirmed by further studies it may be of importance for donor liver allocation.



DISCLOSURE: Terasaki, P.I.: Stockholder, One Lambda.

Abstract # O-129

Functional Warm Ischemic Time as a Predictor of Graft Failure and Biliary Complications. Kristopher P. Croome¹, Alain Lipowicz², David R. Grant², John B. Seal², Max Marquez², Jessica Coffey¹, William Wall¹, Markus Selzner², Roberto Hernandez-Alejandro¹. ¹Surgery, Western University Canada, London, ON, Canada; ²Surgery, University of Toronto, Toronto, ON, Canada

Background: The most widely accepted definition of Warm ischemia time is the time elapsed between withdrawal of life support and the initiation of cold perfusion of the organs in the donor. As of late, there has been increasing interest in defining a "functional warm ischemia time" based on hemodynamic parameters that is a better predictor of DCD liver transplant outcome.

Methods: All recipients of Maastricht Category III DCD liver allografts at the University of Toronto and the Western University Canada between the dates of July 2006 and Sept 2013 were identified. Hemodynamic profiles between withdrawal of life support and cross clamp were investigated. Primary outcome measures were: 1) failure variable (Primary Non-Function or Ischemic cholangiopathy or Graft Failure within 90days) 2) any biliary complication.

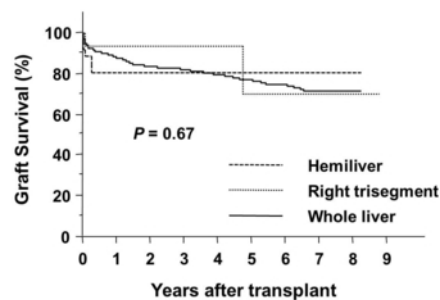
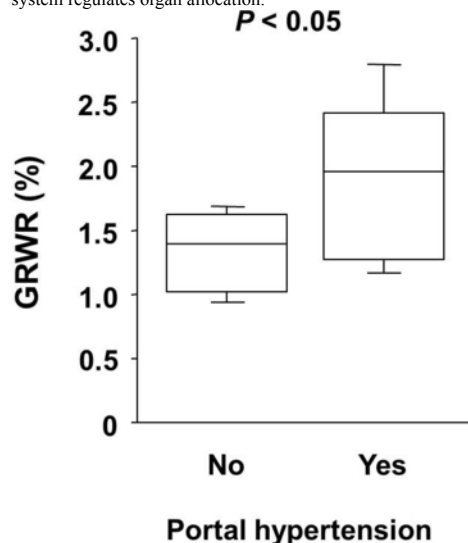
Results: A total of 91 patients were identified. The failure variable was observed in 10% of patients. Biliary complications occurred in 18% of patients. On univariate analysis none of the hemodynamic variables (total warm ischemia time (WIT), oxygen saturation, mean arterial pressure (MAP) and systolic pressure (sBP)) were predictive of the failure variable. Only donor age was a significant predictor ($p=0.019$). When donor age was dichotomized as ≥ 55 years or < 55 years, the rates of failure were 33% and 7% respectively ($p=0.005$). When the outcome of any biliary complications was investigated, both minutes of sBP < 50 mmHg ($p=0.02$) and minutes of MAP < 50 mmHg ($p=0.013$) were significant predictors. Patients had a MAP < 50 mmHg a median of 1 minute earlier than sBP < 50 mmHg. Total WIT and oxygen saturation were not significant predictors. Area under the curve was greatest for minutes MAP < 50 mmHg (0.77). When MAP < 50 mmHg was dichotomized as ≥ 25 min or < 25 min, the rates of biliary complications were 56% and 9% respectively ($p<0.001$).

Conclusions: None of the hemodynamic variables were good predictors of our failure variable, only donor age was a significant predictor with donor allografts greater than 55 years of age having higher rates of failure. MAP < 50 mmHg was the best predictor of biliary complications with relatively few biliary complication in patients with a time of < 25 minutes MAP < 50 mmHg. Total WIT and oxygen saturation were not good predictors of failure or biliary complications.

Abstract # O-130

Hemiliver Graft for Split Liver Transplantation: A 9-Year Single Center Experience in the United States. Koji Hashimoto, Cristiano Quintini, Federico Aucejo, Masato Fujiki, Teresa Diago, Dympha Kelly, Charles Winans, Bijan Eghtesad, John Fung, Charles Miller. Liver Transplant Program, Digestive Disease Institute, Cleveland Clinic, Cleveland, OH, USA

Split liver transplantation (SLT) using hemilivers can expand the donor pool for adults. However, technical and logistical challenges have precluded efficient diffusion of this technique under the "sickest first" MELD allocation where livers amenable to splitting are most often allocated to patients unsuitable for SLT. From April 2004 to June 2012, we used 25 lobar grafts (10 left lobes, 15 right lobes), 16 right trisegment grafts, and 814 whole liver grafts for adult-sized recipients. In 94% of hemiliver donors, the livers were split *in situ*. Twenty-two hemiliver recipients (88%) achieved a graft-to-recipient weight ratio (GRWR) greater than 1.0%. There was no difference in chemical MELD ($P=0.56$) or MELD scores with exception points assigned by UNOS ($P=0.09$) between the 3 graft types. Hemiliver recipients with severe portal hypertension had greater GRWR than those without severe portal hypertension (1.96% vs. 1.40%, $P<0.05$, Figure 1). Left lobe recipients (20%) experienced bile leak more frequently than right lobe (6.7%) and whole liver recipients (1.1%, $P<0.0001$). Five-year graft survival for hemiliver grafts was 80.8%, which was comparable to whole liver grafts (77.1%, $P=0.67$, Figure 2). Graft type did not influence graft survival ($P=0.48$). However, donor hypernatremia (≥ 155 mEq/L) in conjunction with low GRWR ($< 1.5\%$) increased the risk of graft failure by 9.2-fold ($P=0.014$). In conclusion, SLT using hemiliver grafts can achieve excellent outcomes with appropriate graft-recipient matching. How to safely expand the use of hemiliver grafts is an important subject, especially where the MELD system regulates organ allocation.



Abstract # O-131

Coagulation Profiles of Maastricht Category 2 DCD Donors Do Not Indicate a Role for Exogenous Fibrinolysis. Amelia J. Hessheimer, Marina Vendrell, Ángel Ruiz, Graciela Martínez-Palli, Juan C. García-Valdecasas, Constantino Fondevila, Pilar Taurá. *Hospital Clinic, Barcelona, Spain*

Background. It has been suggested that vascular stasis during circulatory arrest leads to the formation of microvascular thrombi and that the viability of organs arising from donation after circulatory determination of death (DCD) donors – namely uncontrolled donors – may be improved through fibrinolytic therapy. Scientific evidence supporting this practice, however, is lacking.

Aim. Comprehensively study coagulation profiles of Maastricht category 2 DCD donors to determine the presence of coagulation abnormalities that could benefit from fibrinolytic therapy.

Methods. Whole blood from potential DCD donors was sampled after declaration of death in the emergency department, and rotational thromboelastometric (ROTEM®) analysis was performed. Blood was extrinsically activated with recombinant tissue factor (EXTEM® reagent), and the duration of analysis was 60 min. Hyperfibrinolysis was defined as maximum lysis during the analysis of >15% and fulminant fibrinolysis as clot dissolution within 30 min.

Results. Samples from 30 potential DCD donors were analyzed. Twenty eight (93%) of the potential donors were men, mean age was 53±8 y, and mean time from arrest to death declaration was 76±16 min. All potential donors demonstrated hyperfibrinolysis, with maximum lysis of 98-100% in all cases. Furthermore, fibrinolysis was fulminant in 21 cases (70%). Interestingly, there was a significant correlation between clot lysis at 30 min and hepatic transaminase levels measured in potential donors (Pearson correlation coefficient 0.553, P=0.014). Finally, 5 livers were transplanted in the series: 2 from donors with fulminant fibrinolysis on ROTEM® analysis, both of which developed significant postoperative complications requiring early retransplantation, and 3 from donors without fulminant fibrinolysis, all of which demonstrated excellent postoperative function.

Conclusions. Endogenous fibrinolysis was observed in all potential DCD donors and was, in the majority of the cases, fulminant. There does not appear to be any role for additional fibrinolytic therapy in this setting. At the same time, fulminant fibrinolysis on ROTEM® analysis indicates significant hepatic injury and may be used as an additional tool to help select DCD grafts suitable for transplantation.

Abstract # O-132

The Evolving Use of Higher Risk Grafts Is Associated With an Increased Incidence of Acute Kidney Injury after Liver Transplantation. Joanna A. Leithead^{1,2}, Neil Rajoriya¹, Bridget K. Gunson^{1,2}, Paolo Muiesan¹, James W. Ferguson¹. ¹*Liver Unit, Queen Elizabeth Hospital, Birmingham, United Kingdom;* ²*NIHR Biomedical Research Unit and Centre for Liver Research, University of Birmingham, Birmingham, United Kingdom*

The growing discrepancy between supply and demand for liver transplantation has necessitated a greater use of higher risk grafts. Donation after Cardiac Death (DCD) liver transplant recipients have an increased frequency of acute kidney injury (AKI). We hypothesised that other higher risk grafts might also impact negatively on renal function. The aim of this study was to examine the effect of the evolving use of higher risk grafts on the incidence of post transplant AKI.

Methods: a single-centre study of 1152 patients undergoing first-single-organ liver transplantation for chronic liver disease 01/2000-12/2011. To assess the impact of the evolution of graft quality over time donor/graft/recipient variables were compared over three 4-year time periods: 01/2000-12/2003, 01/2004-12/2007, 01/2008-12/2011. Exclusion criteria: pre-transplant renal replacement therapy, death by postoperative day 7. Definitions: peri-operative AKI - creatinine >2 times baseline (KDIGO 2012 guidelines stage 2/3); chronic kidney disease - eGFR <60ml/min/1.73m².

Results: Pretransplant recipient eGFR improved over the follow-up period (p<0.001), and the median postoperative day-1 (p<0.001), -2 (p<0.001) and -3 (p<0.001) tacrolimus trough levels fell. The proportion of patients receiving a higher risk graft was 31.8% in 2000-2003, 40.9% in 2004-2007 and 59.1% in 2008-2011 (p<0.001). The mean donor risk index was 1.60, 1.65 and 1.90 in 01/2000-12/2003, 01/2004-12/2007 and 01/2008-12/2011, respectively (p<0.001).

There was a progressive increase in AKI (2000-2003, OR 1.00; 2004-2007, OR 1.43 (95% CI 1.00-2.06); 2008-2011, OR 2.40 (95% CI 1.63-3.53), p<0.001).

After adjusting for relevant recipient variables increasing warm ischemic time in minutes (OR 1.02, p=0.019), DCD transplantation (OR 2.67, p<0.001), donor age ≥60 years (OR 1.49, p=0.020) and donor body mass index ≥30 kg/m² (OR 1.99, p<0.001) were independent predictors of AKI.

Conclusion: The increasing use of higher risk liver grafts is associated with an increased incidence of AKI. These findings support the need for therapies that minimise the hepatic ischaemia-reperfusion injury.

ORAL ABSTRACT SESSION: LATE BREAKING SESSION

Abstract # LB-1

Postoperative Calcium Homeostasis and Outcomes in Liver Transplant Recipients. Jana Hudcova¹, Tomas Cvrk¹, Michael Kaufman¹, Robin Ruthazer², Roman Schumann². ¹*Lahey Clinic, Burlington, MA, USA;* ²*Tufts Medical Center, Boston, USA*

Introduction:

We examined early perioperative changes in ionized serum calcium (Ca) levels and their effect on outcomes in LT recipients.

Methods:

Data of all patients undergoing LT during a 3.75 year period were reviewed. Combined liver/kidney, fulminant hepatic failure and re-transplantations were excluded. Data collected: demographics, first intraoperative Ca (1stCa_{inop}), first PACU Ca (1stCa_{PACU}), Ca 12–24h postoperatively (Ca₁₂₋₂₄), delta (Δ) Ca (1stCa_{PACU} minus Ca₁₂₋₂₄). Outcomes examined: long intubation (Ti≥2days), long PACU/SICU (PACU/SICU≥2days or death day 0-1) and long hospital stay (HOS>10 days or death day 0-10), 30 day mortality, primary graft failure (PGF), and 90days readmissions. Student t and chi-square tests were used for analyses, data are in mean±SD, p<0.05 is significant.

Results:

Data of 175 patients were analyzed. For 85 patients Ca₁₂₋₂₄ were not available. Demographics and Ca [mmol/L] levels are in Table 1.

Table 1

	All patients (n=175)	Patients with DCA (n=90)
Age [years]	52.8±9.7	53±9.7
Male [%]	76.7	74.4
BMI	28.8±5.5	29.8±4.8
MELD	17±8	17±8
1 st Ca _{inop}	1.14±0.09	1.15±0.07
1 st Ca _{PACU}	1.47±0.27	1.50±0.30
Ca ₁₂₋₂₄	-	1.28±0.20
DCA	-	0.21±0.6

Associations between 1stCa_{PACU} and outcomes are in Table 2.

Table 2

Outcome	Ca in patients with outcome	Ca in patients without outcome	p-value
Ti≥2days	1.59±0.36 (33)	1.44±0.23	0.0036
PACU/SICU≥2days	1.54±0.31 (80)	1.41±0.20 (90)	0.0006
HOS>10days	1.56±0.30 (84)	1.38±0.19 (86)	<.0001
30 day mortality	1.73±0.48 (10)	1.45±0.24 (160)	0.0011
PGF	1.41±0.25 (6)	1.47±0.27 (164)	0.5642
90 days readmissions	1.55±0.27 (43)	1.41±0.21 (106)	0.0002

The Ca declined uniformly within the first 24h post LT. ΔCa was significantly higher in patients with longer vs. shorter PACU/SICU stay (0.27±0.32 vs. 0.14±0.14; p=0.016), longer vs. shorter hospital stay (0.27±0.31 vs. 0.15±0.16; p=0.028), and 90 day readmission vs. no readmission (0.28±0.25 vs. 0.14±0.16; p=0.0044). No significant association was observed between ΔCa and 30d mortality, PGF, and 90d readmissions.

Discussion:

Ca increased during surgery and subsequently declined within 24h in all recipients. A higher Ca after surgery and a more pronounced decline within 24h were associated with worse outcomes. The reason for these observations remains speculative until further investigation including postoperative blood products administration and early graft function. Attention to Ca supplementation is important as overcorrection may compromise patient outcomes.

Abstract # LB-2

A Comparison of VO₂ Peak Estimation by Duke Activity Status Index (DASI) and VO₂ Peak Measured by Cardiopulmonary Exercise Testing (CPEX) in Potential Liver Transplant Recipients. Shaun I. Baxter³, Euan M. Thomson¹, David Cameron¹, Alastair A. Innes². ¹Scottish Liver Transplant Unit, Edinburgh Royal Infirmary, Edinburgh, United Kingdom; ²Department of Respiratory Medicine, Edinburgh Royal Infirmary, Edinburgh, United Kingdom; ³Department of Respiratory Physiology, Edinburgh Royal Infirmary, Edinburgh, United Kingdom

Introduction:

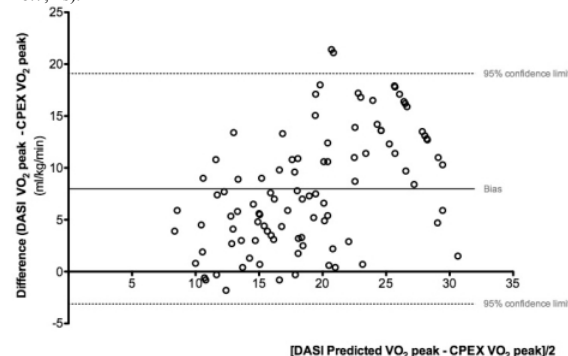
Poor exercise capacity is associated with increased complication rates and poorer outcome following major surgery. Cardiopulmonary exercise testing (CPEX) provides an objective measure of cardiovascular fitness but is an expensive and resource intensive test. The Duke Activity Status Index (DASI) attempts to provide a comparable measure of exercise capacity by estimating peak oxygen consumption (VO₂ peak) based on a 10 yes/no answer questionnaire. In this study we compared the VO₂ peak values estimated by the DASI with the VO₂ peak values obtained by formal CPEX.

Methods:

DASI and CPEX data were prospectively collected from patients with chronic liver disease electively assessed for potential liver transplantation. CPEX measured values and DASI estimated values were correlated and variation assessed by Bland-Altman method. Demographics of those with the greatest DASI to CPEX VO₂ peak differences were compared to those with the least difference.

Results:

98 patients were included in the analysis. Although there was correlation between DASI and CPEX values ($r=0.67$) the DASI frequently over-estimated VO₂ peak in comparison with CPEX (Bias +8mmL/kg/min 95%CI: -3.1 – 19.1). Estimated values ranged between 86% and 314% of measured values. Those with the greatest DASI to CPEX variability were heavier (76 v 87.7 kg, $p<0.01$) and taller (168.2 v 174.4 cm, $p,0.01$) than those with the least difference although the body mass index (BMI) were comparable (26.8 v 28.7, ns).



Conclusion:

In this study DASI predicted VO₂ peak were routinely greater than those obtained by formal CPEX testing. Moreover the extent of over-estimation varied greatly and predicted values up to three fold the measured value were observed. We conclude that DASI is not an accurate predictor of Vo₂ in patients being considered for liver transplantation.

Abstract # LB-3

How Far Can We Push the Limit of Donor Age in DCD Liver Transplantation? Irene Scalera, Giorgia Catalano, Tamara Perera, Hynek Mergental, Darius Mirza, Simon Bramhall, John Isaac, Paolo Muesan. *Liver Unit, Queen Elizabeth Hospital, Birmingham, United Kingdom*

Background

Donor age significantly impacts the outcome of the liver transplantation in Donation after Circulatory Death (DCD): according with DRI studies, donor age greater than 60 years strongly predicts graft failure. European Liver Transplant Registry data showed an increase in the past 10 years of the rate of cadaveric liver donors older that 60 years. However the use of older donors remains limited particularly in DCD donation. The aim of this study was to analyse the outcome of liver transplantation using grafts from DCD donors older than 60 years old.

Methods

All consecutive DCD donor liver transplants performed between June 2004 and June 2013 were included in the study. Liver grafts from DCD older than 60 years were also compared with DBD grafts used in the same study period. Donor and recipient characteristics were collected from a prospectively held database. Outcomes analysed include patient/graft survival and vascular/biliary complications.

Results

In the study period a total of 189 Maastricht category III DCD liver transplants were performed at our unit. Fifty-four liver grafts from DCD older than 60 years were compared with 135 grafts from DBD less that 60 years of age and with 125 grafts from DBD older than 60. There were no statistical differences between the 3 groups in terms of patient survival at 1-3 years: in DCD of >60 years it was respectively 85% and 82%, in DCD < 60 y/o, 88% and 82% and DBD group 91% and 85%. Similar results emerged for graft survival at 1-3 years: 81% and 80%, 86% and 81%, 88% and 83% respectively. The rate of vascular/biliary complications was similar in all three groups (15/22%; 11/24% and 12/16%). A stricter selection process was noted in the DCD older than 60 group for lower donor BMI, lower recipient MELD and shorter cold ischemia time.

Conclusion

Older DCD donors, of 60 years of age or older, can be successfully used for liver transplantation with acceptable short and mid-term outcomes provided that there is careful donor and recipient selection.

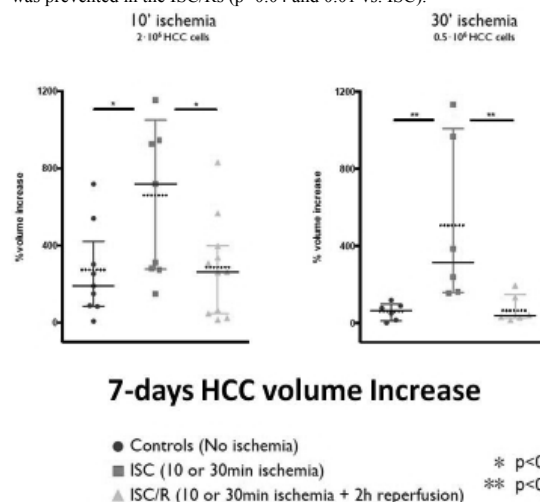
Abstract # LB-4

Pre-retrieval Reperfusion Decreases Cancer Recurrence after Rat Ischemic (DCD-like) Liver Graft Transplantation. Graziano Oldani, Lindsey Crowe, Lorenzo Orzi, Laura Rubbia-Brandt, Florence Slits, Claudio DeVito, Gilles Mentha, Philippe Morel, Stephanie Lacotte, Christian Toso. *Geneva University Hospitals, Geneva, Switzerland*

Background: Liver transplantation from marginal donors is associated to ischemia/reperfusion (I/R) lesions, which may increase the risk of post-transplant hepatocellular carcinoma (HCC) recurrence. Graft reperfusion prior to retrieval (as for extracorporeal membrane oxygenation –ECMO) can prevent I/R lesions. The impact of I/R on the risk of cancer recurrence was assessed on a syngeneic Fischer-rat liver transplantation model.

Methods: HCC cells were injected into the vena porta of all recipients at the end of an orthotopic liver transplantation (OLT). Control donors were standard heart-beating, ischemic ones (ISC) underwent 10' or 30' inflow liver clamping prior to retrieval, and ischemic/reperfused (ISC/R) donors underwent 2h liver reperfusion after the clamping.

Results: I/R lesions were confirmed in the ISC group, with the presence of endothelial and hepatocyte injury, and increased liver function tests. These lesions were in part reversed by the 2h reperfusion in the ISC/R group. HCC growth was higher in the 10' and 30' ISC recipients ($p=0.018$ and 0.004 vs. control, as assessed by MRI difference between weeks one and two), and was prevented in the ISC/Rs ($p=0.04$ and 0.01 vs. ISC).



These observations were associated to a stronger pro-inflammatory cytokine profile in the ISC recipients only, and the expression of hypoxia and HCC growth-enhancer genes, including Hmox1, Hif1a and Serpine1.

Conclusion: This experiment suggests that ischemia/reperfusion lesions lead to an increased risk of post-transplant HCC recurrence and growth. This observation can be reversed by graft reperfusion prior to retrieval.

Abstract # LB-5

Liver Transplantation Using Pre-conditioned Hypoxic Donor Livers Is a Safe Way to Increase the Donor Pool – A Case Controlled Study. Mansoor A. Madanur, Elissaios Kontis, Krishna Menon, Anthony Stafford, Wayel M. Jassem, Andreas Prachalias, Parthi Srinivasan, Hector V. Melendez, Mohamed S. Rela, Nigel D. Heaton. *Liver Transplant Surgical Service, Kings College Hospital, London, United Kingdom*

Introduction: The aim of the study was to compare outcomes of liver transplantation from use of hypoxic grafts, with grafts from elderly donors as controls.

Methods: We reviewed all adult liver transplants between 2006 and 2013 in order to identify grafts from donors who had sustained prolonged hypoxia (Group A). From our transplant registry we retrospectively collected donor/recipient AST at four time points: 1) on admission to hospital, 2) just before retrieval, 3) day 1 post-transplant, 4) day 7 post-transplant. Data on graft and patient outcomes were recorded. From our pool of data we also retrieved the corresponding data from all extreme elderly DBD donors (>75 years) (Group B), in order to serve as controls.

Results: We identified 21 hypoxic donors with mean age 35.23±15.88 years (range: 5-62) (Group A). Initial donor AST was 338.71±291.70 (mean±SD), (range: 47-1371). The pre-retrieval AST had significantly decreased to 150.76±178.75 (range: 14-779) (Wilcoxon Signed Ranks: p<0.0005), with an average decrease of 54.18%. Initial donor AST did not correlate with AST on day 1 or day 7 (Spearman: p=0.267 and 0.784 respectively). We identified 20 elderly donors with mean age 77.82±2.88 years (range: 75-85) (Group B). AST values did not differ between groups on day 1 or day 7 post liver transplantation (Mann-Whitney: p=0.514 and p=0.814) (day 1: median ± SEM: 651.00±566.86 vs 668.00±129.86, day 7: 54.00±108.09 vs 57.00±34.35, respectively). The average decrease of AST between day 1 and day 7 in group A -91.22%±28.65 vs -89.98%±4.10 (median±SEM) in Group B was not statistically significant. None of the patients in either study group presented with primary non function. Kaplan Meier analysis did not reveal any difference in graft survival or patient survival (Log Rank (Mantel-Cox) p=0.09 & p=0.055, respectively).

Conclusions: Although liver grafts from hypoxic donors may represent a high risk group, the downward trend of AST pre-retrieval allows selection of such organs for liver transplantation. There was no significant difference in graft and patient outcomes when the hypoxic group was compared with elderly DBD donors.

Abstract # LB-6

Plasma Vascular Endothelial Growth Factor (VEGF) Predicts Vascular Invasion in Patients with Hepatocellular Carcinoma (HCC) Undergoing Liver Transplantation. Wei Zhang¹, Richard Kim², Cristiano Quintini¹, Koji Hashimoto¹, Masato Fujiki¹, Teresa Diago¹, Bijan Eghtesad¹, Charles Miller¹, John Fung¹, Ann Tan³, K.V. Narayanan Menon⁴, Federico Aucejo¹. ¹Hepatobiliary & Liver Transplant Surgery, Cleveland Clinic Foundation, Cleveland, OH, USA; ²Department of Gastrointestinal Oncology, H. Lee Moffitt Cancer Center, Tampa, FL, USA; ³BC Cancer Agency-Abbotsford, Abbotsford, Canada; ⁴Gastroenterology and Hepatology, Cleveland Clinic Foundation, Cleveland, OH, USA

Background

Tumor vascular invasion is the most important feature associated with hepatocellular carcinoma (HCC) recurrence after liver transplantation (LT). Studies demonstrated the prognostic value of circulating vascular endothelial growth factor (VEGF) levels in patients undergoing liver resection or locoregional therapies (LRT) for HCC. This study evaluates the correlation between plasma VEGF level and clinicopathological variables in patients with HCC undergoing LT in a large western transplant center.

Methods

We retrospectively analyzed 164 patients with HCC undergoing LT. Pre-LT plasma VEGF levels were measured by enzyme-linked immunosorbent assay. Pre-LT Plasma VEGF cut-off value determined by receiver operating characteristics (ROC) curve analysis was set to correlate with clinicopathological variables and tumor recurrence.

Results

Pre-LT plasma VEGF levels ranged from 30 to 272 pg/ml (median 31). ROC analysis indicated the cut-off value with best sensitivity and specificity for predicting vascular invasion was 45pg/ml for VEGF. The sensitivity and specificity for VEGF was 59.6% and 77.8%. VEGF revealed a larger area under the ROC curve than AFP (0.693 vs 0.614). Pre-LT plasma VEGF level >45pg/ml was significantly associated with AFP >200ng/ml (P=0.0281), pre-LT LRT (p=0.033), multiple tumors (p=0.045), total tumor diameter ≥5 cm (p=0.022), tumor vascular invasion (p=0.000), and HCC beyond Milan criteria (p=0.017). On multivariate analysis, plasma VEGF >45 pg/ml was an independent preoperative predictor of tumor vascular invasion (odds ratio 5.021, 95% confidence interval 1.997-12.627, p=0.001). Twenty patients (37.0%) in the high plasma VEGF level group and 8 patients (7.3%) in the low plasma VEGF level group developed HCC recurrence (p=0.000).

Conclusion

In patients with chronic end stage liver disease undergoing LT with HCC, pre-LT plasma VEGF level >45 pg/ml may be an independent predictor of tumor vascular invasion.

Abstract # LB-7

Liver Transplantation for Hepatocellular Carcinoma Using the Milan Criteria and the Expanded UK Listing Criteria: A Single Centre Experience. Anthony T. Stafford, Elissaios Kontis, Krish V. Menon, Abid Suddle, Alberto Quaglia, John O'Grady, Augusto Villanueva, Andreas Prachalias, Wayel Jassem, Parthi Srinivasan, Hector V. Melendez, Mohamed Rela, Nigel Heaton. *Institute of Liver Studies, King's College Hospital, London, United Kingdom*

Background: Orthotopic liver transplant (OLT) is the best therapeutic option for early, unresectable HCC. The introduction of the Milan Criteria in 1996 allowed for the singling out of early-stage HCC's which prognostically were amenable to curative treatment. These criteria were widened in 2009 in the United Kingdom to potentially allow more patients to qualify for OLT. To date, there is no published data looking at outcomes following OLT for HCC in UK.

Study aim: To review the survival outcomes after OLT for HCC and assess the effect of introducing the expanded UK criteria on survival outcomes, in a single high volume centre.

Methods: This is a retrospective review of OLT for HCC at our institution from January 1997 to December 2011. The retrieved data included descriptive pathological features of the tumour in the explant liver, recurrence, disease free and overall survival.

Results: Of 355 patients, there were 277 males, mean age ± SD of 56.92±8.43 and 78 women, mean age 56.48±9.98. 96 patients were transplanted post introduction of the expanded UK criteria and 259 patients' prior to this. The median number of nodules at presentation was one (range 1 to 13). The mean diameter of the largest nodule was 37.34±31.06 mm. In 63 patients (11.8%) recurrence of the HCC was diagnosed during follow up, with a mean disease free survival of 66.95±6.11 months after OLT. The overall mean survival was 146.81±6.16 months, with 1-year survival of 89% ± 0.02 (SE), 3-year survival of 83%±0.02 and 5-year survival of 60%±0.04. Survival rates did not differ significantly between patients listed for transplant before 2009 (Milan criteria) and after (expanded UK criteria) (Log Rank (Mantel-Cox) p=0.912). The respective survival rates at 1 year, 3 years and 5 years were; for patients transplanted within Milan criteria 90%±0.02, 82%±0.03 and 60%±0.05 and for the expanded UK criteria were 87%±0.04, 86±0.04 and 76%±0.07.

Conclusions: The implementation of the expanded UK criteria for transplantation in patients with HCC has had no adverse effect on the survival of patients after OLT suggesting that the vast majority of patients were, in effect, still been transplanted within the Milan criteria.

Abstract # LB-8

Molecular Characterization of Acute Cellular Rejection during Immunosuppression Withdrawal Trials in Liver Transplantation. Eliano Bonaccorsi-Riani¹, Juanjo J. Lozano², Carlos Benitez², Maria C. Londono², Felix Bohne², Marc Martinez-Llordella¹, Antoni Rimola², Alberto Sanchez-Fueyo^{1,2}. ¹King's College London, King's College London, London, United Kingdom; ²Hospital Clinic, Hospital Clinic, Barcelona, Spain

Introduction: The molecular characteristics of acute rejection in human liver transplantation have not been adequately defined. To simultaneously assess the blood and liver tissue molecular profile of liver recipients undergoing acute rejection, we analysed sequential biological specimens collected from

liver transplant patients enrolled in two prospective multicentre European immunosuppression (IS) withdrawal trials, in which IS drugs were gradually discontinued over a 6-9 month period.

Methods: Out of the 136 participants, 58 were successfully weaned while 72 underwent acute cellular rejection. For the current study we analysed samples from 56 rejecting patients (10 HCV-pos and 46 HCV-neg). Liver tissue and blood samples were available before the initiation of IS withdrawal and at the time of rejection. In addition, at least 6 sequential blood samples were collected before the diagnosis of rejection. Gene expression profiling was conducted employing a combination of Illumina whole-genome microarrays and Fluidigm real-time PCR. Microarray differential gene expression was assessed employing LIMMA ($p < 0.05$ and $FC > 1.2$).

Results: Rejection resulted in the differential expression of 1181 and 903 genes in liver tissue from HCV-pos and HCV-neg patients, respectively, with 438 of them similarly expressed in both groups. Among them, 22 genes were also differentially expressed in blood and mainly associated with inflammatory response and cell cycle (e.g.: CXCL9, CXCL10, CENPM, CDC20, CCNB2, CD74). This group of genes was used to define a blood predictive model containing CXCL10 + Foxp3 that accurately identified rejecting patients with AUC=0.88. Importantly, changes in the expression of these 2 genes were already detected 1-2 months before rejection and allograft dysfunction were diagnosed.

Conclusion: Our data indicates that it is possible to identify, both in blood and liver tissue, a common transcriptional signature of rejection that can accurately identify rejection before it is clinically apparent and that is independent from the presence of HCV infection.

Abstract # LB-9

The Cost-Effectiveness of Sofosbuvir Treatment Pre-Transplant to Prevent HCV Recurrence Post-Transplant.

Kosh Agarwal, Ed Gane, Xavier Forns, Michael Manns, Sammy Saab, Massimo Colombo, Zobair Younossi, Norah Terrault, John McHutchison. *Institute of Liver Studies, Kings College Hospital, London, United Kingdom; Auckland City Hospital, Auckland, New Zealand; Liver Unit, Hospital Clinic, IDIBAPS & CIBERHD, Barcelona, Spain; Hannover Medical School, Hannover, Germany; University of California, Los Angeles, USA; University of Milan, Milan, Italy; Innova Fairfax Hospital, VA, USA; University of California, San Francisco, USA; Gilead Sciences, Foster City, USA*

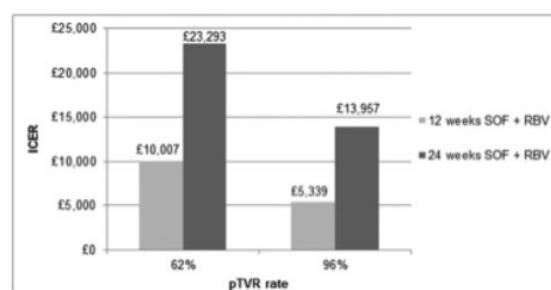
Aim: To assess the cost-effectiveness (CE) of sofosbuvir in combination with ribavirin (SOF+R), a new treatment for Hepatitis C virus (HCV) with established clinical efficacy and safety, in patients awaiting liver transplant, to prevent HCV recurrence post-transplant.

Methods: An economic model was developed to estimate the CE of SOF+R for 12/24 weeks treatment pre-transplant to prevent HCV recurrence post-transplant. The model comprises a decision tree to model pre-transplant treatment and a Markov process capturing the natural history of HCV recurrence post-transplant. Natural history data, resource use and utilities were informed by published sources and clinical opinion. The analysis was performed from a UK National Health Service (NHS) perspective, with future costs and outcomes discounted 3.5% per annum.

Results: The base-case analysis considers a time horizon of 15 years with SOF+R treatment pre-transplant for 12/24 weeks and post-transplant virologic response (pTVR) of 62% compared with no treatment. The incremental cost-effectiveness ratio (ICER) for 12/24 weeks of SOF+R is £10,007/£23,293. Patients with 30 days undetectable HCV-RNA prior to transplant achieved a pTVR rate of 96%, reducing the ICER for 12/24 weeks SOF+R to 5,339/£13,957 (see Figure 1). The results were most sensitive to changes in the utility and survival of patients achieving pTVR.

Over 15 years, at the UK NHS ICER threshold of £20,000, sofosbuvir would be considered highly cost-effective, for 12 weeks treatment in all pts, and for 24 weeks treatment in pts with 30 days undetectable HCV-RNA prior to transplant.

Figure 1: Cost-effectiveness results



DISCLOSURE: *Agarwal, K.:* Other, Gilead, Advisory, Merck, Advisory, Janssen, Advisory, BMS, Advisory, Novartis, Advisory, BI, Advisory., *Gane, E.:* Other, Gilead, Advisory Board, Roche, Advisory Board, Janssen-Cilag, Advisory Board, Novartis, Advisory Board, Boehringer-Ingelheim, Advisory Board., *Forns, X.:* Other, Gilead, Advisory, MSD, Advisory, Janssen, Advisory., *Manns, M.:* Grant/Research Support, Roche; Speaker's Bureau, GSK; Other, BMS, Advisory, Gilead, Advisory, Idenix, Advisory, Novartis, Advisory., *Saab, S.:* Other, Gilead, Advisory, Roche, Advisory, BMS, Advisory., *Colombo, M.:* Grant/Research Support, Merck, Roche; Other, BMS, Advisory, Gilead, Advisory, Novartis, Advisory, Bayer, Advisory., *Younossi, Z.:* Other, Gilead, Advisory, Biolex, Advisory, Tibotec, Advisory, Vertex, Advisory., *Terrault, N.:* Grant/Research Support, AbbVie, Gilead, Vertex, Novartis; Other, Roche, Advisory, BMS, Advisory., *McHutchison, J.:* Employee, Gilead.

PLENARY SESSION II

Abstract # O-133

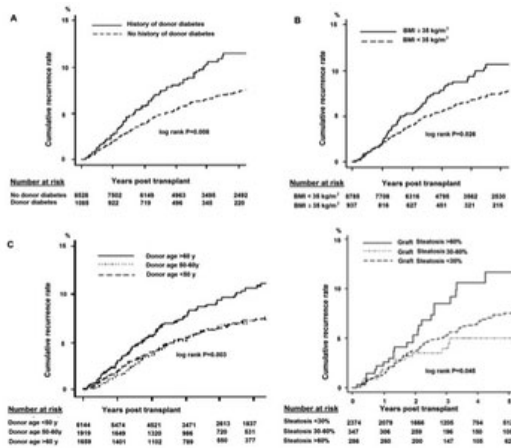
Donor Quality and the Risk of Hepatocellular Carcinoma Recurrence after Liver Transplantation.

Lorenzo A. Orci, Pietro E. Majno, Stéphanie Lacotte, Gilles Mentha, Christian Toso. *Division of Abdominal and Transplantation Surgery, University of Geneva Hospitals, Geneva, Switzerland*

Hepatocellular carcinoma (HCC) recurrence after liver transplantation occurs in 10-15% of patients. To date, studies assessing the risk of post-transplant HCC recurrence have focused on recipients' characteristics. However, liver graft parenchymal abnormalities and ischemia-reperfusion may also be involved in the process of post-transplant cancer recurrence. Here, we investigate the impact of donor characteristics and liver graft quality on the risk of post-liver transplantation HCC recurrence.

Using the Scientific Registry of Transplant Recipients (SRTR), we included adult patients granted with an exception for HCC diagnosis and receiving liver transplantation between 2004 and 2011. HCC recurrence was determined by using malignancy follow-up data and scrutinizing causes of death files (as validated by Samoylova ML et al. Liver Transplant 2013). A multivariate Cox regression was fitted, evaluating the impact of donor characteristics on post-transplant HCC recurrence, after adjusting for confounders such as total tumor volume, AFP and transplant centre.

9724 recipients were included. The 5-year cumulative recurrence rate was 7.8% (95%CI: 7.2-8.5). After adjustment, those receiving a graft from a donor older than 60 years (hazard ratio (HR) 1.4, 95%CI: 1.2-1.7, $p=0.001$), a donor with a history of diabetes (HR 1.5, 95%CI: 1.2-1.86, $p=0.001$) and a donor with obesity class II or more (body mass index ≥ 35 kg/m²) (HR 1.3, 95%CI: 1.0-1.7, $p=0.027$), had significantly higher HCC recurrence rates compared to their lean counterparts. In a post-hoc analysis of patients with documented steatosis, severe steatosis ($>60\%$) was also linked to an increased risk of HCC recurrence (HR 1.6, 95%CI: 1.1-2.5, $P=0.030$).



In addition to tumour characteristics, donor-related factors such as elevated donor age, increasing body mass index, diabetes, and steatosis should be taken into account when predicting the risk of post-liver transplant HCC recurrence.

Abstract # O-134

The Down-Regulation of Mir-126 Promotes Metastasis and Angiogenesis in Hepatocellular Carcinoma. Chengli Du, Jian Wu, Zhen Lv, Jun Cheng, Haiyang Xie, Shusen Zheng. *Department of Hepatobiliary Surgery, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, China*

Background: Hepatocellular carcinoma (HCC) is characterized by active angiogenesis and metastasis, which account for rapid recurrence and poor survival after resection or liver transplantation. Mir-126 has been reported to be correlated with metastasis and angiogenesis. The correlation between mir-126 and metastasis and angiogenesis in HCC remains unknown.

Aim: The purpose of the study was to investigate the expression pattern of mir-126 in HCC. In addition, the potential role of mir-126 in metastasis and angiogenesis in HCC was researched.

Methods: First, we used RT-PCR to explore the expression pattern of mir-126 in 80 pairs of HCC, in which 30 pairs were HCC receiving liver transplantation. Then, in vitro capillary tube formation and transwell assays were exploited to explore metastasis and angiogenesis in Hep-G2 and SMMC-7721 cells. Further, we constructed subcutaneous tumors of nude mice to explore angiogenesis ability of mir-126 in vivo. In addition, targetscan and dual-fluorescence assays were used to confirm the target of mir-126.

Results: Our results showed that the expression level of mir-126 in HCC was significantly higher than corresponding normal liver tissue. Both gain- and loss- of function studied indicate that mir-126 inhibit metastasis and angiogenesis in Hep-G2 and SMMC-7721, while in vivo subcutaneous tumors showed that mir-126 inversely correlated with vessel maker—CD34. Moreover, LRP6 and pik3r2 were identified as targets of mir-126 and silencing of LRP6 and pik3r2 suppressed metastasis and angiogenesis, respectively. Importantly, overexpression of these two targets antagonized the function of miR-126 mimics.

Conclusions: Our findings demonstrate that mir-126 was downregulated in HCC. And overexpression of mir-126 could significantly suppress the metastasis and angiogenesis of HCC cells via targeting LRP6 and pik3r2. In conclusion, mir-126 might serve as a new therapeutic biomarker in HCC patients receiving resection or liver transplantation.

Abstract # O-135

The Impact of Fcγ Receptor Polymorphism on Infection-Related Complications in ABO-Incompatible Living Donor Liver Transplantation Under Rituximab-Based Immunosuppressive Regimen. Hiroshi Sakai, Yuka Tanaka, Seiichi Shimizu, Kentaro Ide, Kohei Ishiyama, Takashi Onoe, Masahiro Ohira, Hiroyuki Tahara, Tsuyoshi Kobayashi, Hirotaka Tashiro, Hideki Ohdan. *Transplant Unit, Department of Surgery, Hiroshima University, Hiroshima, Japan*

[Aim] Rituximab (RTX), which belongs to an IgG1 subclass of immunoglobulin (Ig), plays an indispensable role in the immunosuppressive regimen for ABO-incompatible (ABOi) living donor liver transplantation (LT). Polymorphisms of IgG Fc receptor (FcγR) alter the affinities of the

receptors for RTX and Ig, raising the possibility that polymorphism affects the host innate immunity. This study aimed to explore the impact of these polymorphisms on the clinical response to RTX and the clinical outcome in recipients of ABOi LT.

[Methods] This study enrolled 19 patients who had received ABOi LT. RTX was administered 2 weeks before LT. To evaluate the effects of RTX, analysis of the residual B-cell proportion in the peripheral blood was analyzed by flow cytometry, the total IgG levels were analyzed following LT, and the incidence of infection-related complications was studied. The frequency of single-nucleotide polymorphisms encoding FcγRIIIa [131H/R] and FcγRIIIa [158F/V] was evaluated in every individual by polymerase chain reaction.

[Results] The study revealed that 10 patients were FcγRIIIa 131HH homozygous, 9 were R carriers, while 9 patients were FcγRIIIa 158VV homozygous, 10 were F carriers. The proportion of B-cells in the peripheral blood was almost completely eliminated 1 week after administration of a single dose of RTX. No differences were seen between patients with each polymorphism of both FcγRIIIa and FcγRIIIa. The recovery levels of the total IgG were lower in patients with FcγRIIIa HH genotype (higher affinity for RTX) than in patients with R carrier during the early period after LT. However, no such trend was noted in FcγRIIIa polymorphisms. The incidence of bacteremia was higher in patients with FcγRIIIa HH genotype (n = 5/10, 50%) than in those with R carrier (n = 1/9, 11%). A similar trend was observed between patients with FcγRIIIa F-carrier genotype (low affinity for IgG3) (n = 5/10, 50%) and the VV homozygous patients (high affinity for IgG3) (n = 1/9, 11%).

[Conclusions] The polymorphisms in the FcγRIIIa gene may affect the efficiency of the RTX. In addition, patients with FcγRIIIa HH genotype and FcγRIIIa F-carrier genotype are at risk for severe infection-related complications.

Abstract # O-136

Cardiopulmonary Exercise Testing: Can It Really Predict Survival? Anish Gupta, Ranjan Guha, Simon Cottam. *Anaesthesia, King's College Hospital, London, United Kingdom*

Aim

To review the survival outcomes in hepatic transplant patients in relation to pre-operative anaerobic threshold and peak oxygen consumption.

Background

Selecting patients for liver transplantation is a complex and rigorous process, incorporating a multi-disciplinary assessment of the patient. Cardiopulmonary exercise testing (CPET) has been hailed as a possible predictor of survival, but how does this test fair with survival at King's College Hospital?

Methods

We retrospectively reviewed all elective primary adult liver transplants at King's College Hospital from Sept 2009 until June 2012 and analysed the pre-operative CPET results with survival data. We also reviewed records to determine length of stay, MELD/UKELD, intra-operative cardiac arrest and baseline characteristics.

Results

MELD and UKELD scores were not significantly different between the groups analysed. When studying survival outcomes in relation to anaerobic threshold, mortality rates were comparable. The majority of deaths occurred in the higher peak oxygen consumption group, contradictory to previous studies. Mean follow-up was 9 months. Intensive care length of stay was comparable, however, reduced peak VO2 and AT demonstrated a trend toward increased length of hospital stay, though not reaching statistical significance.

Mortality and Length of Hospital Stay according to Anaerobic Threshold

Anaerobic Threshold	Patients (%)	90 Day Mortality	12 Month Mortality	>12 Month Mortality	Intra-operative Cardiac Arrest	LOS ITU	LOS Hospital
<9	59 (26)	2	0	2	4	3 (2-4)	20 (16-29)
9-10.99	50 (22)	1	1	0	2	3 (2-5)	19.5 (24-32)
>11	119 (52)	2	3	2	0	3 (2-4)	17 (13-28)

LOS=length of stay; ITU=intensive care unit. Median (IQ range)

Mortality and Length of Hospital Stay according to Peak Oxygen Consumption

Peak Oxygen Consumption	Patients (%)	90 Day Mortality	12 Month Mortality	>12 Month Mortality	Intra-operative Cardiac Arrest	LOS ITU	LOS Hospital
<10	7 (4)	0	0	0	2	4 (2-6)	28 (20-88)
10-14.99	50 (26)	1	0	1	1	3 (2-6)	21 (16-38)
>15	135 (70)	4	2	3	3	3 (2-4)	17 (12-31)

LOS=length of stay; ITU=intensive care unit. Median (IQR range)

Conclusion

This data illustrates that mortality following primary liver transplantation cannot be reliably predicted using cardiopulmonary exercise testing. Neither the anaerobic threshold nor the peak oxygen consumption were associated with increased mortality, however, they did appear to be consistent with increased hospital stay.

Abstract # O-137

Sofosbuvir Plus Ribavirin before Transplantation Prevented HCV Infection Post-Transplant in Patients with HCV Cirrhosis and HCC: Results of an Open-Label Trial. Michael P. Curry¹,

Norah Terrault², Jacqueline O'Leary³, Xavier Forns⁴, Robert Brown, Jr.⁵, Raymond T. Chung⁶, Edward Gane⁷, Jonathan M. Fenkel⁸, Fredric Gordon⁹, Alexander Kuo¹⁰, Thomas Schiano¹¹, Eugene Schiff¹², Alex Befeler¹³, John G. McHutchison¹⁴, William T. Symonds¹⁴, Jill Denning¹⁴, Lindsay McNair¹⁴, Sarah Arterburn¹⁴, Dilip Moonka¹⁵, Gregory Everson¹⁶, Nezam Afdhal¹. ¹Beth Israel Deaconess Med Center, Boston, MA, USA; ²University of California, San Francisco, CA, USA; ³Baylor University Med Center, Dallas, TX, USA; ⁴Liver Unit, IDIBAPS, CIBEREHD, Hospital Clinic, Barcelona, Spain; ⁵Columbia University, NY, NY, USA; ⁶Massachusetts Gen Hospital, Boston, MA, USA; ⁷Auckland City Hospital, Auckland, New Zealand; ⁸Thomas Jefferson University Hospital, Philadelphia, PA, USA; ⁹Lahey Clinic, Burlington, MA, USA; ¹⁰University of California, San Diego, La Jolla, CA, USA; ¹¹Mount Sinai School of Medicine, NY, NY, USA; ¹²University of Miami, Miami, FL, USA; ¹³St Louis University, St Louis, MO, USA; ¹⁴Gilead Sciences, Foster City, CA, USA; ¹⁵Henry Ford Health System, Detroit, MI, USA; ¹⁶University of Colorado, Denver, CO, USA

Patients with detectable HCV RNA at the time of liver transplantation (LT) universally experience allograft infection post transplantation. The nucleotide polymerase inhibitor sofosbuvir has a high resistance barrier and favorable safety profile.

In this open-label study, patients with chronic HCV listed for LT for hepatocellular carcinoma received up to 48 weeks of sofosbuvir and ribavirin before LT. The primary endpoint was HCV RNA <25 IU/mL 12 weeks after LT (pTVR) in patients with an HCV RNA <25 IU/mL at last measurement before LT.

Of the 61 enrolled patients, 44 have undergone LT (16 GT1a, 18 GT1b, 5 GT2, 4 GT3, 1 GT4; VL 6 log₁₀ IU/mL; 82% prior treatment). 41 had a HCV RNA <25 IU/mL at last measurement before LT. These 41 patients received a mean of 19 (range 2.3 to 48) weeks of treatment before LT. 39 patients reached ≥12 weeks post-transplant, of whom 25 (64%) achieved pTVR. 24 of these 25 patients have been followed for 24 or more weeks post-transplant and all have achieved pTVR24. The most common adverse events were fatigue, anemia, headache, and nausea.

Sofosbuvir and RBV were safe and prevented allograft infection in the majority of patients who were HCV RNA undetectable at the time of LT.

DISCLOSURE: Curry, M.P.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Terrault, N.: Grant/Research Support, Gilead; Other, Gilead, consulting., O'Leary, J.: Grant/Research Support, Gilead., Forns, X.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Brown, Jr., R.: Grant/Research Support, Gilead., Chung, R.T.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Gane, E.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Fenkel, J.M.: Grant/Research Support, Gilead., Gordon, F.: Grant/Research Support, Gilead., Kuo, A.: Grant/Research Support, Gilead., Schiano, T.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Schiff, E.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Befeler, A.: Grant/Research Support, Gilead., McHutchison, J.G.: Employee, Gilead., Symonds, W.T.: Employee, Gilead., Denning, J.: Employee, Gilead., McNair, L.: Other, Gilead, Consulting., Arterburn, S.:

Employee, Gilead., Moonka, D.: Grant/Research Support, Gilead., Everson, G.: Grant/Research Support, Gilead., Afdhal, N.: Grant/Research Support, Gilead; Stockholder, Gilead, Consulting.

Abstract # O-138

Sofosbuvir Compassionate Use Program for Patients with Severe Recurrent Hepatitis C Including Fibrosing Cholestatic Hepatitis Following Liver Transplantation. Xavier Forns¹, Martin

Prieto², Michael Charlton³, John G. McHutchison⁴, William T. Symonds⁴, Jill Denning⁴, Theo Brandt-Sarif⁵, Paul Chang⁴, Valerie Kivett⁴, Robert J. Fontana⁵, Thomas F. Baumert⁶, Audrey Coilly⁷, Lluís Castells⁸, Francois Habersetzer⁶. ¹Liver Unit, IDIBAPS, CIBEREHD, Hospital Clinic, Barcelona, Spain; ²Hepatology Unit, CIBEREHD, Hospital Universitari i Politècnic La Fe, Valencia, Spain; ³Intermountain Medical Center, Murray, UT, USA; ⁴Gilead Sciences, Foster City, CA, USA; ⁵University of Michigan, Ann Arbor, MI, USA; ⁶Hôpitaux Universitaires de Strasbourg, Inserm U 1110, Strasbourg, France; ⁷Centre Hépatobilaire, Hôpital Paul Brousse, Villejuif, France; ⁸Liver Unit-Internal Medicine Department, CIBEREHD, Hospital Universitari Vall Hebron, Barcelona, Spain

Background: There are no effective treatment options for patients with severe recurrent hepatitis C after liver transplantation (LT). The nucleotide polymerase inhibitor sofosbuvir (SOF) has demonstrated high efficacy across a broad range of HCV genotypes and patient populations, a high barrier to resistance, no interactions with immunosuppressive agents, and a favorable safety profile.

Methods: Patients who had exhausted all treatment options and had poor clinical prognoses received SOF as compassionate use for severe recurrent hepatitis C following LT. The regimen included SOF 400 mg/day and RBV for up to 48 weeks, with PEG-IFN at the physician's discretion.

Results: 87 patients received a SOF-containing regimen (57 SOF+RBV, 30 SOF+RBV+PEG) and will have completed treatment by January 1, 2014. 72 had HCV GT1, 2 GT2, 6 GT3, 3 GT4, and 4 mixed GTs; 26% female; mean age 55; mean baseline bilirubin 7.1 mg/dL (range 0.4-45) albumin 3.1 g/dL (2.0-4.8), INR 1.26 (0.96-2.07), and platelets 105 ×10³/uL (27-316 ×10³). Preliminary SVR12 rates are 54% for patients treated with SOF+RBV and 44% for those treated with SOF+RBV+PEG. Among 76 patients whose outcomes have been reported, 53 (70%) have improved on treatment, 10 (13%) have stabilized and 13 (17%) died, with all deaths attributed to progression of liver disease or associated complications. A total of 29 (33%) subjects reported SAEs, none attributable to study drug.

Conclusions: In patients with severe HCV recurrence, a compassionate-use regimen containing SOF+RBV (with or without PEG) was well-tolerated and demonstrated potent antiviral activity, with many patients achieving SVR and clinical improvement.

DISCLOSURE: Forns, X.: Grant/Research Support, Gilead; Other, Gilead, Consulting., Prieto, M.: Grant/Research Support, Gilead., Charlton, M.: Grant/Research Support, Gilead; Other, Gilead, Consulting., McHutchison, J.G.: Employee, Gilead., Symonds, W.T.: Employee, Gilead., Denning, J.: Employee, Gilead., Brandt-Sarif, T.: Other, Gilead, Consulting., Chang, P.: Employee, Gilead., Kivett, V.: Employee, Gilead., Fontana, R.J.: Grant/Research Support, Gilead., Coilly, A.: Grant/Research Support, Gilead., Castells, L.: Grant/Research Support, Gilead., Habersetzer, F.: Grant/Research Support, Gilead.

Abstract # O-139

Liver Transplantation using Hepatitis B Core-Positive Donor Liver Grafts in Infants and Children. Sanghoon Lee, Byunggon

Na, Dong Kyu Oh, Jin Yong Choi, Wontae Cho, Jong Man Kim, Choon Hyuck D. Kwon, Jae-Won Joh, Suk-Koo Lee. *Department of Surgery, Samsung Medical Center, Seoul, Korea*

Background: Controversy still exists concerning the use of livers from hepatitis B surface antigen-negative (HBsAg-) hepatitis B core antibody-positive (HBcAb+) donors for liver transplantation (LT). We describe our experience of LT using HBcAb+ livers in pediatric recipients.

Methods: From June 1996 to October 2013, 197 cases of pediatric LT were performed in Samsung Medical Center (Seoul, Korea). Fifty-two liver grafts (52/197, 26.4%) were from HBcAb+ donors. De novo hepatitis B prophylaxis for recipients of HBcAb+ livers was given as hepatitis B immunoglobulin (HBIG) 100 IU/kg given intravenously during the anhepatic phase and once daily for 6 days postoperatively. Then, HBIG was given intermittently to

maintain HBsAb titers above 200 IU/L for one year postoperatively. Then, hepatitis B vaccine (Hepavax) was given intermittently to maintain HBsAb titers above 100 IU/L.

Results) Twenty-one cases were male and 31 cases were female recipients. Mean age was 6.6 years (range 4 months ~ 16 years). Forty-seven cases were living donor LT and 5 cases were deceased donor LT. Median follow-up period was 71 months following LT (range 1~202 months). Recipient hepatitis B serology were as follows: HBcAb+/HBsAb+ 5 cases, HBcAb-/HBsAb+ 26 cases, HBcAb-/HBsAb- 15 cases. There were 3 cases (3/52, 5.8%) of de novo hepatitis B encountered during the follow-up period. De novo hepatitis was detected at 6, 16 and 20 months post-LT, respectively. All patients were initially managed with lamivudine. Two patients developed lamivudine resistance and were switched to entecavir. Negative seroconversion was achieved in two patients, one with lamivudine alone and the other with entecavir. All patients are alive with stable functioning grafts 42, 182 and 183 months after occurrence of de novo hepatitis B. Ten-year protocol liver biopsies were done in two patients, including one patient with persistent HBsAg positivity. Biopsy results showed no signs of viral hepatitis or fibrosis in either patients.

Conclusion) LT using HBcAb+ livers resulted in 5.8% incidence of de novo hepatitis B in our pediatric recipients. However, de novo hepatitis B did not compensate graft function or patient survival.

Abstract # O-140

Protection of the Small Remnant Liver By Portal Pressure Modulation With an Adjustable Vascular Ring (MID-AVR™) after Major Hepatectomy in Pigs. P. Bucur^{1,4}, Ma Allard^{2,3}, I. Vignon-Clementel⁵, C. Audebert⁵, D. Drasdo⁵, M. Sebah^{1,2,3}, L. Cazenave⁶, D. Castaing^{1,2,3}, E. Vibert^{1,2,3}. ¹AP-HP Hopital Paul Brousse, Villejuif, France; ²Univ Paris-Sud, Villejuif, France; ³Unit 785, Inserm, Villejuif, France; ⁴CHU Trousseau, Tours, France; ⁵INRIA, Rocquencourt, France

Portal barotrauma is responsible for post-hepatectomy liver failure or small-for-size syndrome after major hepatectomy or living-related donor liver transplantation, respectively. Temporary protection of the small remnant liver from this barotrauma could be efficient. In this experimental study, we assessed the effects of removable, adjustable and inflatable ring placed around the portal vein (MID-AVR™) after a major hepatectomy.

Methods. Seventeen pigs underwent 75% hepatectomy. In 8 of them, an adjustable vascular ring, MID-AVR™ was placed around the portal vein before the resection. It was inflated to reduce by half the portal flow during the first 3 postoperative days (POD). MID-AVR™ was deflated in all pigs and was removed percutaneously in 3. Liver biopsy was done at POD3. All pigs had continuous hemodynamic monitoring (including cardiac output and hepatic hemodynamics) during hepatectomy and sacrifice at POD7. We evaluated survival, liver function and liver pathology including assessment of 3D reconstruction of the hepatic lobule microscopic architecture based on serial confocal microscope immunohistochemistry imaging in the 2 groups. Results.

MID-AVR™ produced a stable reduction of the portal vein diameter. Percutaneous inflation, deflation and ablation were safe. 2 of 8 (25%) pigs with MID-AVR™ and 4 of 9 (45%) controls died before POD3 (p=NS). The portacaval gradient was significantly lower at the end of the hepatectomy in the MID-AVR™ group (1.3 vs 5.2 mmHg, p<.01). MID-AVR™ decreased significantly the rate of plasmatic bilirubin concentration in µmol/L in the first week after 75% hepatectomy (5.7 vs 9.2, p<.01 at POD3 and 3.8 vs 6.6, p<.05 at POD5). Semi-quantitative pathological score showed significantly milder lesions in MID-AVR™ group. 3D lobular imaging showed encouraging differences between the 2 groups.

Conclusion. For protecting the remnant liver from portal barotrauma during the first three post-operatives days after a major hepatectomy and/or transplantation of small liver, MID-AVR™ is an innovative tool to improve post-operative liver function. Feasibility study is ongoing in human after major hepatectomy. **DISCLOSURE:** Bucur, P.: Grant/Research Support, MID Innovation., Cazenave, L.: Stockholder, MID Innovation., Vibert, E.: Grant/Research Support, MID Innovation.

Abstract # O-141

Impact of Everolimus on the Recurrence Rate of Hepatocellular Carcinoma after Liver Transplantation – 12, 24, and 36 Months Data from 719 LTx Recipients. G. Junge, F. Saliba, P. De Simone, L. Fischer, J. Fung, G. Dong, H. Schwende, A. Speziale. H2304 Study Group, Basel, Switzerland

Background For patients with localized hepatocellular carcinoma (HCC) who don't qualify for surgical resection, LTx is an appropriate strategy for candidates with a single lesion ≤5 cm, up to three separate nodules, none larger than 3 cm (Milan criteria), no evidence of gross vascular invasion, and no regional nodal or extrahepatic distant metastases. Because immunosuppression to reduce the incidence of acute rejection is associated with higher tumor recurrence, efforts have been underway to reduce doses and to evaluate new treatment options to reduce this risk.

Methods

Data were retrieved from study H2304 (NCT00622869) and its extension, a 3-year RCT in 719 de novo LTx recipients comparing everolimus (EVR, C0 3-8 ng/mL) plus reduced tacrolimus (rTAC, C0 3-5 ng/mL), or EVR (C0 6-10ng/mL) with TAC Withdrawal (TAC-WD) at M4 to standard TAC (TAC-C, C0 6-10 ng/mL). Here, we present HCC recurrence, patient outcome and impact of everolimus treatment and exposure in 203 HCC patients at 12, 24, and 36 months after LTx.

Results

Baseline demographics and HCC characteristics were comparable (Tab1). HCC recurrence was observed in 2, 12, and 14 patients at M12, 24 and 36. HCC recurrence was lower in patients treated with everolimus. Detailed data by treatment and risk factor analyses will be presented.

Table 1: Baseline demographics and HCC characteristics.

	Number [n]	Age [yr]	Male [%]	Weight [kg]	Prior Treatment	mi Mass [%]	Lesion [g]	Largest [cm]	IDO [cm]	AFP pos [%]	Level [ng/mL]
EVRYTAC	47	58.4 (53-79.1)	75.1	33.67 (60-68.6)	1.0	2.7	4.1	40.9(7)	96.7		
TAC WD	76	58.6 (56-77.3)	74.3	41.76 (65-65.5)	1.0	4.0	4.4	52.0(8)	53.9		
TAC TC	60	58.4 (52-66.7)	74.1	37.60 (57-66.6)	1.0	5.4	4.7	47.1(6)	34.7		

No postoperative mortality was recorded. Post-operative respiratory complications developed in 9 of 80 (11.25%) patients of conventional group. Mild respiratory failure was observed in 7.27% of events (n=4). Pneumothorax and suspected pulmonary infection was observed in 1.18% of events (n=1). Pleural effusion occurred in 23.63% of events (n=13). No intra-operative ventilatory strategy related complication occurred during surgery in both the groups. The patients remained haemodynamically stable throughout the surgery. The surgeon was blinded to the study and did not report any increased bleeding and congestion due to intervention intra-operatively. Postoperatively oxygen saturation was significantly improved in lung protective strategy group. Pulmonary complications are frequent in living liver donors. These complications may be reduced by applying lung protective strategies like application of high PEEP without untoward complications related to PEEP.

Abstract # P-2

Can Massive Volume Overload Result in Severe Pulmonary Hypertension in Liver Transplantation (LTx) Candidates?

Andre M. De Wolf, Joshua Herborn, Wayne Soong. *Anesthesiology, Northwestern University, Chicago, IL, USA*

Volume overload is a common complication of severe liver disease. It can result in increases in pulmonary artery (PA) pressures, but it is believed that severe pulmonary hypertension (PHTN) does not occur solely as a result of volume overload. We present a patient with severe PHTN mainly as a result of massive volume overload.

Case report:

A 61 yr old man with nonalcoholic steatohepatitis (NASH) was transferred from another hospital for consideration for LTx. Dobutamine stress echocardiography 3 days later was normal; peak right ventricular pressure could not be estimated because of the lack of tricuspid regurgitation. Left heart cath 7 days after admission was normal except for LVEDP of 18 mm Hg. Hepatorenal syndrome required daily dialysis. Two weeks after admission an organ became available, and the patient was transferred to the operating room. However, the day before he had refused hemodialysis. After uneventful induction of anesthesia, a pulmonary artery (PA) catheter was placed, revealing the following hemodynamic variables: BP 110/60 mm Hg; PA 70/40 mm Hg, mean 50; wedge 24, cardiac output 13.1 L/min; SvO₂ 74%. Transesophageal echocardiography (TEE) showed mild-moderate right ventricular (RV) hypertrophy and enlargement, but no evidence of dysfunction. The decision was made to cancel the procedure.

24 h after dialysis the PA pressures were 55/28, mean 39; CVP 15; wedge 25; CO 11.6, PVR 1.2 WUnits. 48 h after dialysis the PA pressures were 54/23, mean 36; CVP 16; wedge 20; CO 9.8, PVR 1.6 WUnits. 3 weeks later a LTx was attempted, but the patient died intraoperatively from septic complications.

Discussion: Massive volume overload rarely results in severe PHTN. While PVR can be calculated to determine the presence of PHTN, this is complicated by the high CO state. In normal individuals (exercise physiology), an increase in CO results in recruitment of pulmonary vessels, resulting in a reduction in PVR and only a very small increase in PA pressures. While patients with liver disease also have an increase in CO, we have to consider the natural response to this (vessel recruitment and lowered PVR) when interpreting whether PHTN is present or not.

Abstract # P-3

Clinical Course of Patients Receiving Split Liver Transplants; the Edinburgh Experience. Catherine Determann¹, Jennifer Whitgift¹, Dermot McKeown¹, James Powell², Mark Dunn¹.

¹Department of Anaesthetics and Critical Care, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom; ²Edinburgh Transplant Unit, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom. This study evaluated the clinical course of patients receiving a split liver transplant, from admission to discharge in the Intensive Care Unit (ICU). On literature review, we were unable to find published data comparing the immediate post-operative course of these patients compared with patients receiving whole liver transplants.

All patients receiving a right lobe or extended right split liver transplant between 1st April 2006 and 31st March 2013 were included for analysis, producing a study group of 58 patients. Data collected were from the intra-operative anaesthetic charts and ICU clinical notes, and included the pre-operative status of each patient; their UK End Stage Liver Disease and Model for End Stage Liver Disease scores, their cause of end-stage liver failure and the type of transplant the patient received. Data were also collected regarding

the donor organs where available; the cause of death of the donor patient and the location of organ retrieval compared with location of transplantation. Physiological data throughout the patients stay in ICU were collected. This comprised the hours of complete and assisted ventilation, use of vasopressors or continuous veno-veno haemofiltration (CVVH), acid-base status, creatinine level and fibrinogen levels. Biochemical markers of liver function were also assessed, comprising lactate, alanine aminotransferase, bilirubin levels and normalised prothrombin time. The Acute Physiology And Chronic Health Evaluation II Scores, and daily Sequential Organ Failure Assessment scores for each patient were collected for the duration of ICU admission.

Our results show patients receiving split liver transplants are likely to have an uncomplicated immediate post-operative recovery whilst in the ICU. These patients rarely require CVVH or infusions of vasopressors. Their median length of stay in ICU is just over 2 days, with a median length of stay until hospital discharge of 11 days. We propose that patients receiving split liver transplants do not require a longer period in the ICU or increased levels of organ support in comparison to patients receiving whole liver transplants. This has implications for future liver transplant logistic and financial planning.

Abstract # P-4

Determination of Transfusion Requirement and Blood Bank Stores in Liver Transplantation. Halit Ziya Dundar¹, Remzi Iscimen², Pinar Tasar Sarkut¹, Baris Gulcu¹, Gurkan Turker², Yasemin Heper³, Ekrem Kaya¹. ¹General Surgery and Liver Transplantation Group, Uludag University, School of Medicine, Bursa, Turkey; ²Anesthesiology and Reanimation, Uludag University, School of Medicine, Bursa, Turkey; ³Blood Bank, Uludag University, School of Medicine, Bursa, Turkey

Aim: Liver transplantation (LT) has usually been associated with transfusion of large amounts of blood products. This study evaluates the type and amount of blood products required in LT patients which will provide data for the blood bank stores.

Material and Methods: LT patients between 2008 to 2012 were analyzed retrospectively. In all cases except one, piggyback technique was performed. Age, sex, indication of transplantation, co-morbidities and MELD scores of the patients were reviewed. Hemoglobin, platelet, hematocrit and INR values before, at the time of and 24 hours after the LT and the transfused amounts of fresh frozen plasma (FFP), packed red blood cells (PRBC) and platelets are determined.

Results: Eighty patients (24 female, 56 male) with a mean age of 48.3±14.8 years were included. Mean INR values and MELD scores of the patients were 1.74±0.7 and 19.6±3.7 respectively. The mean amounts of PRBC, platelets and FFP transfused were 6±3.6, 1.8±1.5 and 8.9±4.9 units respectively. 90.7% of all transfusions were performed intraoperatively. There was a significant correlation between the amount of transfused blood products and the preoperative MELD scores, indication of transplantation, preoperative INR and platelet values. An increased requirement for blood transfusion was observed in 2 patients with peritonitis.

Conclusion: According to these data, at least 6 units PRBC should be prepared preoperatively for LT procedure.

Abstract # P-5

Two-Stage Liver Transplantation: Three Clinical Scenarios. Ender Gedik, Murat Biçakcioglu, Emrah Otan, Burak Isik, Cemalettin Aydin, Yasar Bayindir, Hüseyin I. Toprak, Cüneyt Kayaalp, Sezai Yilmaz. *Inonu University Liver Transplantation Institute, Malatya, Turkey*

Two-stage LT, involving a total hepatectomy with a temporary portocaval shunt, requires intensive perioperative care, especially during the prolonged anhepatic period. We presented 3 cases with 3 different clinical conditions. CASE 1: 57 y-o M underwent living related LT due to HBV and HCC. He admitted to ICU with mechanical ventilation. He was re-operated due to hepatic artery thrombosis on the 2nd day. Unfortunately, there was no additional liver source, and then his liver was extracted totally. After anhepatic phase for 48 h in the ICU, he was re-transplanted from deceased donor. At the 15th day he discharged from the hospital with good outcome.

CASE 2: 38 y-o F underwent LT due to fulminant toxic hepatitis. She ingested wild mushroom. He admitted to ICU prior to LT. At the preoperative period, she had high dose inotropes and CVVHDF for AKI. This therapy was continued intra-operatively. The surgeons decided only porto-caval shunt operation and total hepatectomy due to fatal status of the patient. The aim of this option was prevent self-damage of the non-functional liver to body and immunologic trigger. After the operation she was admitted to ICU and

MARS was initiated. Unfortunately, she was lost at the postoperative 12th h. CASE 3: 5 y-o M underwent cadaveric LT due to abdominal trauma. He was operated due to severe liver laceration at other center. He was discharged from the hospital with good outcome. 11 months later, he was admitted to our ICU again. He had bad health status and severe jaundice. He was diagnosed as severe biliary stricture. PTC was performed and biliary drainage catheter was inserted. The liver biopsy was performed and diagnosed as rejection. The living related LT was performed. On the 1st week hepatic artery thrombosis was diagnosed and he was re-operated. At the operation, he was diagnosed as total liver blood supply was interrupted. There was no additional liver source. The only obligatory option was total hepatectomy. At the ICU, MARS and plasma exchange were performed. Urgent liver notification was performed. 50 h later, he was successfully re-transplanted with deceased donor. Refractory lung edema was present. He admitted to ICU again. Unfortunately, he was lost at the postoperative 6th h.

Two-stage liver transplantation could serve as rescue therapy for acute liver failure patients.

References: 1. Kor J Anes, 348-52, 2010.

Abstract # P-6

Extra-Corporeal Membrane Oxygenation after Living Related Liver Transplantation. Ender Gedik, Emrah Otan, Reha M. Çelik, Olcay M. Disli, Cemalettin Aydin, Nevzat Erdil, Ramazan Kutlu, Sezai Yılmaz. *Inonu University Liver Transplantation Institute, Malatya, Turkey*

ECMO is a rescue therapy with indications as acute and cardiorespiratory failure, when conventional treatments fail. ECMO can be performed with either pumpless or pump. There is little literature about ECMO, especially after LT. We presented our experience of two patients.

CASE 1: 69 y-o woman underwent LT due to autoimmune hepatitis. 4 weeks later, she was admitted to ICU with acute respiratory failure and sepsis. She was intubated and mechanically ventilated. Her respiratory status was compromised gradually. Acinetobacter b. and Aspergillus f. were isolated from her tracheal aspirate culture. Appropriate antibiotics were started. On the 5th day, bilateral tube drainage were inserted due to massive pleural effusion. CVVHF was initiated for AKI. Thorax CT showed that bilateral Aspergillus ball. Her ABG's and clinics were deteriorated on conventional mechanical ventilation. The rescue therapy with pumpless extracorporeal lung assist (pECLA, ILA membrane ventilator, Novalung, Germany) was planned. On the 10th day, 15F right arterial, 17F left venous cannula were inserted with fluoroscopy guidance at the femoral vessels. She was anti-coagulated with UF heparin (ACT 180-200s). Her ABG's and lung mechanics were dramatically improved in 2 days. CVVHF was simultaneously continued. Therapy was continued for 7 days with lung improvement. On 27th day she was lost due to refractory septic shock.

CASE 2: An 8 m-o male infant underwent LT and hepatico-jejunostomy due to congenital extrahepatic biliary atresia. He had an acute onset on CLF with pneumonia. On the 3rd day, after successful operation, he was admitted to ICU. The ABG's and clinical condition of baby was deteriorated suddenly on 1st day. On 3rd day, the conventional MV and maximum inotropic therapy were failed. Near cardiac arrest, we decided urgent veno-arterial ECMO therapy. Right 8F c. carotis and 16F i. jugular vein cannula were inserted. ECMO pump (Novalung, Germany) was connected to the cannulas. He was heparinized (ACT 180-200 s). With high dose inotropic support and ECMO therapy, his cardiopulmonary status was improved on 1st day. Nevertheless, he was lost on 7th day due to severe collapse.

Despite our unsuccessful experience of 2 cases, the ECMO therapy for LT patients will cause well prognosis in selected cases.

Ref. 1. Transplantation Proceedings, 2774-5 (2013)

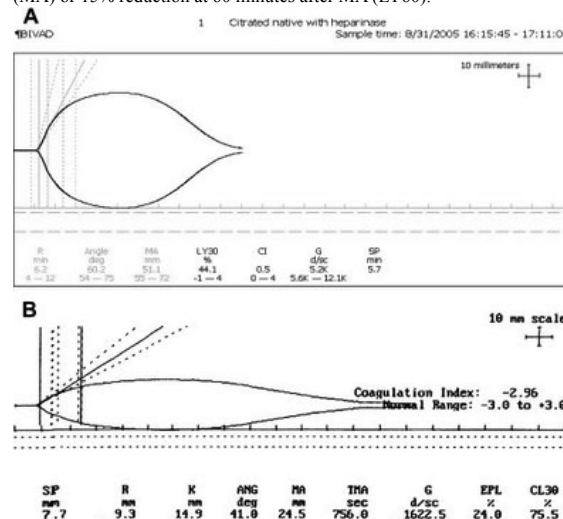
2. Lancet, 1351-63 (2009).

Abstract # P-7

The Incidence of Fibrinolysis Following Reperfusion of Liver Graft. Laura L. Hammel¹, Melissa Ertl¹. ¹Anesthesiology, University of Wisconsin Hospitals and Clinics, Madison, WI, USA; ²Transplant Surgery, University of Wisconsin Hospitals and Clinics, Madison, WI, USA

The goal of this study is to determine the incidence of fibrinolysis in liver transplant following reperfusion of the liver graft. We hypothesize there will be a difference in the incidence between brain dead donors (BDD) and donors after cardiac death (DCD). Fibrinolysis is an indicator of delayed liver function and is associated with delayed hemostasis and increased need of blood product transfusion.

After IRB approval a retrospective review of all liver transplants at our institution over a 6 year period. 509 liver transplants occurred during the study period was performed. Exclusions include fibrinolysis on baseline TEG, no TEG recorded or use of antifibrinolytic drug prior to obtaining the sample of blood for the post-reperfusion TEG. Age, sex, use of intraoperative venous hemodialysis (CVVH) were recorded along with type of donor, DCD or DBD. The presence of fibrinolysis was based on thromboelastogram (TEG). A baseline TEG is recorded at the start of the operation and again at 45-60 minutes after reperfusion of the liver graft. Hyperfibrinolysis is defined as a 7.5% degradation in the clot graph 30 min (LY30) after maximum amplitude (MA) or 15% reduction at 60 minutes after MA (LY60).



After exclusions a total of 424 liver transplants were evaluated. Hyperfibrinolysis occurred in 17.2% of all cases, but 55.2% of DCD compared to 14.4% of DBD (p-value 0.000).

DCD vs DBD

Donor type (n)	Fibrinolysis n(%)
Total (424)	73(17.2%)
DBD (395)	53(14.4%)
DCD (29)	16(55.2%)
DBD vs DCD	p-value = 0.000

There were no significant differences between the groups in mean age, sex or rates of CVVH and age and CVVH did not appear to affect the occurrence of fibrinolysis. There was a trend toward more fibrinolysis in female compared to male recipients of DBD transplants, but not statistically significant. Conclusion: Hyperfibrinolysis occurs in at least 1/2 of DCD liver transplants compared to a lower rate in DBD. Further study is needed to determine a high risk population which may benefit from prophylactic use of antifibrinolytic drugs.

Abstract # P-8

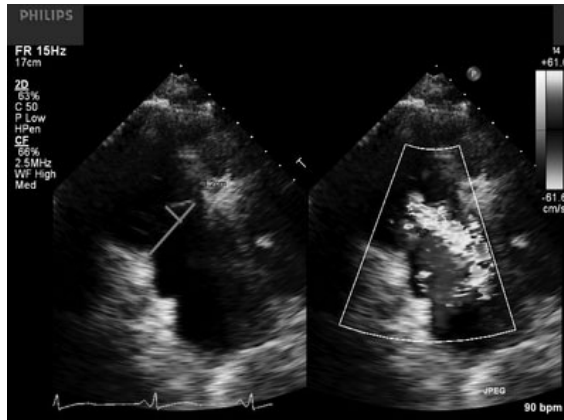
Considerations of Tricuspid Regurgitation in Liver Transplantation. Joshua C. Herborn. *Department of Anesthesia, Northwestern Memorial Hospital, Chicago, IL, USA*

This case report discusses perioperative management of patients undergoing liver transplantation (LTx) with tricuspid regurgitation (TR).

A 63 year-old presents for LTx for HCV cirrhosis. Preop transthoracic echo (TTE) showed a dilated right ventricle (RV) with normal systolic function and moderate TR. Placement of a pulmonary artery catheter into the right atrium read 26mmHg with large V waves that were indistinguishable from an RV trace. Intraop TEE showed an enlarged RV, a mildly dilated tricuspid annulus (TA), and severe TR.

Since significant backpressure from the elevated CVP would jeopardize the functioning of the graft, the LTx was cancelled.

The patient was diuresed to a CVP of 13mmHg. Postop TTE (below) showed mod-severe TR, a normal TA of 33 mm, and a tethered tricuspid valve.



In view of persistent TR despite aggressive diuresis/volume reduction and the high morbidity/mortality of pre-LTx tricuspid surgery, the patient was delisted.

Discussion

TR severity is independently associated with patient and graft survival (AJT 2013;13:2395). Patients with significant TR accounted for 71% of graft failures and 58% of deaths. Increased morbidity/mortality may be due to hepatic congestion exerted by backpressure from the TR jet or impaired RV function. Most patients with TR have normal leaflets but a deformed TV apparatus due to TA dilation or valve tethering. Volume overload causes TA dilation, a lack of coaptation of the leaflets, and an increased regurgitant orifice. Chronic RV overload results in RV remodeling, papillary muscle displacement and tethering of the leaflets. This pulls the free edge of the leaflets toward the RV apex and results in a lack of coaptation despite a normal TA. Patients with valve tethering have been shown to have residual significant TR despite normalization of the TA by an annuloplasty ring (Circ 2005;111:975). The degree of tethering can be quantified by measuring by the tethering distance, the length from the coaptation point to the annular plane. Patients whose TR is due to valve tethering are not expected to significantly improve with management strategies that reduce annular diameter and therefore may not be good candidates for LTx.

Abstract # P-9

Predictors of Requirement of Renal Replacement Therapy and Renal Dysfunction after Liver Transplantation: Experience from a South Indian Center. Ilankumaran Kaliamoorthy, Akila Rajakumar, A.P. Ellango, Mettu S. Reddy, Mohamed Rela. *Institute of Liver Disease and Transplantation, Chennai, Tamil Nadu, India*

Background: Renal dysfunction after OLT is an important factor in determining postoperative morbidity and survival.

Methods: We analyzed our recipient data to identify predictors of acute renal dysfunction (ARD) and need for renal replacement therapy. Predictors of ARD were also investigated. RIFLE criteria were used for defining renal dysfunction (RD). Change in serum creatinine between preoperative creatinine and peak serum creatinine within 7 days of transplant was used to stratify the study group.

Results: A total of 194 adult OLT have been performed between August 2009 and October 2013. Patients undergoing combined kidney liver transplant, on preoperative CRRT and patients with incomplete data were excluded from the analysis. 164 patients of whom 69 (42%) were DDLT and the rest LDLT were analysed. Post operatively, 20 patients required CRRT. Need for CRRT was associated with high intra-operative blood transfusion (median 14 units; $p < 0.001$), initial graft dysfunction ($p < 0.013$) and re-exploration ($p < 0.001$) on univariate analysis. Univariate analysis of risk factors for developing renal injury or failure identified high MELD score, high intraoperative transfusion, Indian ethnicity, postoperative haemorrhage, sepsis, initial poor graft dysfunction, previous HRS, re-perfusion syndrome and re-exploration. Multivariate analysis shows that need for massive blood transfusion and re-exploration ($p < 0.001$) were associated with Injury and Failure while only the need for re-exploration was associated with the need for renal replacement therapy. Patients requiring CRRT were associated with higher risk of death ($p < 0.001$).

Conclusion: Renal dysfunction after liver transplantation is associated with poor outcomes. Need for massive blood transfusion and re-exploration predicted significant post-transplant renal dysfunction.

Abstract # P-10

Detailed Electrocardiographic Analysis of Post-Reperfusion Bradycardia and Asystole and Their Outcome in Patients Undergoing Liver Transplantation. Sooho Lee, Sung-Hoon Kim, Young-Jin Moon, Jung-Won Kim, Sun-Key Kim, Gyu-Sam Hwang. *Department of Anesthesiology and Pain Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea*

BACKGROUND: Hemodynamic perturbation during hepatic graft reperfusion in patient undergoing liver transplantation is challenging and frequently accompanies bradycardia, arrhythmia and occasionally asystole. We investigated the detailed electrocardiographic (ECG) changes during hepatic graft reperfusion and their outcomes in patients underwent liver transplantation.

METHODS: We retrospectively analyzed the consecutive 994 patients in whom electronically archived multi-wave data are available from April 2006 to Jun 2010. The incidence, grade, type, and detailed characteristics of ECG changes immediately after graft reperfusion were systematically analyzed using Windaq software. Patient outcomes of 30-day and long-term overall mortality based on atrioventricular (AV) block and ventricular asystole (no QRS at least 3 s) were assessed.

RESULTS: The post-reperfusion bradycardia showed sinus rhythm slowing or progressive PR interval prolongation until Mobitz type I AV block occurred (Table 1). Overall incidences of bradycardia (heart rate < 60 bpm) and AV block were 7.8% and 4.1% (41/994), respectively. AV block lasted for a median of 22.9 s and was mostly preceded by Wenckebach periodicity. Of these, especially 1.2% (12/994) of patients progressed into ventricular asystole. 30-day and long-term mortalities of patients with asystole were higher than those with AVB or non-AVB patients (Fig 1).

CONCLUSION: The most prominent feature in ECG abnormalities of post-reperfusion bradycardia was AV block with Wenckebach periodicity, and the recipients with ventricular asystole during graft reperfusion showed poor outcome.

Table 1. Electrocardiographic parameters in patients with atrioventricular block

	PP interval (ms)	PR interval (ms)
Baseline	688.3 $\pm$ 127.5	142.0 $\pm$ 23.2
Maximal heart rate before slowing	667.0 $\pm$ 147.3	120.8 $\pm$ 24.3
Before last conducted P-wave	775.6 $\pm$ 141.7	203.5 $\pm$ 50.5
After atrioventricular block	979.8 $\pm$ 188.0	180.4 $\pm$ 42.9

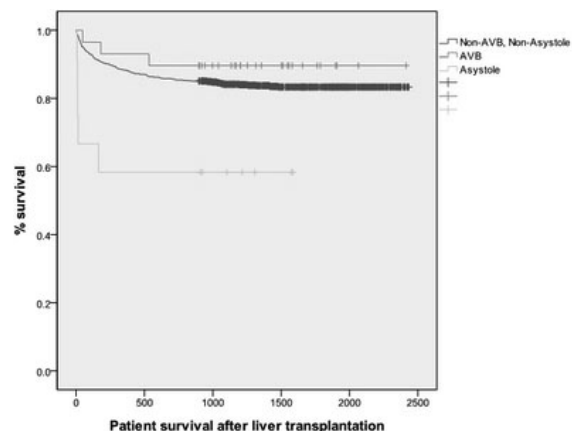


Fig 1. Patients survival after liver transplantation.

Abstract # P-11

Prevention of Hypothermia in Patients Undergoing Orthotopic Liver Transplantation using the Fisher and Paykel Humigard Open Surgery Humidification System: A Prospective Randomised Pilot Clinical Trial. Laurence Weinberg¹, Daniel Alban¹, Robert Jones², David Story¹, Brett Pearce¹, Larry McNicol¹.

¹Department of Anaesthesia, Austin Hospital, Heidelberg, Victoria, Australia; ²Liver and Intestinal Transplant Unit, Austin Hospital, Heidelberg, Australia

Introduction: Perioperative thermal disturbance during orthotopic liver transplantation can result in significant morbidity. We hypothesized that patients undergoing orthotopic liver transplantation will have a higher intraoperative core temperature prior to reperfusion and at completion of surgery if the Fisher & Paykel Humigard system is used.

Methods: Twenty-two adult patients were randomised to receive either open wound humidification with the Humigard system in addition to standard care (FPH group) or to standard care alone (Control group). Temperature measurements were taken at multiple time points using a pulmonary artery catheter (PAC), naso-pharyngeal temperature probe (NPP) and a bladder temperature probe (BTP). Other endpoints included PaCO₂, minute ventilation and the use of vasoconstrictors.

Results: Both groups were evenly matched for MELD, SOFA and APACHE II scores, baseline temperature, and duration of surgery. Immediately prior to reperfusion the mean NPP temperature was 36.0°C (SD: 0.41) in the FPH group and 35.4°C (SD: 0.74) in the Control group (estimated difference: 0.6°C; 95%CI: 0.08 to 1.15, p=0.02); the mean PAC temperature was 35.9°C (SD: 0.51) in the FPH group and 35.5°C (SD: 0.79) in the Control group (estimated difference: 0.4°C; 95%CI: -0.15 to 1.03, p=0.14); the mean bladder temperature was 36.2°C (SD: 0.63) in the FPH group and 35.5°C (SD: 1.03) in the Control group (estimated difference: 0.6°C; 95%CI: -0.12 to 1.4, p=0.09). On wound closure the FPH group had a higher mean NPP temperature compared to the Control group: 36.7°C vs. 36.1°C (estimated difference 0.52°C; 95%CI: 0.02 to 1.03, p=0.041). At completion of surgery there was a trend towards higher PAC (36.8°C vs. 36.3°C, p=0.09) and BTP (36.8°C vs. 36.5°C, p=0.27) temperatures in the FPH group. There were no significant differences in the use of vasoconstrictors, PaCO₂, ET CO₂ or minute ventilation between the groups at completion of surgery.

Conclusion: The Fisher & Paykel Humigard open surgery humidification system reduces the incidence of core intraoperative hypothermia during orthotopic liver transplantation. A larger trial is needed to confirm the results of this pilot study.

Abstract # P-12

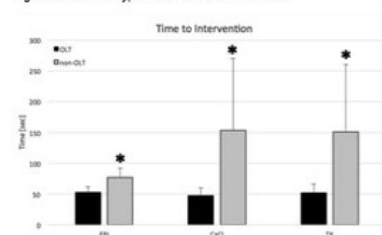
Does Liver Transplant Exposure Improve the Ability of Anesthesia Residents to Manage Intraoperative Crisis? Preliminary Results of a Simulation Study. Dung Nguyen, Shira L. Gurvitz, Annette Rebel, Amy DiLorenzo, Zaki-Udin Hassan. *Anesthesiology, University of Kentucky, Lexington, USA*

Liver transplant anesthesia experience is not mandatory for anesthesiology residency programs in the United States. Many programs expose their residents routinely to these cases in the hope that the exposure will enhance their ability to handle complex cases. The aim of this study is to assess the ability of anesthesia residents to manage an intraoperative hyperkalemic arrest after reperfusion of orthotopic liver transplant, using a patient simulator (PS) scenario.

Methods: A PS scenario was developed by the authors in which the anesthesia resident leads an OR team during reperfusion of an orthotopic liver transplant. Times for administration of Epinephrine (EPI), Calcium Chloride (CaCl) and secondary hyperkalemia treatment (TX) were recorded. After hyperkalemia treatments were given, the simulation scenario resumed stable hemodynamics (HD). Post simulation the residents were debriefed and evaluated the experience using 5 Likert scale questions. All times are given in seconds. Data and SD were analyzed using paired t-test. Significance was assumed if p<0.05.

Results: Twelve anesthesia residents in training years PGY 2-3 participated. 5 residents had previous liver transplant experience (OLT), 7 residents have not been exposed to liver transplants (non-OLT). The OLT residents performed better in recognizing and treating the hyperkalemic crisis than non-OLT residents. Hemodynamics restored earlier in the OLT group than in the non-OLT group (90.2sec +/- 13.8 vs 168.0sec +/-75.8, p=0.023). The post scenario evaluations indicated that all residents (OLT and non-OLT) found the experience helpful and would recommend the experience to others.

Figure 1: Times to hyperkalemic arrest intervention



OLT: residents with liver transplant experience, non-OLT: residents without liver transplant experience. EPI: time to Epinephrine, CaCl: time to Calcium chloride, TX: time to specific hyperkalemia therapy. * p<0.05

Conclusion: The PS is a useful tool for evaluating anesthesia resident performance during an intraoperative crisis situation related to liver

transplant. Previous liver transplant experience increases the anesthesia resident's ability to recognize and treat hyperkalemic cardiac arrest. The findings support the value of exposing anesthesia residents to liver transplant surgery.

Abstract # P-13

Micardial Dysfunction in Liver Transplantation. Use of Milrinone. Gonzalo Javier Pérez Villarejo, Antonio Díaz Martínez, Juanma Pérez Moreno, Javier Yebes González, Juan Carmona Aurioles. *Anesthesiology, Hospital Regional Carlos Haya, Málaga, Spain*

The incidence of cardiomyopathy is very common in patients with cirrhosis of enolic etiology.

This cardiomyopathy usually causes a right ventricle dysfunction during the perioperative period, post-reperfusion syndrome and congestive heart failure. In the echocardiogram and Transesophageal echocardiography of this patients shows a mild pulmonary hypertension and a decrease of the right ventricular cardiac output.

We present 3 case reports of patients with mild pulmonary hypertension: Pulmonary arterial pressure : 32-36, high systemic vascular resistance 1400-1600 dyn/seg/cm⁵, ejection fraction 42-47%, and normal ranges of Glomerular filtration rate.

During the anhepatic phase of the liver transplantation the patients present a decrease of the cardiac output (CO) and increase of the pulmonary arterial pressure so we proceed to use Milrinone.

Milrinone is a phosphodiesterase inhibitor that works to increase the hearts contractility. We will use a bolus dosage of 50 mg/kg and after, a continuous perfusion of 0.375-0.5 mg/kg/min in order to keep a cardiac output around 8-11L/min, PAP<30 and in order to avoid a right heart failure.

This perfusion was maintained until the postoperative period. In all cases it was removed before 16 hours after surgery with no signs of right heart failure, congestive heart failure or hemodynamic impairment.

An increase of the heart rate with no arrhythmias; normal GFR with diuresis 150-220ml/h, and a decrease of the pulmonary arterial pressures were observed during the perfusion.

We didn't use any other vasoactive drug during the procedure and we had no incidence of post-reperfusion syndrome.

Uncontrolled Pulmonary arterial hypertension in liver transplantation produces a right heart failure and subsequently an increase of morbidity and mortality.

PAP, SVR and CO monitoring help us to diagnose an incipient right heart failure but the gold standard of monitoring is the TEE.

So we conclude that Milrinone is an effective inotropic and vasopressor drug that should be use in those patients with right heart failure secondary to enolic cardiomyopathy. In those patients Milrinone has several advantages including better haemodynamic stability that helps improve kidney function and urinary flow and a decrease of morbidity and mortality rates.

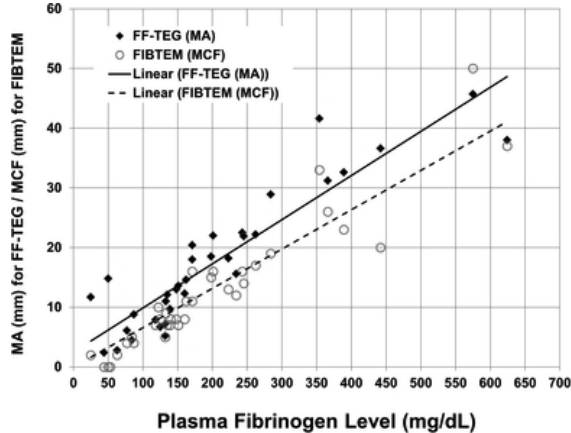
The concomitant use of aerosols of prostaglandines and other vasoactive drugs could be helpful in this kind of patients.

Abstract # P-14

Comparison between Thrombelastography and Thromboelastometry in Liver Transplantation. Ezeldeen Abuelkasem, Kenichi A. Tanaka, Raymond M. Planinsic, Tetsuro Sakai. *Department of Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA*

Head-to-head comparisons of Thrombelastography (TEG®) and thromboelastometry (ROTEM®) have rarely been reported in liver transplantation (LT). An IRB-approved prospective study of 19 consecutive isolated LTs was conducted [median age 55 years old; 11 male (57.9%); median MELD score 19; six live donors (31.6%)]. TEG® and ROTEM® were simultaneously performed including at induction of general anesthesia (baseline) and at 30 minutes after graft reperfusion (III+30). Corresponding coagulation indices between TEG® and ROTEM® [maximum amplitude (MA) vs. maximum clot firmness (MCF); reaction time (R) vs. clotting time (CT); alpha angles] were compared as the percent change at III+30 from the baseline. The incidence of clot lysis (Lysis30>8% in TEG® and Maximum Lysis>15% in ROTEM®) was also compared. The MA in functional fibrinogen TEG (ff-MA) and the MCF in FIBTEM (fib-MCF) were compared using von Clauss fibrinogen levels measured at each point. The data were described in the median with interquartile ranges. The comparison was made with Wilcoxon matched-pairs signed-rank test (or Friedman test with Dunn's multiple comparison test) with p<0.05 as deemed to be statistically

significant. Among the corresponding coagulation indices, the only significant difference was found between R of kaolin-TEG vs. CT of INTEM (%change from the baseline of 7.9% [-11.1, 26.6] vs. 48.6% [36.0, 73.2]; $p=0.0002$). When these numbers were reanalyzed with %changes of PTT (119.1% [91.7, 225.3]), R was significantly different from PTT ($p<0.0001$) while CT was not ($p=0.43$). The incidence of clot lysis was identified in 23 measurement points (16.9% in all 136 measurement points) in ROTEM®. Among these 23 lysis measurements, only 11 (47.8%) were detected in kaolin-TEG. ff-MA and fib-MCF were comparable in correlation with plasma fibrinogen level measurement.



In conclusion, TEG® and ROTEM® were comparable in measurement of coagulation parameters in adult LT; however, ROTEM® had a favorable correspondence with PTT and was more sensitive in identification of lysis. **DISCLOSURE:** Tanaka, K.A.: Other, ROTEM Inc, Consultant.

Abstract # P-15

Fast Track in Liver Transplantation. A National Single Center Experience. Dana R. Tomescu¹, Mihai Popescu¹, Simona O. Dima². ¹Dept. of Anaesthesia and Critical Care, Fundeni Clinical Institute, Bucharest, Romania; ²Dept. of General Surgery and Liver Transplantation, Fundeni Clinical Institute, Bucharest, Romania

Introduction. Early extubation is becoming a common practice for liver transplantation (LT) and early discharge from Post Anaesthesia Care Unit (PACU) is considered a cost-effective practice. The aim of this study was to assess the impact of Fast Track (FT) on patient's outcome in a single transplant center.

Methods. We retrospectively analysed 112 patients undergoing LT between January 2012 and May 2013. Patients were divided in two groups: the study group (SG) consisting of 62 patients in which FT was implemented and a control group (CG) consisting of 50 patients prior to FT implementation. FT criteria consisted of: patient is arousable, good gag reflexes, temperature above 35°C, transfusion requirements under 8 units of packed red blood cells and no need for vasopressor support. Perioperative data were collected from the patient's medical charts.

Results. The mean age in the SG was 48.54±10.97 years and the mean Model for End Stage Liver Disease (MELD) score was 15.52±4.76, similar to that of the CG (age 48.35±13.50 years and MELD score 17.11±5.69). Fifteen patients (24.19%) were extubated in the operating room or during the first hour after surgery. The mean duration of postoperative mechanical ventilation (MV) in the SG (9.18±13.75 hours) was significantly shorter ($p=0.032$) when compared to the CG (16.68±20.96 hours). There were no statistically significant differences between the two groups regarding postoperative rate of reintubation ($p=0.430$), non-invasive MV ($p=0.234$), pulmonary ($p=0.721$), neurological ($p=0.873$) or renal ($p=0.980$) complications. Duration of PACU stay was similar: 9.53±9.63 days in the SG and 9.94±6.25 days in the CG. MELD-Na score ($p=0.005$) but not MELD score ($p=0.532$) appears to be a predictor for prolonged MV in the study group, as well as preoperative serum bilirubin ($p=0.026$), INR ($p=0.004$) and serum sodium ($p=0.012$). Survival at six months was similar between groups: 90.3% in the SG and 86.0% in the CG ($p=0.554$).

Discussion. Fast track criteria adopted by our transplant center are feasible and have been successfully applied for the last year with excellent outcome. Pretransplant liver function assessed by MELD-Na score, represents the main reason for difficult weaning from MV. Adherence to the FT protocol is still low but present results encourage our anaesthesiologists to faster extubate their patients.

Abstract # P-16

Early Extubation in the Hepatopulmonary Syndrome: A Case Report. Amanda Trommello¹, Nicole Khetani¹, Elia Elia¹, Cataldo Doria², Yoogoo Kang¹. ¹Anesthesiology, Thomas Jefferson University, Philadelphia, PA, USA; ²Surgery, Thomas Jefferson University, Philadelphia, PA, USA

Hepatopulmonary syndrome (HPS) has inherent high morbidity and mortality with medical care alone. Liver transplantation (LTX) reverses pulmonary vasodilation, but postoperative course is commonly tumultuous and prolonged (1). In this case, positive pressure ventilation was minimized to avoid further deterioration of shunting.

A 62-year old female with NASH developed progressive hypoxemia secondary to the HPS; PaO₂ of 55 mmHg in room air and 377 mmHg in 100% O₂. LTX was uneventful with 8 units of RBC and 5 units of FFP transfusion. Eight hours in the ICU, she was awake and following commands on pressure support of 8 at FiO₂ of 70%. SaO₂ was 91%, and PaO₂ was 68 mmHg (Table 1). She was extubated and placed on re-breather mask. Immediate improvement in oxygenation was followed by episodes of low SPO₂, that were corrected by position changes to supine or lateral position. She was discharged from the ICU and hospital with nasal oxygen (2L/min) on 2 and 12 days, respectively.

Table 1. Arterial blood gas tensions and acid base state

	Preop.	End of surgery	POD #1a	POD #1b	POD #2a	POD #2b	POD #3
Hemoglobin (g%)	8.5	8.8	8.3	8.3	9.3	7.8	7.5
pH	7.35	7.32	7.33	7.25	7.28	7.31	7.35
PaCO ₂ (mmHg)	40	42	39	50	50	45	41
PaO ₂ (mmHg)	113	80	68	111	104	65	64
Base deficit (mmol/L)	3.2	4.2	5	4.9	3	2.9	2.2
O ₂ saturation (%)	99	96	94	98	98	92	92
Lactate (mmol/L)	2.9	4.5	4.9	4.4	2.7		3.4

She was extubated between POD #1a and POD #1b.

Discussion:

Postoperative rapid deterioration of oxygenation is caused by a further increase in shunting from an increase in lung blood volume, reduced production of pulmonary vasodilators, and ventilator-induced pneumonia. In this case, she was extubated as early as possible to minimize positive pressure ventilation, although she did not meet the conventional criteria for extubation (2). It is noteworthy that immediate improvement in oxygenation was followed by hypoxemia of the preoperative level. This was corrected relatively easily by body position changes to better match ventilation and perfusion. If her oxygenation deteriorated further, noninvasive ventilation was an option. In summary, early extubation is beneficial to patients with the HPS, and it is possible they maintain tissue oxygenation at a lower PaO₂ level by shifting O₂ dissociation curve and high cardiac output.

References:

1. Liver Transplant 2004; 10:174-182
2. Acta Anaesthesiol Scand 2010; 54: 970-978.

Abstract # P-17

Can Preoperative Portal Vein Flow Velocity or Size Predict Hemodynamic Instability during Clamping of the Inferior Vena Cava in Liver Transplantation? Chih-Hsien Wang¹, Tsung-Hsiao Shih¹, Chao-Long Chen², Kwok-Wai Cheng¹, Sheng-Chun Yang¹, Chia-Jung Huang¹, Shao-Chun Wu¹, Bruno Jawan¹. ¹Anesthesiology, Kaohsiung Chang Gung Memorial and Chang Gung University College of Medicine, Kaohsiung, Taiwan; ²Liver Transplantation Program and Surgery, Kaohsiung Chang Gung Memorial and Chang Gung University College of Medicine, Kaohsiung, Taiwan

Purpose As per our hypothesis, the lower the portal vein velocity, the higher will be the porto-systemic collaterals that facilitate shunting of portal blood back to the heart. Probably, preoperative portal vein velocity can be used to predict hemodynamic instability during clamping of portal vein and inferior vena cava in liver transplantation.

Method

A retrospective study of forty-two adult living donor liver transplant recipients was analyzed and compared. Correlation between preoperative portal vein flow velocity and sizes were obtained from Doppler ultrasound. All the changes in the hemodynamic data including heart rate, mean arterial blood pressure, central venous pressure, cardiac output, cardiac index and stroke volume before and after clamping of the portal vein and inferior vena cava were analyzed by linear regression.

Results

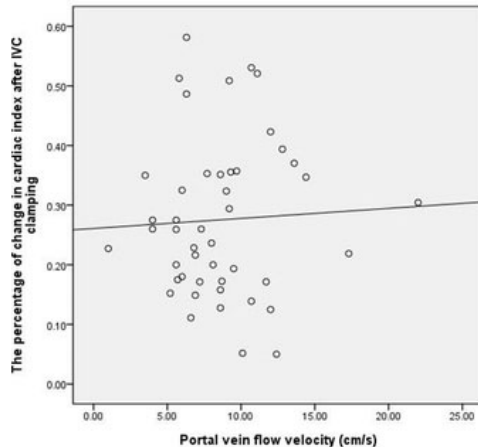
The changes in percentage of the cardiac output after IVC clamping were not significantly correlated with the preoperative flow and the size of the portal vein (Table 1),(figure1)Conclusion

Our results depict that the changes in the percentages of cardiac output after IVC clamping were neither correlated significantly with preoperative flow velocity nor the size of the portal vein.

Table 1 Linear regression analysis of the change of hemodynamic data after IVC clamping and the pre-operative PV flow velocity or PV diameter

	R ² of PV flow velocity	R ² of PV diameter
HR	0.002	0.028
MAP	0.035	0.010
CVP	0.024	0.034
CO	0.001	0.004
CI	0.002	0.002
SV	0.000	0.000

Figure 1 overlay scatter graph between the change in the cardiac index after IVC clamping and the pre-operative PV flow velocity.



Abstract # P-18

Successful Management of Pediatric Liver Transplant for Fulminant Hepatic Failure (FHF) Without an ICP Monitor.
Tomas J. Kucera, Jeffrey White, Peaches Orallo. *Anesthesiology, University of Florida, Gainesville, FL, USA*

Introduction:

A 12 year old, 63 kg male was transferred from another hospital for management of fulminant hepatic failure of unknown origin. All common causes of acute liver failure were ruled out. Patient was listed for liver transplant. Hospital course was significant for rapidly worsening liver failure, hepatic encephalopathy requiring intubation, and exchange transfusion. Despite this, persistent coagulopathy contraindicated ICP monitor placement. A donor organ was found on Day 3.

Management:

Patient was brought to OR intubated with existing radial and femoral arterial lines and LUE PICC line. Two additional central venous catheters were placed. After smooth induction of general anesthesia, patient underwent an end-to-end OLT with biliary stent.

Without an ICP monitor, interval paroxysms of bradycardia with hypertension were considered to represent Cushing's triad signs of significantly increased ICP. These were treated with hypertonic saline, mannitol and Lasix.

Eventually phenobarbital, infusion plus bolus doses, was required for persistent hemodynamics consistent with increased ICP. Patient required vasopressors during the case that included epinephrine, phenylephrine, and vasopressin, titrated to a MAP > 60 mm Hg. Total case fluids were 1L crystalloid, 2U PRBCs, 250 ml Albumin, and 14U FFP. EBL was 1000ml and urine output was 3500ml. Patient was transferred to PICU intubated, then extubated on POD 2 neurologically intact. Patient went on to have complete recovery and discharged on POD 23.

Discussion:

The physiological derangements of liver transplantation for FHF make it one of the most challenging cases for an anesthesiologist. The goals for hepatectomy and orthotopic transplant predicate attentive management of preload and surgical bleeding with pressors and intravascular volume, which can worsen these patients' cerebral edema with increased ICP. Hypertonic saline is useful but must be titrated to osmolality, while pentobarbital must be titrated to MAP.

References:

Kamat P et al. Invasive intracranial pressure monitoring is a useful adjunct in the management of severe hepatic encephalopathy associated with pediatric acute liver failure *Pediatr Crit Care Med.* 2012 January; 13(1): e33–e38.

Abstract # P-19

Anesthesia Care for Children With Fulminant Liver Failure: Report of Our Experience. Taylan Sahin¹, Erdinc Koca², Volkan Ince³, Muharrem Ucar⁴, Huseyin Ilksen Toprak⁴, Sezai Yilmaz³.

¹Dept of Anesthesia and Reanimation, Igdir Devlet Hastanesi, Igdir, Turkey; ²Dept of Anesthesia and Reanimation, Adiyaman Devlet Hastanesi, Adiyaman, Turkey; ³Department of Surgery, Inonu University Institute of Liver Transplantation, Malatya, Turkey; ⁴Dept of Anesthesia and Reanimation, Inonu University Institute of Liver Transplantation, Malatya, Turkey

Pediatric liver transplantations (LT) are becoming increasingly more common in the treatment of a child with fulminant liver failure. The aim of this study was to discuss the anesthetic experience for 59 pediatric patients with fulminant liver failure undergoing LT.

We performed a chart review of patients between 2007 and 2012 in a retrospective cohort study design. Patient characteristics, operational variables, blood and fluid requirements were evaluated.

Nineteen patients were performed from deceased (DDLT) and 40 from living-related donors (LRLT). The mean PELD score of the patients was 25 in DDLT and 33 in LRLT.

All patients received intravenous (IV) anesthesia with remifentanyl, and cisatracurium, and were ventilated with 4-7% desflurane in 50% oxygen/air as adjusted to maintain BIS value of 40-60. Mean operation time was 230min in DDLT and 280min in LRLT. All patient was received a dose of 12 mL/kg/hr of crystalloid infusion, and colloid and albumin as needed throughout the operation. The mean used fresh frozen plasma was 380 and 220 mL, and red blood cell was 570 and 360 mL, respectively in DDLT and in LRLT. There was no anesthetic-related morbidity in our series.

The LRLT patients had a lower mean age and body weight than the DDLT patients. The mean operation time and the mean anhepatic time were longer for LRLT patients than for DDLT patients.

Table 1.

	DDLT (n=19)	LRLT (n=40)
Age (year)	8.7	5.9
Weight (kg)	27.9	22
PELD	25	33
RBC (mL)	570	360
FFP (mL)	380	220
Colloid (mL)	325	375
Crystalloid (mL)	1240	1320
Albumin 20% (mL)	90	110
Duration of The Operation (min)	230	280
Duration of The Anhepatic Phase (min)	56	68

Balanced anesthesia with remifentanyl, cisatracurium, and desflurane after preoperative optimization, is a well-tolerated approach for children with fulminant liver failure undergoing LT. This anesthetic technique was aimed at minimizing the effects on the cardiovascular system, and also any consequences related to the possible increased intracranial pressure. Fluid balance was aimed at optimizing flow through the hepatic graft and preventing increases of intracranial pressure.

Abstract # P-20

Sirtuin 1: A New Insight in Fatty Liver Graft Preservation.

Mohamed Bejaoui¹, Eirini Pantazi¹, Mohamed Amine Zaouali¹, Emma Folch-Puy¹, Hassen Ben Abdennebi², Joan Roselló-Catafau¹.
¹Experimental Pathology, Institute of Biomedical Research of Barcelona, Barcelona, Spain; ²Biologie et Anthropologie Moléculaire Appliquées au Développement et à la Santé, Faculty of Pharmacy, Monastir, Tunisia

Background: Histone deacetylase sirtuin 1 (SIRT1) regulates diverse cellular functions, including cellular metabolism and response to stress conditions. In this sense, it has been reported that Sirt 1 prevents ischemia reperfusion injury (IRI) in the heart. Fatty livers are more vulnerable to cold preservation injury than non steatotic ones; but no data are reported concerning to the implications of sirtuin 1 in liver graft storage. In this communication, we report by the first time the relationship between SIRT1, adenosine monophosphate protein kinase (AMPK), endoplasmic reticulum stress (ERS) and liver autophagy when rat steatotic and non steatotic livers were preserved in IGL-1 solution.

Methods: Steatotic and non steatotic livers were preserved for 24 hr (4°C) in IGL-1 solution, and then washed by ringer lactate solution to assess hepatic injury (ASAT, ALAT). AMPK, SIRT1 and eNOS protein level were assessed by western blot analysis. Also we evaluated ERS parameters (GRP78, p-elf2, ATF4, IRE1 α , caspase 12), as well as other factors associated with autophagy (Beclin-1). Furthermore, liver histology has been performed.

Results: Steatotic liver show poor tolerance to cold ischemia when compared to non steatotic ones as seen by enhanced liver transaminases and perturbed liver histology. Activation of AMPK in non steatotic livers after preservation was accompanied by an upregulation of SIRT1 and eNOS levels. Interestingly, upregulation of SIRT1 level was not accompanied by an enhanced activity of SIRT1. Moreover, activity of SIRT1, assessed by Acp53 protein level, was decreased in steatotic livers. The present study also demonstrates that prolonged cold ischemia time induces ERS, which was more relevant in steatotic livers. GRP78, p-elf2, ATF4, IRE1 α and Caspase 12 were increased in fatty liver but levels of ATF4 and Casp12 remains unchanged in lean ones. This was consistent with a higher activation of autophagic parameter (Beclin-1) in non steatotic livers. These data confirm the closely relationship between SIRT1, AMPK activation, ER stress and autophagy after cold IRI.

Conclusions: The susceptibility of steatotic liver to cold IRI could be explained by lower SIRT1 activity, decreased activation of AMPK and eNOS and enhanced ERS.

Abstract # P-21

Rapamycin Attenuates Hepatocellular Injury Induced By Ischemia/Reperfusion in Rats. Yinghua Chen¹, Wenhui Luo², Yi Ma¹, Xiaofeng Zhu¹, Xiaoshun He¹. ¹Organ Transplantation Center, The 1st Affiliated Hospital, Sun Yet-san University, Guangzhou, Guangdong, China; ²Medical Record Management Department, The 1st Affiliated Hospital, Sun Yet-san University, Guangzhou, Guangdong, China

Aim. To investigate the influence of Rapamycin on hepatocellular injury induced by ischemia/reperfusion in rats.

Methods. Male Sprague Dawley rats underwent ischemia-reperfusion and were treated with Rapamycin by gavage. The changes in levels of enzymes of the liver 1, 3, 6, 24 h after ischemia-reperfusion were observed when the rats received NS or Rapamycin respectively. The apoptosis of hepatocytes were detected by immunohistochemistry.

Results. Treatment with Rapamycin decreased serum alanine aminotransferase and aspartate aminotransferase in 24 h after ischemia-reperfusion. At the 24h reperfusion point, the apoptosis of hepatocytes in Rapamycin group significantly lower than those in the control group

Conclusion. Rapamycin inhibits the apoptosis of hepatocytes and attenuates liver ischemia-reperfusion injury.

Abstract # P-22

Tacrolimus(FK506) Induced Cytotoxicity via TRAIL-R1 (DR4) or TRAIL-R2 (DR5) in Jurkat Cells. Soo Jin Na Choi, Sang Young Chung. Department of Surgery, Chonnam National University Hospital, Gwangju, Korea

Purpose: To elucidate the mechanism of Tacrolimus(FK506) induced cytotoxicity via TRAIL(TNF related apoptosis inducing ligand)–R1(DR4) and TRAIL–R2(DR5) in FK506-treated Jurkat T cells. And signal transduction pathway of TNF-related events was studied.

Methods: Viability of Jurkat T cells was measure by MTT assay. The catalytic activation of caspase-3 and caspase-9 proteases was determined by digestion of fluorogenic biosubstrates and western blot with anti-caspase-3 and anti-caspase-9 antibodies. The levels of mRNA and proteins for p53, Bax, PUMA, proline oxidase, TRAIL(TNF related apoptosis inducing ligand), TRAIL-R1(DR4), TRAIL-R2(DR5), Fas, FasL, TNF- α , IL-6, and NKkB were measured by RT-PCR and western blot with specific antibodies. Also we further examined the localization of TRAIL family proteins using by fluorescent microscope with specific TRAIL family antibodies.

Results: FK506 decreased the viability of Jurkat T cells dose- and time-dependently along with catalytic activation of caspase-3 and caspase-9, p53 phosphorylation, and changes in expression levels of Bax, PUMA, and proline oxidase protein. It caused an increase in expression of TRAIL, TRAIL-R1(DR4), TRAIL-R2(DR5), Fas, and FasL in the levels of mRNA and proteins of Jurkat T cells. Furthermore, FK506 increased extracellular release of TNF- α and IL-6 cytokines in Jurkat T cells. It also induced the transactivation of NKkB through the dephosphorylation of Ser486 residues in Jurkat t cells.

Conclusion: These results suggest that FK506 induces apoptotic death of Jurkat cells through activation of caspase family protease, Bcl-2 family protein-related mitochondrial dysfunction, and activation of death-receptor mediated signaling pathways.

Abstract # P-23

Hypoxic Preconditioning of Adipose-Tissue Derived Stem Cells Enhances the Liver Regenerating Potential By Releasing Secretome. Ho-Joong Choi, Say-June Kim, Dong-Goo Kim. Department of Surgery, Bucheon St. Mary's Hospital, the Catholic University of Korea, Bucheon, Korea; Department of Surgery, Daejeon St. Mary's Hospital, the Catholic University of Korea, Daejeon, Korea; Department of Surgery, Seoul St. Mary's Hospital, the Catholic University of Korea, Seoul, Korea

Recently, as it was revealed that cell-based therapy has many adverse effects, including senescence-induced genetic instability and the potential of malignant transformation, the cell-free strategies based on the property of the stem cell's secretome have been in the limelight. Hypoxic condition induces increased release of cytokines and growth factors from stem cells; therefore, the effects of hypoxic preconditioning on the stem cell's function should be determined. We therefore examined the effects of preculturing human adipose-derived stem cells (ASC) in various hypoxic conditions (1 – 3% oxygen for 24 hours) to elucidate the best conditions that enhance their liver regenerative potential. We demonstrated that MSC cultured in hypoxia activate the Wnt/b-catenin signaling pathway while maintaining their viability and cell cycle rates. We also showed that ASC cultured in hypoxia induced mRNA expression and extracellular release of pro-inflammatory and liver-recovering mediators including IL-6, TNF α , and hepatocyte growth factor. In vivo experiment comparing the mice - control, secretome administration, and hypoxic secretome administration -, mice with hypoxic secretome showed the highest liver regenerating capacity estimated by BrdU, Ki67, and PCNA immunohistochemical stains. Collectively, these data suggest that preculturing ASC under hypoxic conditions prior to transplantation improves their liver regenerative potential by way of recruitment of secretome content with higher therapeutic potential.

Abstract # P-24

A Score Model for the Continuous Assessment of Early Allograft Function after Liver Transplantation. Miriam Cortes¹, Eugenia Pareja², José Mir³, José V. Castell⁴, Agustín Lahoz⁵. ¹Unidad de Cirugía y Trasplante Hepático, Hospital La Fe, Valencia, Spain; ²Unidad de Cirugía y Trasplante Hepático, Hospital La Fe, Valencia, Spain; ³Unidad de Cirugía y Trasplante Hepático, Hospital La Fe, Valencia, Spain; ⁴Unidad de Hepatología, Instituto de Investigación Sanitaria La Fe, Hospital La Fe, Spain; ⁵Unidad de Hepatología, Instituto de Investigación Sanitaria La Fe, Hospital La Fe, Spain

Lack of consensus in the diagnosis of early allograft dysfunction (EAD) hinders comparisons of liver transplant outcomes and recipients managements. We aimed to develop a model for the continuous assessment of early allograft function (MEAF) after transplantation.

A single-centre retrospective study with 1,026 consecutive liver transplants was performed. Multivariate data analysis was used to select appropriate postoperative variables for modelling EAD. The empirical cumulative distribution function assigned a score value to each selected clinical variable. The patient survival and factors associated with EAD were studied by Cox regression and multivariable regression modelling, respectively.

A model, based on easily obtainable clinical parameters (i.e., ALT, INR and bilirubin), which scores liver function from 0 to 10 was built. The MEAF score showed a significant association with patient survival for the 3-month follow-up, ICU and hospital stays. Hepatic steatosis and age for donors; cold/warm ischemia times, post-reperfusion syndrome for surgery; and the MELD score, Child-Pugh, BMI and fresh frozen plasma for recipients were events that associated significantly with EAD.

A model capable of continuously scoring graft function after transplantation has been developed for the first time. The MEAF score is a predictor of recipient survival and provides more accurate graft assessments than current categorical classifications. The standardisation of the criteria used to diagnose EAD may allow the reliable comparison of recipients' treatments, postoperative outcomes and clinical results among different Transplant Centres, and can also help clinicians to make decisions to assess possible patient retransplantation.

Abstract # P-25

Allogeneic Mice Liver Transplantation Increase the Expression of Regulatory B Cells in Liver Graft. Yuan Ding, Sheng Yan, Yan Wang, Lin Zhou, HaiYang Xie, ShuSen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang Province, China*

Background

It is currently known that regulatory T cells play an important role in transplantation immunity. However, the mechanisms of Spontaneous Immune Tolerance (SIT) is not completely clear in mice liver transplantation (mLT). The study of SIT may help to optimize the immunosuppressive regimen in human liver transplantation (hLT). Our lastest research showed Regulatory B Cells (Bregs) are significantly increased in liver graft, indicated Bregs may be another crucial cells to SIT after mLT.

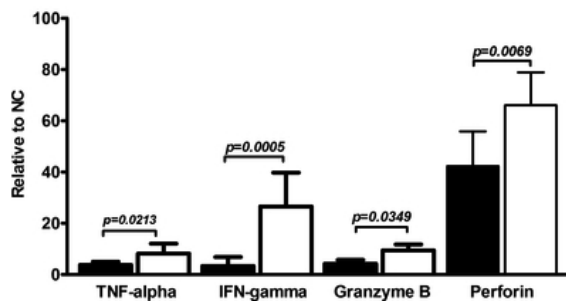
Methods

Mice liver transplantation was operated between C57/B6 or C3H mice in two groups (Allogeneic mLT=C57/B6-Balb/C or Syngeneic mLT = C3H-C3H). The liver grafts and spleen were harvested in multiple time points (7, 14, 28 days) and prepared for flow cytometry. FTY720 (S1P1 inhibitor) was applied for depleting of Bregs. Then, the expression of Tregs (Foxp3) and immune factors (TNF-alpha, IFN-gamma, Granzyme B and Perforin) was detected by RT-PCR.

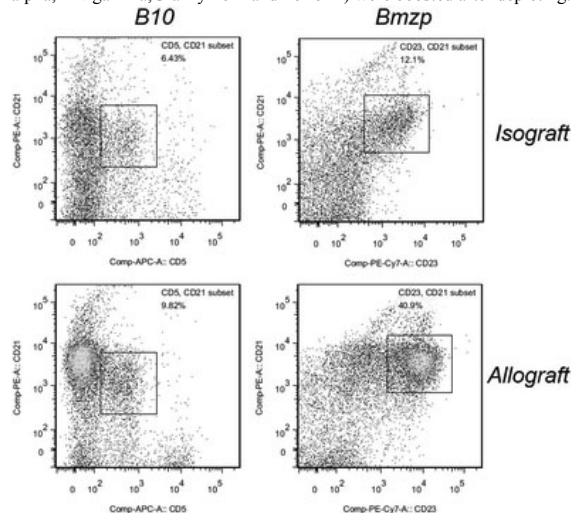
Result

Our data showed that two sub-population of Bregs (B10 cells: CD1d+CD21+CD5+ and Bmzp: CD1d+CD21+CD23+) were both significantly increased in the Allo-group compared with the Syn-group (B10: Allo vs. Iso=8.12% v.s. 5.42%; Bmzp: Allo vs. Iso=4.10% v.s. 9.82%).

The expression of Teff function molecular mRNA



Bregs depleting resulted a significantly decreased of Foxp3 (8.115±1.708 n=9 vs. 3.718±0.5725 n=6, p=0.0373); On the contrary, the immune factors (TNF-alpha, IFN-gamma, Granzyme B and Perforin) were boosted after depleting.



Conclusion

Bregs was significantly up-regulated after mLT. Besides, the depletion of Bregs may damage immune tolerance environment in grafted, indicating Bregs was important for SIT after mLT.

Abstract # P-26

Long-Term Allograft Tolerance Is Characterized by the Higher Levels of Circulating CD19+CD24hiCD38hi B Cells. Lei Geng. *Hepatobiliary Surgery, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, China*

Purpose: Numerous reports have highlighted the central role of regulatory T cells in long-term allograft tolerance, but few studies have investigated the B-cell aspect. Herein, we analyzed the levels of circulating a regulatory subset of B cells marked as CD19+CD24hiCD38hi in the setting of human liver transplantation.

Method and materials: The frequent of circulating CD19+CD24hiCD38hi cells were detected longitudinally in patients with liver transplantation at different point of after liver transplantation by flow cytometry and the health people as control.

Result: CD19+CD24hiCD38hi cell frequency was 3.49%, 1.64%, 1.63%, 2.04%, 3.85% and 4.12% respectively at the time point of pre-operation, 3m, 6m, 1y, 2y, 3y, 5y, while the control frequency was 3.81%.

Conclusion: The higher frequency of CD19+CD24hiCD38hi cell was correlated with the long-time survival recipients and CD19+CD24hiCD38hi cell may contributed to the allograft tolerance.

Abstract # P-27

A Novel Form of the Human Manganese Superoxide Dismutase Protects Rat and Human Liver Grafts Undergoing Cold Storage and Warm Reperfusion Injuries. Diana Hide¹, Sergi Guixé-Muntet¹, Constantino Fondevila², Aldo Mancini³, Juan Carlos García-Pagán¹, Jaime Bosch¹, Jordi Gracia-Sancho¹.

¹Barcelona Hepatic Hemodynamic Lab, Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS) - Hospital Clinic - CIBERhd - University of Barcelona Medical School, Barcelona, Spain; ²Liver Surgery and Transplantation Unit, IDIBAPS - Hospital Clinic - CIBERhd, Barcelona, Spain; ³Molecular Biology and Viral Oncogenesis, National Cancer Institute, Naples, Italy

Hepatic microcirculatory dysfunction due to cold storage and warm reperfusion (CS+WR) injury during liver transplantation is partly mediated by oxidative stress and may lead to graft dysfunction. This is especially relevant when steatotic donors are considered. We aimed at characterizing the effects of a new recombinant form of the human manganese superoxide dismutase (rMnSOD) on the microcirculation, parenchymal injury and endothelial function of livers undergoing CS+WR.

Methods

Oxidative stress and nitric oxide were determined in primary liver endothelial cells cold stored with rMnSOD or its vehicle and then warm reperfused. Control and steatotic rats received a single dose of rMnSOD or its vehicle 30min before liver procurement and grafts were cold stored for 0h (control) or 16h. After 1h of reperfusion, hepatic microcirculation, endothelial function and phenotype, and liver injury were analyzed. The antioxidant effects of adding rMnSOD to a preservation solution were also assessed in rat and human livers undergoing CS+WR.

Results

After CS+WR, the liver endothelium exhibited elevated superoxide and diminished nitric oxide levels; these detrimental effects were prevented by rMnSOD. CS+WR control and steatotic rat livers exhibited markedly deteriorated microcirculation and acute endothelial dysfunction development, together with liver damage, inflammation, oxidative stress, and low nitric oxide. rMnSOD markedly blunted oxidative stress, which was associated with improvement in liver damage and microcirculatory derangements. rMnSOD addition to cold storage solution maintained its antioxidant capability protecting rat and human liver tissues.

Conclusion

rMnSOD represents a new and highly effective therapy to significantly upgrade liver procurement for transplantation.

Abstract # P-28

Epithelial-Mesenchymal Transition Delayed By E-Cadherin To Promote Tissue Formation in Hepatic Differentiation of Mouse Embryonic Stem Cells *In Vitro*. Anbin Hu, Xiaoshun He. *Organ Transplantation Center, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Background & Aims Hepatic differentiation of embryonic stem cells (ESCs) usually results in a single cell lineage and formation of liver tissues remains difficult. Here, we examine the role of epithelial-mesenchymal transition

(EMT) regulated by epithelial cadherin (E-cad) expression in hepatic tissue formation from ESCs.

Methods E-cad was transfected into mouse ESCs to allow a stable expression of E-cad. Hepatic differentiation of ESCs was then induced by hepatic growth factors. Wnt/b-catenin signaling and EMT speed were examined to determine the differentiation process. Hepatic and angiogenesis markers, as well as differentiated cell adhesive force were also examined to identify the hepatic tissue differentiation.

Results E-cad expression gradually decreased in normal ESC (N-ESC) differentiation, but remained stable in E-cad-ESC (EC-ESC) group. In EC-ESC differentiation, expressions of cytoplasmic b-catenin and EMT were much lower and significantly prolonged. Angiogenesis markers VEGFR-1 and CD31/PECAM-1 expressed only on day5-13 in N-ESC differentiation, whereas VEGFR-1 and CD31/PECAM-1 expressed prolonged on day5-17 in EC-ESC group and were coincident with the expression of hepatic markers. Finally, EC-ESC differentiation maintained multilayer-growth patterns, and abundant vascular network structures appeared and migrated in ALB-positive cell areas. The cellular adhesion forces between EB cells in EC-ESC differentiation during day13-17 were similar to that of mouse liver tissue.

Conclusion Accelerated EMT because of the decreased E-cad expression may partially contribute to the failure of hepatic tissue formation in N-ESC differentiation. E-cad can act in synergy with hepatic growth factors to facilitate the early stage formation of hepatic tissues through down-regulating Wnt/b-catenin signaling and delaying EMT. This work provides a new insight into hepatic tissue differentiation mediated by E-cad from ESC.

Abstract # P-29

Curcumin Treated Dendritic Cells Can Effectively Expand Human Donor Intra-Hepatic CD4posCD25highFOXP3pos Regulatory T-Cells. Yamen Jabri, Ruchi Sharma, Andreas Prachias, Parthi Srinivassan, Shirin Khorsandi, Nigel Heaton, Emmanuel Xystrakis, Xia Haung, Wael Jassem, Yun Ma. *Institute for Liver Studies, Kings College Hospital, London, United Kingdom*
Background and aims: Immunoregulatory T cell based therapy has been proposed to induce graft acceptance following liver transplantation. CD4posCD25highFOXP3pos regulatory T cells (Treg) are scarce in the liver and their number is insufficient for clinical use. Various methods and reagents have been used to expand Treg, however, the low number and plasticity of expanded Treg are suboptimal for therapy. Curcumin, extraction of turmeric, has been used to generate tolerogenic dendritic cells (DC) and have potential to expand Treg. We aim to assess whether curcumin can induce intrahepatic DC, which then to be used to expand intrahepatic Treg.

Methods: Intrahepatic mononuclear cells were obtained from perfusates of 20 brain dead donor livers. Monocytes were isolated and cultured with IL-4, GM-CSF and curcumin to generate DC. The status of DC was analysed using monoclonal antibodies to CD14, CD11c, CD80, CD 86, and PDL1. CD4 T cells were characterised by antibodies to CD4, CD25, CD39, CD45RO, and FOXP3.

Results: The frequency of Treg among intrahepatic lymphocytes was 1.5%. Although curcumin treated (Cur DC) showed significantly higher expression of CD80, CD86, a mature status, in all samples than those DC treated with IL-4 and GM-CSF (GMC DC) only. After co-culturing CD4posCD25neg T cells for 5 days, the frequency of Treg was higher in the culture with Cur DC than GMC DC (mean±SD: 8.4%±0.15 vs 2.6%±0.16, P< 0.001).

Conclusions: Curcumin Treated DC showed excellent ability to generate and to expand Treg from donor liver perfusates. This finding might be important for designing future therapeutic strategies aiming at graft tolerance.

Abstract # P-30

Lipidomics Reveals Lipid Pathway Alterations Correlated With DBD, DCD and LRD Livers. Cristina Legido-Quigley, Ana Maria Casas, Arun Sen, Hector Vilca, Ma Yun, Wael Jassem. *King's College London, London, United Kingdom*

Background and aims: There is an urgent need to identify specific molecular markers of liver quality for use in clinical evaluations of donor livers at the pre-transplant stage. Here, we present the first pilot study using comprehensive lipidomics to discover differences in biopsies from three donor types: viz. donation after brain death (DBD n=11), donation after cardiac death (DCD n=7) and live-related donation (LRD n=6).

Methods: Pre and post-transplant liver biopsies were analysed using a range of lipidomic methods scanning for +40.000 molecular features. Statistically significant features (p<0.01) were structurally identified using

mass spectrometry fragmentation data. Following this, significant lipids were correlated with donor and recipient clinical data (e.g. AST, ALT, Bilirubin, WIT, creatinine)

Results: 32 lipids differentiated between pre-transplant obtained from DBD and LRD tissue, with LysoPE (16:0) and TAG (48:1) showing the highest fold-change (9 and 6-fold, respectively). 13 lipids differentiated between DCD and LRD tissue pre-transplantation, with the highest fold-change (9 and 4) observed for LysoPE(16:0) and LysoPE(18:0). The bile acids glycodeoxycholic acid (GDCA) and deoxycholic acid (DCA) showed the most significant alterations between pre- and post-transplant biopsies. Pre-transplant lipid markers showed correlation to graft cold-ischemia time, to post-transplant levels of AST and creatinine. LysoPE(16:0) and LysoPE(18:0) showed the highest corr=0.84 (p<0.01) in DBD and DCD when compared to LRD.

Conclusions: Findings suggest that the main lipid differences between donor types are due to alterations in intracellular signalling lipids. Our results suggest that lysoPE mediated signalling could be associated to pre-transplantation exposure to anoxic conditions.

Abstract # P-31

TIM-3 Signaling Negatively Regulates Ischemia-Reperfusion Injury in Mouse Orthotopic Liver Transplantation. Yuanxing Liu, Haofeng Ji, Yu Zhang, Xiu-da Shen, Feng Gao, Terry Nguyen, Ronald W. Busuttil, Jerzy W. Kupiec-Weglinski. *Dept of Surgery, Dumont-UCLA Liver Transplant Center, Los Angeles, CA, USA*

Background: T cell immunoglobulin mucin (TIM-3) expressed on CD4+ T cells negatively costimulates a variety of allo-immune responses in transplant recipients. We have shown the essential function of TIM-3 signaling in Ag-independent, innate immunity-driven liver injury resulting from warm ischemia and reperfusion (IRI). This study was designed to analyze the effects and mechanisms by which TIM-3 blockade may affect liver IRI cascade and outcomes in a clinically-relevant mouse orthotopic liver transplantation (OLT). **Methods & Results:** We employed C57BL/6 mice in a model of extended (20h) liver cold (4C) preservation followed by syngeneic OLT. Flow cytometry analysis revealed very early and massive T cell accumulation in ischemic OLTs. As early as 1h post-transplant, we found ca. 20x10⁶ CD3+ cells/OLT (vs. <5x10⁶ in warm IRI or <0.5x10⁶ in sham-livers), of which 20% were CD3+CD4+. Of note, CD4+ T cells in OLTs were highly activated (CD69+ = 86.2±1.4 vs. 2.3±0.3 isotype control) and did express TIM-3 (9.2±0.4 vs. 2.3±0.3). Then, we treated OLT recipients (0h; at the time of reperfusion) with TIM-3 blocking Ab (RMT3-23) or rat IgG (0.5mg/mouse). Unlike in controls, disruption of TIM-3 signaling exacerbated liver damage at 6h post-OLT, evidenced by increased sALT levels (18683±590 vs. 6235±906 U/L, p<0.01) and liver architecture (severe sinusoidal congestion, massive edema, vacuolization and necrosis). Liver neutrophil activity was significantly increased after TIM-3 blockade (MPO assay). Interestingly, amplified Th1-associated IFN-γ/Tbet, but diminished IL-4/IL-10 expression was consistently detected in TIM-3 Ab group (qRT-PCR). In addition, disruption of TIM-3 pathway: 1/ enhanced intrahepatic neutrophil and macrophage infiltration/activation (IHC staining); 2/ increased NF-IB expression (Western blots); and 3/ increased the frequency of hepatic apoptotic cells (TUNEL assay). **Conclusion:** This is the first report to document that TIM-3 negative signaling exerts cytoprotection against IRI in liver transplant recipients by: 1) depressing local innate immune inflammation; 2) tipping the balance of adaptive immunity away from Th1- towards Th2-type program; 3) reducing macrophage and neutrophil sequestration/activation. These results offer the rationale for refined new strategies to combat hepatic IRI in liver transplant recipients.

Abstract # P-32

The Effects of Lipids in Steatotic and Non-Steatotic Livers in Conditions of Partial Hepatectomy Under Ischaemia-Reperfusion. Mariana Mendes-Braz^{1,2}, Maria Elias-Miró¹, Burkhard Kleuser³, Susann Fayyaz³, Mónica B. Jiménez-Castro¹, Marta Massip-Salcedo^{1,4}, Jordi Gracia-Sancho⁵, Fernando S. Ramalho², Juan Rodes^{1,4}, Carmen Peralta^{1,4}. ¹Institut d'Investigacions Biomèdiques August Pi i Sunyer, Barcelona, Spain; ²Departamento de Patología e Medicina Legal, Facultad de Medicina, Universidade de Sao Paulo, Ribeirao Preto, Spain; ³Institute of Nutritional Science, University of Potsdam, Potsdam, Germany; ⁴Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBEREHD), Barcelona, Spain; ⁵Barcelona Hepatic Hemodynamic Laboratory, IDIBAPS, CIBEREHD, Barcelona, Spain

*The first two authors contributed equally

BACKGROUND: Steatosis is a risk factor in PH under I/R, which is commonly applied in clinical practice to reduce bleeding. Nutritional support strategies, as well as the role of peripheral adipose tissue as energy source for liver regeneration, remain poorly investigated. To investigate whether the administration of a lipid emulsion could protect steatotic and non-steatotic livers against damage and regenerative failure in an experimental model of PH under I/R. The relevance of peripheral adipose tissue in liver regeneration following surgery is studied.

METHODS: Steatotic and non-steatotic rat livers were subjected to surgery and the effects of lipid treatment on damage and regeneration, and part of the underlying mechanisms, were investigated.

RESULTS: In non-steatotic livers, treatment with lipids provided protection against damage, regeneration failure and ATP drop. Adipose tissue was not required to regenerate non-steatotic livers. In the presence of hepatic steatosis, lipid treatment protected against damage and regenerative failure by induction of cell cycle, maintenance of ATP levels and elevation of sphingosine-1-phosphate/ceramide ratio and phospholipid levels. Peripheral adipose tissue was required for regenerating the steatotic liver but it was not used as an energy source.

CONCLUSION: Lipid treatment reduces the injurious effects of liver surgery on damage and regenerative failure in both steatotic and non-steatotic livers.

Abstract # P-33

Sirtuin 1 Overexpression Attenuates Endoplasmic Reticulum Stress in Rat Liver Ischemic Preconditioning. Eirini Pantazi¹, Mohamed Amine Zaouali^{1,2}, Mohamed Bejaoui¹, Emma Folch-Puy¹, Hassen Ben Abdebbebi², Antoni Rimola³, Joan Roselló-Catafau¹. ¹Experimental Pathology, Institute of Biomedical Research of Barcelona, Spanish National Research Council, Barcelona, Spain; ²Molecular Biology and Anthropology Applied to Development and Health (UR12ESI1), Faculty of Pharmacy, University of Monastir, Monastir, Tunisia; ³Networked Biomedical Research Center of Hepatic and Digestive Diseases (CiberEHD), Barcelona, Spain

Introduction: Ischemia-reperfusion (IR) injury is associated with disruption of endoplasmic reticulum (ER) homeostasis, termed as ER stress, which can result in cell death. Steatotic livers show higher vulnerability against IR injury than normal livers, partially due to the exaggerated ER stress. Ischemic Preconditioning (PC) is the only surgical strategy that has been applied in patients with steatotic livers undergoing warm ischemia. Taking into account that Silent Information Regulator 1 (SIRT1), an histone deacetylase, regulates cellular stress response and metabolism, we evaluated the possible implication of Sirt1 in ER stress in fatty livers undergoing PC prior to IR injury.

Methodology: Homozygous (Ob) Zucker rats aged 12 weeks were classified as follows: Group 1= Sham; Group 2= IR: Ob rats were subjected to 60 minutes of partial ischemia (70%) followed by 24-hour reperfusion; Group 3= PC: 5 minutes of partial ischemia (70%) followed by a reflow for 10 minutes was applied in ob rats and then livers were subjected to I/R; Group 4= Sirtinol + PC: as in group 3, but treated with sirtinol, a SIRT1 inhibitor (0.9 mg/kg intravenously), 5 minutes before PC. Blood and liver samples were collected after 24 hours of reperfusion. Liver injury (AST), oxidative stress (MDA) and SIRT1 activity were evaluated. Expression of SIRT1, p-AMPK α , Caspase 3 and parameters of ER stress (GRP78, p-elf2 α , ATF-6 α , XBP-1) were determined by Western blot. **Results:** 1) SIRT1 protein levels and activity are enhanced in hepatic PC, 2) Inhibition of SIRT1 during PC increases liver injury and oxidative stress, 3) SIRT1 enhanced activity during PC was associated with decreased ER stress parameters, whereas inhibition

of SIRT1 coincided with increased ER stress, 4) Inhibition of SIRT1 during PC diminished levels of pAMPK and enhanced apoptosis (Caspase 3). **Conclusions:** SIRT1 is involved in the protective mechanisms of PC and consists an important regulator of ER stress response.

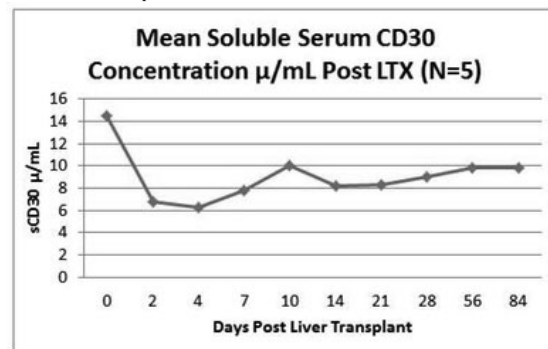
Abstract # P-34

Role of Soluble CD30 (sCD30) Levels To Monitor Overall Immunosuppression after Liver Transplantation (LTx). H. Parekh², A. Mukerji³, S. Geier², R. Patula², A. Karachristos¹, M. Maloo¹, P. Lai², A. Jain¹. ¹Surgery, Temple University Hospital, Philadelphia, PA, USA; ²Pathology & Laboratory, Temple University Hospital, Philadelphia, PA, USA; ³Surgery, Bronx Lebanon Hospital, Bronx, NY, USA

Introduction: Hepatic graft loss due to immunological reason is extremely rare after LTx. Immunosuppression (IS) related metabolic disturbances pose a significant long-term morbidity. The question thus arises, "Are we over immunosuppressing patients?" Thus, identifying biological markers to allow identification of overall IS is desirable. The cell surface CD30 antigen, a member of the TNF/NGF receptor superfamily, has been shown to have pleiotropic effects including co-stimulation, T-cell proliferation and B-cell maturation. CD30 has also been shown to play an immunoregulatory role in TH1/TH2 immune responses. Activation of CD30+ T-cells leads to release of the soluble, cleaved form (sCD30) into the bloodstream suggesting that the serum concentration of the sCD30 may correlate with allo-immune responses in transplant patients. Such study in LTx populations is lacking.

Study Design: The present study was conducted to assess the efficacy of measuring, between days 0 – 84, the circulating levels of soluble CD30 (sCD30) as a surrogate biomarker to monitor the overall immunosuppressive effects of combinations of immunosuppressive agents in post LTx patients.

Results: The serum content of sCD30 in 5 LTx patients was monitored over a period of 12 weeks post LTx. Mean sCD30 concentration of 14.4 U/mL was observed in the pre LTx specimens. An overall trend of 2-3 fold reduction in the mean sCD30 levels by day 4 - 7 post LTx was seen. This was followed by a subsequent re-bound in the sCD30 levels to a mean of about 10 U/mL from day 10 to week 12, correlating well with the reduction in dosage of IS used in these LTx patient.



Conclusion: These preliminary results suggest a potential utility of monitoring the sCD30 levels to guide overall IS regimen in post LTx patients. However, further studies are required to quantify how much reduction in sCD30 is required at various time from LTx to avoid overall IS.

Abstract # P-35

Association between Polymorphisms of PPM1E Gene and Tumor Size of Hepatocellular Carcinoma Patients. Min-Su Park.

Surgery, Kyunghee University Hospital, Seoul, Republic of Korea
Introduction: Hepatocellular carcinoma (HCC) is the most common type of primary liver cancer in Korea. The protein phosphatase, Mg²⁺/Mn²⁺ dependent, 1E (PPM1E) inactivates multiple substrates including 5'-AMP activate protein kinases (AMPK) which inhibits the growth and survival of cancer cells. However, no study on the possible genetic association of PPM1E single nucleotide polymorphism (SNP) with HCC has been conducted yet.

Method: HCC patients (153 males and 30 females) and healthy individuals (167 males and 224 females) were enrolled in this study. We selected three exonic SNPs (rs16943333, rs3809724 and rs3809723) in the 3'-UTR of the PPM1E gene.

Results: rs16943333, rs3809724 and rs3809723 of PPM1E were not significant differences between the HCC group and the control group. In the further analysis, we divided HCC patients into two groups according

to tumor size, serum AFP level, UICC stage, radiologic morphology and portal vein thrombosis. We found that rs16943333 and rs3809724 in PPM1E were significantly associated with the tumor size. The genotype frequency of rs16943333 was associated with tumor size in the codominant 2 (G/G vs. A/A, $p=0.038$, Fisher's exact $p=0.06$, OR=6.27, 95% CI=1.11-35.41), dominant (G/G / G/A vs. A/A, $p=0.014$, OR=2.27, 95% CI=1.17-4.41) and log-additive models ($p=0.0058$, OR=2.16, 95% CI=1.23-3.79). In the allele frequency analysis, rs16943333 was associated with tumor size ($p=0.010$, OR=2.07, 95% CI=1.19-3.59). The genotype frequency of rs3809724 was associated with tumor size in the codominant 2 (C/C vs. T/T, $p=0.030$, Fisher's exact $p=0.09$, OR=5.31, 95% CI=1.17-24.05), dominant (C/C / C/T vs. T/T, $p=0.030$, OR=2.04, 95% CI=1.07-3.89) and log-additive models ($p=0.011$, OR=1.97, 95% CI=1.16-3.37). In the allele frequency analysis, rs3809724 was associated with tumor size ($p=0.023$, OR=1.84, 95% CI=1.09-3.12).

Conclusion: In this study, PPM1E polymorphisms were significantly associated with tumor size of HCC patients. Our results indicated that when we perform liver transplantation for HCC, sufficient evaluation and careful selection by genetic marker are required.

Abstract # P-36

Intestinal Microbial Variation May Predict Early Acute Rejection after Liver Transplantation in Rats. Zhigang Ren¹, Jianwen Jiang¹, Guangying Cui², Haifeng Lu², Xinhua Chen¹, Lin Zhou¹, Shusen Zheng¹. ¹Department of Hepatobiliary and Pancreatic Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang, China; ²State Key Laboratory for Diagnosis and Treatment of Infectious Disease, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang, China

Background: Acute rejection (AR) after liver transplantation (LT) remains a life-threatening complication. This study aims to identify intestinal microbial profile and explore potential application of microbial profile as a biomarker for AR after LT.

Methods: All rats after LT were divided into 2 groups: non-rejection (NR) and AR groups. All recipients were sampled on day 1, 3 and 7 after LT, respectively ($n=6$). Hepatic graft function and intestinal barrier function were observed. DGGE profiles were performed to quantify dominant flora in faeces. DGGE profiles were performed to identify microbial diversity and key bands. Phylogenetic tree of sequences based on 16S-rDNA sequencing identified key bacteria.

Principal Findings: Hepatic graft suffered from the ischemic-reperfusion (I/R) injury on day 1, initial AR on day 3 and severe AR on day 7 after LT, evidenced by histology, ultra-structure and serum ALT&AST. RT-PCR results showed that the proportions of genus *Faecalibacterium prausnitzii* and *Lactobacillus* were decreased, while *Clostridium bolteae* was increased during AR. Notably, cluster analysis of DGGE profiles showed the 7AR and 3AR groups clustered together with 73.4% similarity, confirmed by MDS and PCA, suggesting that intestinal microbiota was more sensitive than hepatic function in responding to AR. Microbial diversity and species richness were decreased during AR. Phylogenetic tree analysis showed that most of decreased key bacteria belonged to phylum Firmicutes, while increased key bacteria belonged to phylum Bacteroidetes. Moreover, intestinal microvilli loss and tight junction damage were noted, and intestinal barrier dysfunction during AR presented a decrease of fecal sIgA and increase of blood bacteremia, endotoxin and TNF- α .

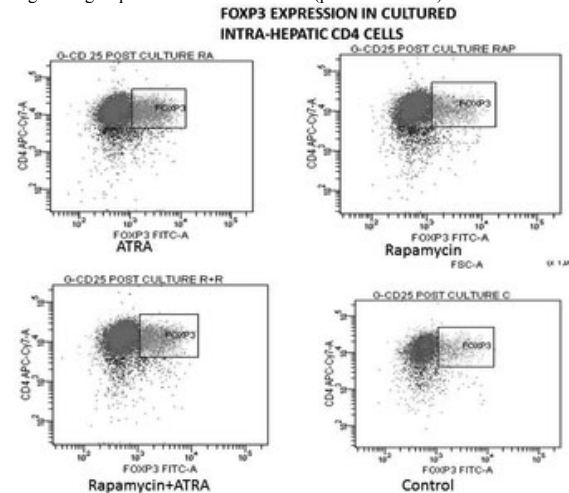
Conclusion: We dynamically detailed intestinal microbial characterization during AR after LT, and found a high sensitivity of microbial change, suggesting that intestinal microbial variation may predict AR in early phase after LT and become an assistant therapeutic target to improve rejection after LT.

Abstract # P-37

Allogenic Peripheral T Effectors Are Suppressed By Human Intrahepatic CD4posCD25posFOXP3pos Regulatory T Cells Treated By Rapamycin and Retinoic Acid. Ruchi Sharma¹, Yamen Jabri¹, Miriam Cortes¹, Emmanuel Xystrakis¹, Parthi Srinivasan¹, Andreas Prachalias¹, Xiaohong Huang¹, Godhevi Manakkat Vijay¹, Nigel Heaton¹, Yun Ma¹, Wayel Jassem¹. *Institute of Liver Studies, King's College Hospital, London, United Kingdom*

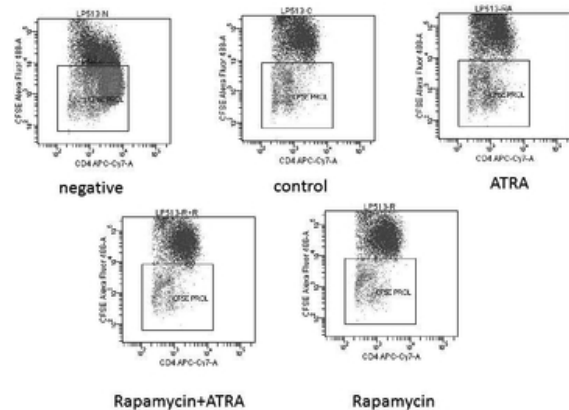
Aim: Passenger leucocytes, especially intrahepatic CD4posCD25posFOXP3pos T cells (Treg) play an important role in hepatic transplant tolerance. The aim of this study was to expand Treg isolated from donor livers and assess their potential for inhibiting allogenic T effector expansion.

Methods: Hepatic mononuclear cells were isolated from 10 donor liver perfusates. CD4 T cells were purified and cultured for 10-days in 4 conditions: 1) All-trans retinoic acid (ATRA), 2) rapamycin, 3) combination of 1&2 and 4) Control. Expanded Tregs were co-cultured with T effectors from peripheral blood of healthy volunteers for 5days. A negative culture contained only peripheral blood T effectors. In vitro proliferation was assessed using carboxyfluorescein succinimidyl ester (CFSE). Induction of FOXP3 expression in co-cultured cells was assessed by flow-cytometry. Results: Percentage of CD4posCD25highFOXP3pos Treg was significantly higher in groups 2 and 3 than in control ($p=0.05$ for both).



There was no difference between control and group 1. The rate of Treg suppression of T effector proliferation was 81%, 75% and 72% for groups 2, 3 and 1 respectively.

PROLIFERATION ASSAY USING CFSE



Induction of FOXP3 expression was >30% in rapamycin and rapamycin/ATRA, 18% in ATRA and control groups and only 6.5% the negative group. Conclusion: Intrahepatic CD4posCD25highFOXP3pos Treg effectively suppress and can induce regulatory function in peripheral blood CD4pos T effectors. This capacity is further increased in the presence of rapamycin and retinoic acid. These findings may be relevant in order to design protocols for transplant tolerance.

Abstract # P-38

Umbilical Cord-Derived Mesenchymal Stem Cells Educate Dendritic Cells to Acquire Tolerogenic Phenotype through IL-6 Mediated Upregulation of SOCS1. Guo-Ying Wang, Yi-Nan Deng, Wei Liu, Qi Zhang, Yang Yang, Gui-Hua Chen. *Liver Transplantation Center, The Third Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Objectives: The regulatory effects of mesenchymal stem cells (MSCs) on dendritic cells (DCs) are fully documented; however, the underlying signaling pathway responsible for the inhibitory effects of MSCs on DCs has not been reported in detail.

Methods and Results: In our study, we investigated potential signaling pathways and reported for the first time that human umbilical cord MSCs (hUC-MSCs) educate mono-derived dendritic cells to acquire tolerogenic DCs phenotype through IL-6 mediated upregulation of SOCS1. This MSC-DCs subset expressed various functional markers at reduced levels, spontaneously secreted higher levels of IL-10, and displayed a weakened capacity to induce lymphocyte proliferation and inflammatory factor secretion. Moreover, our data showed that hUC-MSCs induced high SOCS1 expression via activation of the JAK-STAT pathway by IL-6 secretion, which subsequently led to MSC-DCs to acquire tolerogenic DCs phenotype. Additionally, SOCS1 could maintain the tolerogenic characteristics of MSC-DCs via blocking their maturation by inhibit the TLR4 signaling.

Conclusions: In summary, our data delineate a new mechanism, involving IL-6-mediated upregulation of SOCS1, by which hUC-MSCs educate mono-derived dendritic cells to acquire tolerogenic DCs phenotype. SOCS1 appeared to be the key factor within this novel mechanism and keeping the tolerogenic characteristics of MSC-DCs.

Abstract # P-39

The Mode of Death of the Liver Donor Imprints Distinct Immune Adaptive Responses on the Hepatic Resident Lymphocytes. Emmanuel Xystrakis, Xiaohong Huang, Miriam Cortes, Andreas Prachalias, Mohamed Rela, Susan Fuggle, Nigel Heaton, Yun Ma, Wayel Jassem. *Institute of Liver Studies, London, United Kingdom*

Background

Experimental liver transplantation studies have shown that brain death (BD) induces a systemic inflammatory response, which increases the immunogenicity of the graft. However, the impact of BD on graft intra-hepatic immune cells is currently unclear. In this study we assessed the phenotype and function of the adaptive immune cells of liver allografts, obtained from brain-dead (DBD), deceased after cardiac death (DCD) and living donors (LD), prior to transplantation.

Methods

Liver-resident lymphocytes were isolated from liver perfusates obtained before implantation, to assess their phenotype and function after ex vivo polyclonal stimulation by anti-CD3 and anti-CD28 antibodies. We compared lymphocytes obtained from DBD (n=22), DCD (n=10) and from LD (n=10) as control.

Results

We found that liver-resident lymphocytes from DCD livers preferentially produce IL-17 (IL-17 positive cells being 4.5% in DCD, 0.9% in DBD and 0.8 in LD p<0.01). This IL-17 secretion is attributed to CD4 T (mean at 3.3% in DCD, 1.6% in DBD and 1.2% in LD p<0.05) and CD8 T cells (mean at 1.07% in DBD, 2.7% in DCD and 1.2% in LD p<0.05).

In contrast to DCD, lymphocytes from DBD livers were enriched in CD8 T cells which exhibit an activated phenotype (mean of CD8+CD69+ cells at 60% in DBD, 38% in DCD and 37% in LD, p<0.05).

Assessment of cytokine production shows a significant increase in IFN-gamma production by CD8 T cells of DBD grafts (mean at 32% in DBD, 15% in DCD, p<0.01 and 18% in LD livers, p<0.05) which positively correlates with cold ischemia time and peak level of AST measured in the recipients in the first week post transplantation.

Conclusion

These findings suggest that the events surrounding the mode of death of the donor lead to distinct adaptive immune responses in the graft. This can have an impact on transplant outcome and may represent a possible target for therapeutic interventions.

Abstract # P-40

Experimental Study of CD133-Positive Liver Cancer Stem Cells in Tumor Recurrence after Liver Transplantation in the Role and Intervention of Nanosecond Pulses. Shengyong Yin, Xinhua Chen, Shuseng Zheng. *Department of Hepatobiliary Surgery, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, China*

Objective: Recurrence of HCC in patients with liver transplantation decrease the long-term survival. The intervention strategies are urgently needed. Our previous study found HCC recurrence were caused by liver cancer stem cells. Cancer stem cells are a special group of HCC tumor cells that have the ability to self-renewal and differentiation. We have proved that the CD133 is the molecule marker for liver cancer stem cells, the CD133 positive cancer stem cells caused metastasis, recurrence and drug resistance. The targeted

interventions of CD133 positive cancer stem cells by nanosecond pulsed electric fields were investigated.

Methods: Flow cytometry detected the expression of CD133 in the SMMC7721 cells. the CD133 positive and negative SMMC7721 cells were separated by immune beads, the two cells and unsorted cells were inoculated into nude mice, 10 days later liver transplantation were performed on tumor-bearing mice. The CD133-positive group were randomly divided into two groups, one with nanosecond pulse treatment and the other was control. The tumor recurrence and cell cycle were followed up.

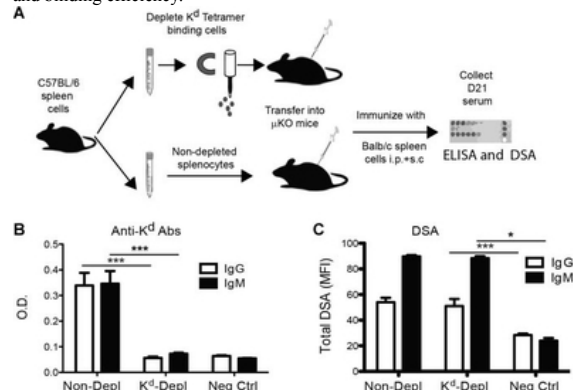
Results: CD133-positive cell proportion was 0.9%, flow cytometry showed that cells staying in the G0/G1 phase of the CD133-positive cells were 80.3%, significantly higher than the CD133-negative cells and unsorted group (P<0.05); When comparing metastasis or recurrence of the tumor-bearing mice after transplantation, CD133-positive cells in the untreated group> CD133-positive cells treated nanosecond pulses> unsorted group> CD133-negative cells group.

Conclusions: CD133-positive cells in vitro have stronger proliferation and tumorigenic capability than CD133-negative cells and unsorted cells, resulting in post-transplant recurrence and metastasis; 100ns30Kv/cm ultrashort high-voltage nanosecond 100 pulse can effectively reduce the CD133-positive cell proliferation and differentiation of tumorigenicity.

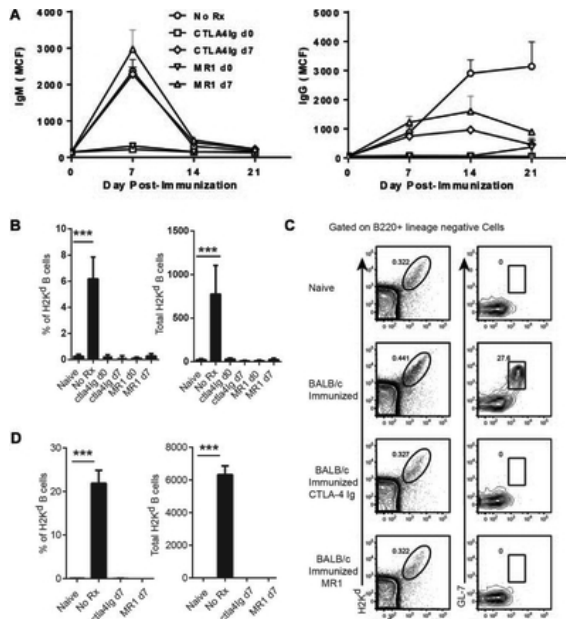
Abstract # P-41

Reversing Endogenous Alloreactive B Cell GC Responses With Anti-CD154 or CTLA-4Ig. Hao Yin^{1,2}, Zheng-Xin Wang¹, Zhi-Ren Fu¹, Anita Chong². ¹Organ Transplant Center, Department of Surgery, Shanghai Changzheng Hospital, Shanghai, China; ²Department of Surgery, University of Chicago Hospital, Chicago, IL, USA

Alloantibodies mediate acute antibody-mediated rejection as well as chronic allograft rejection in clinical transplantation. To better understand the cellular dynamics driving antibody production, we focused on the activation and differentiation of alloreactive B cells in the draining lymph nodes and spleen following sensitization to allogeneic cells or hearts. We used a modified staining approach with a single MHC Class I tetramer (Kd) bound to two different fluorochromes to discriminate between the Class I-binding and fluorochrome-streptavidin-binding B cells with a high degree of specificity and binding efficiency.



By Day 7–8 postsensitization, there was a 1.5- to 3.2-fold increase in the total numbers of Kd-binding B cells. Within this Kd-binding B cell population, approximately half were IgD low, MHC Class II high and CD86+, 30–45% expressed a germinal center (Fas+GL7+) phenotype and 3–12% were IRF4hi plasma cells. Remarkably, blockade with anti-CD40 or CTLA-4Ig, starting on Day 7 post immunization for 1 or 4 weeks, completely dissolved established GCs and halted further development of the alloantibody response.



Thus MHC Class I tetramers can specifically track the in vivo fate of endogenous, Class I specific B cells and was used to demonstrate the ability of delayed treatment with anti-CD154 or CTLA-4Ig to halt established allo-B cell responses.

Abstract # P-42

Interferon Regulatory Factor-1 (IRF-1) Regulates NK Cell Activation and Contributes to Hepatic Ischemia Reperfusion Injury in Allogeneic Liver Transplantation. Shinichiro Yokota, Osamu Yoshida, Lei Dou, John R. Klune, Shoko Kimura, Qiang Du, Angus W. Thomson, David A. Geller. *University of Pittsburgh, Pittsburgh, USA*

Introduction: Interferon regulatory factor-1 (IRF-1) is a nuclear transcription factor that exerts a central role in promoting apoptosis of hepatocytes following cold ischemia reperfusion (I/R) injury in syngeneic orthotopic liver transplantation (OLTx). However, the role of IRF-1 during cold I/R injury following allograft OLTx has not been investigated. We hypothesized that IRF-1 plays a critical role in I/R injury in allogeneic OLTx through donor-derived NK cell activation and IFN γ production.

Methods: Murine allogeneic (B6 to C3H) OLTx with 24 hr cold ischemia time was performed. IRF-1 KO (B6) mice were used as donor allografts to C3H to assess the role of IRF-1 in I/R injury. Recipients were euthanized 6 hr after reperfusion to compare liver injury with serum transaminase, mRNA expression with quantitative RT-PCR, and lymphoid cells in the liver graft using flow cytometric analysis.

Results: B6 to C3H OLTx resulted in peak serum ALT of 11,844 $\pm$ 2632 IU/L, while IRF-1 KO donor to C3H recipients had significantly and markedly decreased injury with serum ALT 1,598 $\pm$ 364 IU/L. Likewise, the liver allografts showed decreased necrosis, WT B6 to C3H 31.1 $\pm$ 5.6% necrosis, compared to 4.2 $\pm$ 1.7% in IRF-1 KO to C3H. Hepatic NKG2D mRNA, a marker of NK cell activation, was induced 20-fold after mouse allograft OLTx, while IRF-1 KO donor allografts showed a 50% reduction in NKG2D mRNA. Flow cytometry showed that 90% of NK cells were donor-derived in WT B6 to C3H, and were markedly decreased in IRF-1 KO grafts. Hepatic IFN γ mRNA was strongly induced (100-fold) after mouse allograft OLTx, while IRF-1 KO donor allografts displayed a 90% reduction in IFN γ mRNA. Hepatic NK cells isolated 6 hr after WT B6 to C3H OLTx showed increased IFN γ production that was reduced 50% when IRF-1 KO donor grafts were used.

Conclusion: These novel data show that hepatic IRF-1 contributes to liver I/R injury after allograft OLTx, as the absence of IRF-1 in the IRF-1 KO donor allografts resulted in approximately 90% protection compared to the WT B6 donor. Further, donor-derived NK cells are activated for IFN γ production, which is in part, IRF-1-dependent. These findings provide further insight into the early alloimmune events after allograft OLTx and suggest that targeting IRF-1 may be an effective approach to reducing I/R injury associated with OLTx.

Abstract # P-43

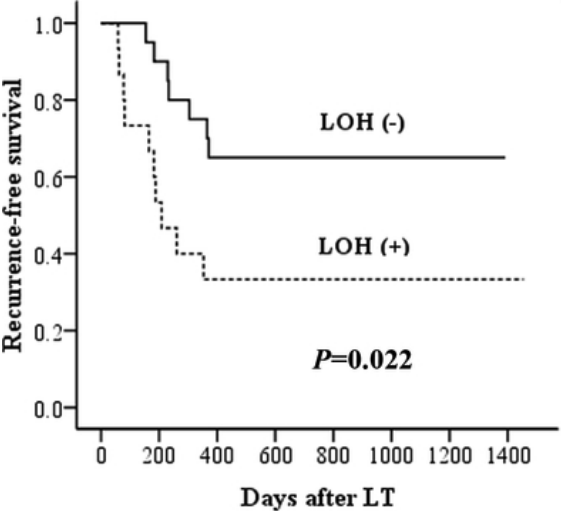
Loss of Heterozygosity of ZDHHC2 Is Associated With Early Metastatic Recurrence of Hepatocellular Carcinoma Following Liver Transplantation. Zhijun Zhang¹, Lin Zhou², Jie Tang¹, Chuanhui Peng², Shusen Zheng¹. ¹Department of Hepatobiliary and Pancreatic Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang Province, China; ²Key Lab of Combined Multi-Organ Transplantation, Ministry of Public Health, Hangzhou, Zhejiang Province, China

Identification of loss of heterozygosity (LOH) can be used to help determine putative tumor suppressor genes (TSGs) and provide a variety of molecular markers for hepatocellular carcinoma (HCC). Previous studies showed Deletions of allele on 8p22-p23 are associated with metastasis and prognosis of HCC. In this study, we evaluated LOH status of four genes on 8p22-p23 (MCPH1, TUSC3, KIAA1456 and ZDHHC2) and investigate their clinical characteristics in HCC cases following liver transplantation (LT). A total of forty patients with HCC who received liver transplantation were enrolled in this study. LOH was examined using twenty-one SNPs located on MCPH1, TUSC3, KIAA1456 and ZDHHC2. The frequencies of LOH on ZDHHC2, MCPH1, TUSC3 and KIAA1456 were 45% (17 of 38), 54% (20 of 37), 50% (17 of 34) and 52% (16 of 31), respectively. LOH on ZDHHC2 was associated with age, tumor size, portal vein tumor thrombi (PVTT) and early metastatic recurrence of HCC after LT.

Univariate Analysis of HCC Recurrence

Variables	n	1-year cumulative recurrence rate (%)	P-value
LOH on ZDHHC2			
Positive	17	66.7 $\pm$ 12.2	0.022
Negative	11	30.0 $\pm$ 10.2	
Preoperative AFP level			
$\leq$ 400 ng/ml	15	15.4 $\pm$ 10.0	0.005
>400 ng/ml	25	62.5 $\pm$ 9.9	
Tumor size			
$\leq$ 5 cm	25	27.3 $\pm$ 9.5	0.001
>5 cm	15	73.3 $\pm$ 11.4	
PVTT			
Absent	33	35.5 $\pm$ 8.6	<0.001
Present	7	100	

LOH on ZDHHC2 was not only associated with early metastatic recurrence of HCC after LT, but also progression of HCC.



Our findings demonstrate that ZDHHC2 might be an important TSG in HCC.

Abstract # P-44

Protective Effect of Cold Perfusion and Perfluorocarbons on Hepatic Graft Ischemia for Donation after Cardiac Death Grafts in a Rat Model. Dmitri Bezinover¹, Saravanan Ramamoorthy¹, Saifeldin Mahmoud¹, Zakiah Kadry², Tadahi Uemura², Piotr K. Janicki¹. ¹Department of Anesthesiology, Pennsylvania State University College of Medicine, Penn State Hershey Medical Center, Hershey, PA, USA; ²Department of Transplant Surgery, Pennsylvania State University College of Medicine, Penn State Hershey Medical Center, Hershey, PA, USA

In this study we investigated the effect of two different third-generation perfluorocarbons (PFC), perfluorodecalin liquid (PFD) and its emulsion (PherO2), on quality of donation after cardiac death (DCD). The value of graft perfusion during cold ischemia time was also explored.

DCD rat model: After 30 min of cardiopulmonary arrest liver was removed, flushed with cold University of Wisconsin (UW) solution +/- PFC, and preserved in the same solution for 8 hours.

The experimental groups:

Baseline Group: Liver was removed and placed in liquid nitrogen immediately after cardiac arrest. This tissue was used only for determination of RNA base levels for hepatic gene expression.

Group 1/Control: Excised liver was flushed and preserved in UW solution with no subsequent perfusion.

Group 2: Excised liver was flushed and preserved in cold, oxygenated UW solution and subsequently perfused in the same solution.

Group 3: Five minutes before cardiac arrest was induced, 2 ml of oxygenated pure PherO2 was administered into the portal vein. Excised liver was flushed and preserved in oxygenated UW, and subsequently perfused in the same solution.

Group 4: Excised liver was flushed and preserved in UW solution with the addition of oxygenated 11% PherO2, and subsequently perfused in the same solution.

Group 5: Excised liver was flushed and preserved in UW solution with the addition of oxygenated 11% PFD, and subsequently perfused in the same solution.

Microarrays were used to analyze 22,519 mRNA transcripts in the liver. Histopathological, immunohistochemistry, and ADP/ATP ratio evaluations were performed.

We demonstrated a significant decrease in down- and increase in up-regulation of hepatic genes in all perfusion groups compared to baseline. This trend was most pronounced in the PFC groups. Lower fat content and ADP/ATP ratio as well as reduction in Caspase 3 activation were found in Groups 2-5. Hypothermic (4°C) perfusion of rat DCD liver grafts with oxygenated UW solution (with or without PFC) produces superior preservation. The change in expression in the hepatic genes may represent a protective effect.

Abstract # P-45

Improving Outcomes in Liver Transplantation from Donation after Circulatory Death (DCD). Humberto Bohorquez, Ari J. Cohen, David Bruce, Ian Carmody, Trevor Reichman, George E. Loss. *Transplantation Surgery, Ochsner Clinic Foundation, New Orleans, LA, USA*

Background: Outcomes of liver transplantation from DCD donors may be inferior to those achieved with donation after brain death (DBD) donors mainly due to development of ischemic cholangiopathy (IC).

Goals: To evaluate the outcomes for LT from DCD donors in two different eras.

Materials and Methods: Following IRB approval, retrospective analysis of two eras of patients who receive a LT from DCD donors, Maastricht 3. In Era 2, donors received a higher dose of heparine, livers were flushed retrogradely through hepatic veins and recipients received hepatic arterial tissue plasminogen activator, tPA (2mg) and verapamil (5 mg) during the implantation after the portal reperfusion and started on aspirin prophylaxis.

Results: Ninety-five patients, 42 in Era 1 (10/2003 – 2/2010) and 53 in Era 2 (3/2010 – 6/2013). There were no differences between Era 1 and 2 regarding donor age (39.4 vs. 35.9, p=0.8), donor BMI (27.5 vs. 28.4, p=0.5), recipient average MELD (21.4 vs. 21, p=0.7), recipient BMI (28.6 vs. 30.0, p=0.24) or warm ischemia time (46.3 vs. 45 min, p=0.8). Cold ischemia time was shorter in Era 1 (3.9 vs. 4.9 hours, p=0.03) and fewer livers were procured outside or our local OPO in Era 1 (4 vs. 30, p<0.01). Total biliary complications occurred in 11 (26.1%) patients of Era 1 vs. 16 (30.1%) (p=0.8) in Era 2.

Patient survival at 1, 3 and 5 years, in Era 1 vs. 2, were 82.9 vs. 92.2% (p=0.5);

82.9 vs. 92.2% (p=0.5) and 74.3 vs. 92.2% (p=0.01). Graft survival at 1, 3 and 5 years, in Era 1 vs. 2, were 76.2 vs. 88.7% (p=0.6), 73.8 vs. 88.7% (p=0.6) and 64.3 vs. 88.7% (p<0.01).

Focal anastomotic strictures were found in 6 (14.2%) vs. 12 (22.6%) patients (p=0.2); IC was present in 5 (11.9%) vs. 3 (5.6%) (p=0.02) of the patients although 3/5 in Era 1 and 3/3 in Era 2 were associated with hepatic artery thrombosis (HAT). Only one patient, Era 1, died secondary to sepsis associated with IC not related to HAT. Re-transplantation occurred in 7 (16%) patients in Era 1, 3 due HCV recurrence and 4 due to IC (3 HAT and 1 non-HAT related); in Era 2, 2 (3.7%) patients required re-LT, both due to HAT.

Conclusions: Low incidence (2.1%) of non-HAT associated IC in liver recipients of DCD livers. Improved patient and graft survival observed in Era 2 are probably related to implementation of new policies, surveillance and surgical techniques although further studies are needed in larger population.

Abstract # P-46

The Use of Severe Steatotic Grafts for Patients With High MELD Score. W.C. Dai, S.C. Chan, S.H. Chok, T.T. Cheung, W.W. Sharr, A.C.Y. Chan, J.Y.Y. Fung, T.C.L. Wong, C.M. Lo. *Surgery, University of Hong Kong, Pokfulam, Hong Kong*

We aimed to evaluate the outcome with the use of severe steatotic liver graft in patient with high MELD score.

Retrospective study of a prospectively collected database of patients managed at the Department of Surgery, Queen Mary Hospital, Hong Kong was performed. Between 1996 and 2013, 369 patients had post-perfusion biopsy after liver transplantation. Among the 36 patient (9.75%) who received graft with severe steatosis (>=30%), 14 had MELD score <20 (S-Low MELD group) and 22 had MELD score >=20 (S-High MELD group). The operative parameters and post-operative outcomes were analysed and compared to those grafted with normal livers. (N-Low MELD group n=134 and N-High MELD group n=199).

There was no primary graft non-function in both S-High MELD and S-Low MELD group of patients. The hospital mortality rate in the S-High MELD and S-Low MELD group was 9% and 14.3% (p = 0.634) while the complication rates were 59.1% and 28.6% (p=0.074) respectively. S-High MELD group was associated with significantly higher post-operative ALT level on day 1 and day 7 and significantly higher post-operative bilirubin level on day 1, day 7, day 14 and day 30 compared with S-Low MELD group. For patients with low MELD score, the 1-, 3- and 5-year overall survival was 93.5%, 87.1% and 87.1% for non-steatotic graft and was all 85.7% for steatotic graft (p=0.537) while the respective graft survival was 92.4%, 86.3% and 83.8% for the former and was all 77.1% for steatotic graft (p=0.172). For patients with high MELD score, the 1-, 3- and 5-year overall survival was 93.3%, 89.8% and 87.0% for non-steatotic graft and was 74.1%, 68.4% and 68.4% for steatotic graft (p=0.005) while the respective graft survival was 91.8%, 87.3% and 84.8% for the former and 76.6%, 71.5% and 64.3% for the steatotic group (p=0.013).

The use of severe steatotic liver graft in high MELD patient displayed a significantly higher vulnerability to ischaemic insult as evidenced by a significantly higher median post-operative ALT values and was associated with a trend of higher post-operative complications rate. Patients with low MELD score were found to have comparable overall and graft survival with severe steatotic graft and non-steatotic graft. For high MELD patients, although the use of steatotic graft was associated with a significantly lower overall and graft survival, five-year overall survival of 68.4% would still justify its use in ultra-urgent situation.

Abstract # P-47

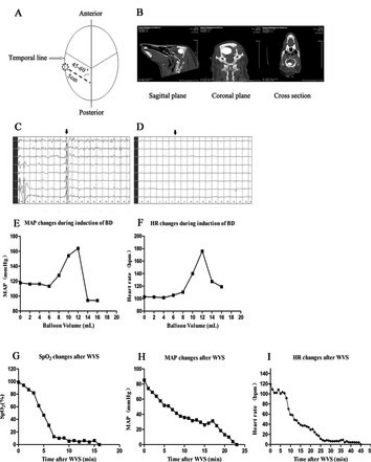
Establish and Characterize a Donation after Brain Death Followed by Cardiac Death Model in Pigs. Zhiyong Guo, Hui Ye, Guixing Xu, Chuanzhao Zhang, Haochen Wang, Zhuohui Li, Xiaoshun He. *The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Objective Donation after brain death followed by cardiac death (DBCD) is a unique practice in China. The aim of this study is to establish a DBCD model in pigs and define the corresponding pathophysiological characteristics.

Methods Brain death (BD) was induced by augmenting intracranial pressure with an inserted catheter into intracranial space through a novel pathway. Continuous monitoring was conducted in hemodynamic parameters, core temperature and blood oxygen saturation (SpO₂). BD was diagnosed by isoelectric EEG, testing of stem reflex, atropine testing and apnea testing. Then the pigs were under intensive care for 12 hours to maintain a stable condition. Then BD was confirmed again, followed by cardiac death inducement by withdrawing ventilatory support. Cardiac death was diagnosed

by an electrical standstill on ECG monitor for five minutes. After that, organs were harvested and biopsies were fixed in 10% formalin, embedded in paraffin, and stained routinely with hematoxylin and eosin (H&E).

Results With continuous high intracranial pressure, all animals showed typical tachycardia, hypertensive and then hypotensive periods. All BD diagnosis met the guidelines. Liver function tests and the results of arterial blood gas analysis were maintained in a stable status. Cardiac death occurred shortly (12-45 minutes) after withdrawal of ventilatory support. Compared to the living donor livers, the DBCD livers showed slightly dilated sinusoidal spaces and biliary epithelial damages, but well organized hepatocyte cords. The structures of glomeruli, tubuli and pancreas tissues were well-preserved. The histological examination showed diffuse cellular edema in the kidney and pancreas tissues. However, no other obvious pathological change was noticed between living donor and DBCD donor organs.



Conclusion We've successfully established a DBCD model using a modified technique, which provides an ideal platform to investigate the characteristics of these unique DBCD donors and develop methods to improve the quality of these allografts.

Abstract # P-48

Histological Injury Detected in Biopsies of Extrahepatic Bile Duct of Donor Livers Represents Injury in the Rest of the Biliary Tree, Including the Intrahepatic Bile Ducts. Negin Karimian, Pepijn Weeder, Fernanda Bomfati, Sanna Op den Dries, Janneke Wiersma-Buist, Annette S.H. Gouw, Ton Lismann, Robert J. Porte. *Department of Surgery, Section of Hepatopancreatobiliary Surgery and Liver Transplantation, University Medical Center Groningen, Groningen, Netherlands*

Histological examinations of distal end of extrahepatic bile duct of donor livers at time of transplantation have revealed signs of severe injury, characterized by a loss of biliary epithelium, mural stroma necrosis and injury of the peribiliary vasculature. It is, however, unknown whether injury of extrahepatic bile duct is representative for the injury in the rest of the biliary tree, including the intrahepatic bile ducts. Aim of this study was to examine whether the degree of histological injury of the distal extrahepatic bile duct is representative for the rest of the biliary tree. Ten donor livers that were not used for transplantation were included after obtaining informed consent from the relatives. After a median of 6 hours of cold ischemia, biopsies were taken from extrahepatic and two different levels of intrahepatic bile ducts: sectoral ducts and segmental ducts. Histological injury was assessed using a systematic histological grading system. Biliary epithelial loss of >50% of the biliary lumen was observed in all the levels of the biliary tree. Minimal injury of peribiliary vascular plexus (<50% vascular changes) was observed in 91.9% of all the biopsies, and there were no significant differences between extrahepatic and intrahepatic bile ducts. There were no signs of microthrombi in the peribiliary vasculature at any level. Mural stroma necrosis was not different in extrahepatic and different levels of intrahepatic bile duct. Minimal intramural bleeding (<50% of the bile duct wall) was found in only 5% of all the biopsies. The degree of injury of periluminal and deep peribiliary glands was similar at all levels of the biliary tree. Injury of periluminal peribiliary glands, however, was more severe than injury of deep peribiliary glands (>50% loss observed in 43% and 6.25%, resp.; $p=0.002$). Histological examinations of bile ducts of donor livers after cold preservation reveal extensive biliary injury. The degree of injury detected in extrahepatic bile

duct of donor livers is representative for the rest of the biliary tree. Biopsies of extrahepatic bile duct of donor livers are a valuable tool for research focusing on bile duct injury in liver transplantation.

Abstract # P-49

Preliminary Observations on the Effect of Anterograde Persufflation (A-PSF) on Energy Charge and Hepatocyte Function in Donation after Cardiac Death (DCD) Livers Declined for Clinical Use. Shirin E. Khorsandi¹, Suttiruk Jittrach¹, Lynette Fairbanks², Corina Cotoi¹, Wayel Jassem¹, Hector Vilca-Melendez¹, Andreas Prachalias¹, Anil Dhawan¹, Nigel Heaton¹, Parthi Srinivasan¹. ¹*Institute of Liver Studies, King's College Hospital, London, United Kingdom*; ²*Purine Reserach Lab, St Thomas' Hospital, London, United Kingdom*

Donation after cardiac death (DCD) livers, are considered to be a marginal organ for solid organ and cell transplantation. Low energy charge and purine quantity within liver parenchyma has been associated with poor outcome after liver transplantation. The aim of this work was to assess the effect of anterograde persufflation (A-PSF) using an electrochemical concentrator on DCD liver energy status and hepatocyte function. Organs utilized for research were DCD livers considered not suitable for transplant. The liver was formally split and the control non PSF section stored in University of Wisconsin Solution (UW) at 4°C. The A-PSF liver was immersed in UW on ice and A-PSF undertaken via the portal vein with 40% oxygen. Tissue samples were taken 2 hours after A-PSF from the A-PSF and control non PSF liver for snap freezing. Purine analysis was performed with photo-diode array detection. Hepatocytes were isolated from A-PSF and control non-PSF liver using a standard collagenase perfusion technique. Hepatocyte function was assessed using mitochondrial dehydrogenase activity (MTT) and the sulforhodamine B (SRB) assay for cell attachment. In <30% steatotic DCD ($n=6$) A-PSF increased the energy charge from 0.197 ± 0.025 to 0.23 ± 0.035 ($p=0.04$). In >30% steatotic DCD ($n=4$) A-PSF had no beneficial effect. After isolation ($n=4$, <30% steatosis) A-PSF was found to improve MTT from 0.92 ± 0.045 to 1.19 ± 0.55 ($p<0.001$) and SRB from 2.53 ± 0.12 to 3.2 ± 0.95 ($p<0.001$). In conclusion, A-PSF can improve the energy charge and function of isolated hepatocytes from <30% steatotic DCD livers.

Abstract # P-50

Donation after Cardiac Death Liver Transplantation - A Rational Expanding of Liver Pool, Compared With Living Donor Liver Transplantation. Guoling Lin, Jun Yu, Yuanxing Liu, Zhenhua Tu, Li Zhuang, Tian Shen, Zhuoyi Wang, Jian Wu, Sheng Yan, Min Zhang, Yan Shen, Weilin Wang, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery First Affiliated Hospital, School of Medicine, Zhejiang University, Key Laboratory of Combined Multi-organ Transplantation, Ministry of Public Health and Key Laboratory of Organ Trans*

Objective To report the acceptable outcomes of liver transplantation from donation after cardiac death (DCD) compared with living donor liver transplantation (LDLT) in one single transplantation center of mainland China.

Methods Until November 2012, fifty-three DCD livers and 161 living donor livers were transplanted in our center. The outcomes including primary non-function, biliary tract complication, organ and patient survival were compared between two groups.

Results Both patient and graft survival is comparable between DCD and LDLT transplant recipients ($p=0.1069$, $p=0.1906$). In DCD liver recipients, biliary complications are also comparable with LDLT ($p=0.0767$). Our findings reveal a significant difference for PNF of DCD liver ($p=0.0342$). PNF of DCD liver has the relation to cold ischemia time ($p=0.0164$), no relations to the donor age, warm ischemia time, liver weight and operative bleeding.

Conclusion The liver of DCD which expanding the source of liver pool is an acceptable resource for liver transplantation. From our experience, the liver of DCD is safe and effective. PNF of DCD liver has the relation to cold ischemia time.

Abstract # P-51

Safety of the Use of G6PD Deficient Donors in Living Donor Liver Transplantation- Results of the Pilot Study. Manoj Shrivatsav, Mettu S. Reddy, Venugopal Kota, Gomathy Narasimhan, Ilankumaran Kaliamoorthy, Sanjay Govil, Anand Bharathan, Kumar Palaniappan, Abdelrrhaim Dabora, Mohamed Rela. *Institute of Liver Disease & Transplantation, Global Hospital, Chennai, Tamil Nadu, India*

Purpose: Safety of the use of living liver donors (LLD) with G6PD deficiency (G6PDd) is unclear. There is only one published case report of the use of a G6PDd donor for LDLT. We report the results of a pilot study of 5 LLD with G6PDd.

Methods: All potential donors were assessed for G6PDd. When G6PDd was identified, family was counselled to identify an alternative donor. If no other donor was available, the G6PDd individual underwent detailed counseling regarding the risk of post-operative haemolysis. Only donors with Class III deficiency (WHO classification, moderate deficiency: 10%-60% of normal) were included in the pilot study. Donor was managed in a dedicated clinical pathway encompassing the intra-operative management and post-operative care focused on G6PDd related haemolysis. Results of 5 consecutive G6PD deficient donors are reported. Outcomes were compared to matched non G6PDd donors.

Results: There were four left lateral sector (LLS) donors and one right lobe (RL) donor. There was no difference between study & control groups with regards to age, extent of resection, duration of surgery, blood loss or need for intra-operative blood transfusion. The peak lactate in the study group was lower than the control group (1.75 mmol/L vs 2.5 mmol/L, $p=0.025$). In the study group, 1 LLS donor needed a single unit transfusion on day 2 due to a drop in haemoglobin. This patient did not show any evidence of haemorrhage or overt haemolysis. 1 RL donor developed fever, tachycardia and body aches on day 3, suggestive of self-limited hemolysis. Markers of haemolysis (serum haptoglobin, LDH, urine Hb and reticulocyte count) remained within normal limits for all study patients. Drop in hemoglobin (Hb) and PCV between post-op days 1 and 3 was higher in the study group though not statistically significant (Hb drop: 14.8% vs 10.2%, $p=0.677$ and PCV drop: 12.5%, vs 9.7%, $p=0.572$). Hospital stay was longer in the study group (9.5 days vs 8.5 days, $p=0.058$) probably because of more intensive management of these patients.

Conclusions: Donors with Class III G6PD deficiency can be safely considered for living liver donation if alternative donors are not available and provided standard precautions pertinent to G6PD deficiency are incorporated in the donor management protocols.

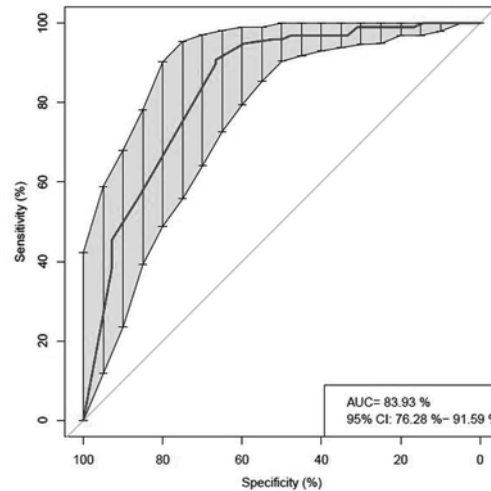
Abstract # P-52

A Neurological Score for Predicting Time of Cardiac Death after Withdrawal of Life-Sustaining Treatment in Neurocritical Patients. Guixing Xu, Zhiyong Guo, Weiqiang Ju, Dongping Wang, Xiaoshun He. *The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Background Reliable prediction of time of death after WLST in neurocritical patients is of importance for organ donation after cardiac death (DCD). We aimed to establish a neurological scoring system (the N-score) to predict the probability of death within 60 minutes after withdrawal of life-sustaining treatment (WLST).

Methods The clinical data from a cohort of 231 neurocritical patients who were admitted in our hospital from 2008 to 2012, were retrospectively reviewed. The patients were divided into training (139) and validation sets (92). In the training set, we used univariate and multivariable logistic regression analyses to assess associations between death within 60 minutes after WLST and clinical variables. Points attributed to each variable were summed to create a predictive score for cardiac death. We assessed performance of the score using receiver operating curve analysis. Finally, we validated the predictive ability of the score in a validation set.

Results In the training set, multivariable logistic regression analysis showed that absent corneal reflexes, absent cough reflexes, extensor or absent motor response and anisocoric or bilaterally dilated pupil were associated with death within 60 minutes (all p values <0.05). The N-score = $-1.523 + 1.140 \times$ pupil size (anisocoric = 1, others = 0) + $1.582 \times$ pupil size (bilaterally dilated = 1, others = 0) + $1.582 \times$ corneal reflex (absent = 1, normal = 0) + $1.488 \times$ cough reflex (absent = 1, normal = 0) - $2.080 \times$ motor response (extensor = 1, absent = 0) - $0.204 \times$ motor response (absent = 1, other = 0). The AUC for the score was 0.839 (95% CI 0.753-0.916) for prediction of death within 60 minutes.



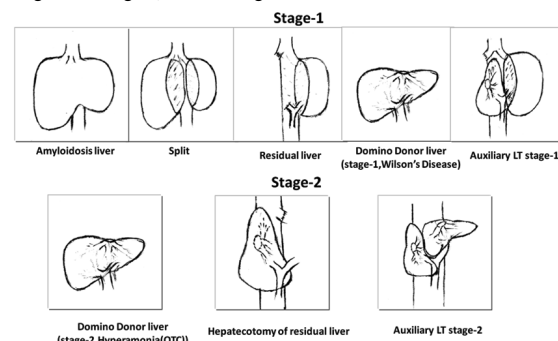
A score of 4-6 had a sensitivity of 87.5% and a specificity of 77.8% to predict death within 60 minutes after WSLT. In the validation set, the prevalence of these predictors was similar with the training sample.

Conclusion The N-score can be easily calculated in clinics, and may be used to predict time of death after WSLT in neurocritical patients in China.

Abstract # P-53

A Case Report: Cross-Auxiliary Double Domino Donor Liver Transplantation. Zhijun Zhu, Liying Sun, Lin Wei, Wei Qu, Zhigui Zeng, Ying Liu, Liang Zhang, Enhui He. *Beijing Friendship Hospital, Beijing, China*

On August 2013, a 32-year-old female diagnosed of familial amyloid polyneuropathy (FAP), with a history of right epigastric fullness and intermittent hematochezia for more than 3 years underwent preoperative evaluation for liver transplantation. The only potential donor of living donor liver transplantation is the patient's mother, who was severe fatty liver by ultra sound and liver biopsy, which was the contraindication. On the basis of a large number of literatures, metabolic liver disease patients such as Wilson's disease and Ornithine carbamyl acyltransferase deficiency (OTC) could receive auxiliary liver transplantation to assist the liver metabolism function. Coincidentally, there were two children patients in the ward listing for LDLT, one was diagnosed of Wilson's disease and the other was OTC. Approved by the ethics committee of Beijing Friend Hospital, we were planning for Cross-Auxiliary Double Domino Donor liver Transplantation divided into stage-1 and stage-2, shown in Figure 1.



On September 16th 2013, the patient underwent stage-1 auxiliary liver transplantation, and the donor was a 4-year-old female child with Wilson's disease who developed the central nervous system symptoms. After the division of the vascular structures supplying the right hemiliver in the recipient, parenchymal transection was performed with an ultrasonic dissector, residue left lobe. The hepatic vein anastomosis was under Piggyback liver transplantation, and also we used the recipient's right hepatic artery and right portal vein branch for vascular remodeling. On October 16th 2013, the patient underwent stage-2 cross-auxiliary liver transplantation, and the donor was a 3-year-old female child with Ornithine carbamyl acyltransferase deficiency (OTC).

Post liver transplantation, the recipient's immunosuppressive therapy comprised tacrolimus, corticosteroids and Mycophenolate mofetil, which were gradually tapered. During a short-term post-LT follow-up for 2 months, the patient has no complications with normal liver function, copper blue protein oxidase activity, blood copper and blood ammonia.

Abstract # P-54

Role of Intravenous N-Acetyl Cysteine (NAC) With Steroid in Acute Alcoholic Hepatitis (AAH) With High Morbidity Score: A Randomized Open Label Prospective Clinical Pilot Trial. P. Patrick Basu^{1,2}, Niraj J. Shah³, Mark Aloysius². ¹Columbia School of Physicians and Surgeons, New York, NY, USA; ²King's County Hospital Medical Center, New York, NY, USA; ³James J Peters VA Medical Center, Mount Sinai School of Medicine, New York, NY, USA

Objective: Acute alcoholic hepatitis is a severe clinical state with significant morbidity and impending mortality in 28 days of about 49%. Recent meta-analysis provokes therapeutic controversies of use of corticosteroid or even liver transplantation. Established standard of care (SOC) is absolute abstinence and nutrition. This study evaluates the use of NAC and Steroids for AAH patients.

Method: Forty five (n=45) patients with AAH, Age 32-58 (mean 46), race Hispanic 21, Caucasian 18, African American 6, mean BMI 24%, Mean Alcohol daily consumption 80 grams/day. DF 56%, Lilies score > 0.67, ABCI (Albumin, Total Direct Bilirubin, creatinine and INR) > 9, mean MELD 24 and mean HOMA 0.9

Group a (n=15): I.V Methyl Prednisolone, i.v. Vitamin C 500 mg + Pentoxifylline 400 mg orally for 4 days followed by Prednisone 60 g orally for 30 days

Group B (n =15): I.V NAC + IV Vitamin C + Pentoxifylline for 4 days followed by Prednisone for 30 days

Group C (n=15): IV Methyl Prednisolone + IV NAC + Pentoxifylline for 4 days followed by Prednisone for 30 days

PERCENTAGE CHANGE	Group A	Group B	Group C
TB	66.7	78.6	60
Albumin	34.7	52.3	73.7
Creatinine	44.4	45.8	37.5
AST	82.9	86.8	90.4
ALT	76	83.6	81.3
TNF	87	42.9	65.4
IL 6	64.7	67.6	72.7
IL 8	62.1	62.1	50
MELD score	51.5	50	42.1

Conclusion: This clinical pilot study postulates adding IV NAC to the SOC in AAH with DF > 32% having a better efficacy with accelerated bilirubin response that enabled to continue steroid therapy with faster recovery time.

Abstract # P-55

Urgent Liver Transplantation for Amanita Phalloides Caused Acute Liver Failure. Abuzer Dirican, Mehmet Yilmaz, Adil Baskiran, Suleyman Koc, Mustafa Ates, Cengiz Ara, Cuneyt Kayaalp, Sezai Yilmaz. Inonu University Faculty of Medicine, Department of General Surgery, Division of Liver Transplantation, Malatya, Turkey

Introduction: Mushroom is widely consumed in Turkey because it is inexpensive and widely available. Intoxication with mushroom is a common health problem in Turkey with a high mortality rate. There are more than 2000 different varieties mushroom in the world and 50 of them are toxic for humans. The most toxic mushroom is Amanita phalloides which have three toxins (Amatoxin, Phallotoxin, Virotxin). Amatoxin poisoning may progress into acute liver failure and eventually death if liver transplantation is not performed. We aimed to share our center's result of liver transplantation for mushroom poisoning caused acute liver failure.

Methods: Files of fifteen patients admitted to the Emergency Department of our hospital with mushroom intoxication between November 2008 and October 2013 were retrospectively evaluated. The patients were administered a combined treatment of gastric lavage, activated charcoal, penicillin G, N-acetyl cysteine and hemofiltration. Demographic, clinical and laboratory data of patients and the outcomes of medical treatment and liver transplantation modality were recorded.

Results: There were 9 (60%) females patients and 6 (40%) male patients. The mean age of the patients was 19.4(2-63) years. Ten of patient was in pediatric age and five adults. They presented with nausea and vomiting

within 4 to 8 hours after intake mushrooms. All patients had abdominal pain and diarrhea. Ten patients (66.6%) developed acute liver failure and were referred to intensive care units. One of these patients recovered without any liver transplantation. Another one patient died during waiting list for liver transplantation. Liver transplantation was performed in 8 patients (1 cadaveric liver transplantation and 7 living donor liver transplantation). Three patients died in the early period after liver transplantation. The rest 5 patients were recovered uneventfully.

Conclusions: Amatoxin poisoning may progress into acute liver failure. Those patients should be referred to a center which liver transplantation can be performed. If supportive therapies is not effective a liver transplantation may be life-saving.

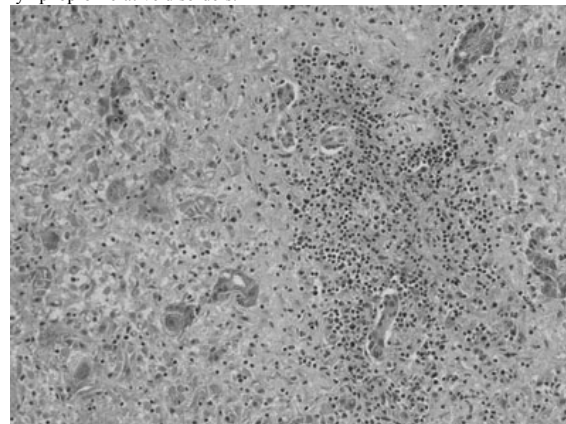
Abstract # P-56

Fulminant EBV Hepatitis Requiring Liver Transplantation: Case Report and Review of the Literature. Alejandro Mejia, Edward Dominguez, Steven Foster, Abdullah Mubarak, Hector Nazario, Parvez Mantry, Stephen Cheng, Adil Habib, Maisha Barnes, Jeffrey Weinstein. The Liver Institute, Methodist Dallas Medical Center, Dallas, TX, USA

Introduction:

Fulminant EBV hepatitis is a rare and challenging presentation of EBV infection and mortality exceeds 85%. We present a case of acute hepatic failure in an immunocompetent patient treated successfully with OLT.

Case report : A 22 yo college student presented to the ER with cough, fatigue and fever. He was treated presumptively for pneumonia but 2 days later presented with worsening symptoms, nausea, vomiting and jaundice. PE revealed fever, tachycardia, jaundice and hepatosplenomegaly. Initial bilirubin was 20, AST 3231, ALT 5741, INR 5.7, platelet count 93000. US showed hepatosplenomegaly. Biopsy showed 60% necrosis. He was placed as Status 1 priority for OLT due to worsening INR and deteriorating neuro function. Serologies revealed a high EBV-IgM (2.27) and EBV PCR of 280000 copies. He was started on Acyclovir IV. He received a 45 yo donor liver and his postop recovery was uneventful. His explant confirmed the presence of EBV by in-situ hybridization and acute hepatic necrosis. Postoperatively he was treated with Valcyte and Cytogam for 6 months and then Acyclovir for 1 year. His EBV PCR copies were checked monthly and remained positive for 1 year but decreased from 120000 to less than 200 copies. He had no viral symptoms/ lymphadenopathy on follow-up exams. At 7 years post OLT he remains well and has had no EBV-related complications or any lymphoproliferative disorders.



Discussion:

This case represents the third reported successful OLT of a patient presenting with fulminant EBV hepatitis. All reported cases were immunocompetent hosts and had no posttransplant EBV-related complications. Antiviral therapy may be started as soon as the diagnosis is made. Due to the high mortality associated with EBV-related liver failure, the ultimate decision to proceed with emergent OLT should be based on clinical grounds and overall hepatic dysfunction.

Abstract # P-57

Is Plasmapheresis(PP) the Key To Successful Living Donor Liver Transplant (LDLT) in Fulminant Wilson Disease(FW) With Severe Hemolysis? Neelam Mohan, Veena Raghunathan, Maninder Dhaliwal, Sandeep Kudale, Sakshi Karkra, A. Soin. *Medanta Liver Institute, Medanta The Medicity Hospital, Gurgaon, Haryana, India*

INTRODUCTION

Hemolytic crisis with acute liver failure(ALF) is a rare but potentially fatal presentation of Wilson disease. Liver transplantation (LT) is crucial, following which time for recovery varies depending on donor graft functioning. It is also unclear if decoppering from heterozygote donor liver grafts is slower than from unaffected donors. PP ameliorates effects of copper overload and has been used as bridge therapy to buy time for transplant; whether it is a determinant of post-transplant recovery is not known.

CASE REPORT

17 children underwent LT for Wilson's disease with ALF between 2003-13 in our hospital. Of these two presented with FW with severe hemolysis. Both were males, aged 6 & 9 yrs and presented with jaundice less than 1 week with rapidly worsening encephalopathy and oliguria. Both had low ceruloplasmin, high urinary copper and KF ring on slit lamp examination. Investigations revealed Hb < 6 g%, bilirubin > 30 mg/dl, INR > 2. There was e/o ongoing hemolysis (high LDH and Reticulocyte count, peripheral smear changes and hemoglobinuria). They were stabilized with blood transfusions and liver supportive measures. One child was taken up for LT within 10 hrs of admission; the other underwent PP while preparing for transplant and thereafter LT at 24 hrs. Mothers were donors in both.

Hemolysis was present with high bilirubin levels in the initial post op period in both cases. However there was rapid resolution in the child(within 48 hrs) who had undergone pre-transplant PP. Graft functioning was good, renal dysfunction resolved and child was discharged in 2 weeks' time.

The other child had persistent hemolysis and worsening renal function. Liver enzymes were persistently elevated. He developed metabolic acidosis and hypotension requiring inotropic support. He was started on continuous renal replacement therapy with transient improvement; however he deteriorated again with worsening shock and acidosis and died on 5th postop day. This was the only mortality in our case series of 17 LDLT patients of FW.

CONCLUSION

A comparison of the two cases probably suggests that PP helped to control hemolysis and possibly other deleterious effects of circulating copper and facilitate a recovery post LT, especially when parents are donors (Heterozygote graft) ; more studies are needed in this direction.

Abstract # P-58

Prediction of Mortality following Liver Transplantation for Fulminant Hepatic Failure. Emrah Otan¹, Cemalettin Aydin¹, Adil Baskiran¹, Cengiz Bal², Cuneyt Kayaalp¹, Sezai Yilmaz¹. ¹*Institute for Liver Transplantation, Inonu University, Malatya, Turkey;* ²*Biostatistics, Osmangazi University School of Medicine, Eskisehir, Turkey*

Introduction: Acute liver failure (ALF) is a clinical syndrom with hepatic encephalopathy and tendency to bleeding which may require liver transplantation (LT) and has a high risk of mortality. Our aim was to analyze the correlation between postoperative mortality and various score systems in patients treated with LT following ALF at our institution.

Material and Method: Between March 2009 and October 2012, 39 ALF patients, evaluated with Kings' College Hospital Criteria ,were treated with LT . Demographic features, Model for End-Stage Liver Disease (MELD), Acute Physiology and Chronic Health Evaluation II (APACHE II) , Sequential Organ Failure Assessment (SOFA) scores, Neutrophil/Lymphocyte Ratio (NLR), Platelet/Lymphocyte Ratio (PLR), Mean Platelet Volume (MPV) levels were analyzed retrospectively.

Results: Mean age was 33,05 ± 13,6 (64% female, n=25 and 35,89% male, n=14). Living Donor Liver Transplantation (LDLT) was performed to 29 (74,35%), and Deceased Donor Liver Transplantation (DDLT) was performed to 10 (%25,64) of the patients. Overall mortality was % 38,46 (n=15).

MELD, APACHE II, SOFA Scores NLR, PLR Values, MPV Levels of Surviving and Resulting in Mortality Groups

Score	Surviving (n=24)	Resulting in Mortality (n=15, 38,46%)	p value
MELD	29,83 ± 7,51	30,40 ± 7,31	0,818
APACHE II	16,79 ± 4,13	16,07 ± 4,57	0,612
SOFA	8,33 ± 2,23	9,00 ± 2,00	0,353
NLO	18,37 ± 27,32	6,41 ± 4,90	0,103
PLO	41,69 ± 76,007	28,89 ± 61,88	0,587
MPV	9,57 ± 1,30	9,38 ± 1,49	0,681

Results for the scores of the patient groups are given in Table-1.

Conclusion: This study reveals that none of the scores are effective in predicting the mortality of the ALF patients treated with LT.

Abstract # P-59

Blood Parameters Can Serve as Prognostic Markers of Patients Have ABO Incompatibility Liver Transplantation. Bingyi Lin¹, Zhiyun Zheng¹, Lei Geng^{1,2}, Lin Zhou^{1,2}, Shusen Zheng^{1,2}. ¹*Key Lab of Combined Multi-Organ Transplantation, Ministry of Public Health, First Affiliated Hospital, Zhejiang University School of Medicine, HangZhou, ZhengJiang, China;* ²*Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, HangZhou, ZhengJiang, China*

Aims: Accurate markers of survival for patients with acute liver failure (ALF) treated with ABO incompatibility liver transplantation (ABO-i LT) are currently lacking. This study was designed to assess the prognostic significance of preoperative blood parameters in outcomes.

Methods: We enrolled 64 patients following ABO-i LT in this study. Transplantation data bank were used to ascertain Neutrophil-to-lymphocyte ratio (NLR), Platelet-to-lymphocyte ratio, neutrophil count, lymphopenia and thrombocytopenia preoperatively. Unifactorial and multifactorial analysis were performed to determine independent risk factors of poor prognosis.

Results: On univariate analysis, preoperative high NLR and high neutrophil count were significantly associated with poor outcomes. Although univariate analysis showed that no statistical significance was observed in 5-year survival rate between normal platelet group and thrombocytopenia group (72.1% vs 57.1%, p=0.080), the high NLR and thrombocytopenia were identified as independent prognostic factors for recipient survival, and high neutrophil count failed to retain statistical significance on multivariate analysis.

Univariate analysis and multivariate analysis of blood parameters affecting overall survival after ABO-i LT

Factors	Subcategory	Number	Univariate analysis P	Multivariate analysis P	HR (95%CI)
NLR	≥5	31	0.030	0.014	3.336(1.271-8.751)
	>5	33			
Neutrophil	≥6000/ul	31	0.025	0.081	2.292(0.903-5.815)
	<6000/ul	33			
Lymphopenia	<1000/ul	33	0.885		
	≥1000/ul	31			
Thrombocytopenia	<50000/ul	26	0.080	0.030	2.615(1.098-6.231)
	≥50000/ul	38			
PLR	≥100	18	0.260		
	<100	64			

HR: hazard ratio; CI: confidence interval.

Conclusion: Patients with preoperative high NLR and thrombocytopenia are more possible to have poorer survival prognosis after ABO-i LT. This suggested that preoperative anti-inflammatory and elevating platelet count are important for patients with ALF.

Abstract # P-60

Anti-Hepatitis C (HCV) Triple Therapy With Protease Inhibitors in HIV/HCV Co-Infected Patients after Liver Transplantation. T.M. Antonini^{1,2,3,5}, V. Furlan⁴, E. Teicher^{2,3,4,5}, S. Haim-Boukobza^{1,2,3,5}, M. Sebagh^{1,2,3,5}, A. Coilly^{1,2,3,5}, L. Bonhomme-Faivre^{1,2}, A.M. Roque-Afonso^{1,2,3}, D. Vittecoq^{2,4}, D. Samuel^{1,2,3,5}, A.M. Taburet^{2,4}, J.C. Duclos-Vallee^{1,2,3,5}. ¹*AP-HP Hopital Paul Brousse, Villejuif, France;* ²*Univ Paris-Sud, Villejuif, France;* ³*Unit 785, Inserm, Villejuif, France;* ⁴*AP-HP Hopital Bicetre, Le Kremlin-Bicetre, France;* ⁵*DHU HepatinoV, Villejuif, France*

Background: HCV recurrence affects survival of HIV/HCV coinfectd patients after liver transplantation (LT).

Aim: To describe the results of triple anti-viral C therapy in 7 HIV/HCV coinfectd patients after LT, with HCV recurrence (genotype 1): fibrosis

Abstract # P-64

Prior Trans-arterial Chemoembolization– A Protective Factor Against Rapid HCV Recurrence Post Liver Transplant in Patients with HCV with HCC??? - A Retrospective Analysis.

Bhavin B. Vasavada, Karan Julka, Chao L. Chen. *Liver Transplant Programme, Chang Gung Memorial Hospital, Kaohsiung, Taiwan*

Background: HCV recurrence after liver transplant is nearly universal and results in progressive fibrosis, cirrhosis, graft loss, re transplantation and mortality. There are very few studies comparing impact of pre transplant HCC therapies either as a bridge to transplant or to downstage like TACE, hepatectomy, RFA, PEI on HCV recurrence post transplant. Primary aim of the study was studying prognostic factors associated with HCV recurrence including pre transplant HCC therapies.

Material and methods:

All the patients who have undergone living donor liver transplantation at Kaohsiung Chang gung memorial hospital, Taiwan for HCV related HCC between July 2002 and June 2012 were analyzed retrospectively. Severity of HCV histological recurrence was categorized according to the ISHAK hepatitis activity index score. Rapid HCV recurrence was defined ISHAK hepatitis activity index (HAI) score greater than 4 at one year. Statistical analysis was done using SPSS version 21. (IBM).

Results:

One hundred and nine patients with HCC associated with HCV underwent living donor liver transplant from July 2002 to June 2012. Median follow up time was 31 months. Forty-nine patient had significant hepatitis c recurrence at the end of one year (HAI >4) and were included in study group. 60 patients without significant hepatitis c recurrence were included in control group. On univariate analysis patients who did not underwent pre-transplant trans arterial chemoembolization (0.035), primary transplant (without prior hepatectomy) (p=0.031), high meld score (p=0.036), high viral load pretransplant (0.007), High AFP levels (0.013) were significantly associated with rapid histological recurrence of HCV (HAI greater than 4 at one year post transplant). Total 61 patient underwent prior trans arterial chemoembolization, 22 of these patients developed significant HCV recurrence while 39 patient did not developed HCV recurrence. On multivariate analysis only patient who did not underwent TACE were significantly associated with rapid histological recurrence of HCV (odds ratio 3.310, p = 0.018 95 % confidence interval 1.22-8.94).

Conclusion:

Prior TACE do not increase post transplant HCV recurrence but may be beneficial for it.

Abstract # P-65

Efficacy and Safety of Everolimus in Liver Transplant Recipients – A Single Center Experience.

Ivelise R.C. Brasil¹, Ronaldo M. Esmeraldo¹, Romero M. Esmeraldo¹, Vicente B.F. Guimaraes², Francisco T.M. de Paula², Israelly E.G. Lucena², Daniel B.P. Freitas². ¹Organ Transplantation Unit, Hospital Geral de Fortaleza, Fortaleza, CE, Brazil; ²Faculty of Medicine, Ceara State University, Fortaleza, CE, Brazil

Everolimus (EVL) is a new m-TOR inhibitor recently approved in the USA for use in liver transplantation (LTx). There are reports that the use of m-TOR inhibitors in LTx has negative effects on outcome including hepatic artery thrombosis (HAT), delayed wound healing, and increased mortality compared to standard immunotherapy.

In this single center, retrospective study we reviewed the data of 142 cases of LTx performed at our institution during the last 4 years. Nearly all patients received a steroid-free immunosuppressive protocol consisting of rabbit thymoglobulin induction, with delayed introduction of low dose tacrolimus (Tac) in association with mycophenolic acid (MPA) or EVL. The aim of this report is to show our initial center experience with the use of EVL, particularly regarding to renal function and tumor recurrence. From the total, 37 (26%) LTx patients received EVL. The main reasons for the use of EVL were the presence of hepatocellular carcinoma, renal dysfunction or drug intolerance (MPA or Tac). Most patients (76%) were male, with a mean age of 53 years. The main indications for LTx were neoplasia (n=11), cirrhosis due to alcohol (n=18) or HVC (n=8). The introduction of EVL varied between patients from day-2 to day-450 post-transplant, being earlier than day-30 in 11 patients (30%) or later than day-30 in 26 (70%). The current maintenance immunosuppression consists of EVL + Tac, n=26 (70%), EVL + MPA, n=7 (19%), or EVL monotherapy, n=4 (11%), with most of patients (95%) remaining steroid-free. There were only 2 cases (5%) of acute rejection, easily rescued. Graft and patient survival were both 100%, with an excellent renal function, as measured by a mean serum creatinine of 1.1mg/dl. The

main surgical complication was incisional hernias, n=5 (14%), and no case of HAT was seen. So far, no patient presented with cancer recurrence. Viral infections comprised only one case of asymptomatic CMV infection and one case of HVC recurrence.

The use of EVL in de novo LTx patients, though limited to a small group of patients, has shown to be safe and efficacious with a very low incidence of acute rejection, CMV infection, HCV and cancer recurrences, and no case of HAT, with an excellent renal function, as well as graft and patient survivals.

DISCLOSURE: Esmeraldo, R.M.: Grant/Research Support, Novartis.

Abstract # P-66

Where Is the Maximum Benefit of Everolimus after Liver Transplantation?: Early Or Late Indication.

Itxarone Bilbao¹, Cristina Dopazo¹, Jose Luis Lázaro¹, Lluís Castells², Mireia Caralt¹, Sofia de la Serna¹, Ramon Charco¹. ¹Department of HPB Surgery and Transplants, Hospital Vall d'Hebron, Barcelona, Spain; ²Hepatology Unit, Department of Internal Medicine, Hospital Vall d'Hebron, Barcelona, Spain

AIM

The objective of this study is to analyze the maximum benefit of the administration of everolimus after liver transplantation (LT).

MATERIAL and METHODS

Since October 1988 to 2012, 1028 liver transplantations were performed in 962 patients in our center. Ninety nine (10,3%) have received everolimus. Two groups have been considered: Early indication, when everolimus was administered within the first year post-transplant; Late indication, when everolimus was introduced after the first year post-transplant. Demographic characteristics, indication of conversion, drug efficacy, the adverse events, rate of withdraw and follow-up have been compared between both groups.

RESULTS

Mean age at time of conversion was 55 ± 10 years. The indication of conversion at early and late period was: refractory rejection in 32% and 32%; HCC out of Milan criteria in the explanted liver in 15% and 5%; HCC recurrence post-LT in 5% and 7,5%; “de novo” tumor in 0% and 37,5%; post-LT renal insufficiency in 10% and 10%; neurotoxicity in 14% and 0% and others. Preconversion immunosuppression was: Tacrolimus in 91 patients, Cyclosporin in 6 and MMF in 2. Postconversion regimen was Tacrolimus + Ever in 74; Cyclosporine + Ever in 5; Ever ± MMF ± steroids in 20. Trough levels were around 3,2 ng/ml (early) and 2,7 ng/ml (late). Mean follow-up post-conversion was 18 ± 17 (early) and 19 ± 17 (late), median 12 months. For those events appearing either early or late, efficacy was better when everolimus was indicated early: resolution of acute rejection 40% vs 25%, resolution of renal dysfunction 45% vs 40%. Half of the patients converted for HCC out Milan criteria and 33% of those converted for the novo tumor recurred. 85% of those with neurotoxicity resolved the neurological symptoms while on everolimus. The main adverse event was hyperlipidemia (42% vs 40%). Incidence of acute rejection was 23% (early) vs 5% (late). Incidence of withdrawal was 36% (early) vs 20% (late).

CONCLUSION

Everolimus at low doses (trough levels around 3 ng/ml), in combination with Tacrolimus or Cyclosporin is a safe immunosuppressant with beneficial effect either at early or late post-LT period.

Abstract # P-67

Long-Term Superior Renal Function With Everolimus and Reduced Tacrolimus in Liver Transplant Recipients: 3-Year Results from the H2304 Extension Study.

Lutz Fischer, Faouzi Saliba, Gernot M. Kaiser, Luciano De Carlis, Herold J. Metselaar, Frederik Nevens, Christophe Duvoux, Gaohong Dong, Barbara Rauer, Guido Junge. *H2304E1 Study Group, Hamburg, Germany*

Introduction: Long-term calcineurin inhibitor (CNI) therapy in liver transplant recipients (LTxR) is associated with nephrotoxicity. Indeed, long-term renal function preservation remains one of the greatest challenges in LTx. The 12- and 24-month (M) results of H2304 study demonstrated that introduction of everolimus (EVR) with reduced tacrolimus (rTAC) at 1M post-LTx provided superior renal function over standard exposure TAC. Here, we report 3-year long-term renal function data from the H2304 extension study. **Method:** Patients who completed the 24M randomised H2304 core study could continue their assigned treatment regimen in the 12M extension phase (H2304E1): EVR+rTAC (N=106; EVR C0 3-8 ng/mL; TAC C0 3-5 ng/mL or TAC-C (N=125, C0 6-10 ng/mL). Key primary endpoint at M36 was renal function assessed by estimated GFR (eGFR) using MDRD4. Additionally, evolution of renal function (eGFR-MDRD4), from extension baseline (M24)

to M36, was explored using a mixed-effect model for longitudinal data.

Results: At M36, the incidence of composite efficacy failure was lower with EVR+rTAC vs TAC-C (11.5% vs 14.6%, risk difference -3.2%, 97.5% CI: -10.5, 4.2; $p=0.334$). Renal function from randomisation to M36 was consistently superior with EVR+rTAC vs TAC-C; difference in mean eGFR at M36 over TAC-C was 15.2 mL/min/1.73m² in favour of EVR+rTAC arm ($p<0.001$; all extension patients). Longitudinal data analysis for eGFR showed that the renal function in EVR+rTAC slightly increased over time in the extension period from M24 to M36 compared to a decrease for TAC-C arm (0.04 vs -0.26 mL/min/1.73m²/month). During the extension period, two patients in the TAC-C arm compared to none in the EVR+rTAC arm discontinued study medication due to renal failure and impairment. None of the patients in either group reported proteinuria (≥ 3 g/day); however, 2 vs 10 patients experienced renal failure and 1 vs 3 patients experienced renal impairment in the EVR+rTAC vs TAC-C arm, respectively.

Conclusion: Results from the H2304 extension study confirm that early introduction of EVR combined with reduced TAC exposure provides long-term renal benefits without compromising efficacy in LTxR.

DISCLOSURE: *Fischer, L.:* Grant/Research Support, Novartis, Astellas; Speaker's Bureau, Gilead Sciences; Other, Novartis, Advisory Committee., *Saliba, F.:* Grant/Research Support, Novartis, Astellas, Roche and Gambro; Speaker's Bureau, Schering Plough, MSD and Gambro; Other, Novartis, Astellas, Roche, Genzyme, Advisory Committee, Viropharma and Vital Therapies, Advisory Committee., *Kaiser, G.M.:* Grant/Research Support, Novartis, Astellas, Roche and Pfizer., *Metselaar, H.J.:* Grant/Research Support, Astellas, Biotech and Novartis; Speaker's Bureau, Astellas, Biotech and Novartis., *Neuens, F.:* Grant/Research Support, Ipsen, Roche, MSD, Jansen, CAF, Astellas, Ferring, Eumedica, and Boston Scientific., *Duvoux, C.:* Grant/Research Support, Novartis, Astellas and Roche; Speaker's Bureau, Astellas; Other, Novartis, Data Safety Monitoring Board Member., *Dong, G.:* Employee, Novartis., *Rauer, B.:* Employee, Novartis., *Junge, G.:* Employee, Novartis.

Abstract # P-68

Conversion To Mammalian Target of Rapamycin Inhibitors and Calcineurin Inhibitor Discontinuation in Liver Transplantation: A Systematic Review and Meta-Analysis of Randomised Controlled Trials. *Thomas E. Glover¹*, Evangelia E. Ntzani², Paul Gibbs¹, J. Andrew Bradley¹, Christopher J.E. Watson¹, Vasilis Kosmoliaptis¹. ¹Department of Surgery, University of Cambridge, Cambridge, United Kingdom; ²Clinical and Molecular Epidemiology Unit, University of Ioannina, Ioannina, Greece

Introduction: Calcineurin inhibitor (CNI) nephrotoxicity represents a significant cause of morbidity following liver transplantation. Even though mammalian target of rapamycin (mTOR) inhibitors are often used to circumvent this problem, the evidence base for this approach is not well defined.

Methods: We conducted a meta-analysis of all randomised controlled trials to test the hypothesis that, following liver transplantation, conversion to mTOR inhibitors (sirolimus or everolimus) compared to CNI continuation is associated with an improvement in renal function at 1 year. We searched all major databases and conference proceedings (April 2013) and contacted corresponding authors. We determined the pooled estimate of change in renal function (Glomerular Filtration Rate) and relative risk (RR) estimates of adverse events associated with mTOR based therapy at 1 year. Heterogeneity was assessed using the Q statistic and I²; we accounted for timing of intervention and baseline renal function.

Results: Nine randomised control studies, with a total of 1,870 patients, met the final inclusion criteria. Use of an mTOR inhibitor was associated with a significant improvement in renal function of 6.1 mL/min [95% confidence interval (CI): 1.7-10.4, $p=0.006$] at 1 year. The risks of death (RR: 1.04, 95% CI: 0.62-1.75), graft loss (RR: 0.75, 95% CI: 0.34-1.66) or infection (RR: 1.18, 95% CI: 0.94-1.48) were not increased following conversion to an mTOR inhibitor. However, sirolimus or everolimus treatment increased the risk for acute rejection (RR: 1.99, 95% CI: 1.40-2.83), mouth ulcers (RR: 8.12, 95% CI: 2.80-23.52) and adverse event related treatment discontinuation (RR: 2.36, 95% CI: 1.29-4.29). Fewer patients on mTOR inhibitors needed renal replacement therapy (RR: 0.40, 95% CI: 0.19-0.84) after 1 year at the expense of higher proteinuria risk (RR: 2.71, 95% CI: 1.63-4.52), although reporting for these outcomes was incomplete.

Discussion: Use of mTOR inhibitors enables CNI discontinuation in liver transplant patients with a significant improvement in renal function after 1 year. This strategy needs to be balanced against an increased risk of adverse events.

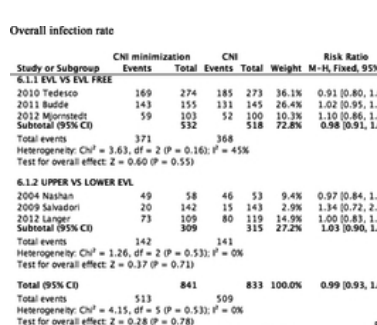
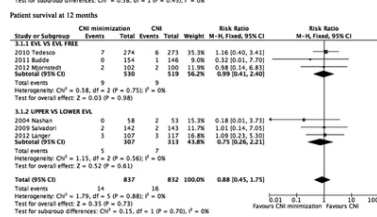
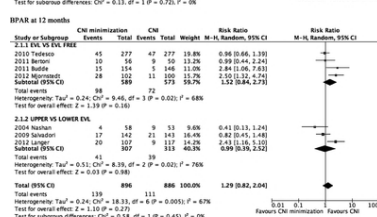
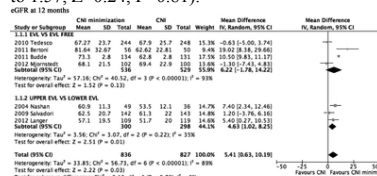
Abstract # P-69

Everolimus Based Calcineurin Inhibitors Minimization Regimens in Renal Transplantation Recipients: A Meta-Analysis. *Zhiyong Guo*, Dongping Wang, Fei Li, Weiqiang Ju, Xiaoshun He. *Organ Transplant Center, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Background Calcineurin inhibitors (CNIs) are widely-used immunosuppressants in renal transplantation, although it has been proved that CNIs can cause nephrotoxicity. Minimization of CNIs seems a better immunosuppression protocol after renal transplantation. Here we conduct a meta-analysis on the outcomes of CNI minimization by Everolimus in renal transplant recipients.

Methods We included randomized trials with no year and language restriction. All data were analyzed using fix or random effect model. The primary endpoints were estimated glomerular filtration rate (eGFR), biopsy proven acute rejection (BPAR) and patient survival at month 12. The secondary endpoints were incidence of infection, blood creatinine level, allograft dysfunction, and other side effects such as hypertriglyceridemia.

Results eGFR was significantly improved in Everolimus group (MD=5.41, 95% CI 0.63 to 10.19, $Z=2.22$, $P=0.03$). There was no significant difference in BPAR episodes (RR=1.29, 95% CI=0.82 to 2.04, $Z=1.10$, $P=0.27$), patient survival (RR=0.88, 95% CI=0.45 to 1.75, $Z=0.35$, $P=0.73$) (Figure 1), overall infection rate (RR=0.99, 95%CI=0.93 to 1.06, $Z=0.28$, $P=0.78$) (Figure 2) and incidence of hypertriglyceridemia (RR=0.94, 95%CI=0.56 to 1.57, $Z=0.24$, $P=0.81$).



Conclusion The findings of this meta-analysis suggest that CNI minimization regimen with Everolimus elicits benefits in renal function, while not comprising immunosuppressive effects.

Abstract # P-70**Correlation of Adverse Drug Reactions (ADRs) Triggered By Immunosuppressive Therapy With Re-Admissions in Post-Liver Transplant.** Karla R. Andrade², Luciana Haddad¹, Lucas S. Nacif¹, Liliana Ducatti¹, Carolina B. Manin², Wellington Andraus¹, Luiz Augusto Carneiro D'Albuquerque¹. ¹Gastroenterology, Sao Paulo University Medical School, Sao Paulo, Brazil; ²Pharmacy Division, Sao Paulo University Medical School, Sao Paulo, Brazil

Introduction: Liver transplantation is a well established treatment for end stage liver diseases, thanks to advances in immunosuppressive therapy. The aim of this study was to evaluate the main reasons for re-hospitalization of patients undergoing liver transplantation and to correlate them with the adverse reactions caused by immunosuppressive therapies.

Methods: A prospective study in liver transplant patients was performed from January 2012 to December 2012. The reasons for re-hospitalization were assessed and they were correlated with adverse reactions caused by immunosuppressive therapy. Significant differences were considered when $p < 0.05$. The criteria for evaluation of randomness of ADRs were the described by Naranjo algorithm.

Results: During the one-year follow up, 79 patients were transplanted, 20 died and 59 were followed in the study. The patient survival at one year was 75%. The rate of re-transplantation was 15%. There were 54 cases of re-admissions, including 32 patients, with a mean hospital stay of 6.35 ± 12.2 days, while 37% was related to infections, 22% because of procedures, 18% elevated hepatic enzymes, 9% itching, 3.7% cholangitis, 1.8% rejection, and 7.4% for other reasons. Of these, 72% had suspected ADRs and they were evaluated the Naranjo algorithm as probable or potential. Tacrolimus were related to 71.8% re-admissions, 20.5% to mycophenolate and 7.7% to prednisone. The incidence of adverse reactions were related to infections in 30.7%; 28% to elevation of liver enzymes; 15.6% to pruritus; 25.7% to others. Mostly patients (96.3%) were discharged, 3.7% died. Comparing the patients re-hospitalized ($n=32$) with those who did not re-hospitalized ($n=36$), the main factors related to readmission were transplantation for HCV ($p=0.05$), presence of comorbidity ($p=0.05$) and obesity ($p=0.01$). There was no difference in age ($p=0.210$) and MELD score ($p=0.52$).

Conclusion: The main reason leading to re-hospitalization was related to ADRs, specially infectious conditions related to the use of tacrolimus. Obesity and HCV are factors related to a higher chance of re-hospitalization. It is important to customize and optimize the immunosuppressive therapy in order to avoid complications and re-hospitalization.

Abstract # P-71**Impact of Cyclosporine Versus Tacrolimus on the Incidence of Chronic Kidney Disease Following Liver Transplantation.**

Jingcheng Hao, Wentao Wang, Lvnan Yan. Department of Liver Surgery, West China Hospital of Sichuan University, Chengdu, Sichuan, China

Object:

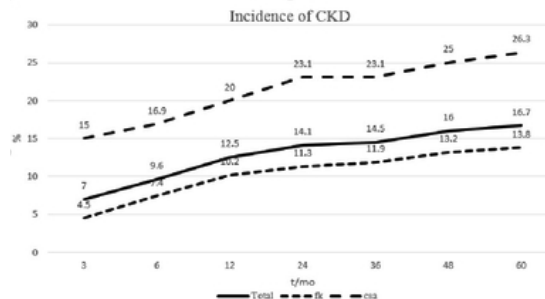
To determine whether tacrolimus (TAC) provide lower incidence of chronic kidney disease (CKD) in recipients undergoing liver transplantation (LT) than cyclosporine (a CSA).

Methods:

From March 1999 until December 2012, a total of 689 consecutive Chinese patients who underwent LT enrolled in the study with mean follow-up duration was 24 (3-120) mo. CKD was defined as Glomerular filtration rate (GFR) < 60 mL/min per 1.73 m² for at least 3 consecutive months. GFR was estimated by an abbreviated Modification of Diet in Renal Disease formula. Initial immunosuppression was by triple-drug regimens that included a calcineurin inhibitor (CNI), mycophenolate mofetil (MMF), and prednisone. The initial dose of CNI was 0.05-0.10 mg/kg per day for TAC and 5-10 mg/kg per d for CSA respectively, and was gradually reduced based on a stable graft function. The serum trough level of CNI was 6-8 ng/mL for TAC and 120-150 ng/mL for CSA 3-mo post-operation, 4-6 ng/mL for TAC and 80-120 ng/mL for CSA 1-year after transplantation was expected with stable liver function. MMF was personalized between 1.0-1.5 g/d.

Results:

With a definition of GFR < 60 mL/min per 1.73 m², the incidence of CKD was 16.7% 5-year after LT. At 1, 3 and 5 years, the incidence of CKD were 10.2%, 11.9% and 13.8% under TAC versus 20.0%, 23.1% and 26.3 under CSA.



Conclusion:

TAC maintained significantly better renal function compared with CSA in LT patients, indicating a lower nephrotoxicity.

Abstract # P-72**Role of Intravenous (IV) Mycophenolate Mofetil (MMF) with Delayed Introduction of Tacrolimus in Liver Transplant (LTx) Recipient Who Have Severe Renal Dysfunction at the Time of Transplant.** A. Jain¹, A. Mukerji², A. Karachristos¹, M. Maloo¹, K. Lau¹, A. Di Carlo¹. ¹Surgery, Temple University Hospital, Philadelphia, PA, USA; ²Surgery, Bronx Lebanon Hospital, Bronx, NY, USA

Introduction: With introduction of organ allocation based on MELD (Model of End stage Liver Disease), more patients are being transplanted renal dysfunction. With the use of antibody preparation of tacrolimus introduction has been delayed or minimized to preserve the renal function. We have in the past shown that absorption of MMF in first few weeks post LTx is impaired and IV MMF provides the 100% delivery of the drug with higher peak and better area under the curve concentration (AUC). This strategy is shown to have immunological advantage.

Aim of the present study is to examine the outcome of LTx recipients who have severe renal dysfunction (Serum Creatinine > 3 mg/dL) at the time of LTx, using IV MMF with delayed introduction of tacrolimus.

Patients and Methods: Between Feb 2009 to July 2013, 11 patients underwent LTx with Serum Creatinine > 3 mg/dL at the time of transplant. All patients received 1gm IV MMF with incision, single oral dose of tacrolimus 0.03 to 0.05 mg/kg on call to surgery and IV 500 mg Methyl Prednisolone (MP) in an hepatic phase. Post LTx IV MMF 1 g twice a day for about a week. Introduction of tacrolimus was gradually delayed after LTx as program matured; MP taper total of 600 mg over five days. All patients were followed for 12 months.

Results: All 11 patients serum creatinine improved after transplant. However, one patient (case #11) was commenced on hemodialysis 4 months and 12days after re transplantation, his pre LTx serum creatinine was 3.2mg/dL. Over all mean creatinine before LTx was 3.91 ± 0.79 that improved to 1.4 ± 0.71 at 3 months and 1.86 ± 1.24 at 12 months.

Pre LTx Serum Creatinine > 3 mg/dL														
case no.	Post Transplant Days													
	-1	5	7	14	21	30	60	90	120	150	180	360		
68	4.39	3.55	2.89	1.94	1.64	1.81	1.39	1.35			1.09	1.35	1.33	
61	4	2	1.2	1	1.2	0.8	0.66	0.89	1.15	0.92	0.96	1.66		
51	4.2	4.4	4.5	4.3	3.3	3.5	3.1	3.2	2.4	3.2	2.7	5.11		
49	5.4	2.5	1.8	1.4	1.8	1.9	1.7	1.5	1.9	1.9	1.79	1.54		
45	3.3	2.6	2.4	2.2	1.1	1.3	1.4	1.9	1.7	1.75	2.07	1.78		
40	5.1	1	0.9	1.1	1	1.1	1.2	1.5	1.27	1.35	1.57	1.36		
36	3.2	1.8	1.2	1.3	1.1	0.8	2	0.9	0.9	0.9	0.9	1.3		
32	3.7	1.1	1.1	0.7	0.8	0.7	0.8	0.8	0.73	0.81	0.72	0.96		
30	3.3	1.5	1.2	1.7	1.8	2.8	1.6	0.9	1					
18	3.1	2.2	1.9	1.5	0.8	0.5	0.4	0.8	0.8	0.9	0.9	1.71		
11	3.3	3.4	3.1	2.1	1.9	2.1	2.7	1.7	2.2	1.9	2.3			
Mean	3.91	2.37	2.02	1.75	1.49	1.57	1.54	1.4	1.41	1.47	1.53	1.86		
SD	0.79	1.07	1.11	0.97	0.72	0.95	0.82	0.71	0.6	0.74	0.68	1.24		

All patients remained free from acute rejection.

Conclusion: As published before, IV MMF provides higher peak concentration and AUC that allows delayed introduction of tacrolimus after LTx which allows renal function to improve. This strategy is useful without any antibody preparation in LTx patients to preserve renal function.

Abstract # P-73

Sorafenib Prolongs Skin Allograft Survival Through Upregulation of Treg and Autophagy-Related Mechanism In Vivo. Jiunn-Chang Lin¹, Chien-Liang Liu¹, Jie-Jen Lee¹, Tsang-Pai Liu¹, Wen-Ching Ko¹, Chih-Hsiung Wu², Yu-Jen Chen³.

¹Department of Surgery, Mackay Memorial Hospital, Taipei, Taiwan; ²Department of Surgery, Taipei Medical University-Shuang Ho Hospital, Taipei, Taiwan; ³Department of Radiation Oncology, Mackay Memorial Hospital, Taipei, Taiwan

Background

Sorafenib, a multi-kinase inhibitor approved for treatment of advanced renal cell carcinoma and hepatocellular carcinoma, has been reported inhibitory on function of dendritic cells (DCs). This study was aimed to explore the mechanisms of sorafenib's immunomodulatory activity.

Purpose:

Evaluate the mechanisms of sorafenib on monocyte-derived dendritic cells (MDDCs) and on survival of skin allograft of mice.

Methods:

MDDCs were generated from monocytes with addition of GM-CSF and IL-4. MDDCs were treated with therapeutic doses of sorafenib. Western blotting for mTOR and its downstream p70S6k was examined. Skin graft from C57BL/6 mice was taken and was transferred to BALB/C mice. FoxP3 was analyzed from splenocytes of mice as a marker of regulatory T cell (Treg). Soluble factors contained in serum were measured by ELISA.

Results:

Sorafenib downregulated the expression of mTOR and p70S6k in vitro. Existence of autophagy was observed on MDDCs after treatment with sorafenib. In mice skin transplant model, sorafenib prolonged the skin allograft survival and splenocytes showed upregulation of Treg. Blockade of autophagic flux by chloroquine partially diminished the protective effect of sorafenib, indicating an autophagy-related mechanism in vivo.

Conclusion:

Sorafenib may have potential to be developed as a new category of immunosuppressant drugs acting via autophagy induction of DCs.

Abstract # P-74

Immunosuppression in Living Donor Liver Transplantation-Less Is Better. Pankaj Lohia, Rajesh Dey, Kavita Sharma, Subash Gupta, Manav Wadhawan. ANG Center for Liver and Biliary Sciences, Indraprastha Apollo Hospital, New Delhi, India

Immunosuppression is maintained at minimal levels in the early post operative period in living donor liver transplantation (LDLT) recipients to avoid septic complications without significantly increasing chances of rejection.

This is a retrospective study (Jan 2012- Dec 2012) on 269 LDLT recipients. Immunosuppression regimen in our center consists of low dose tacrolimus (Tac) along with mycophenolate and steroid without any induction therapy. Post operative day of Tac introduction, Tac levels at day 3, day 7 and at 30 days after surgery were analyzed. Infection rates including sepsis were analyzed. Clinically detected rejection rate was calculated in the study group. Mortality rate at 3 months was evaluated. Subset analysis was done based on pre operative MELD scores.

Mean age of patients(pts) was 45.1 years (range 6 month- 72 yrs). 47(17.4%) pts were female.

Tac was introduced most commonly on post operative day 1 (70.2%)

Mean Tac levels at day 3, day 7 and at day 30 were 7.08, 7.57, 7.23 respectively.

Infection, (blood culture positive, fungal culture positive, sepsis) rate was 18.4%.

Clinical rejection rate in the study group was 11.15%.

Of the 269 patients, 34(12.6%) patients died in first 3 months (58.8%) deaths could be attributed to sepsis(bacterial/fungal). Pre op MELD scores in patients who died from sepsis was below 25 in 10 patients(50%) and beyond 25 in 45% pts.

In our series infection (including sepsis) rates are comparable to published literature.

This regimen has not increased the rejection rates compared to published literature.

Conclusion- We have kept Tac at a lower level in early post transplant period without increasing clinical rejection rates. We believe that maintaining low level of immunosuppression helps in reducing infection rates in living donor liver transplant recipients.

Abstract # P-75

Immunosuppression Withdrawal in Children after Liver Transplantation – Is It Possible? Joanna Teisseyre, Malgorzata Markiewicz-Kijewska, Piotr Kalicki, Hor Ismail, Mikolaj Teisseyre, Irena Jankowska. Pediatric Surgery and Organ Transplantation, Children's Memorial Health Institute, Warsaw, Poland; Gastroenterology, Hepatology and Eating Disorders, Children's Memorial Health Institute, Warsaw, Poland

Liver transplantation has become a routine treatment for children with end stage liver disease. Although transplanted liver has historically been regarded as being immunologically privileged in majority of cases immunosuppression is necessary to avoid graft rejection and liver damage. On the other side immunosuppressive agents increased risk of serious complications. The aim of our study was to assess causes and sequelae of withdrawal of immunosuppressive drugs in pediatric recipients of liver transplant in our center. We performed retrospective search for all immunosuppression withdrawals after liver transplantation looking for indications for withdrawal, time without immunosuppression, reasons for reintroduction of immunosuppression, long term graft function.

Method: 16 patients after liver transplantation (F13, M3). Immunosuppression had to be stopped 3 months – 10,1 yrs after LTx (mean 1,9 yrs). Age at transplantation was 0,59-18,13 yrs (median 1,149 yrs). Immunosuppression before discontinuation consisted of: tacrolimus with MMF in 4 pts, tacrolimus with steroids in 8 pts, MMF in 1 and tacrolimus in 3 pts.

Results: Reason of withdrawal of immunosuppression was PTLTD in 10 pts, lymphoma in 2 pts, high EBV viremia in 4 pts. Duration of time without immunosuppression was 10 days – 6,35 yrs (median 131,5 days). All patients received prednisone in dose 0.1-0.3 mg/kg/24h. The reason for reintroduction of immunosuppression in 12 pts was acute rejection (biopsy proven) in 6 pts, deterioration of liver function in 5 pts, severe fungal infection on steroids in 1 pt. 3 pts are still without IS (0,98-6,35 yrs). Long term survival achieved 87,5% of patients, 2 pts (12,5%) died due to progress of lymphoma and sepsis. The actual follow up of living patients is 3,98-15,08 yrs (median 10,94) Two patients underwent retransplantation, however none due to immunological reasons (one due to biliary complications and one due to deterioration of liver function).

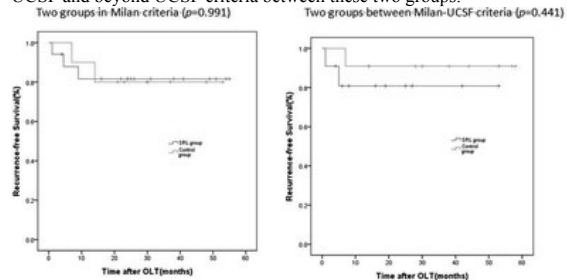
Summary: Most common of immunosuppression withdrawal in children after LTx is development of PTLTD or lymphoma. In most children it enables successful treatment of lymphoproliferative disease, however, most of them will need reintroduction of IS within 1 year due to immunological reasons.

Abstract # P-76

Survival Analysis of Sirolimus-Based Immunosuppression in Liver Transplantation for Patients With Hepatocellular Carcinoma. Shilei Xu, Yingcai Zhang, Qin Yang, Jianrong Liu, Yang Yang. Liver Transplant Center, Third Affiliated Hospital of Sun Yat-sen University, Guangzhou, Guangdong, China

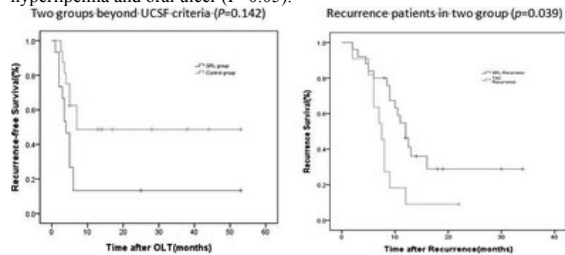
Objective: To investigate the influence of sirolimus-based immunosuppressive protocols on the survival and tumor recurrence in liver transplantation (LT) recipients with hepatocellular carcinoma (HCC).

Methods: We retrospectively analyzed 142 patients who underwent LT for HCC in our hospital during Jan. 2006 to Jan. 2011, who were divided into SRL-treat group (62 cases) and control group (80 cases). The disease-free and tumor bearing survival time were compared using the Kaplan-Meier method. Results: No significant difference was observed between these two groups with the disease-free survival time (DFS). There were no significant differences of the DFS patients who meet Milan criteria, between Milan - UCSF and beyond UCSF criteria between these two groups.



In the control group, the median tumor bearing survival time was 12 months (3-34 months) in 21 patients who add the SRL in the immunosuppressive protocols after tumor recurrence, which was 8 months (6-22months) in 14

patients who continue the used immunosuppressive protocols after tumor recurrence. There was significant difference in the tumor bearing survival time between these patients ($P=0.039$). Compared with the control group, the SRL group had significantly lower diabetes while had a higher rate of hyperlipemia and oral ulcer ($P<0.05$).



Conclusions: The sirolimus-based immunosuppression may not benefit for all HCC patients after LT, but it may inhibit the growth of tumor and prolong the survival time of patients with tumor recurrence after LT; it can reduce the diabetes rate.

Abstract # P-77

Evaluation of Liver Donors' Outcome in LDLT: the National Liver Institute Experience. Khaled A. Abou El Ella, Amr M. Aziz, Hany A. Shoreim, Ossama A. Hegazy, Mohamed B. Taha, Ibrahim Marwan. *Hepato Pancreatic Biliary and Liver Transplant Surgery, National Liver Institute, Menoufiya University, Menoufiya, Egypt*
Background: Liver Transplantation has been the last resort for definite treatment of de-compensated cirrhosis, early stage of hepatocellular carcinoma and acute liver failure. This study aims to evaluate donor outcome after LDLT carried out in our centre.

Patients and Methods: Between April 2003 and December 2012, 200 living related donors who donated part of their liver in LDLT, were reviewed. Post-operative complications were assessed according to the latest version of Clavien's grading system. Mean period of follow-up was 35.2 months with a minimum of five months.

Results: There were 131 males and 69 females. The donor's mean age was 27.5 ± 6.6 years with a range of 18-45 y. Mean graft weight was 852 ± 258.2 g and the mean remaining liver volume percent was $37.9 \pm 7.6\%$. The mean GRWR was $1.22 \pm 0.36\%$ with a range of 0.67-3.30%. Mean operative time was 7.6 hr (range 6-10.5). Mean blood loss was 522 ± 419 ml. Mean ICU & hospital stay were 3.9 ± 2.2 days and 12.4 ± 8 days respectively. A total of 72 complications developed in 62 donors (31%).

There were (21%) non-biliary complications classified according to Clavien's grading system (42 grade); 24 grade I, 6 grade II, 10 grade III a, one III b and one grade V, while there were (15%) biliary complications classified according to Clavien's grading system (30 grade); 4 grade I, 18 Grade III a, 7 grade III b and one grade IV a. One donor died (0.5%), due to massive intra-abdominal bleeding leading to postoperative PVT, on postoperative day 12. No donor developed any long lasting disabilities on follow-up.

Conclusions: Donor hepatectomy is definitely not a complication-free procedure; donor safety is paramount in LDLT. Biliary complications are the most common after these procedures. Major complications of the donor are expected to decrease with improved technique & increasing experience but not minor complications.

Abstract # P-78

Comparison between Right Liver Donor Hepatectomies With and Without Pringle Maneuver: Postoperative Course and Early Follow Up. Gurkan Ozturk¹, Bulent Aydinli¹, Nurinnisa Ozturk², Sukru Arslan¹, Ercan Korkut¹, Aysenur Dostbil³, Nurhak Aksungur¹. ¹Ataturk University, Department of General Surgery and Organ Transplantation Center, Erzurum, Turkey; ²Ataturk University, Department of Biochemistry, Erzurum, Turkey; ³Ataturk University, Department of Anesthesiology, Erzurum, Turkey

Introduction

Donor hepatectomy is very important, because the end product must be technically and physiologically feasible to be transplanted. More important however is donor safety. Portal pedicle clamping (PPC) is a critical maneuver to reduce blood inflow and thereby bleeding during the parenchyma dissection. However it causes ischemia of the liver. Most surgeons are concerned about this ischemia. These concerns raised the idea to perform liver transection without PPC

We conducted this study to compare the results of right donor hepatectomy procedures with and without PPC.

Patients and Methods

The data of 39 patients who underwent donor right hepatectomy retrospectively evaluated. Among the 39 patients 20 were operated with (group 1) and 19 without using portal pedicle clamping (group 2). All patients underwent a right donor hepatectomy. The same surgical team performed operative procedures in all patients. At the operation, the liver was freed from its attachments. In all patients liver-hanging maneuver was performed. The right branch of the portal vein and right hepatic artery were isolated and portal pedicle was encircled with a vascular tape for PPC. After definition of demarcation line, parenchyma transection has begun. Parenchyma transection was performed by using ultrasonic aspirator and bipolar electrocautery. Ischemic preconditioning was performed in all patients who underwent portal pedicle clamping. Portal pedicle clamping was performed during the parenchyma transection for 15 minutes every time.

Records were retrospectively evaluated. Operative times, blood loss and number of PPCs were noted. Postoperative data vital signs, drainage, re-operations, ICU stay, hospital stay and all complications were recorded. Laboratory data were noted.

Results

Operation time was significantly longer in group 2 than 1, blood loss, postoperative complications were not different. Serum AST, ALT and total bilirubin and INR levels were higher in group 1.

Discussion

Unfortunately this study is retrospective. Fortunately we were able to collect all data. Parenchyma transection without PPC is safe but takes time. Can be used in patients with limited volume or liver functions.

Abstract # P-79

Living Donor Grafts as an Option for Liver Retransplantation.

Thomas Becker¹, Nils Heits¹, Benedikt Reichert¹, Alexander Bernsmeier¹, Rainer Günther², Martina Kohl³, Felix Braun¹. ¹Klinik für Allgemeine, Viszeral-, Thorax-, Transplantations- und Kinderchirurgie, UKSH, Campus Kiel, Kiel, Germany; ²Klinik für Innere Medizin I, UKSH, Campus Kiel, Kiel, Germany; ³Klinik für Kinderheilkunde, UKSH, Campus Kiel, Kiel, Germany

Background: During the last years, the shortage of postmortal donor organs and donor risk index increased. LD-LTx is one option for candidates on the liver waiting list sustaining good graft quality.

Methods: We analyzed the cohort of LD-LTx at UKSH, Campus Kiel in the period from 30.11.2010 to 08.06.2013. A special focus was set on living donor grafts used for re-LTx.

Results: A total of 20 LD-LTx were performed including 10 SII+III (LLS), 2 SI-IV (LL) and 8 SV-VIII (RL). Median LLS-recipient age was 0.6 (0.3-11.8) y and donor age was 32.9 (21.0-42.7) y. Median recipient age in adults was 45.7 (16.5-63.6) y and donor age was 42.4 (26.7-51.6) y. LD-re-LTx included 1 child and 3 adults. Indications for LD-re-LTx were: (I, waiting time (WT) 2968 d, 47 y, MELD 27) secondary sclerosing cholangitis after 1.LTx for PSC, (II, WT 1711 d, 26 y, MELD 22) biliary sepsis after 2.LTx with thrombosis of reconstructed hepatic artery anastomosed to the aorta, (III, WT 111 d, 7 y, PELD 30) chronic graft dysfunction (CDF) after 1.LTx for biliary atresia and Kasai operation and (IV, WT 399 d, 16 y, MELD 24) CDF after LD-LTx for metabolic liver disease.

All LD-LTx donors and recipients are alive after a median follow-up of 313 (6-918) d. None of the donors had a major complication (Clavien >2). Four recipients required re-LTx after LD-LTx. Cause for re-LTx were HAT including 2 LD-re-LTx with complex arterial re-reconstruction (1 adult, 1 child), 1 HAT in a patient with coagulopathy and primary Budd-Chiari-syndrome and 1 HAT in a 1 year old child.

Conclusions: Living donor liver transplantation is an option for waiting list patients being not reflected by the current allocation system. The risk for graft loss is increased in case of LD-re-LTx and must be faced against donor risk and mortality of the waiting list candidate. Moreover, the higher risk of graft failure has to be discussed open with the living donor couple prior to the operation.

Abstract # P-80

Does Macrovesicular Steatosis Contraindicate Right Lobe Liver Donation? P. Bhangui, J. George, Y.B. Raghavendra, R. Mohanka, A. Rastogi, S. Goja, P. Balachandran, K.R. Sumana, P. Singla, D. Gautam, N. Saraf, S. Saigal, A.S. Soin. *Medanta Liver Institute, Delhi NCR, India*

Background: While the use of marginal deceased donor livers to increase the donor pool is acceptable, the objective in living donor liver transplantation (LDLT) is to use "near-perfect" grafts to minimize donor risk and maximize recipient benefit. Whether and what degree of macrovesicular steatosis in a living donor is safe for the recipient and donor, remains controversial.

Methods: We compared post operative graft function and outcomes in primary, blood group compatible, right lobe LDLT in adults, with (Group A; $>10 \leq 20\%$ steatosis), and without (Group B; $0-10\%$ steatosis) biopsy proven macrovesicular steatosis. Donors with $>20\%$ steatosis were rejected. Steatosis was quantified on selective pre-operative liver biopsy (when suspected on biochemistry or imaging), or protocol intra operative biopsy. Donors' postoperative recovery was also studied.

Results: Among 534 LDLT's performed from July 2011 to October 2013, outcomes in 277 recipients with GRWR ≥ 0.7 , whose donors had a liver biopsy, were studied. There were 24 patients in Group A, and 253 patients in Group B. Pre-transplant MELD (19 vs 22; $p = 0.13$) and GRWR (1.08 vs 1.01; $p = 0.33$) were comparable in the 2 groups. Post operative day (POD) 3 transaminases [SGPT (median 130 vs 127 IU, $p = 0.26$) and SGOT (87 vs 92 IU; $p = 0.82$), and INR (1.63 vs 1.73; $p = 0.13$); as well as POD 7 transaminases [SGPT (103 vs 99 IU, $p = 0.90$), SGOT (55 vs 56 IU, $p = 0.59$), and serum total bilirubin [TB] (2.6 vs 2.9 mg/dl, $p = 0.38$) were similar in the two groups. Also, hospital stay (median 16 days in both), hospital mortality (4.1% in Group A vs 7.5% in group B; $p = 0.54$), and 3 year survival (92% vs 90%; $p = 1.00$) were comparable. Only one patient in Group A died due to primary non-function of the graft. Donor demographics in both groups (including age, sex, BMI, and remnant liver volume) were similar. Donor POD3 median SGPT (167 vs 142 IU; $p = 0.13$), SGOT (125 vs 132 IU; $p = 0.93$), and INR (1.44 vs 1.48; $p = 0.49$); POD7 TB (1.3 vs 1.9; $p = 0.14$); Clavien 3 or 4 morbidity (5.1% vs 6.2%; $p = 0.7$), and hospital stay (median 7 days in both groups) were similar in both groups. There was no donor mortality in either group.

Conclusion: Use of right lobe living donor grafts with $\leq 20\%$ macrovesicular steatosis does not compromise early graft function and outcomes in the recipient, and is safe for the donor.

Abstract # P-81

Liver Regeneration and Recovery in Right Lobe Living Donors: More a Matter of Function Rather Than Volume Alone? P. Bhangui^{1,3}, J. Duclos¹, C. Salloum^{1,2}, A. Elmaleh¹, P. Andreani¹, R. Adam¹, D. Castaing¹, D. Azoulay^{1,2}. ¹Hopital Paul Brousse, Villejuif, France; ²Hopital Henri Mondor, Creteil, France; ³Medanta Liver Institute, Delhi NCR, India

Background: Right lobe living donor liver transplantation is safely performed in adults given the partial livers' ability to regenerate and regain normal function both as a graft (in the recipient) and remnant (in the donor). Few studies define, and report objectively on the rate and extent of recovery of liver function and volume.

Methods: Prospectively collected preoperative and postoperative clinical, biochemical and imaging data in 91 consecutive right lobe donors was analyzed. We studied functional and volumetric recovery of the remnant left liver [RLL] during the first year post hepatectomy. In addition, the relationship between liver regeneration and functional recovery, and predictors of the same were studied.

Results: The right lobe was harvested excluding the middle hepatic vein [MHV] in 70 cases (75.8%). The mean RLL (as per preoperative CT volumetry) was 501 ± 130 grams and represented $35.1 \pm 5.8\%$ of the total liver volume [TLV]. Normal liver function (defined as prothrombin time [PT] $\geq 70\%$ and total bilirubin [TB] $\leq 20\mu\text{mol/L}$) was regained by post operative day [POD] 7 in 47 donors (51.6%), by POD 30 in 78 (85.7%), and by POD 90, 180 and 365 in 92.3%, 93%, and 95.6% of donors, respectively. Mean liver volumetric recovery (RLL/TLV ratio) was $63.8 \pm 9.4\%$, $71.3 \pm 8.9\%$ and $84.6 \pm 9.2\%$ at POD 7, 30, and 365, respectively. Percentage liver growth was 85%, 105%, and 146% at POD 7, 30, and 365, respectively. Preoperative PT value ($\beta = 0.072$, $P = 0.01$), RLL/TLV ratio ($\beta = 0.111$, $P = 0.03$), MHV harvesting ($\beta = -1.554$, $P = 0.02$), and post operative peak TB ($\beta = 0.04$, $P < 0.01$) were determinants of liver functional recovery. Predictive factors for early liver regeneration included donor age ($\beta = -0.171$, $P < 0.025$), TLV/ body weight ratio ($\beta = -7.905$, $P < 0.004$), and RLL/TLV ratio ($\beta = 0.415$, $P < 0.017$).

Conclusion: Even one year after donation, ad integrum liver regeneration is not complete in all donors (85%). However, by that time, near-complete (96%) recovery of liver function has been achieved. A well-selected healthy donor recovers well and resumes normal activity within a short period after surgery, probably emphasizing that function ultimately prevails over just liver volume. Predictive factors of early functional recovery and regeneration could further aid in better selection of donors thus ensuring good donor outcomes.

Abstract # P-82

Causes of Aborted Live Donor Hepatectomy: Can It Be Avoided? Chao-Long Chen, Allan M. Concejro, Chih-Che Lin, Yueh-Wei Liu, Chee-Chien Yong. *Liver Transplant Program and Department of Surgery, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan*

Objective: An aborted donor operation is considered donor morbidity in living donor liver transplantation (LDLT) because it jeopardizes an otherwise healthy individual without achieving the aim of the transplant operation. We present the causes of aborted donor hepatectomy based on a single institution with a large experience in LDLT.

Methods: From June 1994-November 2013, there were 1025 LDLT done. There were 783 adult and 242 pediatric LDLT. All donors underwent routine liver US, CTA and MRI according to preoperative donor protocol evaluation. All recipients underwent routine liver US, abdominal CT and CTA according to recipient protocol evaluation. In addition, hepatocellular carcinoma patients underwent thorough metastatic work-up prior to transplant. Pre-operative liver biopsy in both donor and recipient was not routine. There were 14 (1.37%) aborted live donor hepatectomies. The records of these live liver donors were reviewed. Special attention was focused on reasons for aborted donor hepatectomy.

Results: There were 6 male and 8 female donors. 13 donors intended to donate the right lobe and one left lobe of the liver. There were 12 male and 2 female recipients. The indications for liver transplant were HBV-related cirrhosis with hepatocellular carcinoma (7) HBV-related cirrhosis (2), HCV-related cirrhosis (1), alcoholic (1), polycystic liver disease (1), autosomal recessive polycystic kidney disease with congenital hepatic fibrosis (1), and cryptogenic (1). There were 8 (57%) donor-related and 6 (43%) recipient-related reasons for aborted donor hepatectomy. The reasons for aborted donor operation were inadequate donor remnant liver volume (4), hemodynamic instability in the recipient (3), steatohepatitis in the donor (2), unrecognized extrahepatic malignancy in the recipient (2), peritoneal tuberculosis in the recipient (1), poor quality of hepatic artery in the donor (1), and congenital hepatic fibrosis in the donor whose recipient is a son with congenital hepatic fibrosis (1). The incidences of donor-related and recipient-related causes of aborted donor operation were 0.78% and 0.58%, respectively.

Conclusion: Judicious preoperative planning is not 100% to ensure a no aborted donor operation in LDLT but it should avoid such a situation. Mention of possible incidence of an aborted donor operation should be included in the informed consent when counselling a potential live liver donor.

Abstract # P-83

Quantification of Hepatic Steatosis with MR Spectroscopy in Living Donor Liver Transplantation. Hsien Jen Chiang^{1,3}, Chun Wei Li³, Chun Chi Lin¹, Hsien Wen Chiang¹, Tung Liang Huang¹, Chao Long Chen², Yu Fan Cheng¹. ¹Liver Transplantation Program and Departments of Diagnostic Radiology, Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Kaohsiung, Taiwan; ²Departments of Surgery, Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Kaohsiung, Taiwan; ³Department of Medical Imaging and Radiological Sciences, College of Health Science, Kaohsiung Medical University, Kaohsiung, Taiwan

Objective:

Hepatic steatosis is a major problem in both donors and recipients in living donor liver transplantation (LDLT). The purpose of this study is to evaluate the accuracy rate of the one breath-hold MR Spectroscopy in liver fat quantification in LDLT comparison with intraoperative liver biopsy.

Materials and Methods:

Of 81 liver donation were preformed (35 males and 46 females with a mean age of 30.05 years (18 to 46 years)), who received both MRS and intraoperative liver biopsy were enrolled in this study. One breath-hold single-voxel stimulated echo acquisition mode (STEAM) MR Spectroscopy were performed by 1.5T MRI (Discovery 450; GE, USA) in evaluation of the liver fatty content in segment 5, 8, and left lateral segment. Accuracy was

assessed through linear regression between MR spectroscopy fat fraction and pathology grading. Sensitivity and specificity of MR spectroscopy fat-fractions were also calculated.

Results:

Totally 81 LDLT (39 right, 32 left and 10 lateral segment graft) were performed. No fatty content (Group 1) was found in 61 donors (75.3%), 5%-10% fatty liver (Group 2) in 16 donors (19.7%), 11%-15% fatty liver (Group 3) in 2 donors (2.5%), and >16 % fatty change in 2 donors (2.5%) (Group 4). The acquisition time for the MRS data collection was 20 seconds and the data analysis and measurement were almost instant.

MR spectroscopy fat fraction was well correlation with the pathology grading (3.447 ± 3.68 , 5.3043 ± 5.11 , $P < 0.0001$). Linear regression between MR spectroscopy fat fraction and pathology grading with high accurate rate ($R^2 = 0.920$) was achieved. The sensitivity and specificity for detection of liver steatosis in MR spectroscopy were 94.4% and 98.4%, $P < 0.0001$.

Conclusion:

MR spectroscopy fat fraction is a highly precise and accurate method in quantification hepatic steatosis for the living donor and the acquisition and can be finished in one breath-hold.

Abstract # P-84

Biliary Complications after Donor Hepatectomy: The Dark Side of the Moon. Murat Dayangac, Murat Akyildiz, Necdet Guler, Onur Yaprak, Arzu Ozcelik, Yalcin Erdogan, Yildiray Yuzer, Yaman Tokat. *Liver Transplantation Unit, Florence Nightingale Hospital, Istanbul, Turkey*

Biliary complications (BC) are among the most common postoperative complications in living liver donors. The aim of this study is to determine the impact of BC associated with donor hepatectomy for living donor liver transplantation (LDLT).

Between July 2004 and May 2013, 456 donors underwent right hepatectomy at our institution. In a median follow-up of 30.5 (21.2-54.2) months, 36 donors (7.9%) developed 37 BC (biliary leakage, BL=33, 7.2%; biliary stenosis, BS=4, 0.8%). Of these, 12 donors had transient biliary drainage from the abdominal drains, which stopped spontaneously. These BL were defined as Grade 1 according to Clavien Classification, which did not necessitate any treatment and there was no deviation from the normal postoperative course. Six donors were found with symptomatic biliary collections during the perioperative follow-up, which were treated successfully with parenteral antibiotics (Grade 2).

A total of 18 donors developed 19 major BC. Eight donors with grade 3a BL were successfully treated either with percutaneous catheter drainage (PCD) (n=7) or endoscopic sphincterotomy/stent placement (ES/SP) (n=1). One of these donors developed late BS. In 4 donors with grade 3b BL, two underwent early Roux-en Y hepaticojejunostomy (RNY HJ) and in one donor, BL from the remnant biliary orifice was repaired over a T-tube. One other donor, who did not attend for a return visit after PCD for early BL returned 10 months after, only when the PC clogged and he developed cholangitis. He underwent RNYHJ immediately. Two donors with grade 3a BS were treated successfully with ES/SP and two others with grade 3b BS underwent RNY HJ after failed interventional procedures.

The only donor mortality in our entire LDLT cohort (1/620) require special attention. The 38-year old woman, who donated for her father underwent PCD and ES/SP for early postoperative BL. While having biliary drainage from the PC, she was lost to follow-up. Unfortunately, we were informed that she has returned to her home country for follow-up care and died after a series of failed operations.

Although donors may gain a psychological benefit from the fact that they were able to give a gift of life to the recipients, donor hepatectomy is not without risks. Untreated biliary leakage, either from the cut surface or from the hepatic duct stump may be devastating.

Abstract # P-85

58 Consecutive Living Liver Donors. Implementation of an Educational Service Agreement between Fundación Programa Metropolitano De Trasplante De Hígado at Caracas, Venezuela and the Liver Transplant Center of Columbia University at New York, USA. Manuel E. De Guglielmo¹, Dafne Del Valle¹, Elena Pestana¹, Damelys Marín¹, Miguel Vasallo¹, Carlos Rodríguez¹, Tomoaki Kato², Pedro Rivas¹. ¹*Programa Metropolitano de Trasplante de Hígado - Fundahígado, Caracas, Distrito Capital, Venezuela;* ²*Department of Surgery, Center for Liver Disease and Transplantation, Columbia University, New York, NY, USA*

Background: Liver transplant (LT) is the only therapeutic option for patients with end stage liver disease. Living donor liver transplant (LDLT) program was initiated in our country in 2005 as part of an Educational Service Agreement between the Programa Metropolitano de Trasplante de Hígado-Fundahígado and the LT Program at Columbia University in New York. This is a report after 58 consecutive cases

Patients and methods: 143 patients were initially evaluated, 43 potential donors were rejected, 16 are still in evaluation and 27 patients withdrew for personal reasons. The medical files of 58 donors that were used for actual liver transplant were reviewed. Each donor underwent a pretransplant evaluation protocol that included standard cardiopulmonary and renal work up and complete blood evaluation, angioTAC, colangioMRI, psychiatric, social evaluation and hepatic biopsy when necessary.

Results: we included 58 donors with ages ranging between 18 and 52 years. 26 left lateral, 24 left and 8 right hepatectomies were performed. 13 donors developed complications: 8 grade I, 3 grade II, 1 grade IIIa and 1 IIIb, according to the Clavien classification system for surgical complications (4 intraabdominal collections, 5 wound infections, 2 biliary fistulae, 1 endocarditis, 1 enterocolitis, and 1 patient needed surgery for an intrabdominal collection). Mortality in this group was 0 %. All donors are in excellent physical conditions and returned to their daily activities within a period between 1 and 3 months after donation.

Conclusion: Living Donor Liver transplantation is a safe procedure for donors. Surgery was performed with excellent results and zero mortality. The rate of complication was 22.4% however most of them were low grade complications. All donors returned to their daily activity within three weeks after surgery.

Abstract # P-86

Results and Complications of ERCP in Adult Living Donor Liver Transplantation Recipients. Luis F. Flores¹, Constantino Fondevila¹, Andrés Cárdenas², Alejandro Fernández-Simón², Jorge Rodríguez¹, José Fuster¹, Juan C. García-Valdecasas¹. ¹*Surgery, Liver Transplant Unit, Hospital Clinic, University of Barcelona, Barcelona, Spain;* ²*GI/Endoscopy Unit, Hospital Clinic, University of Barcelona, Barcelona, Spain*

METHODS: This is an observational, descriptive analysis of ERCP outcomes in 84 patients undergoing LDLT at our center from 2000 to 2013. Sixty eight patients underwent primary biliary reconstruction with duct-to-duct anastomosis, among whom 43 (63%) developed BC. In 27 of these patients (63%), a total of 67 ERCP were performed: 1 ERCP in 14 patients, 2 in 3 patients, 3 in 4 patients, and ≥4 in 6 patients. Graft, surgical, and ERCP results were evaluated.

RESULTS: ERCP findings were as follows: 30 biliary strictures (45%), 14 bile leaks (21%), 7 biliary stones (11%), 5 normal (7%), 3 sphincter of Oddi dysfunction (4%), 2 other (3%), and 6 failed cannulations (9%). ERCP confirmed the clinical diagnosis in 55 procedures (82%), was used to treat the initial form of the BC in 40 (60%), and definitively resolved the BC in 13 cases (39%). The existence of more than one graft bile duct or a complex biliary reconstruction were factors significantly associated with failure of ERCP to resolve the BC acutely (OR 3.77, 95% CI 1.23-11.49, $P=0.01$, and OR 11.14, 95% CI 1.25-98.81, $P=0.01$, respectively). Complications developed after ERCP in 9 cases (13%): 4 cholangitis, 3 pancreatitis, and 2 post-sphincterotomy bleeding, all of them mild and moderate.

CONCLUSIONS: ERCP is an effective technique for the diagnosis and initial treatment of BC in LDLT and is associated with a low rate of complications; however, its effectiveness in resolving BC in this setting is low. When the biliary reconstruction is complex, other therapeutic options should be considered.

Abstract # P-87

Arterial Anastomosis under Loupe Magnification in Adult and Pediatric Living Donor Liver Transplantation- 1300 Cases, Single Surgeon Experience over 13 Years. Subash Gupta, Neerav Goyal, Shiraz Ahmad Rather. CLBS, Apollo, Delhi, India

Background: Hepatic arterial (HA) anastomosis in LDLT is technically challenging. There is general agreement that the best results are obtained if done under microscope. But no large series has reported the results of arterial anastomosis with loupe.

Aim: To study the outcome of HA anastomosis under loupe (magnification 2.5 x and 3.5 x) over 13 years.

Methods: It is a retrospective analysis of a prospectively maintained data base from Jan 2001 to Oct. 2013. Preoperative vasculature anatomy was delineated in all by CT angiogram. HA reconstruction was done by interrupted "two stay suture technique" by 8. 0 polypropylene. First the right half was done and then the left half. In general 12 sutures were placed. Doppler was done twice a day for 5 days and then whenever needed. CT angiogram was done before discharge.

Patients: With total of 1300 patients HA reconstruction performed were 1354 (which includes double arterial supply in 45 grafts, 4-re-transplants and a case of dual transplant). Adult to pediatric ratio was 15:1. Median age in adults was 49 years (range 13-75 years) and in pediatrics it was 4 years (range 2 months to 12 years). Most common types of graft used in adults and pediatrics was modified right lobe 955 (75%) and left lateral lobe 63 (78%) respectively. Right posterior sector grafts (18) have been used from last 2 years which have a relatively smaller size artery. Average diameter of donor HA was 2.8 mm (range 1.6 to 3.4 mm). Right HA was used in 757 (68%) and left HA in 535 (41%) patients. Overall incidence of intimal dissection of recipient HA was seen in 25 (1.9%) patients and of donor HA in 3 (0.02%) patients.

Results: The mean time for HA anastomosis was 14.3 ± 3 minutes 3 minutes. Frequency of revision HA anastomosis has remained more or less same (1.5-2.5%) over 13 years. Grafts with dual arterial supply were used in less than 2% of cases in the era 2001 to 2010 but has increased to more than 5% in 2013. Incidence of HAT has decreased significantly in the later 650 patients as compared to initial half (13 (2%) versus 4 (0.6%) patients, p=0.04, odds ratio (OR)-3.25. The incidence of HAT in adult 14 (1.1%) and pediatric 3 (3.7%) patients was not significantly different, p = 0.06. None of the patient with intimal dissection developed HAT.

Conclusion: HA reconstruction under loupe magnification can be done safely and swiftly in both adult and pediatric LDLT cases without compromising the outcome.

Abstract # P-88

Should Anticoagulant Prophylaxis be Made after Right-Lobe Liver Hepatectomy? Sinan Hatipoglu, Adil Baskiran, Cuneyt Kayaalp, Sezai Yilmaz. Liver Transplantation Section, Inonu University School of Medicine, Malatya, Turkey

Introduction: Minimizing the mortality and morbidity rates with increasing number of hepatic resections depends on the absence of serious deteriorations in the remnant liver functions. As one of the important functions of liver is on coagulation mechanism, we aimed to interpret effects of liver resections on the coagulation functions and evaluate anticoagulant treatment and prophylaxis approach in surgical practice in this patient group.

Methods: Data from medical records of healthy adult patients that underwent right-lobe donor hepatectomy for LDLT were reviewed for the study between February and October 2011. All of the living donors were identified by retrospective review that contained donor demographics data, BMI (body mass index), weight of liver grafts, GWDW (Graft weight/donor weight ratio) and the laboratory test values of pre-operative and post-operative first, second and third days (hemoglobin (Hgb), hematocrit (Htc), platelet (Plt) counts, prothrombin time (PT), active partial thromboplastin time (aPTT) and international normalized ratio (INR)). No prophylactic blood product replacement and no anticoagulant prophylaxis were applied to the patients. Continuous variables are reported as means ± standard deviations and categorical variables as numbers and percentages.

Results: We had performed hundred right lobe living donor hepatectomies during the stated study period. The median age was 30.8 ± 8.9 (18-61) years and 45 (45%) of the patients were women, whereas 56 (56%) were men. Mean operation time was 261±76 minutes. Hemoglobin, hematocrit and thrombocyte counts showed statistically significant (p<0.05) declines until the postoperative day 2, however the values started to increase at the day 3. Prothrombin time, aPTT and INR values showed statistically significant (p<0.05) increments until the postoperative day 2, but at the day 3 the values had returned to normal. The patients had experienced no major complications

as thrombosis-embolism and/or bleeding. All of the donors remained alive with normal liver functions at the time of the final follow-up examination. Conclusions: Coagulation abnormalities that may be seen in proportion with the liver resection must be taken into consideration in this patient group and routine anticoagulant treatment protocols should be reviewed.

Abstract # P-89

Predictive Factors for Significant Steatosis in Potential Healthy Liver Donors. Dinesh Jothimani, Manoj Srivatsav, Srinivas Reddy, A. Olithselvan, Joy Vargese, Gomathy Narasimhan, Mohamed Rela. Institute of Liver Disease and Transplantation, Global Hospitals, Chennai, Tamilnadu, India; Institute of Liver Studies, King's College Hospital, London, United Kingdom

Background and aims: Non-alcoholic fatty liver disease is a common clinical condition in the community. Potential donors are recipients close relatives and are otherwise healthy people with no known co-morbidities Presence of significant (>10% macrovesicular steatosis) fat in these patients may preclude them from partial liver donation. Aim of the study was to identify factors that predict significant steatosis in these patients.

Methods: In this retrospective study all potential donors had screening blood tests followed by a computerized tomography (CT) scan. Patients underwent a percutaneous liver biopsy for one or more of the following: abnormalities in LFTs, lipid profile or liver attenuation index (LAI)<5. A univariate (Student's T-test) and a multivariate logistic regression analysis was performed between patients with <10% and >10% steatosis to identify factors predict significant steatosis (p< 0.05). Area under the receiver operating characteristic curve performed.

Results: Out of 346 potential donors assessed, 60 patients had liver biopsy. In the biopsied patients, the median age was 37 (20-50) years, M: F 1.5:1, BMI 24.4 (18-33). steatosis was seen in 44/60 (73.3%) patients. Forty patients were found to have normal or <10% steatosis (group 1) and 20 patients had >10% steatosis (group 2). Univariate analysis showed significant difference in donor weight (kg) (66 vs 72.5, p=0.04), total cholesterol (mg/dl) (193 vs 221, p=0.02), LDL cholesterol (mg/dl) (32.8 vs 38.9, p=0.079), total liver volume (mls) (1301 vs 1393, p=0.058) and LAI (6.4 vs 1.0, p=0.002) between group 1 and 2, respectively. In the multivariate analysis, only total cholesterol (p=0.042) and LAI (p=0.02) independently predicted significant steatosis. ROC analysis using LAI <0 or LAI<5 and total cholesterol >210 mg/dl showed a sensitivity of 70%, specificity of 85% with an AUROC 0.77. Conclusions: In this study, total cholesterol and LAI are independent predictive factors for significant steatosis in potential liver donors, which may influence their suitability for donation.

Abstract # P-90

Portal Vein Thrombosis in Living Donor Liver Transplantation Recipients: Changing the Present To Improve the Future. Hazem Zakaria Lasheen¹, Mohammed Taha¹, Emad Hamdy Salem¹, Hassam El-Deen Soliman¹, Tarek Ibrahim¹, Khaled Abou El-Ella¹, Koichi Tanaka². ¹Surgery, National Liver Institute, Shebin El-Koom, Menofia, Egypt; ²Kobe International Medical Alliance, Kobe, Japan

Background: Portal vein thrombosis (PVT) in living donor liver transplantation (LDLT) is a surgical challenge with technical difficulty. The aim of this study was to analyze the incidence, risk factors, preoperative diagnosis of PVT, operative procedures, management of postoperative PVT in LDLT and its impact on the outcome.

Methods: Between March 2003 to February 2013, 200 patients underwent LDLT in the National Liver Institute, Menofia University. Twenty seven patients (13.5%) had PVT at time of liver transplantation (LT). The preoperative, operative, and postoperative data of patients with PVT were analyzed. In all cases, we considered age, sex, Model for End-stage Liver Disease (MELD) score, Child-Pugh score, indication for transplantation, grade of PVT, surgical technique, blood product transfusion, and survival rate. Results: Of 27 patients with preoperative PVT, 14 (51.85%) had partial thrombosis (grade I), 10 (37.04%) near total or total PVT (grade II), 2 (7.4%) complete PVT with proximal superior mesenteric vein (SMV) thrombosis (grade III), and 1 (3.7%) patient with whole splanchnic system thrombosis (grade IV). As regard surgical treatment; 22 patients (81.48%) underwent thrombectomy, 2 (7.4%) patients had bypass graft, 1 (3.7%) patient had portal replacement graft, 1 (3.7%) patient had anastomosis with left renal vein, and 1 (3.7%) patient had anastomosis with large collateral vein. Postoperative PVT occurred in 9 (33.33%) patients all in the form of early PVT, 4 patients of them had preoperative PVT. The perioperative mortality in patients with grades I, II PVT was 41.67%, and 1y survival was 45.8 %. In patients with grades III,

IV PVT perioperative mortality was 66.67%, and 1y survival was 33.33%. Conclusions: Portal vein thrombosis observed before surgery may no longer preclude a patient from undergoing successful liver transplant, steps to decrease complications include detailed knowledge of the degree of thrombosis preoperatively to assist with operative planning. Grade I, II PVT had better prognosis than grade III, IV.

Abstract # P-91

Outcome of Living Donor Liver Transplantation Using Partial Liver Allografts with Dual Arterial Supply. Sanghoon Lee, Jinsoo Rhu, Eunmi Gil, Jin Yong Choi, Wontae Cho, Seunghwan Lee, Hyung Hwan Moon, Jong Man Kim, Choon Hyuck D. Kwon, Jae-Won Joh, Suk-Koo Lee. *Department of Surgery, Samsung Medical Center, Seoul, Korea*

Background) When multiple donor hepatic arteries (HA) are present in living donor liver transplantation (LDLT), whether all HAs require reconstruction remains debatable.

Methods) From October 2009 to March 2013, 473 cases of LDLT were performed at Samsung Medical Center (Seoul, Korea). We excluded ABO incompatible cases and retransplantation cases from the analysis. Data of 429 cases were retrospectively reviewed. Our center's criteria for HA anastomosis in case of multiple HAs is to check for pulsatile back-flow from the smaller HA during the donor procedure and also during the recipient procedure. A priority is set on anastomosis of both HAs, unless good pulsatile back-flow is evident during both the donor and the recipient procedures.

Results) Out of the 429 cases, 33 cases (33/429, 7.7%) were done using liver allografts with 2 HAs. 16 were right lobe (RL) grafts, 4 were left lobe (LL) grafts and 12 were left lateral section (LLS) grafts. Among the 16 RL grafts, we anastomosed both HAs in 6 cases and one HA in 10 cases. The two groups did not show differences in donor and recipient age, GRWR, cold ischemia time, macro- and microscopic steatosis of the graft, type of bile duct anastomosis and number of bile duct anastomoses. Postoperative results showed similar levels of maximum AST and ALT during the 1st post-transplant week. Rate of biliary complications were not different between the two groups. One case of HA thrombosis occurred (both HAs anastomosis group). Among the 16 LL and LLS grafts, we anastomosed both HAs in 5 cases and one HA in 11 cases. The two groups did not show differences in donor and recipient clinical characteristics. Postoperative outcome were not different between the two groups. No cases of HA thrombosis occurred in both groups.

Conclusion) Using our criteria for HA anastomosis, we were able to achieve similar outcomes among LDLT cases using allografts with two HAs.

Abstract # P-92

Translational Study the Role of Cytokine and Growth Factors during Liver Regeneration in Healthy Liver Donors after Partial Hepatectomy. Ping-Yi Lin, Yao-Li Chen, Chi-Chen Lin. *Transplant Medicine & Surgery Research Centre, Changhua Christian Hospital, Changhua, Taiwan; Department of Surgery, Changhua Christian Hospital, Changhua, Taiwan; Chung Hsing University, Taichung, Taiwan*

BACKGROUND

The safety of the donor operation and liver growth after transplantation is gained major concern in living donor liver transplantation (LDLT). Liver regeneration is a compensatory hyperplasia process elaborately regulated by the innate immune system in the liver. However, the mechanisms of action of cytokines and growth factors in liver regeneration after partial hepatectomy (PH) in healthy liver donors are not well evaluated. In this study, we aim to evaluate the role of cytokine and growth factors during liver regeneration in healthy liver donors after PH.

METHODS

Donors

Four patients who underwent PH as donors for LDLT at our hospital were enrolled prospectively. This study was approved by the Institutional of Review Board (IRB). The clinical and demographic data of all donors were obtained through chart review. The liver residual volumes were evaluated by computed tomography (CT) before PH and on postoperative day 7. Blood samples were collected at a day before surgery and daily during 7 days postoperatively. Serum levels of transforming growth factor b (TGF-b), Interleukin-17 (IL-17) and Interleukin-19 (IL-19) were measured using enzyme-linked immunosorbent assay kits.

Statistical Analysis

We used the Fisher's exact test for categorical comparisons of data and the Wilcoxon test for paired samples to determine differences in the means of continuous variables. Spearman correlation was used to evaluate the relationship between clinical and cytokine parameters in different time intervals. A P-value less than 0.05 was considered to indicate statistical significance.

PRELIMINARY RESULTS

The mean age among donors was 29.50 years (SD, 8.19 years). Serum levels of IL-17 increased after surgery and remained high for 4 days. Serum TGF-b levels decreased rapidly from PD 1 to PD5 but lasting increase. In addition, serum TGF-b levels were positively correlated with serum AST and ALT levels.

CONCLUSIONS

In the present study, we measured cytokine levels and clinical parameters in 4 healthy donors. With this preliminary finding, we suggest that it is essential to conduct a further study to clarify the mechanisms between hepatocyte production and the differentiation of liver progenitor cells in liver regeneration after PH.

Abstract # P-93

Donor Mortality Among 2138 Live Liver Donors in Egypt: "The Nightmare of Living Donor Liver Transplantation". Ibrahim Kamel Marwan¹, Mahmoud El Metani², Magdy Ameen³, Mohamed Abd Elwahab⁴. ¹Hepato-Biliary Surgery, National Liver Institute, Menoufeya University, Shebeeh El Koom, Egypt; ²Hepato-Biliary Surgery, Ain Shams Faculty of Medicine, Ain Shams University, Cairo, Egypt; ³Hepato-Biliary Surgery, Maadi Military Hospital, Cairo, Egypt; ⁴General Surgery, Mansoura Faculty of Medicine, Mansoura University, Mansoura, Egypt

Living donor liver transplantation (LDLT) is a well established modality for end stage liver diseases especially in countries where cadaver liver transplantation is not alternative. We present the causes of mortality among 2138 LDLT In Egypt.

Methods: Between August 2001 and December 2013, 2138 LDLT cases were performed; adults were 93.5%, while pediatric were 6.5%. The main indication in adults was HCV cirrhosis 92%, while in the pediatric was biliary atresia (52%).

Results: Donor mortality was five donors (0.23%). All donor deaths (two females and three males) were related donors except one and all of them sustained formal right hepatectomy. The 1st. donor death developed biliary leak uncontrolled by neither ERCP nor operative management. He developed sepsis followed by multi organ failure and died 2 months. The 2nd donor death was 12 days after donation due to portal vein thrombosis postoperative. A trail to dissolve the thrombus by radiological intervention failed and the patient developed severe infection and death. The 3rd donor death was 35 years mother who donated to her child. Right-sided hemothorax occurred following insertion of a subclavian vein catheter and was managed by thoracotomy but she developed pneumonia, respiratory failure and died on day 45. The 4th. donor was 32 years old daughter who developed delayed arousal from anesthesia, followed by hemiplegia. MRI brain was normal. Neurological consultation deemed the clinical scenario as hypersensitivity to anesthesia medication. Improvement was observed in upper limb, however one month later she developed deep venous thrombosis followed by chest pain, respiratory failure and death. The fifth donor died 22 days after donation due to hepatic insufficiency and hepatic failure. The remaining liver volume was 30 %.

Conclusion: LDLT is a potentially safe procedure especially when cadaver liver transplantation is unavailable. Although LDLT has reasonable outcomes, however, it carries in small percentage risks to healthy donors. Thorough per-operative imaging as well as liver biopsy of all donors is essential to avoid possible donor complications.

Abstract # P-94

Mother Versus Father Versus Close Relatives; Identical Versus Compatible – Who Is a Better Donor in Pediatric Living Donor Liver Transplant (LDLT)? Neelam Mohan, Sakshi Karkra, R. Mohanka, A. Rastogi, M. Balachandran, A. Soin. *Medanta Liver Institute, Medanta The Medicity Hospital, Gurgaon, Haryana, India*

Aim: To analyze the outcome of Pediatric LDLT in identical versus compatible donors and parents versus close relative donors.

Design: The medical records of 130 consecutive pediatric LDLT from Sept 2004 to Nov 2013 were reviewed. Donors were divided into Identical (same

blood group as recipient), compatible (not same blood group but compatible) and incompatible. Donors were classified as either mothers, fathers and other. Acute rejection (rejection in first 30 days post LT), biliary complications, vascular complications and 1 year mortality was compared in various groups. Results: Out of 130 LDLT at our centre, identical donors 107(83%), compatible donors 21 (16%) and incompatible 2(1%). Out of 130 donors, 78(59%) were mothers out of which 56/78 (72%) were identical, fathers 21(16%), 19/21 (90%) identical. Other donors were 42(32%) with 32 identical. When we compared acute rejection, biliary complications, vascular complications and mortality between identical and compatible donors there was no significant difference in both the groups ($p=0.056, 0.66, 0.23, 0.31$ respectively). When mothers were compared with fathers as donors for above 4 parameters there was significantly less rejection and mortality in mother group ($p<0.05$). Also in comparison to others group there was significantly less rejection and mortality in mothers and fathers ($p<0.005$). There was no difference in hospital stay in any of the groups. Conclusions: In children undergoing LDLT there was significantly better survival if donor was mother or father in comparison to others and mother donor has better outcome than father. Rejection rate was also significantly less in mother group. There was no difference in identical or compatible donors.

Abstract # P-95

Living Donor Liver Transplantation for Obese Patients in a Single Center Experience in Japan. Takahiro Murokawa, Masashi Kadohisa, Masaki Honda, Shintaro Hayashida, Kwang-Jong Lee, Hidekazu Yamamoto, Takayuki Takeichi, Katsuhiro Asonuma, Yukihiro Inomata. *Pediatric Surgery-Transplant Surgery, Kumamoto University Hospital, Kumamoto, Japan*

Background: Obese population, especially in male, of Japan is increasing, and currently around 30%. Living donor liver transplantation (LDLT) for obese patients has been not common in Japan, but it might increase in the near future. Outcome of LDLT for obese recipients has not been well documented yet, and indication criteria have not been well defined in Japan.

Methods: In the 204 adult recipients of LDLT performed in our center from Nov 2000 to Jun 2013, 8 moderately obese patients (with the body mass index (BMI) over 30) were retrospectively reviewed for the clinical course and outcome after LDLT. There were no candidates for LDLT excluded from indication for obesity.

Results: The BMI and body weight at the time of transplant was 30.1-37.3 (median: 32.4), and 69-94 (median 86.5) kg, respectively. 2 patients had body weight over 100kg before LDLT. Age was from 49 to 64 (median 51.5) years old. Indicated diseases were viral hepatitis in 5, autoimmune hepatitis in 2, and the other fulminant hepatic failure (FHF), without any case of obesity related liver diseases. MELD score ranged from 10 to 32, with median of 16.5. All patients did not have any obesity-related co-morbidity like hypertension or diabetes. The graft was right lobe in all cases, and the ratio to the body weight was 0.67 to 0.83. The operation time ranged from 10h53min to 18h50min, and the blood loss was from 1680g to 12320g. Six patients could be extubated before 4 POD, except two cases taking 7 and 14 days, respectively. There was no postoperative bleeding or surgical site infections. Two of them had postoperative biliary complications. All patients except one with FHF survived.

Conclusion: Although longer time was taken until the extubation, there were no serious post-operative complications related to the obesity. Moderate obesity with BMI of the cases in this series is not a contraindication for LDLT.

Abstract # P-96

Preservation of the Segment Four Lower (S4A) Venous Drainage Improves Donor Safety in Living Related Liver Transplantation. Vasudevan Ramaswamy¹, Subash Soni¹, Abhideep Chaudhary¹, Saumitra Rawat¹, Anil Arora². ¹Department of Surgical Gastroenterology and Liver Transplantation, Sir Ganga Ram Hospital, New Delhi, Delhi, India; ²Department of Gastroenterology and Hepatology, Sir Ganga Ram Hospital, New Delhi, Delhi, India

Background

Despite rigorous evaluation and selection of best available liver donors, decompensation after donation is variable and unpredictable, at times reaching significant levels. Congestion of liver parenchyma resulting from outflow obstruction by ligation of venous drainage impairs regeneration delaying recovery leaving the donor vulnerable to second hits during this phase. We hypothesized that preservation of outflow in the donor, of S4A

(ventral portion) would limit decompensation and enhance recovery in right lobe liver donors. To the best of our knowledge, this concept has not been reported before.

Methods

Retrospective analysis of prospectively maintained database was performed. 31 consecutive liver transplants performed between december 2012 and december 2013 were included. Preservation of S4A vein was initiated midway through 2013 following an unexpected decompensation in a donor. Liver grafts were harvested with preservation of at least the last S4A opening into the middle hepatic vein (MHV) (Group B), or by harvesting the MHV caudal to opening of S4B (dorsal portion) vein after ligating all S4A veins (Group A). Results

There were 16 patients in group A and 15 in group B. In 2 of 17 donors where we intended to preserve S4A vein, we were unable to due to anatomy of S4A drainage. Patients in group A showed a significantly higher peak in bilirubin (5.36 vs 2.78, $p=0.001$) and higher prothrombin time with trend to significance (2.14 vs 1.99, $p=0.392$) postoperatively and a more gradual recovery to normal. Volume of ascitic drainage was less in group B (36% vs 60%), though not reaching statistical significance.

Conclusion

Preservation of venous drainage of segment 4 a limits donor decompensation and enhances recovery thereby improving donor safety.

Abstract # P-97

Vascular Complications after Adult and Pediatric- Living Donor Liver Transplantation: Trends Observed with 1134 Cases Over a Period of 8 Years. Shiraz Ahmad Rather, Neerav Goyal, Subash Gupta. *CLBS, Apollo, Delhi, India*

Background: Vascular complications continue to have a devastating effect after living donor liver transplant (LDLT). Although their nature, incidence and the outcome might have actually changed with the increasing experiences and proficiency. Yet there is a visible paucity of data in world literature in this regard. The current study represents one of the largest series on vascular complications essentially from South Asia.

Aim: To analyze the trends observed in vascular complications over a period of 8 years in two time frames.

Methods: This study was a retrospective analysis of 391 (Group I) and 741 (Group II) patients from Jan. 2006 to Dec. 2010 and from Jan. 2011 to Oct. 2013 respectively. Adverse vascular events were recorded both during and after the surgery. Protocol doppler and CT liver angiogram were done in all after surgery.

Patients: The male: female ratio (4.7:1 versus 5.1:1, $p=0.63$), median age (49 versus 48 years, $p=0.53$) and the pediatric- LDLT (29 (7.4%) versus 41 (5.5%), $p=0.24$, were similar in the two eras. The average MELD and PELD scores were comparable between the groups.

Results: The incidence of HAT in adults had reduced significantly from 8/362 (2.2%) to 4/700 (0.57%) patients, $p=0.02$, (odds ratio) OR-3.86 whereas in children it remained the same 1 (3.4%) and 1 (2.4%) patients, $p=0.82$ in Group I and Group II respectively. In Group II non-significantly more patients 3/4 (75%) with HAT could be salvaged successfully compared to only 2/8 (25%) patients in Group I, $p=0.31$. Patients with asymptomatic HAT (3) were managed conservatively. Postoperative portal vein thrombosis (PVT) in adult- 2 (0.5%) versus 8 (1.1%), $p=0.35$ and pediatric recipients 2 (6.8%) versus 3 (7.3%), $p=0.95$ has not changed in Group I and Group II respectively. Overall mortality due to PVT was 2/5 (40%) in Group I and 4/11 (36%) in Group II, $p=0.92$. The incidence of complete block of the reconstructed middle hepatic vein in modified right lobe graft was significantly less in the Group II (31/527 (6%) versus 43/391 (11%), $p=0.01$, OR-0.5). Right hepatic venous outflow obstruction was seen in 1 (0.25%) and 3 (0.4%) patients, $p=0.69$ in Group I and II respectively and were all managed successfully by angioplasty and stenting.

Conclusion: Vascular complications are inherent to LDLT. Increasing experience, early diagnosis and multimodality treatment is the key to decrease the overall morbidity and mortality.

Abstract # P-98

Outcome of Liver Transplantation in Hemochromatosis. 12 De Octubre Hospital Experience. Rebeca Sanabria, Alejandro Manrique, Iago Justo, Alberto A. Marcacuzco, Naim Fakihi, Oscar Caso, Jorge Calvo, Felix Cambra, Alvaro Garcia Sesma, Carmelo Loinaz, Carlos Jimenez. *Surgery, 12 de Octubre University Hospital, Madrid, Spain*

INTRODUCTION

Hereditary hemochromatosis is an autosomal recessive condition associated with an excess in intestinal iron absorption and deposition in the liver, as principal deposite organ, pancreas, hearth, joints and pituitary gland. The majority of cases are associated with a mutation of HFE gene on the short arm of chromosome 6. The most common mutation is referred to as C282Y. It is an uncommon indication for liver transplantation. It have been suggested that patients who LT for cirrhosis related to HH have higher morbidity and mortality, but currently, as described in the literature, these suggestions are changing.

MATERIAL AND METHODS

Since May 8, 1995 to December 1st 2013 have been performed in our center 1273 liver transplants, with primary hemochromatosis etiology or associated by 19 cases. The objective of this study is the analysis of this group of patients

RESULTS
Patients with Hemochromatosis (HC) presented a mean age of 50.69, 84% males. The mean MELD was 18.29 +/- 4.3 vs 15.96 +/- 6.57 (p=0.001). The cause of transplant has been isolated in Hemochromatosis 31.6%, associated with alcohol 10.5% in HC, and HCV has been 31.6%.

Regarding medical complications, highlights the presence of renal insufficiency in 26.5% of patients, the rates of HCV recurrence was 33.3% and the percentage of infections 52.6% without significant differences in comparison to the general serie of transplanted patients of our hospital.

The actuarial survival rate was at 1, 3 and 5 years of 94.1%, 94.1% and 83.7% respectively in the HC group by 83%, 75.5% and 68.3% in control group (p<0.001)

The causes of death in the HC group was 2 for infection, one primary graft failure, bladder malignancy and metastatic melanoma

DISCUSSION

Hereditary hemochromatosis is an uncommon indication for orthotopic LT. There is an increase in morbidity, with respect to the percentage of infections and recurrence of malignancies, in this group objectified in our patients analysis. The post-transplantation survival of patients with HC has been excellent in our group.

Abstract # P-99

Low Graft Body Weight Ratio Does Not Predict Outcome in Recipients With Body Mas Index Above 30. Vivekanandan Shanmugam, Sanjay Govil, Arikichenin Olithselvan, Mohamed Safwan Mohamed Ilias, Gomathy Narasimhan, Srinivas Reddy, Naresh Shanmugam, Joy Vargheese, Dinesh Jothimani, Mohamed Rela. *Institute of Liver Diseases and Transplantation, Global Hospitals and Health City, Chennai, Tamil Nadu, India*

OBJECTIVE: To determine the impact of small-for-size partial liver grafts in liver transplant recipients with high body mass index (BMI)

METHODS: Liver transplant recipients with BMI above 30 and GRWR BELOW 0.8 operated upon at our centre from August 2009 to October 2013 formed the study group. The control group was created by selecting MELD score and Age matched controls from among 114 living donor liver transplant (LDLT) recipients operated upon at our centre over the same period of time. Preoperative risk factors and postoperative outcomes were compared using Students t-test, Mann-Whitney test and Fisher's exact test as appropriate.

RESULTS: The study and control groups consisted of 14 patients each. Both groups were matched for age, sex, etiology, MELD score and Child's status. GRWR was significantly lower (p=0.0002) and BMI significantly higher (p=0.0001) in the study group. There was no significant difference in preoperative comorbidity, donor age or cold ischemia time. Five patients in the study group experienced small-for-size dysfunction as defined by Clavien but there was no significant difference in peak liver function tests, mean ICU stay, Hospital stay, Hospital mortality, synthetic function at day 14 and 30 or 1 year mortality between the two groups. There was a trend to both preoperative and postoperative renal dysfunction in the study group.

CONCLUSIONS: Low GRWR grafts are able to provide adequate function to patients with BMI above 30 to permit them to recover just as well as the average elective liver transplant recipient with GRWR above 1.

Abstract # P-100

Excellent Outcome of Living Donor Liver Transplantation for End-Stage Alcoholic Liver Disease: A Single Centre Experience. Sanjay Kumar Yadav, Sanjiv Saigal, Neeraj Saraf, Narendra Singh Choudhary, Ravi Mohanka, Amit Rastogi, Sanjay Goja, P.B. Menon, Arvinder Singh Soin. *Institute of Liver Transplantation and Regenerative Medicine, Medanta, Medicity, Gurgaon, Sector 38, Haryana, India*

Introduction: End-stage Alcoholic Liver Disease (ALD) is one of the leading indications of liver transplantation (LT). Recipient selection in deceased donor programs is stringent since recidivism can compromise the principle of optimal use of a societal resource. In living donor liver transplantation (LDLT), the criteria can be relatively relaxed. We analysed recidivism rates and outcome of ALD in a large series of LDLT.

Methods: Of the 1087 adults who underwent LDLT between 2005 and 2013 for chronic liver disease, 270 were transplanted for ALD. Clinical and lab parameters of this group, and survival compared to other etiologies were analysed. The mean follow up post transplant was 30 months (range, 3-96 months). Data are expressed as mean±SD. Survival was obtained using Kaplan Meier curves and difference in survival curves were compared using log-rank analysis. P value < 0.05 was considered significant.

Results: All except one patient were male with a mean age of 44 years (range-27-73 years). Pre-transplant, 64% were Child's C, while 31% were Child's B. The mean MELD score was 19.86 (range 7-41) and the mean DF was 39. Mean follow up of 30 months (range, 3-96 months). The overall actuarial survival at 1 year and 8 year were 87.4 % and 85.2 % respectively. The overall survival among patients transplanted for ALD (85.2%) was comparable to the survival in other groups (hepatitis B, hepatitis C, hepatocellular carcinoma and cryptogenic) (p=0.61). The comparative actuarial survival among various etiologies is shown below.

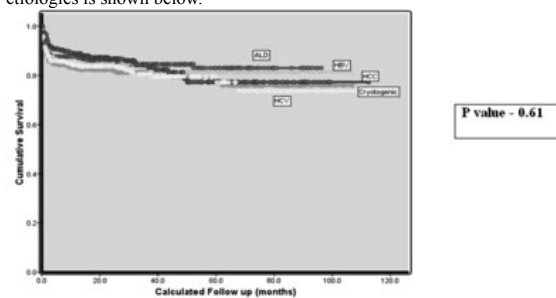


Figure 1. Kaplan-Meier survival curve for different etiology

The incidence of recidivism was 10.71%. The main complications were biliary 56(16.8%), cellular rejection 45(13.5%), sepsis 27(8.1%) and vascular 15(4.5%).

Conclusions: Living donor liver transplantation offers excellent early and long-term outcome in patients with ALD which is comparable to that for other etiologies.

Abstract # P-101

De Novo Hepatocellular Carcinoma in 4 Liver Allografts. Michel Blé^{1,2}, Angel Rubin^{1,2}, Carmen Vinaixa^{1,2}, Victoria Aguilera^{1,2}, Salvador Benlloch^{1,2}, Maria Garcia-Eliz^{1,2}, Rafael López-Andujar^{1,2}, Martin Prieto^{1,2}, Marina Berenguer^{1,2,3}. ¹Hepatology and Liver Transplant Unit, University and Polytechnic Hospital La Fe, Valencia, Spain; ²CIBERHED, Networked Biomedical Research Center for Hepatic and Digestive Diseases, Valencia, Spain; ³University of Valencia, University of Valencia, Valencia, Spain

Background and aims: De novo hepatocellular carcinoma (HCC) in liver allografts is rare, with only 11 cases previously published in the last 14 yrs. **Methods:** Our hospital has performed 2906 liver transplants (LT) from 1991 to 2012. 914 (31%) were due to hepatitis C virus (HCV). 67 (7.3%) of these were re-transplanted due to HCV recurrence and graft loss without evidence of HCC in the explant.

Results: We present 4 cases of de novo HCC. Table 1 summarizes the clinical features and management of these patients.

Case serie of de novo hepatocellular carcinoma

Year of LT / aetiology	Recipient sex / age (years) at diagnosis	Donor sex / age (years)	De novo hepatocellular carcinoma characteristics	Treatment	Cause of death / survival time after diagnosis	Time (yrs) from LT to cirrhosis / to HCC
2002/ HCV	Female/72	Female /70	MRI and CT scan: 3.6 cm, 4.3 cm, 3.2 cm HCC	Sorafenib (5 months)	Dead due to liver failure complications / 5 months	7/10
1993/ HCV	Male/60	Female/ 51	Multicentric and disseminated poorly differentiated HCC. Peritoneal and pulmonary metastases.	Palliative	Dead of multiorgan failure / 2 weeks	17/19
1995/ HCV & HCC	Male/74	Male/ 45	CT scan: 2 cm HCC	RF & trans-arterial chemo-embolization. No tumor recurrence	Dead of pulmonary sepsis / 10 months	2/17
2005/ Multiple HCCs & OH	Male/58	Female/68	MRI: 1.5 cm HCC	RF	Alive / 4 months follow up	Chronic rejection/8

CT, computerized tomography; HCC, hepatocellular carcinoma; MRI, magnetic resonance imaging; RF, radiofrequency

Induction and baseline immunosuppression (IS) was based on calcineurin inhibitor (CNI) and all patients received methylprednisolone bolus as treatment of early acute cellular rejection. The median time to HCC was 13.5 yrs (range 8-19); the median age at diagnosis was 66 yrs (range 58-74). Three patients had chronic renal failure (one had a kidney transplant). Conclusions: With improved survival of LT-patients and use of older allografts, an increase in the incidence of de novo malignancies may be expected. There are no screening guidelines in this patient population. We should be aware of the high-risk population of old cirrhotic patients with HCV-allograft recurrence and CNI based IS.

Abstract # P-102

Safe Withdrawal of Sorafenib as Adjuvant Therapy after Liver Transplantation for Hepatocellular Carcinoma beyond Milan Criteria. Yinghua Chen¹, Wenhui Luo², Weiqiang Ju¹, Xiaoshun Zhu¹, Xiaoshun He¹. ¹Organ Transplantation Center, The 1st Affiliated Hospital, Sun Yat Sen University, Guangzhou, Guangdong, China; ²Medical Record Management Department, The 1st Affiliated Hospital, Sun Yat Sen University, Guangzhou, Guangdong, China

Aim. To report a case of withdrawal of sorafenib as adjuvant therapy after liver transplantation for hepatocellular carcinoma beyond Milan criteria, and its 3 years follow-up.

Methods. The patient received orthotopic piggyback liver transplantation for hepatocellular carcinoma beyond Milan criteria. He was treated with adjuvant monotherapy by oral sorafenib at a dose of 400 mg Bid for the high risk of tumor recurrence after the operation. The adjuvant therapy of sorafenib lasted for 13 months, which was stopped unexpectedly for critical weakness induced by severe tuberculosis pneumonia.

Results. The patient recovered from tuberculosis pneumonia after 9 months of anti-tuberculosis chemotherapy, who was reluctant to continue the adjuvant therapy of sorafenib. As the follow-up went on, he had been recurrence-free survival for over 3 years.

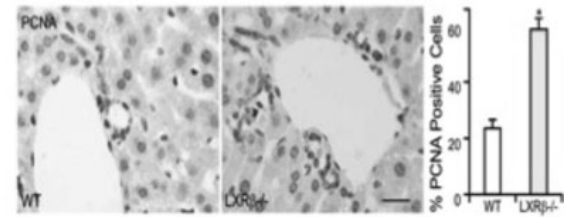
Conclusion. The withdrawal of sorafenib as adjuvant therapy may be safe for longtime recurrence-free survival after liver transplantation for hepatocellular carcinoma beyond Milan criteria, which means less adverse reaction and more economic.

Abstract # P-103

Mechanism of Liver X Receptor Signaling Pathway in Cholangiocarcinoma: A Putative Therapeutic Target. Sherilyn Gordon Burroughs¹, Xuefeng Xia². ¹Surgery, Houston Methodist Hospital, Houston, TX, USA; ²Houston Methodist Research Institute, Houston, TX, USA

Background: Cholangiocarcinoma (CCA), a primary malignancy arising from biliary epithelium, is usually asymptomatic until treatment-resistant advanced stages, leading to frequent metastasis and a rising associated mortality. The poor prognosis for CCA patients, limited understanding of the mechanisms of CCA pathogenesis, and the need for improved therapies makes advancing the understanding of CCA an important objective. Estrogens play a key role in the development and progression of CCA; CCA expresses increased Estrogen receptor alpha (ER α) and an increased ER α /Estrogen receptor beta (ER β) ratio. Our lab has found evidence for the involvement of additional nuclear receptors and their target genes (notably Liver X receptor-like beta

(LXR β) in cooperation with the estrogen receptors in the pathogenesis of CCA. Additionally, our preliminary data indicates strongly that Kruppel-like factor 4 (KLF4) is highly upregulated in response to LXR agonist treatment, and may be one of the key suppressors of CCA. We further hypothesize that LXR β acts in opposition to ER α driven cholangiocyte proliferation through upregulation of the tumor-suppressor gene KLF4. Methods: 6-month old female LXR β -/- and WT control mice were exposed to a diethylnitrosamine and bile duct ligation CCA model to determine the role of the nuclear receptors ER α and LXR β in bile ductogenesis and CCA pathogenesis. Biliary histology and proliferation were examined at weeks 4-28. Results: We observed a higher rate of biliary epithelial proliferation in LXR β -/- vs. WT controls (Fig 1). This was associated with an accelerated rate of tumor formation in the LXR β -/- group (Fig 1). Conclusion: LXR β plays an important role in biliary proliferation and CCA pathogenesis and may provide an anti-tumor therapeutic target via manipulation of KLF4 expression.



Abstract # P-104

Incidence and Outcomes of De Novo Malignancies after Living Donor Liver Transplantation. Taizo Hibi, Masahiro Shinoda, Yusuke Katsuki, Masayuki Tanaka, Kenta Inomata, Osamu Itano, Minoru Kitago, Hiroshi Yagi, Yuta Abe, Yuko Kitagawa. Department of Surgery, Keio University School of Medicine, Tokyo, Japan

Background: Little is known about the nature of de novo malignancies after living donor liver transplantation (LDLT).

Methods: A single-center, retrospective cohort analysis was conducted for 121 adult patients who underwent LDLT. Our routine surveillance for malignancy included annual upper gastrointestinal endoscopy, fecal occult blood, and chest/abdominal/pelvic computed tomography. Tumor markers were checked for recipients with a cancer history.

Results: A total of 9 (7.4%) de novo malignancies (thyroid, 2; colorectal, 2; laryngeal, 1; and posttransplant lymphoproliferative disorders (PTLD), 4) were detected.

For solid tumors, the median duration from transplant to diagnosis was 76 months. One female noticed a neck mass which revealed to be papillary thyroid carcinoma. She is well >5 years after radical resection. The other patient had back pain caused by extensive sacral metastasis from follicular thyroid carcinoma and is now receiving radiation. One male with fecal occult blood positive had superficial cancer in the descending colon and underwent endoscopic mucosal resection. Another male had an early cancer in the rectum and underwent laparoscopic anterior resection. A laryngeal cancer was diagnosed in a female who presented with hoarseness. She remains disease free >4 years after definitive chemoradiation.

For PTLD cases, the median interval from transplant was 117 months. All 4 patients were EBV-PCR negative. The manifestation of disease was paraaortic lymph nodes for 1 and extranodal for 3. Pathological diagnosis was diffuse large B-cell lymphoma in 3 and Hodgkin lymphoma in 1. Complete response was achieved in 2 patients who underwent R-CHOP and both are alive >3 years. PTLD relapsed in 1 female who received rituximab alone because of recurrent hepatitis C: She died 4 months thereafter. Calcineurin inhibitor was reduced in 1 remaining patient who is currently under strict follow-up. Conclusions: Our surveillance program detected solid tumor in only 1 patient and there is a pressing need to establish an effective protocol. Primary sites of solid tumors are distinct from previous publications in deceased donor liver transplantation, suggesting genetic differences between populations. In adult LDLT, the relation between PTLD and EBV infection is unclear: Risk factors and prognostic indicators remain to be elucidated.

Abstract # P-105

Long-Term Survival Analysis of Liver Transplantation for Hepatocellular Carcinoma With Bile Duct Tumor Thrombus.

Sung-Gyu Lee, Wan-Joon Kim, Yo-Han Park, Shin Hwang, Deok-Bog Moon, Chul-Soo Ahn, Ki-Hun Kim, Tae-Yong Ha, Gi-Won Song, Dong-Hwan Jung, Gil-Chun Park, Hyung-Woo Park, Sung-Hwa Kang, Bo-Hyun Jung, Eol Choi, Jae-Hyun Kwon. *Liver Transplantation Surgery, Division of Hepatobiliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea*

Background: Long-term prognosis of liver transplantation (LT) for hepatocellular carcinoma (HCC) with macroscopic bile duct tumor thrombus (BDTT) has not been well assessed. This study intended to analyze the posttransplant outcomes in patients having HCC with macroscopic BDTT.

Methods: a retrospective study was performed with 14 patients who underwent LT for HCC with BDTT (0.7%) after selection from institutional database of 2052 adult LT cases.

Results: Types of LT were living-donor LT in 13 and deceased-donor LT in 1. The extents of BDTT were Ueda type 1 in 4, type 2 in 3, and type 3 in 7. Milan criteria were met in 8 (57.1%). Concurrent bile duct resection was performed in 7 (50%). Mean model for end-stage liver disease score was 18.7±4.9. Mean graft-recipient weight ratio was 1.2±0.3. There were one case of perioperative mortality and one case of HCC-unrelated late mortality. Cumulative HCC recurrence rates were 15.4% at 1 year, 46.2% at 3 years and 46.2% at 5 years. Overall patient survival rates were 92.9% at 1 year, 57.1% at 3 years and 50% at 5 years. Univariate risk factor analyses revealed that only macrovascular invasion was a significant risk factor for HCC recurrence (p = 0.019).

Conclusions: The results of this study revealed that LT for HCC with macroscopic BDTT carries a high risk of posttransplant HCC recurrence, thus further large-volume studies are necessary to elucidate the risk factors.

Abstract # P-106

Repetitive Transarterial Chemoembolization Reduces Recurrence Rate in Milan-Out Patients With Hepatocellular Cancer after Liver Transplantation: A Pair-Match Analysis.

Quirino Lai^{1,2}, Gerd Otto³, Ivo Graziadei⁴, Giuseppe Tisone⁵, Massimo Rossi², Alfonso W. Avolio⁶, Jan Lerut¹. ¹University Hospitals St. Luc, Université Catholique Louvain - UCL, Brussels, Belgium; ²University Sapienza, Umberto I Hospital, Rome, Italy; ³University of Mainz, Mainz, Germany; ⁴Medical University Innsbruck, Innsbruck, Austria; ⁵Foundation PTV, University Tor Vergata, Rome, Italy; ⁶University Cattolica, Agostino Gemelli Hospital, Rome, Italy

Background: The efficacy of trans-arterial chemoembolization (TACE) and the impact of repetitive TACE are two controversial issues in the management of potential liver recipients presenting hepatocellular cancer (HCC) exceeding Milan Criteria (MC). The aim of the study is to investigate the benefit of repetitive TACE in reducing the risk of HCC recurrence after liver transplantation (LT) in this group of patients.

Methods and Material: A Pair-match analysis was performed: 37 “directly transplanted” (no TACE) and 74 patients treated with TACE before LT were enrolled. All the patients were MC-OUT at initial radiology: pair-matching was performed according to tumor diameter and number. Median follow-up was 4.9 years (IQR 2.9-9.2).

Results: The two groups were similar for tumor morphological variables and waiting time period. Looking at the number of treatments, patients with no TACE had the highest 5-year recurrence rates respect to patients treated with 1-3 and 4-6 TACEs (44.5 vs. 27.5 vs. 20.6%, respectively; P .02). At logistic regression analysis, the higher the number of TACE procedures, the higher was the protection against HCC recurrence (1-3 TACE: OR=0.43; P .11; 4-6 TACE: OR=0.26; P .01).

Conclusions: MC-OUT patients treated with TACE during the waiting time significantly reduce recurrence rates. Repetitive TACE is useful and especially beneficial in this group of patients.

Abstract # P-107

Prognostic Value of Rho GDP Dissociation Inhibitors in Hepatocellular Carcinoma after Liver Transplantation.

Mingchun Lai, Lin Zhou, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, China*

Rho GDP dissociation inhibitors (GDIs) are pivotal regulators of Rho GTPases, which are essential for tumor progression, but their role in hepatocellular carcinoma (HCC) remain poorly understood. In our study, expression of RhoGDIs were assessed using quantitative real-time PCR in 118 HCC cases and confirmed by western-blot in 20 pairs clinical specimens obtained at the time of surgery, their prognostic value were also determined in patents following liver transplantation. Besides, the functions of RhoGDIs in liver cancer cell line were studied in vitro. We found that down-regulation of RhoGDI1 and RhoGDI2 at both mRNA and protein levels in HCC compared with adjacent noncancerous tissues (P<0.05). However, the level of RhoGDI3 was found to be similar in tumor and para-carcinoma tissues. The expressions of both RhoGDI1 and RhoGDI2 were negatively associated recurrence-free survival of patients with HCC following liver transplantation (P<0.05). Moreover, on multivariate analysis, patients with decreased expression level of RhoGDI2 had a significantly increased risk of tumor recurrence (hazard ratio, 3.306, P=0.001). Functional studies found that silencing of RhoGDI1 or RhoGDI2 cause a significant increase in HCC cell migration and invasion in vitro. All results in our study indicate that RhoGDIs dysregulation is a frequent event in human HCC and promote cancer progression by stimulating cell migration and invasion. RhoGDI2 could be a prognostic biomarker for patients with HCC after LT and serve as a potential therapeutic target.

Abstract # P-108

The Criteria of Salvage Liver Transplantation for Recurrent Hepatocellular Carcinoma Should Be Expanded.

Fei Liu, Yonggang Wei, Bo Li, Wentao Wang, Tianfu Wen, Lvnan Yan. *Division of Liver Transplantation, Department of Liver Surgery, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Division of Liver Transplantation, Department of Liver Surgery, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Division of Liver Transplantation, Department of Liver Surgery, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Division of Liver Transplantation, Department of Liver Surgery, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Division of Liver Transplantation, Department of Liver Surgery, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Division of Liver Transplantation, Department of Liver Surgery, West China Hospital of Sichuan University, Chengdu, Sichuan, China*

Aim: Salvage liver transplantation (SLT) is restricted to patients who develop hepatocellular carcinoma (HCC) recurrence within Milan criteria (MC). Little is known about outcomes for SLT in patients with recurrent HCC within UCSF criteria.

Methods: Between 2001 and 2011, 219 patients with HCC meeting UCSF criteria underwent LT at our institute, which included 39 SLT and 180 primary LT (PLT). We compared patient characteristics, perioperative and long-term outcomes between SLT and PLT groups.

Results: Although intraoperative blood loss and required blood transfusion were more frequent in SLT group, the perioperative mortality and posttransplant complications were similar in SLT and PLT groups. Overall survival for the entire cohort patients at 1, 3, 5 years after transplantation was 89%, 80%, 69%; and microscopic vascular invasion, poor differentiation and satellitosis nodules independently predicted poor survival. Patients in the PLT group had slightly higher 5-year survival rates than those in SLT group (72% vs. 61%, respectively); however, this difference was not statistically significant (P=0.54). The overall recurrence rates also did not significantly differ between the two groups. When stratifying by graft type in the SLT group , overall survival and recurrence rates did not significantly differ between deceased donor LT (DDLT) and living donor LT (LDLT) groups. In the subgroup analysis by MC, similar results were observed between patients with recurrent HCC meeting MC and patients with recurrent HCC beyond MC but within UCSF criteria.

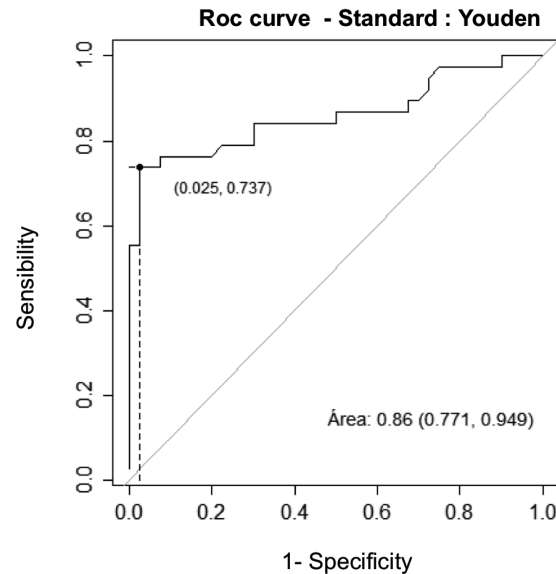
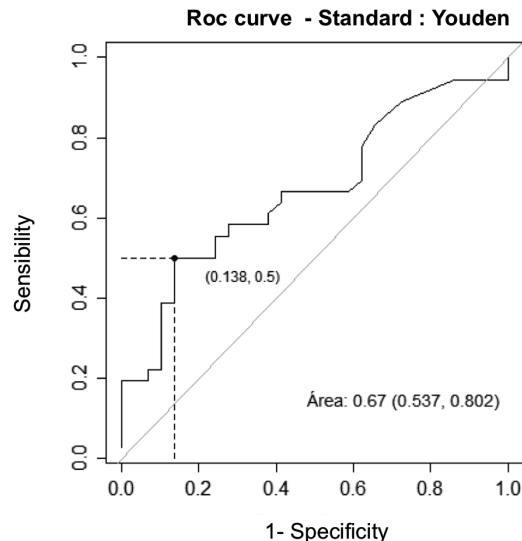
Conclusion: Our single institution experience demonstrated that the criteria of SLT for recurrent HCC should be expanded to UCSF criteria.

Abstract # P-109

Diagnostic Accuracy of Elastography, Alfa Fetoprotein and Ultrasound Findings in Screening for Hepatocellular Carcinoma in Patients on Liver- Transplant Waiting List. Lucas S. Nacif, Denise C.P. Vezozzo, Alina Matsuda, Wellington Andraus, Rafael S. Pinheiro, Suzane K. Ono, Flair J. Carrilho, Luiz C. D'Albuquerque. *Gastroenterology, Liver and Gastrointestinal Transplant Division, Sao Paulo, Brazil*

Purpose: Although hepatocellular carcinoma (HCC)-specific serum tumor markers, alfa-fetoprotein (AFP), imaging exams (ultrasound) and elastography are used in the screening for HCC, their utility in pre-transplantation evaluation is not well established. This study aimed to evaluate the accuracy of AFP, elastography measurement and ultrasound findings for the diagnosis of HCC in liver transplant waiting list.

Methods: From October 2012 to December 2013, total of 103 adult patients on waiting-list (67,96% men and 32,04% women, mean age 52 years). The AFP and elastography measurements were compared with group with nodule or not. Mann-Whitney test and Fisher test is considered. Furthermore, ANOVA or Kruskal-Wallis followed by Non-Parametric Tukey test. Finally, ROC Curve allowed finding cutoffs for exams. A p value less 0.05 indicates statistical significance. **Results:** MELD score mean was 15,75 and Child-Pugh B is 47,25%. The statistical significance on presence of nodules was observed with AFP (p=0.02), portal hypertension (p=0.038) and hepatitis C (p=0.0001). The Roc curve shows us specificity 86% to AFP (cut off value 9.1) (Figure 1); sensitivity 92% on fibroscan (cut of value 9 Kpa) ; specificity 92% ARFI (cut off value 2.56 m/s) and high accuracy on the sum of ARFI value parenquimal and nodule with specificity 98% and sensibility 74% (cut off value 3.02 m/s) (Figure 2).



The Fibroscan value mean was 32.73 Kpa. ARFI of liver parenchyma was 2.06 m/s and ARFI of liver lesion was 1,89 m/s. **Conclusion:** AFP, ARFI and portal hypertension findings were specific methods and can be used to forward diagnostic of hepatocellular carcinoma.

Abstract # P-110

Usefulness of PIVKA-II after Living Donor Liver Transplantation for Hepatocellular Carcinoma. Min-Su Park, Kwang-Woong Lee, YoungRok Choi, SuK-Won Suh, Jeong-Moo Lee, Nam-Joon Yi, Kyung-Suk Suh. *Surgery, Seoul National University College of Medicine, Seoul, Republic of Korea*

Introduction Prothrombin induced by the absence of vitamin K or antagonist-II (PIVKA-II) is useful tumor marker for hepatocellular carcinoma (HCC). However, the usefulness of post-transplant surveillance with PIVKA-II is not clear. We evaluated the clinical value of PIVKA-II in monitoring HCC recurrence after living donor liver transplantation (LDLT).

Methods One hundred twenty patients who had undergone LDLT for HCC from February 1999 to December 2010 and whose serum alpha-fetoprotein (AFP) and PIVKA-II had been measured sequentially before and after LDLT were included in this study. Patients were classified into four groups according to the level of AFP and PIVKA-II [Group I, normal AFP and PIVKA-II; Group II, elevated AFP; Group III, elevated PIVKA-II; Group IV, elevated both AFP and PIVKA-II].

Results Pre-operative PIVKA-II level tended to increase with increasing tumor size, number of nodule, presence microvascular invasion and poor differentiation. Group III and IV with elevated PIVKA-II showed higher recurrence rates, respectively (p=0.000). Recurrence occurred in 27 cases (22.5%). In group I and II patients with preoperative normal PIVKA-II level, 87.5% patients showed elevated PIVKA-II level at recurrence. In 14 patients (51.8%), only elevated PIVKA-II level was the first sign of recurrence after LDLT.

First sign of recurrence according to pre-operative tumor marker level

First sign of recurrence	Group I (n=44)	Group II (n=25)	Group III (n=25)	Group IV (n=26)
Elevation of AFP	0 (0.0)	3 (60.0)	0 (0.0)	0 (0.0)
Elevation of PIVKA	3 (100.0)	1 (20.0)	5 (100.0)	5 (35.7)
Both AFP and PIVKA	0 (0.0)	1 (20.0)	0 (0.0)	5 (35.7)
Others	0 (0.0)	0 (0.0)	0 (0.0)	4 (28.6)

The mean time from elevation of PIVKA-II level as first sign of HCC recurrence to radiologic confirmation was 8.4 months. However, a transient increase in PIVKA-II levels without evidence of recurrence was observed in 14 patients; biliary obstruction (n=9), unknown (n=5).

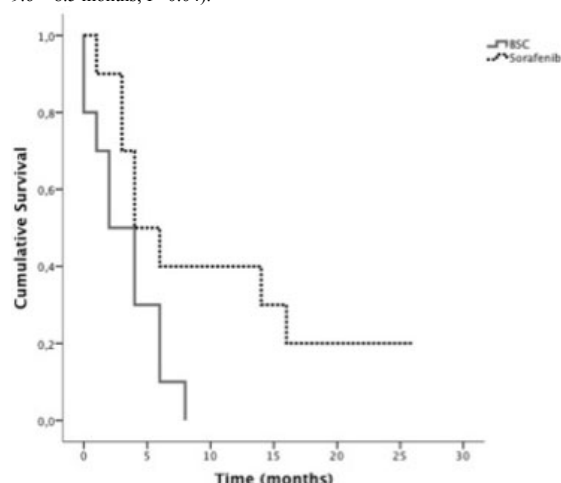
Conclusions Serial measurement of PIVKA-II after LDLT may be a useful follow-up tumor marker for early detecting HCC recurrence.

Abstract # P-111

Sorafenib Versus Best Supportive Care after Recurrent Hepatocellular Carcinoma: Case-Control Study from Argentina and Uruguay.

Federico Piñero¹, Sebastián Marciano², Margarita Anders³, Federico Orozco Ganem³, Manuel Mendizabal¹, Alina Zerega⁴, Josemaría Menéndez⁵, Octavio Gil⁴, Solange Gerona⁵, Matías Tisi Baña¹, Eduardo de Santibañes², Ricardo Mastai³, Adrián Gadano², Marcelo Silva¹. ¹Liver Unit, Hospital Universitario Austral, Pilar, Argentina; ²Liver Transplant Program, Hospital Italiano de Buenos Aires, Ciudad de Buenos Aires, Argentina; ³Liver Unit, Hospital Alemán, Ciudad de Buenos Aires, Argentina; ⁴Liver Transplant Program, Sanatorio Allende, Córdoba, Argentina; ⁵Liver Transplant Program, Hospital Militar-Hospital de Clínicas, Montevideo, Uruguay

The efficacy of Sorafenib compared with best supportive care (BSC) after recurrent hepatocellular carcinoma (HCC) following liver transplantation (LT) is controversial. The aim of this study was to compare the efficacy and safety of both strategies. Patients with recurrent HCC were included from 803 consecutively transplanted adult patients in 5 LT programs from Argentina and Uruguay (1/2005 and 12/2011). Results: Of a total of 135 patients with HCC, 20 patients had recurrence (14.8%). Overall median survival and recurrence free survival were 16 and 10 months, respectively. Ten patients received BSC and 10 patients Sorafenib, no differences were observed between groups. Median time since recurrence to Sorafenib initiation was 9 weeks, 87% (n=7/10) started with 800 mg/day and median treatment duration was 4 weeks. Nine out of ten patients presented adverse events related to Sorafenib: diarrhea (n=4), fatigue (n=3), myocarditis (n=1) and hand-foot skin syndrome (n=1). No fatal adverse events were reported. Patients with BSC had lower survival since HCC recurrence (3.3 ± 2.7 vs 9.6 ± 8.5 months; $P=0.04$).



Survival since recurrence was similar among patients receiving Sorafenib with/without mTOR. Time from LT to HCC recurrence diagnosis was the only independent factor related with survival, HR=0.95 (CI 0.91-1.00; $P=0.07$). Conclusions: Sorafenib treatment for recurrent HCC after LT has probably a survival benefit compared with BSC. However, randomized clinical trials are needed to evaluate efficacy, tolerability and safety of Sorafenib after LT.

Abstract # P-112

Influence of Transcatheter Arterial Chemoembolization on Tumour and Patient Status before Liver Transplantation for Hepatocellular Carcinoma.

Lukasz Rdzanek, Piotr Kalinowski, Maciej Krasnodebski, Marek Krawczyk. Department of General, Transplant and Liver Surgery, Medical University of Warsaw, Warsaw, Poland

Orthotopic Liver Transplantation (OLTx) is an accepted treatment for hepatocellular carcinoma (HCC). Transcatheter arterial chemoembolization (TACE) may be used in HCC patients awaiting OLTx to slow down the progress of HCC. It produces acceptable responses but is associated with toxicity and sometimes impaired liver function.

Aim

The aim of the study was to compare influence of TACE vs observation on HCC characteristics and status of patients awaiting OLTx.

Patients and methods

Fifty five patients with HCC underwent OLTx between 01.2011-05.2013 in the Department (1340 total OLTx since start of the program). Among HCC transplant candidates 25 had TACE (1-5 interventions) before OLTx (TACE group) while 30 had no intervention (non-TACE group). TACE was offered to patients with more advanced HCC. Prequalification assessment was based on computed tomography and magnetic resonance. The second assessment was made at OLTx and was based on detailed pathological description of the explanted liver. Clinical scores of disease severity (Child-Pugh and Model for End-stage Liver Disease, MELD) were used at both time points.

Results

Patients in TACE group more frequently exceeded Milan criteria (60% vs 33%; $p<0.05$), had larger tumours (median longest diameter 40 vs 30.5mm; $p<0.05$), higher median alfafetoprotein (AFP) concentration (59.4 vs 8.1; $p<0.05$), and shorter median waiting time on the list (56 vs 72 days; $p<0.05$). During study period in TACE group median longest diameter of lesions decreased from 40mm to 38mm. In non-TACE group it decreased from 30.5mm to 25mm. In TACE group median concentration of AFP was reduced from 59.4ng/ml to 22.2ng/ml compared to an increase from 8.1ng/ml to 11.4ng/ml in non-TACE group. In TACE group median number of lesions was reduced from 2 to 1 compared to 1 vs 1 in non-TACE group. MELD score in TACE group was 9 and didn't change at OLTx. In non-TACE group MELD was 11 before and 10 at OLTx. At OLTx there were no significant differences between the study groups with regard to evaluated variables.

Conclusions

The results support the use of TACE in patients with more advanced HCC awaiting OLTx. TACE treatment allows to decrease tumour characteristics in this group of patients to the level of patients with less advanced HCC without any impairment of their liver function and clinical status.

Abstract # P-113

Risk Factors of the Hepatocellular Carcinoma Recurrence after Living Donor Liver Transplantation; a Single Center Experience Retrospective Analysis.

Naoki Tanimine, Yuka Tanaka, Kohei Ishiyama, Kentaro Ide, Masahiro Ohira, Hiroyuki Tahara, Takahiro Tashiro, Hideki Ohdan. Department of Gastroenterological and Transplant Surgery, Institute of Biomedical and Health Science, Hiroshima University, Hiroshima, Japan

Although the Milan criteria are the gold standard for HCC patient transplantation, several institutions attempt to treat cases exceeding these criteria, especially by transplantation of living donor livers. We have also aggressively treated patients exceeding the Milan criteria. In this study, we analyzed the risk factors for recurrence after living donor liver transplantation (LDLT).

From 2001 to 2012, 98 HCC patients with end-stage liver failure underwent LDLT at Hiroshima University. Sixty-five patients were enrolled in this study with the exclusion of patients that underwent adjuvant adoptive immunotherapy with activated NK cells. Cumulative recurrence rate curves were analyzed by the Kaplan-Meier method. We adopted histologically proven findings as tumor factors to estimate the actual effect on recurrence. In univariate analysis, preoperative Child-Pugh grade C (C-P C), tumor number (≥ 4), tumor diameter (≥ 5 cm), and preoperative high alpha-fetoprotein levels (≥ 160 ng/ml) were significant risk factors ($P < 0.05$). Notably, multivariate analysis revealed that not only the tumor number ($P = 0.005$) but also preoperative (C-P C) ($P = 0.034$) were independent risk factors for recurrence. Among 65 patients, the number of patients with preoperative Child-Pugh grade A/B (C-P A/B) and C-P C were 41 and 24, respectively. The tumor factors for C-P A/B showed no difference compared with those for C-P C. However, the MELD score, intraoperative loss of bleeding, and perioperative blood transfusion of C-P C were significantly higher than those of C-P A/B ($P < 0.001$, $P = 0.023$, and $P = 0.008$, respectively).

In resectable HCC patients, preoperative liver function and perioperative blood transfusion are sometimes reported as predictive risk factors for HCC recurrence. Although host immunity is a putative key factor, the mechanisms underlying these tumor-unrelated factors in HCC recurrence remain unclear. We confirmed that reduced expression of the activating receptors, NKG2D and NKp46, in intrahepatic NK cells in liver transplant recipients is dependent on their preoperative liver function. This impairment of innate immunity around tumor cells might be the reason that C-P C is an independent prognostic factor for HCC recurrence after LDLT.

Abstract # P-114

Prevention and Treatment of Recurrent Hepatocellular Carcinoma after Liver Transplantation: Hangzhou Experiences. Wei Wang^{1,2,3}, Yufu Ye^{1,2,3}, Ting Wang^{1,2}, Sheng Yan^{1,2,3}, Shusen Zheng^{1,2,3}, ¹Hepatobiliary and Pancreatic Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang, China; ²Key Laboratory of Combined Multi-Organ Transplantation, Ministry of Public Health, Hangzhou, Zhejiang, China; ³Key Laboratory of Organ Transplantation, Key Laboratory of Organ Transplantation of Zhejiang Province, Hangzhou, Zhejiang, China

Liver transplantation is the best treatment of patients with unresectable early hepatocellular carcinoma, which can achieve excellent disease-free survival rates and overall survival rates. However, about 10-20% of recipients still experienced HCC recurrence after transplantation. We share Hangzhou Experiences in the prevention and treatment of recurrent hepatocellular carcinoma after Liver Transplantation, which can be schematized into 3 aspects: 1) pre-transplant assessment and candidates selection to involve recipients with low risk of tumor recurrence and metastasis after transplantation; 2) peri-transplant management to decrease the intraoperative release of HCC cells and the engraftment of circulating HCC cells in the liver; 3) post-transplant comprehensive managements as surgery plus anti-HBV therapy, anticancer drugs or immunosuppression therapy to effectively reduce HCC recurrence.

Abstract # P-115

Comparisons of Surgical Outcomes and Recurrence after Liver Transplantation in Patients With Hepatitis B vs. Hepatitis C Related Hepatocellular Carcinoma. Tiffany C.L. Wong¹, Kenneth S.H. Chok¹, T.T. Cheung¹, Albert C.Y. Chan¹, James Y.Y. Fung², William Sharr¹, Simon H.Y. Tsang¹, Jeff W.C. Dai¹, See Ching Chan¹, Chung Mau Lo¹. ¹Surgery, The University of Hong Kong, Hong Kong, Hong Kong; ²Medicine, The University of Hong Kong, Hong Kong, Hong Kong

Background
Previous studies described inferior long-term outcomes among HCV related HCC patients after liver resection and liver transplantation (LT). This study aims to evaluate the impact of HCV and HBV status on overall survival and recurrence in HCC patients after LT.

Method
This was a retrospective study at a university centre. Data was retrieved from a prospectively collected database. All HCC patients who underwent LT from 1991 to 2012 were analyzed.

Results
Two hundred and thirty nine patients, of whom 207 had HBV and 32 had HCV underwent LT. Patients' baseline demographic and tumor characteristics were listed in table 1.

Table 1. Baseline demographics and tumor characteristics of all patients			
	HBV n=207	HCV n=32	p value
Age (years)	55 (30-67)	58.5 (41-72)	0.052
Sex (M:F)	184: 23	21:11	0.001
Pre transplant AFP, ng/ml	20 (1-117850)	50.5 (6-16150)	0.049
Graft type (LDLT: DDLT)	129:78	27:5	0.015
Salvage transplant	44	6	0.746
UCSF (within: beyond)	154: 49	26:6	0.503
Vascular permeation, %	30.2%	46.7%	0.071

The 1-, 3-, and 5-year patient survival were 97.0 vs. 90.3%, 86.5 vs. 86.4% and 79.4 vs. 86.4% in HBV and HCV patients respectively (p=0.584). The overall graft survival at 1-, 3- and 5-year were 96.5 vs. 87.1%, 86 vs. 87.1% and 78.9 vs. 87.1% for HBV and HCV patients respectively (p=0.546). 35/207 HBV patients (16.9%) and no HCV patient developed HCC recurrence. Majority (27/41) of patients in HBV group died as a result of HCC recurrence. In HCV group, 2 died as a result of reactivation and 2 died of sepsis.

Conclusion
Etiology of underlying cirrhosis has no impact on overall patient and graft survival in HCC patients after LT.

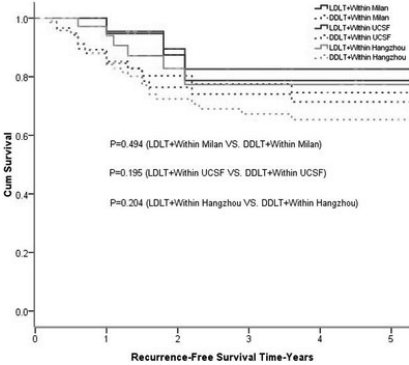
Abstract # P-116

Living Donor Liver Transplantation Does Not Increase Tumor Recurrence of Hepatocellular Carcinoma Compared to Deceased Donor Transplantation. Guangqin Xiao, Julin Song, Shu Shen, Jia-Yin Yang, Lu-Nan Yan. West China Hospital of Sichuan University, Chengdu, Sichuan Province, China

Introduction: Whether there is a higher tumor recurrence for living donor liver transplantation (LDLT) than for deceased donor liver transplantation (DDLT) for hepatocellular carcinoma (HCC) has recently become a subject of debate. The aim of our study is to compare the recurrence-free survival (RFS) and overall survival (OS) of hepatitis B virus (HBV)-positive HCC after LDLT and DDLT.

Methods: We retrospectively collected clinical data from 408 liver cancer patients from February 1999 to September 2012. We used the chi-squared test or Fisher's exact test to analyze the characteristics of LDLT and DDLT. Kaplan-Meier analysis was used to compare the RFS and OS in HCC.

Results: Three hundred sixty HBV-positive patients (276 DDLT and 84 LDLT) were included in this study. The mean follow-up time was 27.1 months (range 1.1-130.8 months). One hundred eighty-five (51.2%) patients died during follow-up. The 1-, 3-, and 5-year RFS rates for LDLT were 85.2%, 55.7%, and 52.9%, respectively; for DDLT, the RFS rates were 73.2%, 49.1%, and 45.3% (P=0.115). The OS rates were similar between the LDLT and DDLT recipients, with 1-, 3-, and 5-year survival rates of 81.8%, 49.5%, and 43.0% versus 69.5%, 43.0%, and 38.3%, respectively (P=0.298). The outcomes of HCC according to the Milan criteria after LDLT and DDLT were not significantly different (for LDLT: 1-, 3-, and 5-year RFS: 94.7%, 78.7%, and 78.7% vs. 89.2%, 77.5%, and 74.5%, P=0.494; for DDLT: 86.1%, 68.8%, and 68.8% vs. 80.5%, 62.2%, and 59.8% P=0.526).



Conclusions: The outcomes of LDLT for HCC are not worse compared to the outcomes of DDLT. The mean RFS and OS rates are longer for LDLT compared to DDLT.

Abstract # P-117

Favorable Long-Term Outcome after Liver Transplantation in HCC-Recipient. Ekaterina Yaroshenko, Maxim Kornilov, Yan Moysyuk. Liver and Kidney Transplantation, Federal Research Center of Transplantology and Artificial Organs, Moscow, Russian Federation

Female recipient had been infected with hepatitis C (HCV) since 1989, when 3 months after caesarean section and subsequent transfusion, noted the appearance of jaundice. Treatment and additional survey was conducted, jaundice solved. In 1992, appeared hepatomegaly, splenomegaly, small ascites: was diagnosed with cirrhosis of the liver in the outcome of chronic HCV, genotype 1b (viral load unknown). In 1993 underwent 1.5 years antiviral therapy (interferon with ribavirin) and reached positive effect (stable virologic response during the observation period). When control ultrasound in January 2010 discovered mass lesion in the right lobe of the liver. On further investigation was diagnosed hepatocellular carcinoma (S6 - 3,3x3,6 cm, S8 - 4x4 cm) without evidence of distant metastasis and portal and hepatic veins thrombosis. Since august 2010 to may 2011 patient got antitumor therapy with sorafenib. In spite of the poor tolerability of sorafenib with the development of neurotoxicity, the patient takes the drug irregularly. At the same time patient was put in the waiting list for orthotopic liver transplantation (OLT) and 9 months later (26.05.2011) we performed her OLT.

Initial immunosuppression was only tacrolimus (TAC) 2 mg/BID; 2 months later after OLT we added the patient 2nd component of immunosuppression - everolimus (RAD) 1,5mg/BID. On the 3rd month after OLT TAC was withdrawn and dosage of RAD reached 2,5 mg/BID. All the time of

observation our recipient (2 years 6 months) serum levels of RAD had been in range 8.8-7.8 ng/ml, upper limits of cholesterol still remains 4.6-5.0 and PLT 116000-151000 without signs of coagulopathy. Recipient has excellent quality of life: she works hard and travels a lot.
To conclude: favorable outcome in this clinical case determined by a complex of factors: the size of the tumor, HCV RNA-negative status of recipient and specific immunosuppression appointed in time.

Abstract # P-118

FBW7 Suppresses Invasion and Metastasis in Hepatocellular Carcinoma Cells Via Down-Regulation of Notch-1. Jun Yu, Wu Zhang, Feng Gao, Yuanxing Liu, Zhiyun Chen, Longyu Cheng, Shangfen Xie, Shusen Zheng. *Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Key Laboratory of Multi-Organ Transplantation of Ministry of Public Health, Hangzhou, China*

Background: FBW7 functions as a tumor suppressor in several cancers and has been proved to be associated with progress of tumor metastasis. However, the underlying mechanism by which FBW7 mediating invasion and metastasis in hepatocellular carcinoma (HCC) cells is still unclear. This study is aimed to investigate the relationship between FBW7 and Notch-1 in HCC and the exact roles of Notch-1 in the pathway regulated by FBW7 involved in invasion and metastasis in HCC.

Methods: Wound healing assay and transwell migration assay were exerted to investigate the capacity of invasion of Huh7, SK-Hep1, HCCLM3 cells *in vitro*. Formation of metastatic tumor in BALB/c nude mice was used to assess the capacity of HCC cells *in vivo*. Western blot analyses and Co-Immunoprecipitation (Co-IP) were used to investigate the expression pattern and interaction of FBW7 and Notch-1 in HCC cells. Protein-specialized siRNA or overexpression plasmid were used to alter the expression pattern of FBW7 and Notch-1 in HCC cells *in vitro* and *in vivo*.

Results: The expression levels of FBW7 in HCC cells were associated with invasive capacity *in vitro*. FBW7 low expressive HCC cells (SK-Hep1 and HCCLM-3) exhibited more invasive, whereas FBW7 high expressive HCC cells (Huh7) lost invasive capacity. Moreover, co-IP assay exhibited that FBW7 directed bound and downregulated expression of Notch-1 in HCC cells. Knockdown of FBW7 or overexpression of Notch-1 significantly improved invasive capacity of HCC cells *in vitro*. Also, SK-Hep1 and HCCLM-3 cells had more powerful capacity in the formation of metastatic tumor than Huh7 cells. However, transfection of overexpression FBW7 plasmid significantly attenuated the tumorigenicity of SK-Hep1 and HCCLM-3 cells in BALB/c nude mice.

Conclusion: This study showed the critical role of Notch-1 in FBW7-mediated metastatic pathway and demonstrated that FBW7 suppresses capacity of invasion and metastasis via down-regulation of Notch-1 in HCC.

Abstract # P-119

Genetic Polymorphism of B7-H3 is Not Associated with HCC Incidence of LT Recipients in Han Chinese Population. Xiaobo Yu¹, Bajin Wei², Min Zhang², Jian Wu², Xiao Xu², Lin Zhou¹, Shusen Zheng². ¹Key Lab of Combined Multi-Organ Transplantation, Ministry of Public Health, the First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China; ²Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, the First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China

Background: B7-H3 protein, first identified as a co-stimulatory molecule serving as a modulator of T-cell response, is found to be overexpressed in HCC and several other cancers, such as colorectal cancer, pancreatic cancer and gastric cancer. High expression of B7-H3 in HCC is correlated with tumor aggressiveness and postoperative recurrence. Since the important roles of B7-H3 in HCC, the aim of this study is to find out whether B7-H3 genetic polymorphism could function as a risk factor of HCC incidence.

Methods:

A total of 156 Han Chinese transplantation recipients with were enrolled, including 123 males and 23 females, aged from 23 to 58. DNA was extracted from peripheral blood. We performed genotyping of B7-H3, including rs11072431, rs11574495, rs12593558, rs12594627, rs2127015, rs3816661 and rs7176654, and SNP frequency and Hardy-Weinberg equilibrium were analyzed.

Results:

The incidence of HCC in this cohort is 38.5%(60/156). Genotypes frequencies of 7 SNPs were in Hardy-Weinberg equilibrium. However, association analysis suggested none of the 7 SNPs was correlated with HCC incidence of recipients.

Conclusion:

Although new studies suggest a role of B7-H3 in tumor immune surveillance, it might not be involved in cancer initiation, which leads to a negative correlation between genetic polymorphisms and HCC incidence.

Abstract # P-120

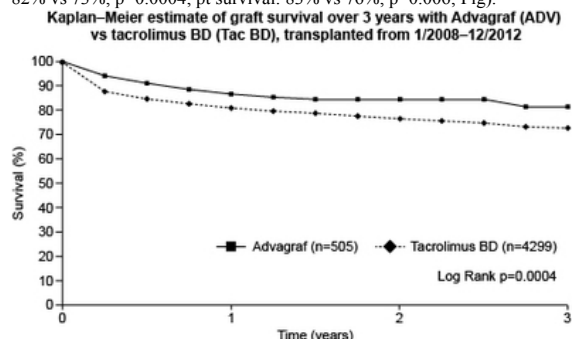
The Long-Term Outcome of Liver Transplantation for Recurrent Hepatocellular Carcinoma after Repeat Hepatic Resection. Tong Zhang, Bin-Sheng Fu, Hua Li, Chi Xu, Shu-Hong Yi, Yang Yang, Gui-Hua Chen. *Department of Hepatic Surgery, The Third Affiliated Hospital of Sun Yat-sen University, Guangzhou, Guangdong, China*

Objective To analyze the survival results of liver transplantation(LT) for recurrent hepatocellular carcinoma after repeat hepatic resection(HR). Methods The clinical and follow-up data of 11 patients underwent LT for recurrent HCC or deterioration of liver function after repeat HR between October 2003 and December 2013 were analyzed retrospectively. Results Of 776 patients with HCC, 11 (1.4%) had undergone LT after repeat HR, including 11 segmentectomy or subsegmentectomy at initial HR, 2 bisegmentectomy and 9 segmentectomy or subsegmentectomy at repeat HR. There were 8 men and 3 women with a median age of 47 years (range 35 to 58 years). The median time from initial HR to recurrence was 24 months (range 6 to 84 months) and the median time from repeat HR to recurrence was 18 months (range 3 to 104 months). The median time from LT to recurrence was 18 months (range 3 to 50 months). There was 1 incident (8.3%) of operative mortality: one patient died on postoperative day 1 due to MOSF caused by massive abdominal bleeding at LT. Postoperative complications occurred in 4 (36.4%) of the 11 patients: one recipient with massive abdominal bleeding at LT; one died on 1.5 months post-transplantation from GVHD and pulmonary infection; both one patients with ischemic type biliary lesions and one patient with biliary anastomotic stricture were treated by a combination of endoscopic dilation and stenting of the stenotic anastomosis 3 months after surgery. 8 patients (72.7%) died from tumor recurrence. Overall cumulative 1-, 3-, 5-, 7- and 10-year survival results were 87.5%, 77.8%, 33.3%, 22.2% and 11.1%, respectively and recurrence-free 1-, 3-, 5-, 7- and 10-year survival results were 66.7%, 22.2%, 22.2%, 11.1% and 11.1%, respectively. In our study 1-, 3-, 5-, 7-, 10-years overall cumulative survival rates from initial HR were 100%, 90%, 90%, 67.5%, 33.8%, respectively. 1-, 3-, 5-, 7-, 10-years overall cumulative survival rates from repeat HR were 100%, 77.8%, 66.7%, 33.3%, 11.1%, respectively. Conclusion LT still remain feasible in the treatment of hepatocellular carcinoma after repeat HR. When pre-transplant survival be added to the survival after LT, It is possible that the strategy of LT may achieve better overall survival results.

Abstract # P-121

Prolonged-Release Tacrolimus (ADVAGRAF) Improves Survival Outcomes in De Novo Liver Transplantation: the European Liver Transplant Registry (ELTR). R. Adam¹, V. Karam¹, V. Delvart¹, P. Trunecka², D. Samuel¹, W. Bechstein³, P. Nemec⁴, G. Tisone⁵, J. Klempnauer⁶, M. Rossi⁷, O. Rummo⁸, J. Belghiti⁹, M. Krawczyk¹⁰, J. Pratschke¹¹, O. Kollmar¹², K. Boudjema¹³, M. Colledan¹⁴, B. Ericzon¹⁵, G. Manton¹⁶, U. Baccarani¹⁷, P. Neuhaus¹⁸, A. Paul¹⁹, P. Bachellier²⁰, F. Zamboni²¹, P. Muiesan²². ¹ELTR Hôpital Paul Brousse, France; ²Transplantcentre IKEM, Czech Republic; ³Goethe University Hospital & Clinics Frankfurt, Germany; ⁴Centre of CV Surgery & Transplantation, Czech Republic; ⁵Policlinico di Tor Vergata, Italy; ⁶Hannover Medical School, Germany; ⁷Umberto 1 Policlinico of Rome, Italy; ⁸RSPC for Organ & Tissue Transplantation, Belarus; ⁹Beaujon Hospital, France; ¹⁰Medical University of Warsaw, Poland; ¹¹Innsbruck University, Austria; ¹²Saarland University, Germany; ¹³Rennes University, France; ¹⁴Ospedale Papa Giovanni XXIII, Italy; ¹⁵Karolinska Institute, Sweden; ¹⁶Franché-Comté University, France; ¹⁷Udine University, Italy; ¹⁸Charité-Universitätsmedizin, Germany; ¹⁹University Hospital Essen, Germany; ²⁰Strasbourg University, France; ²¹AO Brotzu, Italy; ²²Queen Elizabeth Hospital Birmingham, United Kingdom

Retrospective analysis of LTx pts receiving *de novo* ADV (n=505) or Tac BD (n=4299) in the ELTR over 3 yrs. Factors influencing graft/pt survival were identified using uni- and multivariate regression (p<0.05). Differences between ADV and Tac BD were assessed by KM analysis. Baseline demographics were comparable. Overall graft/pt survival at Yr 3 were: 73% and 77%. Univariate analyses identified non-ADV as a significant risk factor of poor graft/pt survival (p=0.0004; p=0.006, respectively). Significance was confirmed by multivariate analyses for graft survival (p=0.0175; RR: 1.46; CI: 1.07, 1.99). KM analyses demonstrated significantly improved graft/pt survival with ADV vs Tac BD over 3 yrs (graft survival: 82% vs 73%, p=0.0004; pt survival: 83% vs 76%, p=0.006; Fig).



A large observational study from the ELTR demonstrated significant improvements in graft/pt survival with ADV vs Tac BD in *de novo* LTx over 3 yrs.

DISCLOSURE: Adam, R.: Other, Astellas, Astellas supports ELTR., Karam, V.: Other, Astellas, Astellas supports ELTR., Delvart, V.: Other, Astellas, Astellas supports ELTR., Trunecka, P.: Other, Astellas, Advisory boards & received consultancy agreements, Pfizer, Speaker honorarium., Samuel, D.: Other, Astellas, Consultant fees, Novartis, Consultant fees, Roche, Consultant fees., Bechstein, W.: Other, Astellas, Honoraria and served on advisory boards., Klempnauer, J.: Other, Astellas, Support, Novartis, Support, Roche, Support, Genzyme, Support, BMS, Support.

Abstract # P-122

Successful Treatment of Fungal (Aspergillosis) Abscess and Co-Infected With CMV in Both Brain and Lung Developed after Orthotopic Liver Transplantation for Toxic Fulminant Hepatitis. Keun Soo Ahn, Yong Hoon Kim, Tae Jun Park, Hyoung Tae Kim, Won Hyun Cho, Byoung Kuk Jang, Tae-Seok Kim, Koo Jeong Kang. *Keimyung University School of Medicine, Daegu, Korea*

Invasive aspergillosis of CNS is recognized as one of the most significant and fatal opportunistic fungal infection developed in the liver transplant(LT)

recipients. We report a case of a LT recipient who developed brain and lung abscess caused by combined aspergillus and cytomegalovirus (CMV) infection.

A 55-year-old female underwent deceased donor LT for fulminant hepatic failure induced by toxic mushroom ingestion. She did not have any history of liver disease. Preoperatively, she was comatous status and her MELD score was 28. She had no active bacterial or viral infection including CMV preoperatively. Orthotopic LT underwent on 3rd day after admission. The 56 year-old male donor had no evidence of any infection. Postoperatively, the graft function was well immediately. On postoperative 4th day, her consciousness recovered and weaned off ventilator. The patient was discharged on the 25th post-operative day without complication. Immunosuppressions consisted of prednisone, mycophenolate mofetil and tacrolimus. One month post-transplantation, the patient admitted again due to persistent nausea, vomiting, headache and visual disturbance. Chest CT revealed 2cm sized abscess in right lower lung field and brain MRI displayed multiple solid masses(4mm – 18mm sized) scattered in the whole brain. Pathological examination by aspiration biopsy of lung and excisional biopsy of brain abscess revealed aspergillus fumigatus combined with CMV infection. Therapeutic dose of Ganciclovir (5mg/kg/d) and Voriconazole (8mg/kg/d) applied to the patient intravenously. During 6 months of treatment, size of lung and brain abscess were decreased very slowly without additional spreading of aspergillus infection. Headache and visual disturbance were improved progressively. She was discharged 63th days after treatment with change of medication. Voriconazole (200mg twice a day orally) was used for 8 months until complete regression of the abscess cavity both in lung and brain, and prophylactic dose of Valganciclovir (900mg per day orally) was supplied for 4 months. The patient was good without reactivation of the CMV and aspergillus until postoperative 18 months.

We successfully treated acute phase of fungal abscess in the brain and lung infected with aspergillosis combined CMV infection after LT.

Abstract # P-123

Control of Diabetes Mellitus (DM) in Liver Transplant Recipients (LTR). Beatriz Rodríguez-Medina^{1,2,3}, Diego Álvarez¹, Carla Satorres¹, Ignacio Herrero^{4,5}, Trinidad Serrano^{5,6}, Manuel De la Mata^{6,7}, Victoria Aguilera^{1,3}, Ángel Rubin^{1,3}, Martin Prieto^{1,3}, Marina Berenguer^{1,3}. ¹Hepatology and Liver Transplantation Unit, Hospital Universitario La Fe, Valencia, Spain; ²Hepatology Unit, Hospital Clínica Roca, Las Palmas, Spain; ³CIBERehd, Instituto de Salud Carlos III, Madrid, Spain; ⁴Hepatology and Liver Transplantation Unit, Clínica Universitaria de Navarra, Pamplona, Spain; ⁵Hepatology and Liver Transplantation Unit, Hospital Lozano Blesa, Zaragoza, Spain; ⁶Hepatology and Liver Transplantation Unit, Hospital Universitario Reina Sofía, Córdoba, Spain

Background and aims: DM in LTR is associated with an impaired long-term outcome with increased rejection rates, infections and mortality. However, there are no studies that assess the degree of diabetes care in these patients. The aim of this prospective study was to evaluate the quality of diabetes care in a LTR cohort. Methods: In this prospective, cross-sectional, multicenter study we describe the prevalence and factors associated with DM in 266 LTR. In addition we describe the parameters indicative of an adequate diabetes care according to the recommended international standards. Results: Prevalence of DM was 50%. DM complications: There were no differences between the DM(n=134) and non-DM-group(n=132) with respect to arterial hypertension(63%vs56%) and chronic renal failure(14%vs18%) prevalences. Dyslipidemia(47%DM-group vs 23% non-DM-group, p<0.01) and cardiovascular disease(20%vs8%, p=0.03) occurred more frequently in the DM-group. 69% of patients were obese/overweight and 85% had abdominal obesity. DM care(diabetic LTR): Screening for complications of DM had never been performed in 36% of patients. HemoglobinA1c levels were poorly controlled in 33% of patients. Insulin therapy was needed in 53% of patients. A sedentary life or light physical exercise were practiced by 20% and 46% of cases, respectively. Only 34% practiced moderate exercise. A diabetic diet was used by 63% but 37% followed a free diet. Only 37% had received diabetes self-management education. Conclusions: 1. Prevalence of diabetes and common diabetes-associated conditions in LTR are high; 2. Control of DM in LTR is poor, with low control of risk factors associated with DM, a poor screening of DM complications and poor glycemic control; 3. Treatment is focused on the use of antidiabetic drugs disregarding other treatments, such as exercise and diet; 4. The role of the LT team is important to improve control of DM but ultimately a multidisciplinary approach is required.

Abstract # P-124

Factors Associated with Lower Rejection Rates in Liver Transplantation. Kin-Pan Au, See-Ching Chan, Siu-Ho Chok, William Wei Sharr, Wing-Chiu Dai, Sui-Ling Sin, Tiffany Cho-Lam Wong, Chung-Mau Lo. *Surgery, Queen Mary Hospital, Hong Kong, Hong Kong*

Acute cellular rejection (ACR) is an important cause of graft dysfunction after liver transplantation. Complications of immunosuppressive therapy also lead to substantial post-transplantation morbidity. We retrospectively analysed the data of 789 patients transplanted during the period from October 1991 to December 2011 to identify factors affecting rejection rates. Univariate analysis showed that older age (p=0.0001, RR 0.969), chronic hepatitis B virus infection (p=0.001, RR 0.544), living donor liver transplantation (p=0.006, RR 0.611) and use of interleukin-2 receptor antagonist on induction (p=0.00000001, RR 0.333) were associated with less ACRs. Patients with fulminant hepatic failure (p=0.004, RR 2.634), drug induced liver failure (p=0.024, RR 3.097) or Wilson disease (p=0.010, RR 3.884) were more likely to develop ACR. Multivariate analysis confirmed that older age (p=0.032, RR 0.981), chronic hepatitis B virus infection (p=0.022, RR 0.639), living donor liver transplantation (p=0.031, RR 0.688) and use of interleukin-2 receptor antagonist on induction (p=0.000002, RR 0.383) were associated with lower rejection rates. These patients should receive less aggressive immunosuppression to minimize treatment complications.

Multivariate analysis of factors affecting rejection rate

	Univariate p-value	Multivariate p-value	Relative risk	95% confidence interval
Age (per year)	0.0001	0.032*	0.981	0.964-0.998
Chronic HBV	0.001	0.022*	0.639	0.436-0.937
Fulminant liver failure	0.004	0.252		
Drug induced liver failure	0.024	0.155		
Wilson disease	0.010	0.260		
Living donor	0.006	0.031*	0.688	0.463-0.964
Induction with IL-2 antagonist	0.00000001	0.000002*	0.383	0.259-0.567

*Statistically significant

Abstract # P-125

DIAMOND: Preserving Renal Function (RF) with Tac Prolonged-Release in De Novo LTx Pts with Different Primary Disease (PD). W. Bechstein¹, P. Trunecka², J. Klempnauer³, J. Pirenne⁴, S. Friman⁵, A. Zhao⁶, H. Isoniemi⁷, L. Rostaing⁸, U. Settmacher⁹, M. Brown¹⁰, N. Undre¹¹, G. Tisone¹². ¹Goethe University Hospital and Clinics Frankfurt, Germany; ²Transplantcentre IKEM, Czech Republic; ³Hannover Medical School, Germany; ⁴University Hospitals Leuven, Belgium; ⁵Sahlgrenska University Hospital, Sweden; ⁶Vishnevsky Institute of Surgery, Russian Federation; ⁷Helsinki University Hospital, Finland; ⁸University Hospital Toulouse, France; ⁹University Hospital Jena, Germany; ¹⁰Astellas Pharma Inc, USA; ¹¹Astellas Pharma Europe Ltd, United Kingdom; ¹²Policlinico di Tor Vergata, Italy

Impact of PD on RF with Tac QD at Wk 24.

Pts received: Arm 1 Tac QD (initial dose: 0.2mg/kg/day); Arm 2 Tac QD (0.15–0.175mg/kg/day)+bas; Arm 3 Tac QD (0.2mg/kg/day delayed to Day 5)+bas. All received MMF+1x bolus steroid only. Primary analyses eGFR (MDRD4); sub-analyses eGFR by PD. Both FAS, Wk 24.

283, 287 and 274 in Arms 1–3. BL characteristics were comparable. Mean Tac QD trough levels were initially lower in Arm 2 vs 3, comparable by Day 30; Arm 3 delayed until Day 5, comparable by Day 14. Wk 24 eGFR Arms 2/3 vs 1: 76.4, 73.3 vs 67.4mL/min/1.73m² (p=0.001, 0.047); eGFR was numerically higher in Arm 2 vs 3 (p=ns). RF was preserved in all arms. Mean change in eGFR from BL–Wk 24 for HCC was less in Arms 2/3 vs 1 (p=0.0088, 0.0031) and numerically less in Arms 2 vs 1/3 for HCV (Table).

eGFR at BL and Wk 24 by PD

	Arm	Alcoholic mL/min/1.73m ² (SD)/n	HCC mL/min/1.73m ² (SD)/n	HCV mL/min/1.73m ² (SD)/n	Other mL/min/1.73m ² (SD)/n
BL	1	82.4 (38.8)/58	101.2 (38.2)/87	81.5 (25.0)/46	91.9 (42.0)/86
	2	81.1 (40.8)/80	92.1 (33.0)/79	86.9 (37.9)/47	97.6 (47.5)/77
	3	82.1 (35.2)/60	93.0 (29.3)/81	84.4 (32.7)/37	94.3 (38.4)/91
Wk 24	1	59.3 (32.5)/58	58.7 (32.8)/87	58.2 (25.9)/46	63.9 (37.1)/86
	2	66.2 (28.4)/80	64.8 (35.6)/79	67.8 (43.9)/47	77.3 (42.1)/77
	3	63.2 (29.8)/60	67.6 (26.9)/81	61.5 (36.8)/37	68.5 (36.9)/91
Change from BL	1	-23.1 (38.1)	-42.6 (42.3)	-23.4 (29.5)	-28.0 (38.2)
	2	-14.9 (42.5)	-27.2 (38.2)	-19.1 (45.4)	-20.3 (48.3)
	3	-18.8 (42.9)	-25.4 (29.9)	-22.9 (46.9)	-25.9 (43.9)
P value (change from BL)	Arm 1 vs 2	0.2503	0.0088	0.6166	0.2625
	Arm 1 vs 3	0.5710	0.0031	0.9586	0.7463
	Arm 2 vs 3	0.5814	0.7485	0.6742	0.4112

Pts with missing data were excluded

Initial low dose of Tac QD (0.15–0.175mg/kg/day)+MMF+bas (without maintenance steroids) maintained RF over 24 wks regardless of PD. For HCC, Arms 2/3 vs 1 conferred a RF advantage.

DISCLOSURE: Bechstein, W.: Other, Astellas, Honoraria, Astellas, Advisory boards., Trunecka, P.: Other, Astellas, Advisory boards and consultancy agreements, Pfizer, Speaker honoraria., Klempnauer, J.: Other, Astellas, Support, Novartis, Support, Roche, Support, BMS, Support, Genzyme, Support., Friman, S.: Other, Astellas, Honoraria, Roche, Honoraria, BMS, Honoraria., Isoniemi, H.: Other, Astellas, Consulting fee and advisory boards, Roche, Advisory boards., Brown, M.: Employee, Astellas., Undre, N.: Employee, Astellas.

Abstract # P-126

Multicenter Study of Elective Liver Retransplantation in Spain. Carmen Bernal-Bellido¹, Martín Prieto Castillo², Jorge Ortiz de Urbina³, Trinidad Serrano⁴, Antonio Poyato⁵, Alejandra Otero⁶, Magdalena Salcedo⁷, Gloria Sanchez-Antolin⁸, Manuel Rodriguez-García⁹, Santiago Tomé¹⁰, Valentin Cuervas-Mons¹¹, Rafael Bárcena¹², Miguel Angel Gómez-Bravo¹. ¹Hospital Virgen del Rocío, Sevilla, Spain; ²Hospital La Fè, Valencia, Spain; ³Hospital de Cruces, Bilbao, Spain; ⁴Hospital Lozano Blesa, Zaragoza, Spain; ⁵Hospital Reina Sofia, Córdoba, Spain; ⁶Hospital A Coruña, A Coruña, Spain; ⁷Hospital Gregorio Marañón, Madrid, Spain; ⁸Hospital Rio Ortega, Valladolid, Spain; ⁹Hospital Central de Asturias, Santander, Spain; ¹⁰Hospital Clinico de Santiago, Santiago de Compostela, Spain; ¹¹Hospital Puerta de Hierro, Madrid, Spain

Introduction: Retransplantation of the liver remains controversial because of inferior outcomes compared with the primary orthotopic liver transplantation **Material and Methods:** We performed a retrospective analysis of 224 patients who underwent e-ReLT in 12 centers between January 2000 and December 2010. Patients were analyzed according to the risk scores Rosen or MELD and classified in 2 groups: +/-VHC. Survival estimates were calculated using the Kaplan-Meier method, comparisons of outcome using the log-rank test. **Results:** The mean age of patients was 50, 2 (DE:11,7) years. The most common indication for ReLT was: recurrence of disease 30%. Overall survival of e-ReLT at 1, 3 and 5 years was 67.5%, 58.4% and 53%. We found no differences in survival of ReLT-e in HCV vs non-HCV, at 1, 3 and 5 years: 68, 59.2 and 50.4 vs 67.2, 57.7 and 55.3 (p = 0.8781). We found differences in survival at 1.3 and 5 years of the 142 patients retransplanted with MELD score < 25 and 52 patients with MELD score >25: 75.3, 64.7 and 57.4 vs 51.9, 45.5 and 45.5 (p = 0.0035)

We found differences according to Rosen index of 1 and 5 years: Rosen low: 73.7 and 60, Rosen moderate 71.7 and 54.1 and higher Rosen: 43.9 and 31.5 (p = 0.0012).

Conclusions: The ethical implications in reLT are many and diverse. At present in Spain found no differences in the survival of patients electively retransplanted HCV versus non-HCV. Therefore, recipients HCV is not a contraindication for reLT; all variables should be used to evaluate a potential candidate.

Patients with high MELD score (>25) and high rate Rosen (>20.5) have a mortality of 50% in the first year, so they must be questioned in elective retransplantation. Patients candidates for elective retransplantation should be prioritized on waiting lists to prevent deterioration.

Abstract # P-127

Outcome after Living Donor Liver Transplantation in Patients With Renal Dysfunction. Tejpal Bhoy, Shailendra Lalwani, Vivek Mangla, Vinay Kumaran, Samiran Nundy, Naimish N. Mehta. *Surgical Gastroenterology and Liver Transplantation, Sir Ganga Ram Hospital, Old Rajinder Nagar, New Delhi, India*

BACKGROUND

Patients with end stage liver disease who develop renal dysfunction have poor prognosis. Liver transplantation (LT) is the definitive treatment for patients with cirrhosis and renal dysfunction. We studied the outcomes of living donor liver transplantation (LDLT) in this subset of patients.

Patients and Methods

Data for patients with pre-existing renal dysfunction was retrieved from a prospectively maintained database and retrospectively analyzed. We performed 240 living donor liver transplantation during January 2010 – December 2013 of which 43 patients had renal dysfunction based on diagnostic criteria proposed by International Ascites club, classified into type 1 and type 2. A standard treatment protocol for renal dysfunction which included albumin and terlipressin was followed in all. Various pre- and post-operative variables were evaluated to assess outcome after LDLT.

RESULTS

Renal dysfunction was observed in 43 patients (36 male and 7 female). Renal dysfunction type 1: n=3; and type 2: n=40. Mean age of patients was 47.7 years. Most common etiology of liver disease in patients with renal dysfunction was HCV 13 (30 %) followed by alcoholic liver disease 12 (27%), HBV & cryptogenic 5 (11%) each. Mean CTP and MELD score was, 11 and 23 respectively. Mean serum creatinine pre- treatment was 1.96 mg/dl which reduced to 0.8 mg/dl pre transplant.

Type of graft most common was right lobe with MHV 37, right lobe without MHV 2, left lobe with MHV 2, left lobe 1, and left lateral lobe 1 patients. Cold ischemia time 104 min, warm ischemia time 46 min. Mean graft recipient weight ratio of 1.07. Intra-op blood transfusion 8, none of the patients required intra-op dialysis.

Post operative mean serum creatinine level was 1.06 mg/dl on post-operative day (POD) 1 and on POD3 mean 0.9 mg/dl which gradually decreased by POD7 to mean 0.8 mg/dl. Two patients required hemodialysis (one on POD 4 - CRRT for 3 days and another required SLED on POD 60- patient had expired). Mean (SD) hospital stay was 21.2 (11.5) days and ICU stay of 7.8 (5.7) days. Post operative morbidity was type II Clavien-Dindo classification seen in 15 patients (34%). Overall mortality in the study group was 2 %.

Conclusion:

In patients with HRS, renal functions improve after LT. Attention to pre-operative renal supportive measures helps improve outcomes of LT in these patients.

Abstract # P-128

Impact of Blood Product Transfusion on Patient/Graph Outcome in Liver Transplantation. Annabel Blasi¹, Joan Beltran¹, Artur Pereira², Graciela Martinez-Palli¹, Jaume Balust¹, Pilar Taura¹, Juan Carlos Garcia-Valdecasas³. ¹Anesthesia, Hospital Clinic, Barcelona, Spain; ²Hemostasia, Hospital Clinic, Barcelona, Spain; ³Surgery, Hospital Clinic, Barcelona, Spain

BACKGROUND

A relation between blood product transfusion and poorly patient and graph outcome has been reported in liver transplantation, even with low transfusion rates.

AIM

To investigate the impact of the perioperative blood products transfusion on the early graft function and one year patient / graft survival, in the liver transplantation, in a single centre population.

M&M

We evaluated liver transplants performed at the Hospital Clinic of Barcelona between January 2008 and December 2011 diagnosed of liver cirrhosis. Patient and donor characteristics, surgical data, and transfused blood components were prospectively recorded until the 5th postoperative day. Early graft function and one year patient and graph outcome were also reviewed. Mc-Whitney, and Chi-Square test were used as needed.

RESULTS

219 adult patients, 123 M/96 F, 53 (40-64) yrs. old, MELD 17 (11-22), Child 7(9-11), and BMI 27 (24-30), were included. Median transfusion of red blood cells (RBC) and plasma (days 0 to 5th) was 4 units (interquartil ranges: 1-7 and 0-8, respectively). At least one platelet transfusion was required by 45% of patients, and 38% received fibrinogen-rich products. Early graft dysfunction rate and one year graph/patient survival was similar between patients above

and below median perioperative transfusion values for all blood products. Only ICU and hospital.

Graph dysfunction and outcome parameters above/below median transfusion values			
Red blood cells	<4/n=123	>4/n=96	p
EAD (%)	23	29	0.35
Hospital stay	16(13-20)	20(16-27)	<0.01
Patient/graph survival 1 year(%)	95/95	92/92	0.41/0.41
Fresh Frozen plasma	<4/n=123	>4/n=96	p
EAD (%)	20	32	0.06
Hospital stay	16(13-22)	19(15-25)	<0.01
Patient/graph survival 1 year(%)	94/94	93/93	0.78/0.78
Platelets	no=119	yes=100	p
EAD (%)	24	28	0.53
Hospital stay	16(13-20)	19(15-25)	<0.01
Patient/graph survival 1 year(%)	94/94	93/93	0.78/0.78
Fibrinogen	no=135	yes=84	
EAD (%)	27	24	0.39
Hospital stay	16(13-22)	19(15-26)	0.01
Patient/graph survival 1 year(%)	94/94	93/93	0.78/0.78

EAD: early graft dysfunction

CONCLUSION

Contrary to the previously reported data, in the present study perioperative blood product transfusion in liver transplantation was not associated with decreased one-year survival, neither with early graft dysfunction.

Abstract # P-129

Liver Transplantation for Autoimmune Hepatitis with DCD Donors. J. Bustamante^{1,2}, D. Klintman^{1,3}, S. Kriese¹, M. Muñoz Tornero^{1,4}, I. Cadden⁵, N. McDougall⁵, G. Whitehouse¹, A. Quaglia¹, J.G. O'Grady¹, N.D. Heaton¹, A. Sanchez Fueyo¹, Ma Heneghan¹. ¹Institute of Liver Studies, King's College Hospital, London, United Kingdom; ²Dept of Gastroenterology and Hepatology, Hospital Universitario Cruces, Baracaldo, Spain; ³Skane University Hospital, Malmö, Sweden; ⁴Hospital Clinico Universitario Virgen de la Arrixaca, Murcia, Spain; ⁵Royal Victoria Hospital, Belfast, United Kingdom

Background: Donation after cardiac death (DCD) constitutes an increasing source of liver grafts. DCD grafts are associated with an increased risk of primary dysfunction and biliary complications, mainly attributed to a more severe ischaemia-reperfusion injury (IRI). It is not known if the inflammation initiated by the IRI influences outcomes or the incidence of biliary and immunological complications in patients transplanted for autoimmune hepatitis (AIH).

Methods: In a single-centre, retrospective cohort, we analysed pre- and post-transplant data of 48 patients (40 DBD (donation after brain death), 8 DCD livers) with AIH from 2001 to 2011. Patients with early death (<90 days) or incomplete follow-up were excluded. IAHG criteria for diagnosis of recurrent AIH were used. For statistical analyses chi-2 test, Kruskal-Wallis test and log-rank test were used.

Results: Demographic data, Child-Pugh/MELD scores and post-transplant immunosuppression were similar between DBD and DCD recipients. Median age at transplant was 41 (5-70) years; 29 recipients (60%) were female. Median follow-up was 4.7 years. There was a significant association between AIH recurrence and DCD recipients (OR 6.25), males (OR 6.25) and younger age (median age 31 years vs. 46.5 years, p=0.04). Biliary strictures were more frequent in DCD than in DBD grafts (50% vs. 8%, p= 0.033). Concurrent autoimmune disease, active hepatitis in explant, early graft dysfunction, donor age, ischaemic times, rejection episodes or CMV infection were not associated with AIH recurrence. There was no significant difference in survival in DCD vs. DBD recipients.

Conclusions: This study indicates a higher incidence of post-transplant AIH recurrence in patients receiving DCD compared with DBD grafts. In addition, a higher than expected incidence of biliary strictures was seen in DCD recipients. These findings, although limited to the small cohort, may suggest the possibility of increased alloreactivity to DCD grafts in patients transplanted for AIH.

Abstract # P-130

Carbapenem-Resistant Klebsiella Pneumoniae Multiple Liver Abscesses in a Liver Transplanted Patient: Report of a Case.

Amedeo Carraro¹, Umberto Montini¹, Paola Violi¹, Fabio Soldani², Romualdo Mazzi², Matteo Donataggio¹, Ercole Concia², Umberto Tedschi¹. ¹Department of General Surgery and Odontoiatrics, Liver Transplant Unit, University Hospital of Verona, Verona, Italy; ²Department of Pathology, Infectious Disease Unit, University Hospital of Verona, Verona, Italy

Introduction

Acquired carbapenem-resistant Klebsiella Pneumoniae (CRKP) infections are an emerging problem in solid organ transplant. Here we report a case of successfully treated multiple liver abscess due to CRKP in a liver transplanted patient.

Case report

A 65-year-old Caucasian woman underwent liver transplant. The patient had no significant medical background except for chronic renal failure; pre-transplant cultures resulted negative for MDR bacteria. The postoperative course (p.o.) was characterized by biliary anastomotic-fistula which required an hepaticojejunostomy. During the p.o. course an ESBL-producing E. Aerogenes and K. Pneumoniae resistant to all the antibiotics tested (apart for intermediate sensitivity to gentamycin and tygecycline) were isolated from throat swabs. The patient despite being colonized by CRKP was doing well and discharged. Two months later, she was readmitted for the abrupt onset of fever. A CT scan revealed the presence of multiple abscesses in the liver graft (max diameter 3.5 cm). Teicoplanin, anidulafungin and a weaning of the immunosuppressive therapy were the initial empiric therapy. Blood cultures resulted positive for both E. coli and Klebsiella Pneumoniae, confirming the previous isolated colonizing microorganisms. Fluid samples from the percutaneous drain in the liver abscesses tested positive for the same CRKP strain. The treatment strategy consisted of prolonged antimicrobial combination (meropenem, tygecycline and gentamicin) and drainage of the abscesses As long-time therapy and to preserve renal function, the antimicrobial therapy was then switched to ertapenem and tigecycline. On p.o. day 88, a PET-CT revealed a good response with substantial recovery and only residual activity; the therapy for CRKP was stopped and the patient discharged in good clinical condition. At the moment the patient is doing well with complete recovery of the liver lesions.

Conclusion

Antimicrobial treatment of CRKP infections remains an ongoing challenge and implementation of enhanced infection control measures is essential.

Abstract # P-131

The Effect of Donor Age on the Outcome of Liver Transplant in Patients With Hepatitis B Virus Infection.

Tan To Cheung, Kenneth S.H. Chok, Albert Chan, William Sharr, See Ching Chan, James Y.Y. Fung, Sheung Tat Fan, Chung Mau Lo. *Surgery, The University of Hong Kong Queen Mary Hospital, Hong Kong, Hong Kong*

Background

Liver regeneration power has been showed to decrease with advanced age. Large scale analysis for hepatitis B virus infection in this aspect is lacking.

Objectives:

Since liver donation rate is still very low in many parts of the world, we aim to study whether the use of advanced donor age liver graft has an adverse effect on survival in patients with hepatitis B virus infection.

Methods:

918 patients received liver transplantation in Queen Mary Hospital between January 1996 to December 2011. Patients with hepatitis B virus related pathology who had undergone deceased donor liver transplantation were included and the outcome of liver transplantation were studied.

Results:

Amongst the 214 patients included, 135 patients were transplanted for cirrhosis, 48 patients for acute on chronic liver failure, and 30 patients for acute flare of hepatitis B virus infection. 57 patients had concomitant hepatocellular carcinoma. The median age of the donor was 54 year (range 2-76). Liver donors were divided in to two groups by the donor age. Group 1 consisted of donor less than or equals to 60 years (n=184). Group 2 consisted of donor age more than 60 years (n=30). The median recipient age for group 1 was 48.5 years. The median recipient age for group 2 was 49 years. (p=0.297) The median MELD score for group 1 was 29 (range 13-56). The median recipient age for group 2 was 24 years. (p=0.436). The median graft weight was 1032.5g (range 810-1600g) in group 2 which is lower than the median

graft weight in group 1 patients (1210g)(range 365-2180g) (p=0.007). The median estimated standard liver volume (ESLV) was 83.3% (range 61.4-136.6%) in group 2 which is lower than the median ESLV in group 1 patients (98.3%) (Range 31.9%-177.9%) (p=0.013). The 1 year, 3 year and 5 year graft survival for group 1 patients was 93.4%, 88.7%, 88.7% respectively. The 1 year, 3 year and 5 year graft survival for group 1 patients was 90.5%, 90.5%, 90.5% respectively. (p=0.682). The 1 year, 3 year and 5 year overall survival for group 1 patients was 93.4%, 90.2%, 90.2% respectively. The 1 year, 3 year and 5 year graft survival for group 1 patients was 90.5%, 90.5%, 90.5% respectively. (p=0.809).

Conclusion

Advanced donor age does not seem to have adverse effect on graft and patients survival for transplant patients with hepatitis B virus infection.

Abstract # P-132

Patient Burden and Quality of Life in Liver Transplantation

Recipients. Ji Seon Yoon, Hye Jin Choi, Oen Oak Shin, Sang Hwa Seo. *Medical Surgical Unit, Asan Medical Ctr, Seoul, Republic of Korea; Medical Surgical Unit, Asan Medical Ctr, Seoul, Republic of Korea; Medical Surgical Unit, Asan Medical Ctr, Seoul, Republic of Korea*

1. The need for research

Patients who received liver transplant in the country continues to increase, but perceived by the patient after liver transplant psychosocial assessment and intervention, including pressure enough it does not work, the study of the burden of the liver transplant patients to identify and quality of life and to determine the relationship between post-operative liver transplantation effectively psychosocial nursing intervention is to ensure

2. Method

A hospital received IRB approval from October 2012 to June 2013 exotic liver transplantation and hepatobiliary surgery and liver transplant patients as one of 251 patients) received liver transplantation at a single institution are outpatient patients, 2) in a single institution, receiving a liver transplant two months or more past patients, and 3) in more than 21 years a total of 134 people under the age of patients was calculated. 5-point scale, the higher the score the higher the burden of health care items and a total of 40 questions three questions, three questions questions and social activities, emotional state 14 questions, family support three questions, one question sexuality question, the state of the 4.

3.Result

The quality of life of those year liver transplant, the donor liver can, liver donor, liver transplant surgery, after receiving the recommendation received prior period, for synchronous liver transplant Although significant differences, after liver transplant hospitalization experience for the difference was statistically significant. The average pressure of the subjects was 54.38 ± 13.64 points, the quality of life of those average was 141.08 ± 24.07 points. Burden and quality of life of those in the relationship between quality of life and the burden of the correlation was significantly negative (r = -.72, p<.001)

4.Conclusion

The average pressure of the subjects was 54.38 ± 13.64 points on average the quality of life of those points were 141.08 ± 24.07, the subject of the burden and pressure on the relationship between quality of life and quality of life showed a significant negative correlation. Burden and quality of life of the average monthly medical costs, economic status, occupation, and postoperative hospitalization was depending on experience, there is less pressure on increasing the quality of life was better.

Abstract # P-133

Pregnancy and Delivery in Women With Portal Hypertension.

Zoulikha Jabiry-Zieniewicz¹, Filip Dabrowski¹, Bronislawa Pietrzak¹, Barbara Suchonska¹, Rafal Kowalczyk², Miroslaw Wielgos¹. ¹1st Department of Obstetrics and Gynecology, Medical University of Warsaw, Warsaw, Poland; ²1st Department of Anesthesiology and Intensive Care, Medical University of Warsaw, Warsaw, Poland

Aim

Retrospection of the pregnancy and labor in women with esophageal varices.

Material

From 2000 to 2012 seven pregnant were admitted. None had Ltx, and the varicose have been reported as the 1st stage. Each of them has been consulted by the obstetrician, transplant surgeon and anesthesiologist. The patient condition during pregnancy, labor and postpartum period was analyzed.

Results

5 patients had portal vein thrombosis, one Wilson disease, one Budd-Chiari syndrome in the course of polycythemia vera. Pregnancy in 5 cases proceeded physiologically in the first two trimesters. In 1 threatening miscarriage was diagnosed and treated successfully with gestagens, two patients had tocolytic treatment with betamimetic. One pregnant required variceal banding in I & III trimester. In 3 thrombocytopenia worsened, with platelet count ~70g/L (up to 59g/L). They received platelet transfusion before delivery. In one case significant hypoproteinemia (4.7g/L) occurred. In 1 patient GDM G1 and oligohydramnios were found. All women delivered at term (37-40Hbd). In all general anesthesia with use of remifentanyl was done. There was no fluctuations in MAP and HR. Incision to delivery time was 2.5min. Time from opioid administration to birth was <4min. All children were born in good condition, weight 10-90percentil. Patients received heparin [Clexane]. One had to continue at home (1mg/kg). This patient was receiving heparin from 22Hbd. None of the patients suffered thromboembolic events postpartum. Regional anesthesia is contraindicated in patients with thrombocytopenia. Thus vaginal delivery with epidural is not possible. Opioids freely pass through the placenta and can cause respiratory failure at birth. In patients with esophageal varices sudden increase in heart rate and blood pressure can cause hemorrhage. Ultra-short start of action of remifentanyl allows to get desired analgesia without complications in the newborn.

Conclusion

Patients with portal hypertension can deliver at term. It is a high risk pregnancy. In this group it is desirable to shorten the second stage of labor or complete it by c-section under general anesthesia with remifentanyl. Surveillance of pregnant with portal hypertension must include monitoring of liver function and coagulation disorders.

Abstract # P-134

Living Donor Liver Transplantation. Outcome after 58 Transplants in Adult and Children in a Single Center. Manuel E. De Guglielmo¹, Dafne Del Valle¹, Elena Pestana¹, Damelys Marin¹, Miguel Vasallo¹, Carlos Rodríguez¹, Luzmila Aguero¹, Abigail Sala¹, Carlos Lozada¹, Hermogenes Malavé¹, Tomoaki Kato², Pedro Rivas¹. ¹Programa Metropolitano de Trasplante de Hígado - Fundahigado, Caracas, Distrito Capital, Venezuela; ²Department of Surgery, Center for Liver Disease and Transplantation, Columbia University, New York, NY, USA

Background: Liver transplantation (LT) is the only therapeutic option for patients with end stage liver disease. Living donor liver transplant (LDLT) program was initiated in our country in 2005 as part of an Educational Service Agreement between the Programa Metropolitano de Trasplante de Hígado-Fundahigado and the LT Program at Columbia University in New York. This is the first report after 58 consecutive cases

Patients and methods: The medical files of LDLT recipients from April 2005 to November 2013 were reviewed. Living Liver Donor (LLD) evaluation protocol included standard cardiopulmonary and renal work up and complete blood evaluation, angioTAC, colangioMRI, psychiatric, social evaluation and hepatic biopsy when necessary. Recipients underwent standard LT work up. Graft and patient survival was determined by Kaplan-Meier method.

Results: 58 patients [40 (69%) pediatrics patients and 18 (31%) adults] received LDLT from LDL. 26 left laterals, 24 left and 8 right lobes grafts were transplanted. The most common indication for transplantation was biliary atresia in children (35%) and autoimmune hepatitis in adults (28%). 13 donors developed complications (8 grade I, 3 grade II, 1 grade IIIa and 1 IIIb, according to the Clavien classification system for surgical complications). All donors are in excellent physical conditions and returned to their daily activities within a period between 1 and 3 months after donation. In the recipients the incidence of major vascular complications was 20% in pediatric and 22% in adult recipients. Biliary complications developed in 10% of pediatric and 11% of adult patients. Graft and patient survival were 89% and 80% respectively at 1 year and 82% and 74% at 5 years.

Conclusion: Living donor liver transplantation constitutes an alternative for our patients with end stage liver disease. It is a safe procedure with a low complication rate for liver donors.

Abstract # P-135

Renal Dysfunction after Liver Transplantation in Italy: Results of a Cross-Sectional, Multicenter Study (SURF).

Paolo De Simone¹, Mauro Salizzoni², Matteo Cescon³, Luciano De Carli⁴, Alfonso Galeota Lanza⁵, Alfredo Di Leo⁶, Alfonso W. Avolio⁷, Donato Donati⁸, Rossella Brusa⁹, Stefano Fagioli¹⁰. ¹Hepatobiliary Surgery and Liver Transplantation, University of Pisa Medical School Hospital, Pisa, Italy; ²General Surgery and Liver Transplantation, San Giovanni Battista Hospital, Turin, Italy; ³General Surgery and Liver Transplantation, Sant'Orsola University Hospital, Bologna, Italy; ⁴General Surgery and Transplantation, Ca' Granda Niguarda Hospital, Milan, Italy; ⁵Hepatology and Liver Transplantation, Cardarelli Hospital, Naples, Italy; ⁶Gastroenterology, University of Bari, Bari, Italy; ⁷General Surgery and Liver Transplantation, Catholic University Medical School Hospital, Rome, Italy; ⁸Nephrology, Varese Hospital, Varese, Italy; ⁹Novartis Italy, Origgio, Italy; ¹⁰Gastroenterology, Riuniti Hospital, Bergamo, Italy

Renal dysfunction (RD) is an unmet medical challenge after liver transplantation (LT).

SURF is a cross-sectional study to explore the prevalence of RD (eGFR <60mL/min/1.73m²) and the evolution of renal function in recipients from 5 months (M) to 5.5 years after LT. Patients were stratified in 6 attention categories (none; low; intermediate-low; intermediate-high; high; very high) based on eGFR (≥90; 89-60; 59-30; <30 mL/min/1.73m²), proteinuria (≥0.5g/day), and velocity of eGFR deterioration (-4mL/min/year).

From March 2012 to June 2013, 1,002 patients were enrolled (males 75.9%; mean age 55.3±9.6 years; Caucasians 98.3%) at a mean of 28.6±16.5 M from LT. HCV was present in 427 patients (42.6%) and HCC in 425 (42.4%). MELD scores were available for 835 (83.3%) patients: the mean pre-LT MELD was 17.5±7.4 with 40% low (≤14), 44% intermediate (15-24) and 16% high-MELD (≥25) patients. At transplantation, mean eGFR was 95.7±36.9 mL/min/1.73m² and RD was 15.8% (138/875). At study visit, mean eGFR was 76.9±25.7 mL/min/1.73m² and RD was 25.3% (253/1002). Mean difference in eGFR from LT to study visit was -18.30±34.98 mL/min/1.73m² (p<0.0001) and mean yearly decrease was -12.3±32.2 mL/min/1.73m². 48% patients were in intermediate-high attention level for RD, including eGFR <60 mL/min/1.73m² and/or eGFR <90 with proteinuria and/or eGFR deterioration >4 mL/min/year. RD was 21.2% in low vs. 28.3% in intermediate vs. 28.5% in high-MELD patients (p=0.042).

LT is associated with a high prevalence of RD which was greater for intermediate-high MELD patients. Preventative strategies for preservation of renal function are favored.

DISCLOSURE: De Simone, P.: Speaker's Bureau, Novartis, Astellas., Cescon, M.: Speaker's Bureau, Novartis., Donati, D.: Employee, Novartis., Brusa, R.: Speaker's Bureau, Novartis., Fagioli, S.: Speaker's Bureau, Novartis.

Abstract # P-136

Management of Biliary Complications after Living Donor Liver Transplantation: An Egyptian Experience. Ibrahim Mostafa¹, Mahasen Mabrouk², Mahmoud El-Meteini³, Shereen Hunter², Mohammed Bahaa³, Ahmed Abd El-Azeem El-Mikkawy¹.

¹Hepatology and Gastro-enterology Department, Theodor Bilharz Research Institute (TBRI), Giza, Egypt; ²Endemic Medicine Department, Faculty of Medicine, Cairo University, Cairo, Egypt; ³General Surgery Department, Faculty of Medicine, Ain-Shams University, Cairo, Egypt

Introduction: Biliary tract complications remain one of the most common problems following living donor liver transplantation (LDLT). The most common forms of biliary complications are biliary strictures and biliary leakage. **Objectives:** To assess the Egyptian experience in management and outcome of biliary complications after LDLT. **Patients:** 150 right lobe graft recipients who had undergone adult-to-adult LDLT in Wady El-Neel Hospital, Cairo, Egypt from 2001-2008. Patients were divided into those with and those without biliary complications. **Results:** Overall biliary complications occurred in 52 patients (34.7%); including bile strictures in 30.7% and bile leakage in 4%. The mean onset of biliary complications was 5.07 months ± 5.69 months. Risk factors associated with biliary complications were prolonged cold ischemia time, multiple donor ducts together with multiple biliary anastomosis.

Table [1]: Diagnostic tools in recipients with biliary complications

Diagnostic tool	No. of patients (N=52)	Percent
Ultrasound		
Negative	11	21.15%
Positive	41	78.85%
MRCP		
Not done	8	15.38%
Done with negative result	3	5.77%
Done with positive result	41	78.85%
Cholangiogram		
Not done	44	84.62%
Done with positive result	8	15.38%
Biopsy		
Not performed	27	51.92%
Done with negative result	8	15.38%
Done with positive result	17	32.7%

MRCP = magnetic resonance cholangiopancreatography

Table 1 shows the various diagnostic tools used for the diagnosis of biliary complications in our study. Endoscopic interventions alone were successful in 38/50 patients (76%) and when combined with percutaneous methods (rendezvous technique), the success rate became higher (96%). Overall patient survival rates at 1, 2, 3 and 4 years were 90.07%, 84%, 80% and 77.30% respectively. Conclusion; Biliary complications after LDLT are relatively common, however, they can be successfully treated with nonsurgical approaches. Endoscopic retrograde cholangiopancreatography (ERCP), in particular, has proven to be relatively safe and effective in the management of these complications. The occurrence of biliary complications does not appear to adversely affect the long-term graft and patient survival.

Abstract # P-137

The First Four Years of Liver Transplantation in a Developing Country: The Ecuadorian Experience. Sergio Enderica-Gonzalez, Juan C. Aguilar, Juan J. Suarez, Harry F. Dorn, Juan Garces, Enrique Carrera, Paul E. Astudillo, Frans I. Serpa. *Transplant Unit, Hospital Metropolitano, Quito, Ecuador*

There was a highly unmet need for treating end-stage liver diseases in Ecuador, so the development of a liver transplantation program was necessary. Liver transplantation activity started in 2009 and has been growing progressively over time. Herein, we present the first report to the international community of the first four years of liver transplantation in Ecuador. We performed a retrospective chart review of all patients who underwent liver transplant from December 2009 to November 2013 in the largest transplant center in the country. Demographic features, MELD scores, Karnofsky performance status (KPS), laboratory values, complications and mortality rate were also included. A total number of 66 cadaveric liver transplants were performed over the past four years. The mean age of liver transplant recipient was 50 years old (range, 11-65). From all the liver recipients 53% of them were male and 46.9% were females. The most common cause for liver transplantation was: cryptogenic cirrhosis (50%), followed by autoimmune hepatitis (14%), alcoholic liver disease (11%), secondary biliary cirrhosis (9%) and others (16%). The mean MELD score and KPS for transplantation were 17 +/-3 and 70, respectively. Eighty-five percent of patients had esophageal varices by the time of surgery, 63% developed ascites, 45% had at least one episode of hepatic encephalopathy before surgery and 75% had splenomegaly with hypersplenism. Complication included: Neurological (27%), vascular (10%) and biliary (7%) as the most common. From all the transplanted patients 72% were still alive to the last follow up and 28% have died. The most common causes of death were intraoperative bleeding (27%) cardiovascular disease (22%) and sepsis (11%). Interestingly, the annual mortality rate improved over the years, in 2010 mortality was 47% and to the date mortality has dropped to 15%. To our knowledge this is the first report to the international community about the situation of liver transplantation in a small and developing country, like Ecuador. It's clear that as time has progressed our mortality rate has dropped significantly, demonstrating that interdisciplinary efforts combined with adequate center support good outcomes can be achieve. These findings suggest that developing a well-established liver transplantation center in a limited resource country is feasible.

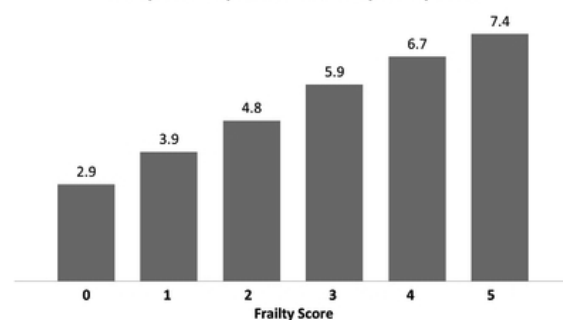
Abstract # P-138

Depression in Liver Transplant Candidates May Be Explained by Frailty, Not Severity of Liver Disease. Jeffrey F. Friedman, David C. Cron, Angela E. Thelen, Jordan E. Derck, Ashley D. Gerebics, Michael J. Englesbe, Christopher J. Sonnenday. *Transplant Surgery, University of Michigan, Ann Arbor, MI, USA*
Intro: End-stage liver disease (ESLD) patients are believed to have a higher prevalence of depression than the general population. It is unclear whether depression in ESLD is related to severity of liver disease or other factors. As part of a large prospective study of frailty in patients referred for liver transplant, we studied the association of frailty with depression.

Methods: This is a prospective cohort study (N=542) of ESLD patients referred for transplant at a single center. Frailty was assessed with a validated instrument of 5 components (grip strength, gait speed, unintentional weight loss, physical activity, and self-reported exhaustion). Patients were assigned a composite score of 0 to 5, with scores ≥ 3 considered frail. Depression was assessed using the 15 question Geriatric Depression Scale, with a validated threshold of ≥ 5 used as indication of depressive symptoms. Univariate and multivariate logistic regression were used to determine independent predictors of depression.

Results: 37.6% of patients demonstrated depressive symptoms, with a median score in the entire cohort of 4 (range 0-15). Frailty alone was a significant predictor of depression (OR=3.10, 95%CI: 2.16-4.45, $P<.01$, AUROC=0.64), whereas MELD was not (OR=1.02, 95%CI: 0.99-1.05, $P=.17$, AUROC=0.53). In multivariate analysis, frailty remained a significant predictor of depression (OR=3.20, 95%CI: 2.18-4.69, $P<.01$), while MELD remained insignificant. Other significant covariates included age, lack of transplant during study period, hepatitis C, encephalopathy, and tobacco use. The figure shows a stepwise increase in depression score by frailty score. The most frail patients had 2.6 times higher depression scores than the least frail patients ($P<.01$). **Conclusion:** Frailty is strongly associated with depression, whereas severity of liver disease (MELD) is not. Future work is needed to determine if frailty is a remediable condition. If this proves true, programs aimed at decreasing frailty could lower rates of depression in this patient population.

Unadjusted Depression Scores by Frailty Score



Abstract # P-139

Hemophagocytic Syndrome after Orthotopic Liver Transplantation: A Report of Three Cases. Bin-Sheng Fu, Shu-Hong Yi, Hui-Min Yi, Yang Yang, Gui-Hua Chen. *Liver Transplantation Center, The Third Affiliated Hospital of Sun Yat-Sen University, Guangzhou, Guangdong, China*

Objective Hemophagocytic syndrome (HPS) is a serious hematological disorder caused by activated T lymphocytes in immunologically compromised patients. To analyze the clinical characteristics, risk factors, diagnosis, and prognosis of hemophagocytic syndrome (HPS) after liver transplantation (LT).

Methods Among 895 patients who underwent orthotopic liver transplantation between September 2003 and September 2013, HPS developed in three patients (0.34%) on the 36th, 14th and 32th postoperative day, respectively. The courses of these patients were evaluated.

Results The cause of HPS was unknown in three patients. Three patients had high fever, splenomegaly, pancytopenia, coagulopathy, hypertriglyceridemia, hyperferritinemia, and hemophagocytosis in bone marrow. The diagnosis of HPS was established based on clinical findings, laboratory data and bone marrow biopsy. Three patients died in an acute course despite intensive care including management with high-dose steroid pulse, administration of G-CSF and intravenous immunoglobulin supplementation. One died of intracranial hemorrhage and multiple organ failure on day 54 after LT, the other died of respiratory failure and septic shock on day 32 after LT, and the last died of multiple organ failure on day 61 after LT.

Conclusion HPS should be recognized as a severe hematological complication in severely immunocompromised liver transplant recipients. When HPS is suspected, bone marrow aspirate must be performed and repeated if necessary. Although adequate treatment is necessary to prevent fatality, the prognosis remains poor.

Abstract # P-140

Chronic Renal Failure after Liver Transplantation in Long Term: Prevalence and Risk Factors. Suut Gokturk¹, Bulent Baran¹, Asli Ormeci¹, Ozlem Soyer¹, Sami Evirgen¹, Ilgin Ozden², Filiz Akyuz¹, Cetin Karaca¹, Kadir Demir¹, Sabahattin Kaymakoglu¹, Fatih Besisik¹. ¹Gastroenterohepatology, Istanbul Medical Faculty, Istanbul, Turkey; ²General Surgery, Istanbul Medical Faculty, Istanbul, Turkey

Aim: Calcineurin inhibitors (CNI) (cyclosporine (CsA) and tacrolimus (Tac)) are the backbone drugs for the immunosuppression in liver transplantation (LT). However, long term use of CNIs may result in chronic renal failure (CRF). In this study, we aimed to investigate the course of renal functions in LT recipients which were treated by long term CNIs.

Patients and Methodology: The patients who were undergone LT and survived more than 3 months were retrospectively analyzed. Appearance of renal failure (> 1.4 mg/dL) is defined as early (<3 month) or late (>3 months) according to time of initial increase in serum creatinine levels. If there is a persistent rise in creatinine for 6 months and no improvement is observed despite CNI dose reduction, diagnosis of CRF is made. In case of nephrotoxicity unresponsive to dose reduction, CNI therapy was switched to sirolimus.

Results: A total of 178 patients (110 males, 61%) with LT are included in the study. Mean age is 48 (19-81) years and mean follow-up period is 70 (4-223) months. CsA or Tac treatment protocol has been initiated in 43 (% 24) and 125 (% 70) patients, respectively. Serum creatinine values were ≥ 1.4 mg/dL during post-transplant 3rd, 6th and 12th months in 28 (16%), 32 (19%) and 20 (12%) patients, respectively. The frequency of patients that developed CRF during long term CsA and Tac therapy were 40% (17) and 19% (23), respectively ($p = 0.018$). In 34 patients with CRF, creatinine levels have regressed or stabilized by dose reduction or switching to sirolimus. Hemodialysis was applied to 3 patients and kidney transplantation was required eventually in one. According to univariate analysis development of CRF at late post-transplant period is associated with older age, CsA usage, presence of pre-transplant diabetes mellitus, and high level of pre-transplant creatinine value. In multivariate analysis, only older age is found to be related with development of CRF.

Conclusion: The occurrence of long-term CRF after liver transplantation is common and still a significant cause of morbidity in LT recipients. Risk factors for CRF are CsA using and pretransplant older age, diabetes mellitus and azotemia.

Abstract # P-141

Importance of Individual Surgeon's Experience in Deceased Donor Liver Transplantation. Michal Grat¹, Zbigniew Lewandowski², Karolina Grat¹, Joanna Ligocka¹, Karolina M. Wronka¹, Wacław Holówko¹, Hanna Zborowska³, Krzysztof Zieniewicz¹, Paweł Nyckowski¹, Tadeusz Wróblewski¹, Rafał Paluszkiwicz¹, Ireneusz Grzelak¹, Krzysztof Dudek¹, Piotr Remiszewski¹, Waldemar Patkowski¹, Bogusław Najnigier¹, Marek Krawczyk¹. ¹Department of General, Transplant and Liver Surgery, Medical University of Warsaw, Warsaw, Poland; ²Department of Epidemiology, Medical University of Warsaw, Warsaw, Poland; ³Department of Laboratory Diagnostics, Medical University of Warsaw, Warsaw, Poland

BACKGROUND

Although several reports indicate superiority of liver transplantation (LT) results achieved in high-volume centers, literature is void of data on the relevance of individual surgeon's experience. The aim of this study was to evaluate the impact of surgeon's experience on outcomes following LT.

METHODS

A total of 1162 LTs performed at a single center between December 1994 and November 2012 were included in this retrospective study. Quantile regression analysis for survival data was used to assess dependence of conditional quantiles of cumulative mortality on covariates: individual experiences of surgeons performing hepatectomy and graft implantation adjusted for transplant team experience and Model for End-stage Liver Disease (MELD) score.

RESULTS

Median experience of surgeons' performing hepatectomy and implantation were 53.0, and 68.0 LTs, respectively. The 0.05, 0.10, 0.15, 0.20, and 0.25 quantiles of cumulative mortality occurred at 0.4, 4.2, 19.5, 41.8, and 73.5 post-transplant months, respectively. Overall, higher experience of surgeon performing hepatectomy increased the risk of death until reaching

the 0.05 quantile of cumulative mortality ($p = 0.0275$; effect estimate 0.020 [logarithmic scale] per 1 hepatectomy; 95% confidence interval [95% CI] 0.002–0.037). Conversely, in patients with MELD ≤ 25 ($n = 829$), higher experience of hepatectomy surgeon decreased the risk of mortality from the 0.20 quantile onwards ($p = 0.0340$; effect estimate -0.026 [logarithmic scale] per 1 hepatectomy; 95% CI -0.050–0.002). MELD independently predicted death throughout all quantiles of cumulative mortality (all $p < 0.0001$).

CONCLUSIONS

Surgeon's experience is of particular importance with respect to hepatectomy. Unexpectedly, higher individual experience yields bimodal effects on post-transplant outcomes, increasing the risk of early mortality in general and decreasing the risk of late mortality in low-MELD recipients, respectively.

Abstract # P-142

Postoperative Confusion Following Liver Transplantation: A Multifactorial and Under Recognised Occurrence. Victoria Green, Francesca Hogg, Ashley Barnabas, George Auzinger, Julia Wendon, Varuna Aluvihare, Abid Suddle, John O'Grady, Wael Jassem, Michael Heneghan, Kosh Agarwal. *Institute for Liver Studies, King's College Hospital, London, United Kingdom*

Background

Postoperative confusion is a serious complication in liver transplant recipients (LTRs), leading to increased resource utilisation and morbidity. We reviewed the occurrence of postoperative confusion in LTRs and aimed to identify predictive factors.

Method

Retrospective analysis of the records of LTRs in a six month period ($n = 76$) was undertaken. Written documentation of confusion, by any healthcare professional, was recorded as a positive result. Predictive factors were compared in confused and non-confused groups.

Results

Postoperative confusion was noted in 26% ($n = 20$) of LTRs. No significant demographic difference was identified between the groups. Perioperative factors, specifically graft type and cold ischaemic time (CIT), were similar. Confusion was associated with a numerically longer intensive care stay (7.3, 1-27 days), but no significant difference was identified. Basiliximab administration post liver transplantation was significantly higher ($p = 0.01$) in the confused group (50%) versus the non-confused group (17.54%). No significant differences in tacrolimus levels were shown. A higher incidence of graft dysfunction was noted amongst confused patients, but pulsed methylprednisolone usage was similar. Infection rates were similar in both groups. Total length of stay (25 days) was identical between groups.

Table of Results

Predictive factors	Confused patients (n=20)	Non-confused patients (n=56)	P value
Mean age, years (range)	52.5 (27-69)	46.14 (19-69)	NS *
Mean MELD at listing (range)	14.4 (9-32)	15.75 (6-38)	NS *
DBD graft (%)	70	78.95	NS +
CIT (min)	542.78 (350-950)	561.17 (190-1170)	NS *
Days on intensive care (range)	7.3 (1-27)	5.46 (1-52)	NS *
Patient controlled analgesia (%)	15	33.33	NS +
Tacrolimus level (range)	4.42 (0.9-31.6)	2.97 (0.5-7.2)	NS +
Basiliximab (%)	50	17.54	0.01 +
Graft dysfunction (%)	35	35.1	NS +
Pulsed methylprednisolone (%)	15	19.3	NS +
Infection (%)	45	43.86	NS +
Length of stay post-transplant (days)	25.15 (7-89)	24.94 (7-89)	NS +

NS, not statistically significant ($P > 0.05$). Comparisons used * Mann-Whitney U test or + Chi-squared test.

Conclusions

Postoperative confusion is multifactorial. Basiliximab usage maybe a surrogate marker for LTRs who are more unwell at the time of transplantation, and thus more prone to confusion.

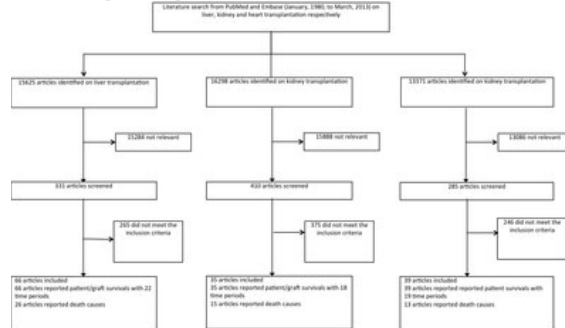
Abstract # P-143

Changes in Patient/Graft Survival and Death Causes of Liver, Kidney and Heart Transplantation Over Time, According To Age, Sex, Region: A Meta-Analysis. Zhiyong Guo, Dongping Wang, Xi Yuan, Weiqiang Ju, Xiaoshun He. *Organ Transplant Center, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

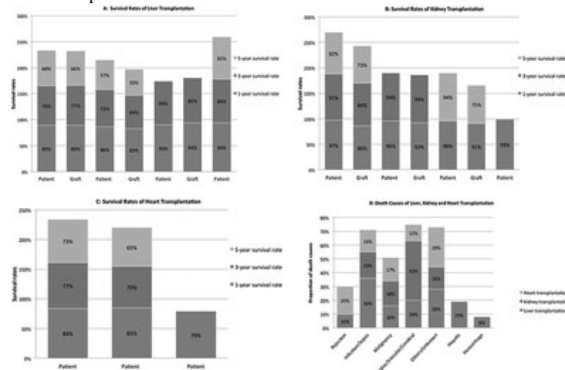
Background We aimed to assess the patient/graft survivals and death causes of liver, kidney and heart transplantation in relation to age, sex, region and time period.

Methods A search of PubMed and Embase with predefined inclusion criteria identified prospective studies published between January 1980, and March 2013. Patient/graft survivals were pooled in a random-effects binomial meta-analysis. Time trends of patient/graft survivals and death causes, and the effect of age, sex and region were assessed with weighted linear regression analysis.

Results 66 eligible studies described 22 time periods with 12589 liver transplant recipients, 35 studies described 18 time periods with 10296 renal transplant recipients, and 39 studies described 19 time periods with 14831 cardiac transplant recipients, were included.



Patient/graft survivals in three types of SOT all had increasing trends per year and every five years over time. There were no regional differences found in 1-year patient/graft survival of kidney transplantation worldwide, but Asia had higher 5-year kidney transplant recipient survival (94%) than Europe (82%). No regional survival disparities were found in both liver and heart transplantation.



Malignancy has become more dominating to patient deaths, while the impact of infection/sepsis and cardiovascular factors has reduced yearly in the three different organ transplantations. Furthermore, the role of rejection as a death cause has been decreasing overtime in liver and heart transplantation.

Conclusion Post-transplant patient/graft survivals have been improving although not significantly in the past three decades, and are not affected by patient age, sex, and region.

Abstract # P-144

Protective Effect of Remote Limb Ischemic Postconditioning on the Liver Grafts of Rats With a Novel Model. Junjun Jia, Jianhui Li, Li Jiang, Lin Zhou, Shusen Zheng. *Department of Hepatobiliary Surgery, the First Affiliated Hospital, Zhejiang University, College of Medicine, Hangzhou, China*

Background: Ischemic reperfusion injury (IRI) during liver transplantation (LT) is still major concern influencing the outcome. Remote ischemic preconditioning (RIC) is a known manual conditioning to decrease the hepatic IRI which not increase total ischemic time. In this study we tried to establish a LT model of RIC, optimize the applicable protocols and investigate the potential protective mechanism in rat LT.

Methods: The RIC model was developed by a standard tourniquet which could induce hindlimb ischemia efficiently. Sprague-Dawley rats were assigned randomly to the sham operated control (N), standard rat liver transplantation (OLT), RIC (OLT with hindlimb ischemic and perfusion for different time intervals at the time point of recipient anhepatic phase began). According to the protocol the RIC group was then divided into 3 subgroups (10min×3, n=6; 5min×3, n=6; 1min×3, n=6)respectively. Serum transaminases (ALT, AST), creatine kinase (CK), histopathologic changes, malondialdehyde

(MDA) and myeloperoxidase (MPO) were evaluated. Expressions of p-Akt were also determined by western blot.

Results: According to our knowledge, it was first reported model of RIC. Compared with the OLT group, the grafts subjected to RIC 5min*3 algorithm showed significant reduction of morphological damage and improved the graft function. Also, production of reactive oxygen species (MDA) and neutrophil accumulation (MPO) were markedly depressed and p-Akt was upregulated in ischemic hepatic graft. RIC 1min*3 algorithm tended to reduce IRI while RIC 10min*3 made even worse.

Conclusion: In conclusion, we successfully established a novel model of RIC in rat LT, the optimal RIC 5min*3 algorithm seemed to be more efficient to alleviate the detrimental effects of IRI of the liver graft in both functional and morphological categories, which depended on its antioxidative, anti-inflammation activities and activating PI3K/Akt. The strategy of RIC 5min*3 is relatively simple to perform, particularly during LT, and may be considered as a potentially applicable in the clinical field.

Abstract # P-145

Differential Risk Factors for Chronic Kidney Disease between Patients With and Without Acute Kidney Injury Following Liver Transplantation. Hideya Kamei, Yasuharu Onishi, Yasuhiro Ogura. *Transplantation Surgery, Nagoya University, Nagoya, Japan*

Backgrounds: Chronic kidney disease (CKD) is common complication after liver transplantation. Although it has reported that CKD is associated with acute kidney injury (AKI) in the early period after liver transplantation, it is the fact that the patients with no incidence of AKI can develop CKD in the long-term. We evaluated the long-term renal dysfunction after liver transplantation and sought to investigate whether the risk factors and etiologies of CKD are different between patients with and without the incidence of AKI postoperatively.

Patients and methods: In this retrospective study, we reviewed adult patients underwent liver transplantation at Nagoya University between December 1998 and December 2012 and enrolled the patients with at least 1-year survival. Estimated glomerular filtration rate (eGFR) was calculated by using Cockcroft-Gault formula. The patients with eGFR<60 (ml/min/1.73m2) were categorized into CKD group. AKI was defined as a 2-fold increase in the serum creatinine (sCr) level over the preoperative level.

Results: Ninety-five liver transplantation recipients were investigated. The median of follow-up time was years (1-13 years). Of those, 22 recipients have developed CKD at the time of investigation. Multivariate analysis revealed that risk factors for CKD as AKI occurrence within 4 weeks postoperatively, age at the transplant (>50 years old), hepatitis C (HCV), comorbidity of diabetes mellitus. The mean eGFR at 12 months after liver transplantation in the patients with postoperative AKI was significantly lower than that of those without postoperative AKI. Among the patients affected by AKI within 4 weeks postoperatively ($n=27$), preexistent renal dysfunction ($\text{sCr} > 1.5 \text{ mg/dL}$), age at the transplant (>50 years old) were identified as predictive factors for development of CKD. On the other hand, HCV and comorbidity of diabetes mellitus were identified as risk factors for CKD among the patients without the episode of AKI.

Conclusion: CKD after liver transplantation appear to be multifactorial. The risk factors and etiologies of CKD might be different between patients with and without the incidence of AKI in the early period postoperatively.

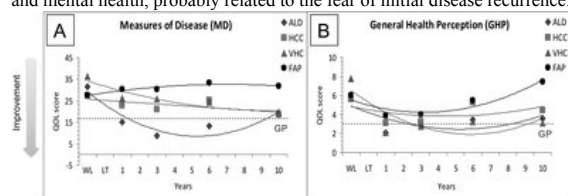
Abstract # P-146

Are the Early Quality of Life Benefits Sustained Long-Term after Liver Transplantation? a 10-Year Longitudinal Diagnosis Stratified Evaluation. Y. Karam¹, C. Danet¹, D. Samuel^{1,2,3}, R. Adam^{1,2,3}, T.M. Antonini^{1,2,3}, F. Saliba^{1,2,3}, D. Castaing^{1,2,3}. ¹AP-HP, Hôpital Paul Brousse, Villejuif, France; ²Univ Paris-Sud, Villejuif, France; ³Inserm, Villejuif, France

The focus of improving outcomes after liver transplantation (LT) has transitioned from merely extending quantity of life to enhancing quality of life (QOL). We assessed the QOL changes specific to different pre-LT diagnosis groups over 10-year period.

Methods: Five QOL domains were evaluated: measures of disease (MD), psychological distress (PS), personal function (PF), social function (SF), and general health perception (GHP). Consecutive 48 patients enrolled onto the waiting list (WL) completed the National Institute of Diabetes and Digestive and Kidney Disease-Pittsburg, USA (NIDDK) QOL questionnaire before and 1, 3, 6 and 10 years after LT. The change in scores over time was evaluated for 4 diagnostic groups: virus C cirrhosis (VHC, n=12), alcoholic cirrhosis (ALD, n=14), hepatocellular carcinoma (HCC, n=14) and familial amyloidotic

polyneuropathy (FAP, n=8). Respondents were age- and gender-matched with healthy subjects recruited from the general population (GP, n=487). Results. One year after LT, the analysis of data showed dramatic improvement in the 5 QOL domains for all the diagnosis groups with the exception of FAP in whom MD and PF have worsened. Moreover, FAP QOL worsening was sustained over the time (Figure A). Nevertheless, the FAP graft survival was the highest. The best improvement was observed in ALD exceeding even the GP scores. However, a slow and progressive deterioration in most QOL domains spans between 3 and 6 years post-LT as shown for GHP (Figure B). HCC and VHC patients had quite similar trajectories in both physical and mental health, probably related to the fear of initial disease recurrence.



Conclusion. All the diagnosis groups benefit from the LT with respect to QOL improvements at least 3 years post-LT. However, their trajectories differ along time in most QOL areas. Further research is necessary for the development of disease-tailored and post-LT period-adapted psychological interventions.

Abstract # P-147

Close Monitoring for Polyneuropathy/Myopathy Is Warranted Among Liver Transplant Recipients on Long-Term Treatment With Telbivudine. Zeki Karasu¹, Ilker Turan¹, Soner Duman², Murat Sozbilen³, Fulya Günsar¹, Galip Ersoz¹, Ulus S. Akarca¹. ¹Gastroenterology, Ege University Faculty of Medicine, Izmir, Turkey; ²Nephrology, Ege University Faculty of Medicine, Izmir, Turkey; ³General Surgery, Ege University Faculty of Medicine, Izmir, Turkey

Background and Aim: Compared to lamivudine, telbivudine has been reported to improve renal functions in patients with chronic hepatitis B virus (HBV) infection and HBV-related cirrhosis. To our knowledge, the impact of telbivudine therapy on renal functions in liver transplant recipients has not been determined so far. The aim of this study was to examine whether switching lamivudine therapy to telbivudine may improve renal functions in liver transplant recipients who have impaired renal function. However, we terminated the study earlier because of very high rate of polyneuropathy and myopathy.

Methods: We prospectively enrolled forty-five patients (39 Male, 6 Female, mean age: 57 ± 9) who were transplanted for HBV-related cirrhosis. All patients had a serum creatinine concentration more than the upper limit of the normal range (1.3 mg/dL). eGFR [by 24-hour creatinine clearance and Modification of Diet in Renal Disease (MDRD)], serum creatinine kinase (CK) and myoglobin levels were monitored at the time of switching therapy to telbivudine, and at 3-month intervals. Electrophysiological tests were performed in patients who had elevated CK levels, muscle pain and/or muscle weakness.

Results: Twenty-one (46%) patients diagnosed with polyneuropathy (n=17) or myopathy (n=4), following a median duration of 6 (range:2-17) months after switching to telbivudine. Renal functions assessed by MDRD showed a significant improvement after 6 months of telbivudine therapy.

Conclusions: Despite the promising effect of telbivudine on renal functions, high polyneuropathy/myopathy rates observed in our cohort warrants close monitoring for polyneuropathy/myopathy among liver transplant recipients. Even if it may be possible to say that telbivudine should not be used in liver transplant setting.

Abstract # P-148

Risk Factors Analysis for New-Onset Diabetes Mellitus after Liver Transplantation—A Nationwide Population-Based Study.

Pei-Ching Kuo, Chien-Hui Yang, Wen-Tsan Chang, King-Teh Lee. *Organ Transplantation Center, Department of Nursing, Kaohsiung Medical University Hospital, Kaohsiung, Kaohsiung Medical University, Kaohsiung, Taiwan; Organ Transplantation Center, Department of Nursing, Kaohsiung Medical University Hospital, Kaohsiung, Kaohsiung Medical University, Kaohsiung, Taiwan; Organ Transplantation Center, Department of Surgery, Kaohsiung Medical University Hospital, Kaohsiung, Kaohsiung Medical University, Kaohsiung, Taiwan; Organ Transplantation Center, Department of Surgery, Kaohsiung Medical University Hospital, Kaohsiung, Kaohsiung Medical University, Kaohsiung, Taiwan*

Objective: To analyze the risk factors for new-onset diabetes mellitus (NODM) after liver transplantation.

Methods: This study analyzed administrative claims data obtained from Taiwan Bureau of National Health Insurance. There were 1876 adult patients received liver transplantation in 1999-2010. One thousand and four patients were eligible for this study, after excluding 672 patients with preexisting DM and 200 patients of surgical mortality. Risk factors for NODM were examined using multivariate Cox regression analysis.

Results: NODM was reported in 141(14%) of 1004 liver transplantation recipients with the period range of 1 month to 10.37 years (mean ± SD=1.56 ± 2.27 years). The incidence was significantly higher in HCV positive patients (12.75% vs 20.11%, P=0.013) and lower in HBV positive patients (11.43% vs 16.44%, P=0.023). The trend incidence is lower in recent 5 years (OR=0.462, P<0.001). NODM-free survival rate was significantly lower in patients older than 50 years (68.7% vs 71.7%, P=0.021), and patients with Hepatitis C (46.6% vs 72.0%, P=0.001).

Using multivariate Cox regression analysis, HCV infection is the only independent predictors of NODM (HR=1.71, 95% CI 1.16-2.53, P=0.006). Patients survival was similar in the NODM and control group at one year (95.6% vs 95.0%), 3 year (91.6% vs 88.8%), 5 year (86.5% vs 85.5%); Kaplan-Meier survival analysis showed no survival difference (P=0.305).

Conclusion: HCV infection may have a potential role in the pathogenesis of NODM. Liver transplantation recipient with HCV infection or older than 50 years should be monitored very closely to observe the development of NODM.

Abstract # P-149

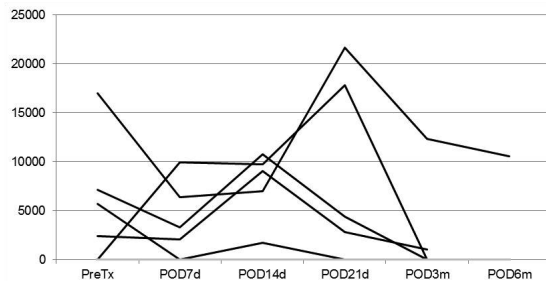
Impact of Serial Change of Donor Specific Antibodies on the Graft Outcomes after Liver Transplantation.

Jung Jun Lee^{1,2}, Dong Jin Joo^{1,2}, A-Lan Lee^{1,2}, Su Hyung Lee^{1,2}, Sung Hoon Kim³, Dae Hoon Han¹, Man Ki Ju^{1,2}, Gi Hong Choi¹, Jin Sub Choi¹, Soon Il Kim^{1,2}, Myoung Soo Kim^{1,2}. ¹Department of Surgery, Yonsei University College of Medicine, Seoul, Korea; ²Research Institute for Transplantation, Yonsei University College of Medicine, Seoul, Korea; ³Department of Surgery, Yonsei University Wonju College of Medicine, Wonju, Korea

Introduction: This study aimed to investigate the acute rejection rate and graft function after liver transplantation according to pre-transplantation donor specific antibody (DSA) status and changing pattern of DSA after liver transplantation.

Patients and methods: This study was prospectively designed observational study from March 2011 to October 2013. Forty patients were enrolled in this study. Single antigen bead assays were performed to detect DSA all patients at pre-transplantation, post-transplant-7, 14, 21, 3rd month and 6th month.

Results: There were four patients (10%) with acute rejection and eleven patients (27.5%) with biliary complication. Four patients (10%) were positive on DSA before transplantation and one of them was converted to negative on DSA after transplantation. Three patients who had no DSA before transplantation showed de Novo DSA after liver transplantation. Two of four patients with acute rejection were positive on DSA. One of four patients with acute rejection showed pre-transplant DSA and de Novo DSAs were detected in another one acute rejection patient. Seven patients of eleven patients with biliary complication showed no DSA and the others demonstrated de Novo DSA after transplantation (p=0.039). Biliary complications occurred in two of three patients with de Novo DSA. Figure showed the change pattern of mean fluorescent intensity (MFI).



Conclusions: De Novo- DSA after transplantation can be associated biliary complication and the patients with high MFI showed more biliary complication. Further study with large sample size and long-term follow-up are needed.

Abstract # P-150

Hip Joint Pain: A Rare Initial Presentation of Cryptococcal Osteomyelitis and Septic Arthritis after Liver Transplantation.

M. Maloo¹, H. Clauss², A. Karachristos¹, K. Lau¹, A. Di Carlo¹, A. Jain¹. ¹*Surgery, Temple University Hospital, Philadelphia, PA, USA;* ²*Medicine, Temple University Hospital, Philadelphia, PA, USA*

Introduction: Cryptococcal infection is an invasive fungal infection, seen most commonly in immunocompromised patients. Initial presentation with osteomyelitis and septic arthritis after liver transplantation has been rarely described. Below is a patient who initially presented 13 months after liver transplantation with isolated hip pain that was found to be secondary to cryptococcal infection.

Case Presentation:

This is a 71-year-old female, past history significant for NASH cirrhosis, who is 13 months status post liver transplant, admitted with acute on chronic hip pain for 6 weeks. This pain led to instability and resulted in a fall and a broken wrist. An MRI of her hip revealed increased signal intensity in the iliac and acetabular regions and surrounding soft tissue edema. Aspiration of the left hip revealed that the fluid contained yeast consistent with cryptococcus. The patient was started on liposomal amphotericin B and immunosuppression was reduced. CT of the chest and CSF on lumbar puncture (LP) did not show any sign of cryptococcal infection. After several days she developed mental status changes requiring ICU management with ventilator support. Repeat CSF on LP was positive for cryptococcal infection at that time. Flucytosine was added and the hip joint was surgically debrided showing involvement of the acetabulum and iliac cavity. Over the next few days, the patient became hypotensive. Follow-up MRI of the head revealed multifocal infarcts. Unfortunately, the patient's condition deteriorated further and she later expired with a functioning hepatic allograft.

Discussion: The principal sites of cryptococcal infection, the lung and the meninges, are most commonly seen in the immunocompromised population, and are well described. Many data about this issue have been gained from studies in the HIV population. A blunted response to encapsulated yeast has never been described at initial presentation. In the setting of cryptococcal bony infection. This potentially devastating infection merits aggressive treatment, without which a poor outcome may result.

Conclusion: We believe that early aggressive dual antifungal therapy is warranted in the immunocompromised patient population when evidence of cryptococcal disease is presented with cryptococcal osteomyelitis.

Abstract # P-151

Cardiac Complications and Adverse Cardiac Events after Liver Transplantation.

Mitsuru Nakatsuka, Martha Behnke, Robert A. Fisher. *Department of Anesthesiology, Virginia Commonwealth University Health System/MCV, Richmond, VA, USA; Transplant Programs Administration, Virginia Commonwealth University Health System, Richmond, VA, USA; Department of Surgery, Virginia Commonwealth University Health System, Richmond, VA, USA*

Cardiac complications and adverse cardiac events are the major causes of mortality and morbidity after liver transplantation. We have reviewed cardiac complications and adverse events after liver transplantation in total of 907 liver transplantation procedures in 858 patients from 1995 to 2012 at our institution. Cardiac complications and adverse cardiac events were categorized into: 1) perioperative period, 2) post-transplant readmission with

cardiac complications, 3) readmission for cardiac interventions and 4) cardiac related causes of death. In the perioperative period, there were: (1) 12 cases of cardiac arrest (1.3%), (2) 3 cases of cardiac related death (0.33%), (3) 54 cases of atrial fibrillation (5.8%), (4) 6 cases of myocardial infarction (0.66%), (5) 6 cases of bradycardia, and (6) 3 cases of ventricular tachycardia. In the post-transplant readmission with cardiac events; (1) 11 cases of congestive heart failure (1.2%), (2) 1 case of cardiac arrest, (3) 7 cases of myocardial infarction (0.77%), (4) 11 cases of atrial fibrillation (1.2%), and (5) 4 cases of atrial flutter (0.44%). In the cardiac interventions with admission: (1) 7 cases of coronary artery bypass graft (0.77%) without mortality, and (2) 3 cases of PTCA/Stents (0.33%). In cardiac related causes of death: (1) 27 cases of cardiac arrest/myocardial infarction (2.97%)—13 cases within 6 months and 14 cases from 6 months to 9 years and (2) 3 cases with endocarditis/sepsis. Perioperative atrial fibrillation seems to be fairly common without mortality (5.8%). Perioperative cardiac arrest and myocardial infarction can be reasonably managed with only 3 cases of mortality out of 18 cases. Overall there were 30 cases of cardiac related death among 907 cases of liver transplantation (3.3%). Cardiac interventions such as coronary artery bypass graft and PTCA/Stents seem to be quite safe after liver transplantation. In conclusion, cardiac complications and adverse cardiac events are fairly common and one of the leading causes of death after liver transplantation.

Abstract # P-152

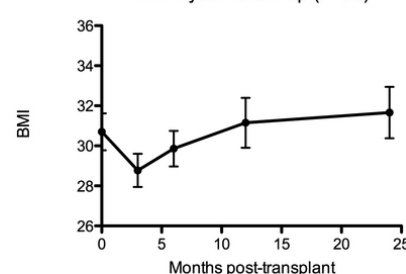
NAFLD in the 21st Century: A Modern Challenge in Liver Transplantation.

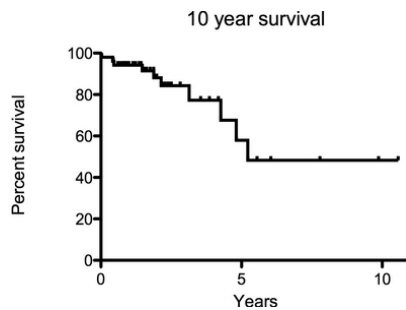
Sara Napetti, Andrew I. Sutherland, Rosanne Bate, Gabriel C. Oniscu, Anya Adair. *Scottish Liver Transplant Unit, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom*

Non-alcoholic fatty liver disease (NAFLD) is now the third most common indication for liver transplantation in the UK. Of concern is recurrence of fatty liver disease in transplant recipients. We reviewed the experience of the Scottish Liver transplant Unit in patients transplanted between 2003-2013. We examined the demographics of the patients and the following outcome measures: patient and graft survival, body mass index (BMI), and histologically proven recurrence of disease.

Between 2003 and 2013, 52 patients were transplanted for NAFLD, 37 of these since 2011. Twenty-nine patients had NAFLD alone, 18 had NAFLD and HCC, and 5 had NAFLD and ALD. Twenty-two patients were type 2 diabetics. One-year patient and graft survival was 93% and 91% respectively, with 1 graft being lost due to primary non-function. In total 11 patients have died during the follow-up period, with one death being attributed to liver failure secondary to recurrence of disease (severe chronic steatohepatitis). 14 patients received liver biopsies post transplant. Of these 4 showed evidence of recurrence of disease. BMI was studied in patients that had at least 2 years follow-up (n=30) and although there was a significant drop in BMI 3 months post-transplant (p<0.002), mean BMI significantly increased over the next 9 months (p<0.001), returning to pre-transplant levels by the first year. **Conclusions:** In Scotland, liver transplantation for NAFLD has increased markedly over the last 2 years. In this cohort of patients post transplant mean BMI exceeds pre-transplant levels and there is histological evidence of recurrence of NAFLD recognized in a proportion of patients. As more liver transplants are performed for NAFLD, it is likely that disease recurrence will become more prevalent.

BMI 2 year follow-up (n=30)





Abstract # P-153

Transplantation for Primary Hyperoxaluria. Gomathy Narasimhan, Rajesh Rajalingam, Naresh Shanmugam, V. Chandrasekhar, Rajasekhar Perumalla, S. Vivekanandan, A. Olithselvan, Dinesh Jothimani, Joy Varghese, Srinivas Reddy, Mohamed Rela. *Institute of Liver Disease and Transplantation, Global Hospital, Chennai, India*

Aim: Primary Hyperoxaluria is a metabolic disease of the liver that results in excess production and deposition of oxalate in the body. Renal failure is invariably the presentation and the treatment of choice is combined liver and kidney transplantation. We analysed the process involved and outcome in transplantation for patients with primary hyperoxaluria type 1 at our hospital. **Methods:** Retrospective analysis of prospectively collected database of all patients who underwent liver and kidney transplantation for primary hyperoxaluria at our hospital from 2010 to 2013.

Results: A total of 278 patients underwent liver transplantation from October 2009 to December 2013. Liver and kidney transplant was done for 11 patients either simultaneously or sequentially. Primary hyperoxaluria was the indication in 7 patients. Recipients were between 8 years and 47 years of age (4 pediatric, 3 adults). Two patients underwent deceased donor transplant and five Living donor transplantation. 3 of the living donor transplants had two donors, one for Liver and one for Kidney whereas 2 of the living donors donated both the Liver and kidney in a sequential manner, Liver first followed by kidney donation. 2 out of the 7 patients underwent 2 kidney transplants. All the patients were on aggressive dialysis prior to transplant to reduce the oxalate load. All, except one, had low ejection fraction as a marker of oxalate deposit in the myocardium secondary to oxalosis and the ejection fraction improved prior to transplant following aggressive dialysis. All the patients are alive at a median follow up of 18 months (9months to 30 months), Liver allograft function is good on all 7 patients, one renal graft loss at 9 months due to oxalate deposit in a combined Liver and Kidney transplant patient who was re-transplanted and the renal function on 7 patients was good with creatinine ranging from 0.7 to 1.8. All the donors are alive and healthy.

Conclusion: The treatment of choice for primary hyperoxaluria and nephrocalcinosis is Liver and kidney transplantation. The option of simultaneous, sequential, deceased donor, living donor, single or double living donor has to be weighed in each situation and each patient and the appropriate option chosen for optimal patient and graft outcomes.

Abstract # P-154

Renal Glomerular Filtration Rate at 1 Year Post Liver Transplantation: A Prognostic Indicator for Mortality. Nicholas Onaca, Peter Kim, Greg McKenna, Giuliano Testa, Richard Ruiz, Tiffany Anthony, Marlon Levy, Robert Goldstein, Goran Klntmalm. *Baylor Simmons Transplant Institute, Dallas, USA*

Renal dysfunction/failure are risk factors for poor outcome after liver transplantation (LTX). Our aim is to determine if renal dysfunction has impact on the long term outcome after LTX. We used multiple cutoffs for GFR at 1 year post LTX to look for association with later mortality. 985 primary LTX transplant recipients from a single institution were studied. All included survived >1 year after LTX and underwent iohalamate glomerular filtration rate (GFR) testing. Patients were stratified by GFR at 1 year post LTX [GFR≤40 (n=140), 41-60 (n=290), >60 ml/min (n=555)]. 37 patients had GFR≤30, of which 13 had GFR≤20. The GFR≤40 group had significantly more patients >60 years old, female gender, cyclosporine maintenance, anemia, but did not differ by HTN, DM, liver disease etiology. 5-year Kaplan Meier survival (6 years post LTX) was 81.6%, 89.1%, and 91.6% for 1-year GFR of ≤40, 41-60, >60 respectively (p=0.01), and dropped to 75.6% if GFR ≤30, compared to 90.1% for GFR>30 (p<0.001), and further

to 53.8% if GFR≤20 compared to 84.5-91.6% for GFR>20 (p<0.001). Recurrence of liver disease did not correlate with GFR. Multivariate Cox regression analysis showed statistically significant increased risk of mortality for African American recipients [risk ratio (RR) 2.35, p=0.0002], GFR≤40 (RR 1.95, p=0.0009). Analysis for GFR≤30 showed a RR for mortality of 2.91 (p=0.009). Kaplan Meier 5-year graft survival was 81% for GFR≤40, compared to 88.7% with GFR>40 (p=0.024), and 72.7% if GFR≤30 (p=0.005).

In conclusion, a GFR of 40 ml/min or lower at 1 year post LTX is associated with higher mortality and graft loss and therefore requires more aggressive follow-up and intervention and thus has therapeutic implications. This GFR threshold is higher than previously anticipated. An accurate GFR measurement is essential for intermediate and long-term prognosis after LTX.

Abstract # P-155

Evaluating Risk Factors for Multi Drug Antibiotic Resistance Post Living Donor Liver Transplantation. Sarah Osman, Hany Dabbous, Iman Fawzy, Mahmoud El-Meteini. *Liver Transplantation, Ain Shams Center for Organ Transplantation, Cairo, Egypt*

Introduction

Bacterial infection after liver transplantation is the most common early complication after the operation, reported to be more than 60%-80%. Immunocompromised recipients are target for infection by multidrug resistant bacterial strains because of frequent antimicrobial usage. Understanding risk factors for infection can be used to guide the selection of the diagnostic approach and initial therapy.

Aim of the work

The aim of the study is to point out resistant bacterial strain to broad spectrum antibiotics and to identify the primary risk factors for antimicrobial resistance among recipient after living donor liver transplantation (LDLT).

Patients and methods

122 recipients from 2008 to 2012 were screened at Ain Shams Center for Organ Transplantation (ASCOT) for the presence of risk factors for antimicrobial resistance either preoperative, intra-operative or post-operative. Routine cultures were withdrawn on day one post-operatively in the ICU and once patient is transferred to the ward and in case of fever, elevated C-reactive protein, White blood count (WBC) or procalcitonin.

Results

42 patients, 7 females with mean age of 53±6.4 years. Multivariate regression test revealed that prolonged operative time (P=0.016), multiple radiological interventions (P=0.040) and multiple antibiotic changes post operatively (P=0.038) were the main risk factors. 257 bacterial cultures were statistically analyzed, 70.8% were gram negative poly microbial resistant bacterial strains and 29.2% were gram positive resistant strains to third generation cephalosporin, carbapenems and quinolones. The most common organisms were *Pseudomonas aeruginosa* (25.8%), *Klebsiella* spp. (19.5%), MRSA (18%), *Acinetobacter* spp. and *E.Coli* (9.8%). The most common sites were biliary and abdominal drains (49.3%).

Conclusion

Gram negative polymicrobial resistant biliary infection is the most common bacterial infection after LDLT. Careful usage of antibiotics, short operative time and reduced rate of radiological intervention are recommended for better outcome.

Abstract # P-156

History of Major Abdominal Surgery Affects Patients Mortality after Liver Transplantation. Cengiz Ara, Fatih Ozdemir, Adil Baskiran, Volkan Ince, Sezai Yilmaz. *Liver Transplantation Section, Inonu University School of Medicine, Malatya, Turkey*

Background: History of major abdominal surgery affects patients' morbidity and mortality after liver transplantation. Perioperative and post operative complications can occur more frequently.

Aim: The aim of this study was to evaluate the liver recipients who have the history of previous major abdominal surgery.

Method: We retrospectively analyzed 28 liver transplant recipients with the history of abdominal surgery between 2009 and 2013. Patients morbidity and mortality were evaluated.

Results: 26 of them received living donor liver transplantation. The rest of the two patients received cadaveric liver transplantation and these cadaveric recipients had also portal venous thrombosis before the operation. Although these two cadaveric transplant recipients were lost after transplantation. There were 15 male and 13 female patients with the mean age of 46.7. Average MELD score of the patients were 18.8. Five patients reoperated due to

bleeding. All these five patients were lost after the operation. 2 patients were reoperated due to intestinal leakage. One of them was lost during the post operative follow up. The common features of the mortal patients were high MELD scores(>23) and diffuse ascites in the peritoneal cavity. Conclusion: If the patients had the history of major abdominal surgery with lots of adhesions in the peritoneal cavity which cause extra bleeding during the operation, even if they had diffuse ascites and portal venous thrombosis and if they need liver transplantation for end stage liver disease, liver transplantation should be decided carefully.

Abstract # P-157

Initial 3-Year Experience of Liver Transplantation at a Low-Volume Center. Jeong-Ik Park¹, Sung-Gyu Lee². ¹*Surgery, Haeundae Paik Hospital, University of Inje College of Medicine, Busan, Korea;* ²*Surgery, Division of Hepatobiliary Surgery and Liver Transplantation, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea*

Background :

We present the initial experience of liver transplantation(LT)at Haeundae Paik hospital during the first three year.

Materials and methods :

The medical records of all LT patients between July 2010 and July 2013 were retrospectively reviewed.

Results :

We performed 18 cases of LT for 17 patients since July 2010. Living donor liver transplantation(LDLT) was 16 cases include 3 cases of dual graft LDLT and 2 cases of deceased donor liver transplantation(DDLT). Primary diseases were 7 patients for acute liver failure, 4 patients for hepatitis B-related liver cirrhosis, 3 patients for cryptogenic liver cirrhosis, 3 patients for hepatocellular carcinoma, and 1 patient for graft failure due to hepatic artery rupture after LDLT. Mean MELD score was 18.4(7-36) and mean hospital stay was 50.2 days(22-122). Mean age of living donor was 27.6(18-43) years old and most relationship was son and daughter(83.3%). All grafts in 13 single graft LDLTs were modified right lobe grafts those were reconstructed using expanded Polytetrafluoroethylene (ePTFE, GORE-TEX®) grafts.

There were 7 cases of postoperative bleeding that treated by re-exploration, 3 cases of biliary stricture that managed by percutaneous transhepatic biliary procedure and endoscopic procedure. There were 3 cases of acute cellular rejection that treated with steroid pulse and recycling therapy.

We had an one in-hospital mortality, and all other patients are alive during mean follow-up of 775 days(129-1233). There is no serious morbidity and mortality in living donor.

Conclusion :

This initial result showed favorable settlement of new LT program as a low-volume center. We will have been trying continuously for the result which it is better.

Abstract # P-158

Outcome of Patients Considered Unsuitable for Liver Transplantation – A Missed Opportunity for Palliative Care?

Anju Phoolchand, Sam Murray, Brian Hogan, James O'Beirne. *Royal Free Hospital and UCL Institute of Liver and Digestive Health, London, United Kingdom*

Background and Aims

Patients with end stage liver disease (ESLD) and/or hepato-cellular carcinoma (HCC) may be considered unsuitable for liver transplantation (LT) due to disease severity at presentation or de-listed due to disease progression. These patients have complex medical needs and a limited life expectancy and would be expected to benefit from access to palliative care services.

Methods

We performed a retrospective audit of patients assessed for LT between 2010-12 at the Royal Free Hospital. We studied patients who were either not listed at the time of assessment, or listed and subsequently de-listed prior to LT. Sources used included transplant meeting records, hospital notes, local death records and a local palliative care database.

Results

106 patients were identified. Median age was 58 years (IQR 51-72) and 67% were male. The median MELD score at the time of assessment was 13 (IQR 11-18.75) with a UKELD score of 52 (IQR 49-57).

Aetiology of liver disease was divided into Alcohol related Liver Disease (39), Viral (32), Autoimmune (19), Metabolic (8), Cryptogenic cirrhosis (3), other (5).

Reasons for not listing included poor clinical state/co-morbidities (48), tumour outside transplant criteria (25), psychosocial/compliance issues (18) and currently too well for LT (15).

Excluding patients who were "Too Well" for LT, Kaplan-Meier Survival analysis calculated the median survival following delisting as 219 days (IQR 28-540). Specifically for those patients delisted for 'tumour outside criteria' and "poor clinical state" median survival was 530 days and 29 days respectively.

Overall, 17 (19%) patients were referred to palliative care a median 4 days before death (IQR 2.5-47.5).

Conclusion

Those patients who are unfit for LT due to poor clinical state should be referred immediately for palliative care due to limited survival. Patients with HCC outside criteria have a significantly longer survival but still appear to have limited access to palliative care. Liver Transplant programs should have access to dedicated liver palliative care services.

Abstract # P-159

Portal Pressure of ≥ 20 mm of Hg As a Predictor of Mortality in 221 Right Lobe Living Donor Liver Transplant Recipients.

Sumana Ramachandra¹, J. George¹, P. Agrawal¹, R. Mohanka¹, A. Rastogi¹, S. Goja¹, B. Menon¹, A. Joly², V. Vohra², P. Bhangui¹, P. Singla¹, S. Bajjal³, A. Soin¹. ¹*Liver Institute, Medanta Liver Institute, Gurgaon, NCR, India;* ²*Liver Anaesthesia, Medanta Liver Institute, Gurgaon, NCR, India;* ³*Interventional Radiology, Medanta The Medicity, Gurgaon, NCR, India*

Persistent portal hypertension after living-donor liver transplantation (LDLT) may adversely affect graft function, especially in small-for-size grafts. However, there is scarcity of data on the effects of the post perfusion portal hypertension on the graft and recipient outcomes. We present our analysis of the above factors in 221 adult LDLT recipients.

Methods: All recipients in the study group underwent right lobe LDLT between May 2011 and Aug 2013. Intra-operative measurement of portal pressures (PP) was done in the pre-dissection (initial PP or IPP), anhepatic and post-reperfusion (final PP or FPP) phases by a cannula in an omental vein connected to a pressure transducer. Patients were stratified into groups A (n= 137; FPP < 20 mm of Hg) and B (n= 84; FPP ≥ 20 mm of Hg). The effect of post reperfusion portal pressure, GRWR, disease severity on liver function at days 1, 5 and 10 and recipient outcomes was analyzed.

Results: Group B (FPP ≥ 20 mm of Hg) appeared to be at a high risk group with a higher mortality, ICU stay, higher use of blood products and INR day 5 on both univariate and multivariate analysis.

Table 1

	Group A (137) FPP < 20 mm Hg	Group B (84) FPP ≥ 20 mm Hg	P value
Hospital stay	18.77 $\pm$ 7.10	20.05 $\pm$ 8	0.24
INR day 5	1.44 $\pm$ 0.29	1.56 $\pm$ 0.41	0.019*
ICU stay	5.79 $\pm$ 2.9	6.96 $\pm$ 4.5	0.025*
30 day mortality	7/137(5.1%)	12/84(14.3%)	0.025*
PRC	5.56 $\pm$ 3.4	6.67 $\pm$ 4.5	0.009*

Conclusion: INR on Day 5, requirement of blood products, ICU stay and mortality were higher in patients with higher portal pressures irrespective of GRWR and disease severity. Hence, final post-reperfusion portal pressure is an important factor affecting graft function and recipient outcomes in LDLT.

Abstract # P-160

Ten Years Single-Centre Experience on Patients With MELD-Score ≥ 30 in Liver Transplant Waiting List. Matteo Ravaioli,

Valentina R. Bertuzzo, Matteo Cescon, Lorenzo Maroni, Alessandro Cucchetti, Giorgio Ercolani, Massimo Del Gaudio, Antonio D. Pinna. *Department of Medical and Surgical Sciences, General and Transplant Surgery Unit, University of Bologna, Bologna, Italy*

Background. MELD-score was used the first time in 2002, to direct liver grafts to the sickest patients and to optimize the limited organ supply. After its introduction there has been a significant increase in mean pre-transplant MELD-score, and some Centres have reported a worsening in post-transplant survival.

Methods. A single-centre retrospective study evaluating the outcome of 140 LT candidates with a MELD-score ≥ 30 listed from January 1st, 2004 to February 28th, 2013, was performed. 90-day and 1-year survival rates were determined; pre, intra, post-operative and donor-related risk factors for patients death were analyzed.

Results. 94 patients underwent LT, while 46 died in the WL. 90-day intention-to-treat survivals were 4.3% without LT vs 87.2% with LT (P<0.0001).

Patients deceased in the WL wait for a longer time with a MELD-score ≥ 30 (18 vs 13 days; $p=0.028$) and had higher serum creatinine level (1.79 vs 1.22 mg/dL; $p=0.003$), compared to the transplanted patients. 90-day and 1-year post-transplant survival rates was 84.0% and 74.2%, respectively. On univariate analysis, factors affecting 90-day post-transplant survival rate were pre-operative serum creatinine ≥ 1.22 mg/dL ($p=0.009$), pre-operative need for haemofiltration ($p=0.002$) and donor HBcAb positivity ($p=0.04$). Multivariate analysis showed that elevated creatinine and donor HBcAb positivity independently predicted lower patient survival. If none, one, or both independent predictors were present, 90-day post-transplant mortality rates were 2.6%, 21.3% and 44.4%, respectively ($p=0.003$). Conclusions. LT is an effective therapeutic option for patients with high MELD-score; the timing of transplantation is crucial in order to avoid WL mortality. HBcAb donors should be used cautiously in these patients, especially with a concomitant renal disfunction.

Abstract # P-161

Nursing of the Patients With Severe Agranulocytosis after Orthotopic Liver Transplantation. Lihan Rui¹, Qiaoling Zeng¹, Yingcui Liu¹. ¹The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China; ²The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China; ³The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China

Aim: Analyze the nursing and management of the patients with agranulocytosis after orthotopic liver transplantation (OLT); summarize the clinical characteristics and nursing experience.

Method: The clinical data of 7 liver transplant recipients with agranulocytosis, including 2 patients with graft versus host disease (GVHD) in the Transplant Center, the First Affiliated hospital of Sun Yat-sen University was retrospectively studied. **Result:** Agranulocytosis occurred on 23rd day after transplantation (range from 7d to 45d). All patients received granulocyte stimulating factors (GSF) treatment, and the number of granulocytes becoming normal in 5 patients. Infectious disease can be found in 6 patients, including 1 patient with bacterial pneumonia, 1 patient with cytomegalovirus pneumonia, 1 patient with lung infection of bacteria and fungi, 3 cases of severe septicemia. No rejection was detected in all of the 6 patients with immunosuppressive agents withdrawn or reduction. 3 patients died and 4 surviving patients were followed-up for 14m-46m, no rejection or infection occurred. **Conclusion:** Agranulocytosis is a rare but severe complication after liver transplantation, aseptic operation, sterilization, isolation in nursing management and infection prevention is important to improve the survival rate.

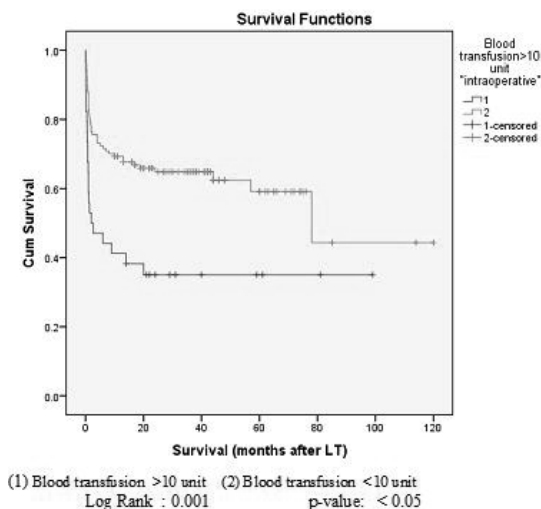
Abstract # P-162

Predictors of Survival after Adult to Adult Living Donor Liver Transplantation. Emad Hamdy Salem¹, Maha Lotfy², Ayman Alsebaey³. ¹Hepatobiliary Surgery and Liver Transplantation, National Liver Institute, Menoufiya University, Shibin El-Kom, Menoufiya, Egypt; ²Anaesthesia, National Liver Institute, Menoufiya University, Shibin El-Kom, Egypt; ³Hepatology, National Liver Institute, Menoufiya University, Shibin El-Kom, Menoufiya, Egypt

Objectives: Adult-to-adult living donor liver transplantation (A-A LDLT) is an effective therapeutic modality to treat patients with end-stage liver disease. The aim of this study was to define the pre-, intra- and post- operative factors that may influence patient outcome. **Methods:** The data from 161 (A-A LDLT) patients who had operations between 2003 and 2013 were collected and analyzed retrospectively after exclusion of mortality due to intra-operative bleeding. Data were analyzed using uni- and multi-variate analysis according to factors that are known to be associated with outcome in these patients. **Results:** Overall, the accurate survival rate of recipients at, 6 months, 1, 3, 5 and 7 years was 67.7%, 63.4 %, 59.0%, 58.4% and 57.1% respectively. On univariate analysis, the following factors were significant predictors of survival, male recipients, Actual GRWR > 0.8 , right lobe graft, blood transfusion < 10 units and absence of vascular complications. On multivariate analysis, male recipients, blood transfusion > 10 units and absence of vascular complications were independent predictors. **Conclusions:** The reduction of intraoperative RBC, prevention and treatment of vascular complications, selection (GRWR > 0.8 , right lobe graft and male recipients) are required to achieve better survivals among patients undergoing A-A LDLT.

Table(1) Multinomial logistic regression test of predictors of survival

Model	P value	95.0% Confidence Interval(Lower Bound)	95.0% Confidence Interval(Upper Bound)
Recipient gender	0.012	0.490	14.188
Actual GRWR > 0.8	0.357	0.008-	7.238
Graft type	0.328	0.298	37.223
Blood transfusion < 10 unit	0.025	0.163	0.885
intraoperative			
Absent vascular complications	.018	0.158	0.842



Abstract # P-163

Risk Factor of Renal Dysfunction Post-Liver Transplantation. Alba Vargas Garcia, Irene Peñas Herrero, Eva Muñoz Conejero, Rebeca Amo Alonso, Andrea Loza Vargas, Felix Garcia Pajares, Carolina Almohalla Alvarez, Gloria Sanchez Antolin. Liver Unit, Liver Transplantation Unit, Hospital Universitario Rio Hortega, Valladolid, Spain

Kidney dysfunction pre and post liver transplantation(OLT) is a risk factor of mortality.

Objective: To analyze retrospectively the kidney dysfunction incidence pre and post-OLT, and the associated factors. To analyze the rate of AKI in the immediate post-operative period and its association with chronic kidney dysfunction and mortality rate one year post-OLT.

Material and methods: We include 100 consecutive liver patients transplanted in our hospital. We collected data from risk factors of renal dysfunction: HTA, DM, and creatinine pre-OLT, Maximum creatinine/urea in the immediate postoperative period, the third month, and the following year after OLT, as well as the dialysis need(RRT) and mortality. Every patient had, at least, 1 monitoring year.

Results: 75 patients were men and 25 women. The indication for OLT was 39% HCC and 46% advanced cirrhosis. Pre-transplant, 18% of the patients had HTA and 35% of them DM. MELD was 13.75 ± 5.65 . Kidney dysfunction rate preOLT was 7%. In the kidney dysfunction pre-OLT group, the transplant indication was re-OLT for 42.8% and 14.2% for acute liver failure. The HTA and the diabetes pre-OLT prevalence was 57.14% and 85.7%, significantly higher than in the group with normal pre-OLT kidney function. The ICU stay was also higher in these group (16.4 days/10.04 $p < 0.05$) and there were also significant differences in Renal Replacement Therapy(42.8% vs 11.8%). The rate of post-transplant renal dysfunction was 50%. The Max Creatinine level was 2.92 compared to 1.60mg/dL in the group with and without KI ($p < 0.05$). All patients with pre-OLT KI, had AKI post-LT. Patients with postoperative AKI had a higher rate of renal dysfunction 1 year post-OLT($p < 0.05$) and higher mortality rate($p < 0.05$).

CONCLUSIONS: The pre-transplant renal dysfunction is the most important risk factor for the development of post-OLT renal dysfunction and it is also associated with higher rate of AKI, higher mortality rate, longer stay in ICU and greater need for RRT and. Hypertension and diabetes are risk factors of AKI.

Abstract # P-164

Assessment of Pre and Post-Reperfusion Liver Graft Biopsies Can Predict Post Orthotopic Liver Transplant Outcome. Ruchi Sharma, Yamen Jabri, Emmanuel Xystrakis, Elissaios Kontis, Anuja Athale, Ana Ciscar Belles, Parthi Srinivasan, Andreas Prachalias, Xiaohong Huang, Nigel Heaton, Alberto Quaglia, Yun Ma, Wael Jassem. *Institute of Liver Studies, King's College Hospital, London, United Kingdom*

Ischaemia/reperfusion injury (IRI) is an important issue in liver transplantation. Steatotic livers and those from donation after cardiac death (DCD) are particularly vulnerable to IRI. We assessed pre and post-reperfusion liver biopsies to evaluate the impact of IRI and steatosis on graft outcome.

Methods

Pre and post reperfusion biopsies from liver allografts for 58 patients (42 donation after brain death i.e. DBD and 16 DCD) were assessed in a blinded fashion. The biopsies were graded for steatosis (none, mild, moderate, severe) and neutrophil infiltration (none, mild, moderate, severe). IRI was diagnosed if neutrophil infiltration increased by at least 2 grades from pre to post reperfusion.

Results

Macroscopic assessment of steatosis had no correlation with the histopathological findings. Based on post-transplant LFT profile, cluster analysis identified 3 groups of patients. While patients with no steatosis generally had favorable results, 1/3 of those with steatosis had a poorer outcome.

Cluster Analysis of Patients Based on Liver Function Profile Post Transplant

	Cluster 1	Cluster 2	Cluster 3
	No Steatosis	Steatosis	Steatosis
Number of patients	26 (45.6%)	10 (17.5%)	21 (36.8%)
AST Day 5	107.31	264.00	101.24
Bilirubin Day 5	58.19	145.80	58.24
AST Day 7	74.5	446.10	78.76
Peak AST Value	1937.38	3479.70	1350.05
INR Day5	1.08	1.22	1.05

There was no significant difference in steatosis between DCD and DBD livers. Biopsies from DCD livers had significantly greater IRI compared to DBD (p 0.011). While IR injury had no impact on clinical outcome in DBD transplants, in DCD, it was associated with a significantly increased duration of Intensive Care Unit stay (p=0.039). The presence of steatosis in pre-reperfusion biopsies in DCD livers was associated with a significantly higher INR (p=0.01). There was no association between IR injury or steatosis with cholangiopathy, primary non function or retransplantation rates.

Conclusions

Steatosis in pre transplant biopsies and IRI may have an impact on outcomes after liver transplantation. DCD livers are more prone to IRI and are more severely affected by it post transplant. Routine pre transplant biopsies, particularly in DCD livers, might add to assessment of grafts prior to transplantation.

Abstract # P-165

Geriatric Nutritional Risk Index May Be a Significant Nutritional Factor in Renal Transplantation Patients According To the Presence Or Absence Of Chronic Kidney Disease. Ho Sik Shin¹, Yeon Soon Jung¹, Hark Rim¹, Myunghee Yoon², Dong Hoon Shin², Taek Sang Kim³, Hyun Yul Rhew³. ¹Internal Medicine, Kosin University College of Medicine, Busan, Republic of Korea; ²Surgery, Kosin University College of Medicine, Busan, Republic of Korea; ³Urology, Kosin University College of Medicine, Busan, Republic of Korea

Background: Evaluation of nutritional status is essential clinical procedures for managing renal transplantation patients, especially in status of chronic kidney disease (CKD). However, no standard method for assessing the nutritional status in renal transplantation patients with CKD exists. The GNRI is a very simple and objective method to assess nutritional condition, using only three objective parameters: body weight, height and serum albumin values.

Methods: We examined the GNRI scores of 184 renal transplantation patients (50.2 ± 11.3 years; 115 men and 69 women). The GNRI is calculated based on the serum albumin level and total lymphocyte count and uses the following equation: GNRI = [14.89 C albumin (g/dL)] + [41.7 C (weight/ideal body weight)]. Logistic regression analysis was performed for predicting malnutrition in renal transplantation patients.

Tab 2. Comparisons of baseline characteristics of patients according to the presence or absence of CKD

Characteristics	No CKD (n = 97)	CKD (n = 87)	P value
Sex (male/female)	65/32	50/37	0.182
Immunosuppressive agent(Tac/Cyclo)	19/78	17/70	0.994
Age (years)	49.8 ± 11.2	50.7 ± 11.5	0.609
Duration after kidney transplantation (months)	117.4 ± 63.5	118.5 ± 70.6	0.911
GNRI	108.6 ± 8.0	100.8 ± 10.0	0.001
Blood urea nitrogen (mg/dL)	18.7 ± 5.1	40.7 ± 26.1	0.001
Creatinine (mg/dL)	1.0 ± 0.2	2.8 ± 5.5	0.001
eGFR (mL/min/1.73m ²)	78.6 ± 15.8	28.7 ± 19.1	0.001
Sodium (mEq/L)	140.0 ± 2.6	138.7 ± 3.1	0.003
Potassium (mEq/L)	4.3 ± 0.4	4.6 ± 0.7	0.002
Calcium (mg/dL)	9.5 ± 0.5	9.1 ± 0.8	0.001
Phosphorus (mg/dL)	3.2 ± 0.6	4.3 ± 1.3	0.001
Albumin (g/dL)	4.2 ± 0.3	3.8 ± 0.5	0.001
CRP (mg/dL)	0.1 ± 0.1	0.5 ± 1.0	0.009

Table 3. Logistic regression for predicting malnutrition

Variable	OR (95% CI)	P
Age > 60 years	1.422 (0.522-3.870)	0.491
Male	1.072 (0.442-2.602)	0.877
Diabetes Mellitus	0.572 (0.137-2.393)	0.445
Chronic Kidney Disease	2.939 (1.224-7.057)	0.016
Duration after kidney transplantation (months) > 100	0.775 (0.317-1.894)	0.576
Serum Albumin < 3.5 g/dL	10.218 (2.479-42.114)	0.001

Results: The average GNRI value was 104.8 ± 10.6, and GNRI values were normally distributed. According to logistic regression for predicting malnutrition, serum albumin and CKD predicted malnutrition in renal transplantation patients. **Conclusions:** These results suggest that GNRI may be a significant nutritional marker in renal transplantation patients. The simple GNRI method is a clinically useful marker for the assessment of nutritional status in renal transplantation patients.

Abstract # P-166

A Single Center Experience of ABO-Incompatible Adult Living Donor Liver Transplantation: 230 Cases over 5 Years. Gi-Won Song, Sung-Gyu Lee, Shin Hwang, Chul-Soo Ahn, Ki-Hun Kim, Tae-Yong Ha, Dong-Hwan Jung, Gil-Chun Park, Sung-Hwa Kang, Bo-Hyun Jung, Min-Ho Sin, Young-In Yoon, Wan-Joon Kim, Eol Choi, Jae Hyun Kwon. *Surgery, Asan Medical Center, Ulsan University College of Medicine, Seoul, Korea*

Introduction : The widespread application of ABO-incompatible (ABOi) adult living donor liver transplantation (ALDLT) has been limited due to poor graft survival despite of its great potential for donor pool expansion. However, the promising results under rituximab prophylaxis have been reported recently. **Method :** The desensitization protocol consisted of preoperative rituximab and plasmapheresis. For initial 20 cases, we employed local infusion therapy which was eliminated from the protocol in later cases. And splenectomy has been added from August 2012.

Results : From November 2008 to November 2013, 230 cases of ABOi ALDLT have been performed in our center. The mean age of recipient was 52.1 ± 7.6 years. The mean MELD score was 12.7 ± 5.3. There was the only one (0.5%) in-hospital mortality. The 1-, 3-, 5-year patient survival rate was 95.4, 92.1 and 91.0%, respectively and graft survival rate was 91.6, 86.6 and 85.7%, respectively. Those were superior to that of ABO-compatible ALDLT during same period. There were 6 cases (3.0%) of re-transplantation. The incidence of biliary stricture was 20.4% during mean 21.4 months follow-up period. Biopsy-proven antibody-mediated rejection occurred in one patient but multiple intrahepatic biliary (m-IHBS) strictures in 16 patients. Among 16 patients with m-IHBS, 2 patients died and 4 patients underwent re-transplantation. We could not find out statistically significant risk factor in multivariate analysis.

Conclusion : The survival outcome of ABOi adult LDLT is excellent under rituximab prophylaxis and should be considered as a valuable option for the expansion of living liver donor pool. However, the special concern needs to be paid for the development of m-IHBS and we should try to find out associated risk factor and preventive measures.

Abstract # P-167

Impact of Pretransplant Infection on Outcome after Living Donor Liver Transplantation. Thiagarajan Srinivasan, Ravi Mohanka, Neeraj Saraf, Sanjeev Saigal, Arvinder Singh Soin. *Department of Liver Transplantation, Medanta Liver Institute, Gurgaon, Haryana, India*

Background : The effects of pre-transplantation infection and sepsis on outcome after living donor liver transplantation have not been fully described.

Aims and Methods: To assess the recipient pretransplant incidence and patterns of bacterial infections and sepsis and their impact on outcomes after transplantation. The data of demographics, incidence and patterns of pretransplant bacterial infections and sepsis within a month, peritransplant factors and mortality were collected for 470 LDLT recipients from 2007-2010. Sepsis was defined as if infection is highly suspected or proven and two or more of systemic inflammatory response syndrome criteria were met. Active SBP, positive blood or urine culture, and active infection within 5 days prior to transplant were excluded in all recipients.

Results: Pre LDLT 145/470 (30.8%) had bacterial infections and 62 (13.2%) had sepsis. The overall in-hospital and 6 month mortality were 8.9% and 10% respectively. In all 470, pretransplant infection sites were spontaneous bacterial peritonitis 103 (21.9%), urinary 52 (11%), blood stream 50 (10.6%), respiratory 33 (7.0%), cellulitis 30 (6.4%) and cholangitis 11 (2.3%). *Escherichia coli* and *Klebsiella* were commonest isolates (60%). Recipients with pretransplant infections had higher MELD – 26 vs 22 ($p < 0.041$), lower likelihood of transplantation from home 57% vs 91% ($p < 0.004$) and longer pretransplant hospitalization 12.5 vs 3 days ($p < 0.0001$) but no significantly increased mortality 12.4% vs 7.4% ($P = 0.061$). The mortality in septic patients was 29% vs 5.9% ($p < 0.002$). The significant risk factors for post transplant severe sepsis included 3 pretransplant factors (renal replacement ($p < 0.001$), ventilation ($p < 0.005$) and sepsis ($p < 0.004$)). In multivariate analysis the significant risk factors for post transplant sepsis related deaths included postoperative renal failure ($p < 0.01$), MDR infections ($p < 0.038$), pre transplant sepsis ($p < 0.004$). Both pre and post transplant sepsis ($P < 0.044$ and $P < 0.001$), but not the presence of pretransplant infections ($p = 0.68$) were associated with posttransplant mortality at 180 days.

Conclusions: Adequately treated pretransplant infections do not result in excess mortality but pretransplant sepsis adversely affects outcome even up to 6 months after transplant. Pretransplant renal replacement, ventilation and sepsis predicted severe sepsis in the post transplant period.

Abstract # P-168

Simultaneous Liver-Kidney Transplantation in HIV-Infected

Patients. Giuseppe Tarantino¹, Giuseppe D'Amico¹, Nicola Cautero¹, Nicola De Ruvo¹, Roberto Ballarin¹, Valentina Serra¹, Mauro Codeluppi², Beniamino Baisi³, Giovanni Cappelli⁴, Fabrizio Di Benedetto¹. ¹Hepato-Pancreato-Biliary Surgery and Liver Transplantation Unit, University of Modena and Reggio Emilia, Modena, Italy; ²Infectious Diseases, University of Modena and Reggio Emilia, Modena, Italy; ³Urology, University of Modena and Reggio Emilia, Modena, Italy; ⁴Nephrology, University of Modena and Reggio Emilia, Modena, Italy

Since the introduction of combined antiretroviral therapy (ART), solid organ transplantation (SOT) has become a therapeutic option for the HIV-positive population. Because the definitive treatment for end-stage organ failure is transplantation, the demand for it has increased among HIV-infected patients. For these reasons, many transplant centers have eliminated HIV infection as a contraindication to transplantation, as a result of better patient management and demand. In contrast with isolated liver and kidney transplantation, there is much less experience with combined liver-kidney transplantation (CLKT) in the HIV-infected population. Herein, we report our experience with four HIV-infected patients who underwent CLKT for end stage liver disease and end-stage kidney disease.

Abstract # P-169

The Use of Deceased Donors Over 75 Years in Liver Transplantation; a Nordic Collaborative Study.

Trygve Thorsen¹, Bennet William², Olausson Michael³, Ericzon Bo-Göran³, Nowak Greg³, Frans Duraj⁴, Helena Isoniemi⁵, Rasmussen Allan⁶, Tom H. Karlsen¹, Foss Aksel¹. ¹Department of Transplantation Medicine, Oslo University Hospital, Oslo, Norway; ²Transplant Institute, Sahlgrenska University Hospital, Gothenburg, Sweden; ³Division of Transplantation Surgery, Karolinska University Hospital Huddinge, Stockholm, Sweden; ⁴Department of Surgical Sciences, Uppsala Academic Hospital, Uppsala, Sweden; ⁵Transplantation and Liver Surgery Clinic, Helsinki University Hospital, Helsinki, Finland; ⁶Department of Surgical Gastroenterology and Transplantation, Rigshospitalet, Copenhagen, Denmark

Background: Liver transplantation is limited by the availability of donor organs. Measures to expand the donor pool are highly warranted. The aim of the present study was to evaluate the use of older deceased donors (DD)

as a potentially underused graft source. **Patients and Methods:** From 2001 to 2011 a total of 54 patients in the Nordic countries received a 1st liver transplant from a DD aged 75 years (y) or older (D75). Donor data and recipient parameters were collected from the Nordic Liver Transplant Registry (NLTR) and from center specific medical records. The outcome of the D75 group was compared with a matched control group of 54 patients receiving a liver graft from DD aged 20 to 49 y (D20-49). **Results:** Median donor age was 77 y [75-86] in D75 and 41 y [20-49] in D20-49. Mean cold ischemia time (CIT) was 491 min [227-900] in D75 and 510 min [183-960] in D20-49. Median patient age was 59 y [31-73] in D75 and 58 y [31-74] in D20-49. In both groups, 48 % of the patients were transplanted due to malignant disease, mainly hepatocellular carcinoma. One, 3 and 5 y patient (PS)/graft survival (GS) were 87/87 %, 81/81 % and 71/67 % for D75, and 88/87 %, 75/73 % and 75/73 % for D20-49. Neither the differences in PS ($p = 0.89$) nor GS ($p = 0.79$) were significant. The rates of vascular and biliary complications in D75/D20-49 were 7.4/9.3 % ($p = 0.73$) and 29.6/13 % ($p = 0.03$) respectively. **Conclusion:** 5 y PS and GS for patients in the D75 group were satisfactory and comparable to results achieved utilizing young donors (20-49 y). However, the biliary complication rate in D75 was significantly elevated compared to D20-49. The study supports the view that otherwise optimal liver donors ≥ 75 y should not be excluded because of age only and that these livers could be used liberally without compromising PS and GS, at least in a five year perspective.

Abstract # P-170

Observation and Nursing Care of Intestinal Fistula after Upper

Abdominal Multiple Organ Transplantation.

Haidan Ye, Yingcui Liu, Qiaoling Zeng. *The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, Guangdong, China*

Objective: Multiple organ transplants is very difficult, the Postoperative care is a challenging job, the complex and difference is more than conventional complications. This study, we explore the nursing key point of upper digestive tract fistula after Abdominal Multiple Organ Transplantation.

Methods: From march 2009 to august 2013 our Centre successfully implementation of Abdominal Multiple Organ Transplant, for 12 patients with end - stage liver disease complicated with type 2 diabetes. 12 of patients were male, aged from 30 to 70 years, the average age is 50.5 years, and the 12 patients' liver cirrhosis were end - stage liver disease is hepatitis B, 7 cases with Small Hepatocellular carcinoma, 2 cases of postoperative patients with gastrointestinal fistulas. Retrospective Analysis of clinical data of 2 patients of in this group and its nursing method.

Results: 12 patients were taken at the level of blood sugar back to normal within one weeks after operation, and stop using insulin, 2 cases occurred in patients with intestinal occurs, namely 14 and 21 days after the operation. By positive drainage and the use of drugs to suppress glandular secretion, to strengthen infection control and nutritional support. Regular place 4 drainage tube after operation, through observation of the drainage of fluid property changes can make earlier diagnosis.

Conclusion: Clearly mark the drainage tube after operation, the Daily Record of flow and its properties, draw the attention of dynamic changes of flow. If the increase in abdominal drains fluid anomalies, appears dark yellow, such as pus, manure residues or clarify a transparent change, should be highly sceptical of the digestive tract fistula may be given.

Abstract # P-171

Nursing of Donor Liver in Liver Transplantation in Adult

Children after Cardiac Death.

Qiaoling Zeng, Yingcui Liu, Lihan Rui. *The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China*

Objective: To study the nursing experience of pediatric cardiac death donor (DCD) liver transplantation in adult recipients after operation.

Methods: Summarized the nursing experience of 4 cases pediatric DCD donor liver transplantations (liver allografts weight 400-800g) in adult recipients after operation performed from October 2007 to March 2013 in organ transplant center in our hospital.

Results: Of the four recipients, one had biliary tract stenosis after operation, one suffered from gastrointestinal hemorrhage and small-for-size syndrome, one with portal vein thrombosis and septic shock, and the remaining one had no complication. The first two patients were cured and the third recipient died of liver failure.

Conclusions: Complications such as small-for-size syndrome were high after operations in pediatric DCD donor liver transplantations in adult recipients. Close monitoring the changes of the patient's condition, pay attention to the

occurrence of small-for-size syndrome, vascular and biliary complications, timely treatment and nursing care were the keys for the patients to survive the peri-operation period.

Abstract # P-172

Nursing Experience of Biliary Complication after Orthotopic Liver Transplantation. Qiaoling Zeng¹, Yingcui Liu¹, Qingxiu Fan¹. ¹The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China; ²The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China; ³The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China

Aim: To study the nursing method of biliary complication after orthotopic liver transplantation. **Method:** The clinical data of 68 patients after orthotopic liver transplantation with biliary complication were retrospectively analyzed. **Result:** Nose-bile drainage, sphincterotomy or plastic stent placement is undergone to the patients with biliary stricture. Nose-bile drainage, sphincterotomy or lithotomy is undergone to the patients with bile duct stones. **Conclusion:** The quality of lives is affected to the patients with biliary complication after orthotopic liver transplantation. Meticulous nursing care, observation, evaluation, early detection of biliary complication and post-interventional treatment nursing are important method to improve cure rate and life quality of the patients.

Abstract # P-173

Effects of Preceding Liver Resection on Salvage Liver Transplantation for Recurrent HCC after Liver Resection. Qijun Zhang, Zhenhua Hu, Jie Zhou, Lin Zhou, Shusen Zheng. Department of Hepatobiliary and Pancreatic Surgery, First Affiliated Hospital, Zhejiang University, Hangzhou, Zhejiang, China **BACKGROUND:** Salvage liver transplantation (SLT), which remains controversial, has been reported as an accessible way for patients with developed recurrent hepatocellular carcinoma (HCC) after primary liver resection (PLT). However, whether the times of preceding liver resection (LR) had any impacts on prognosis of SLT, have not been reported yet. This study is to evaluate the incomprehensiveness of this confusion.

METHODS: The core methodology applied a retrospective study which involves a total number of 59 patients who underwent SLT for HCC (Data analysis are obtained from the First Affiliated Hospital of Zhejiang University during September 2001 to December 2012). Specifically, 51 patients selected in the group only experienced liver resection once before SLT, while the remaining 8 patients received LR more than once before SLT (Times of LR=2, Number=7; Times of LR=3, Number=1). By utilizing statistics methods, the overall survival and tumor-free survival outcomes of the above two groups after different time periods, namely 1-year, 3-year, 5-year respectively, are compared.

RESULTS: The study indicates that there are no significant differences between the patients who underwent LR only once and those counterparts who experienced LR more than one time in terms of the subsequent survival or tumor-free survival condition before they received SLT. The 1-year, 3-year, 5-year overall survival ratios of recipients are 72.9%, 35.3%, 35.5% vs. 50%, 50%, 50%, $p=0.986$. And tumor-free survival rates of 1-year, 3-year, 5-year each are 66.3%, 55.3%, 44.4% vs. 40%, 40%, 40%, $p=0.790$.

CONCLUSIONS: It is showed from the study that the disparity does not exist between the survival rate of patients who experienced LR only one time before SLT and the others who received LR more than once. This outcome suggests that SLT is still an accessible choice for patients who suffered from recurrent HCC after liver resection and it given provides a possible underpins for clinical therapy as well.

Abstract # P-174

Low Express of Oct4-PG1 Predicts a Poor Prognosis of Hepatocellular Carcinoma Patients With Liver Transplantation. Cheng Zhang, Jian Wu, Zhen Lv, Chengli Du, Zhou Lin. Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, Zhejiang University, Hangzhou, Zhejiang, China; Key Laboratory of Combined Multi-Organ Transplantation, Ministry of Public Health, Key Laboratory of Organ Transplantation, Zhejiang University, Hangzhou, Zhejiang, China

Background: POU5F1B, a processed pseudogene homologous to the pluripotency factor OCT4, was reported to play an essential role in the oncogenesis and prognosis of carcinomas. We conducted a study to reveal its

expression and clinical significance in hepatocellular carcinoma. **Methods:** To investigate the correlations between POU5F1B expression and the clinical parameters, 60 patients samples who have undergone liver transplantation were included in the study, by using Immunohistochemistry staining and Real-time PCR.

Results: By comparing to the adjacent healthy tissues, abnormal localization and lower level of POU5F1B in tumor cells was observed by Immunohistochemistry staining. Real-time PCR verified the down-regulation of POU5F1B in hepatocellular carcinoma patients.

A significant relevance between low level of POU5F1B and tumor numbers ($P=0.009$), tumor recurrence ($P=0.010$) was demonstrated. In addition, patients with lower level of POU5F1B as predicted a declined overall survival ($P=0.001$) by Kaplan-Meier Analysis (OS).

Especially, multivariate analysis by Cox's proportional hazard model revealed that POU5F1B ($P=0.033$), pTNM ($P=0.001$, $RR=4.322$, 95% $CR=1.789-10.442$) was an independent prognostic factor in hepatocellular carcinoma (OS); while (RFS) POU5F1B ($P=0.041$), pTNM ($P=0.000$, $RR=6.96$, 7.95% $CR=2.711-17.908$). **Conclusions:** In a word, our present research clarify that the low expression of POU5F1B in hepatocellular carcinoma is possibly correlated with tumorigenesis and development, and the POU5F1B protein could act as a potential biomarker for prognosis assessment of hepatocellular carcinoma. Mechanism Related is worthy of further investigation.

Keywords: liver cancer, POU5F1B, immunohistochemistry, RT-PCR.

Abstract # P-175

Ischemic-Type Biliary Lesions Following Liver Transplantation: A New Diagnosis and Therapy Model. Ying-Cai Zhang, En-Ze Qu, Qi Zhang, Jie Ren, Rong-Qin Zheng, Yang Yang, Gui-Hua Chen. Liver Transplantation, Third Affiliated Hospital of Sun Yat-Sen University, Guangzhou, Guangdong, China; Medical Ultrasonics, Third Affiliated Hospital of Sun Yat-Sen University, Guangzhou, Guangdong, China; Guangdong Provincial Key Laboratory of Liver Disease, Third Affiliated Hospital of Sun Yat-Sen University, Guangzhou, Guangdong, China

Ischemic-type biliary lesions (ITBLs) are a major source of morbidity, graft loss and even mortality after orthotopic liver transplantation (OLT). They can be defined as focal or extensive damage to the bile ducts caused by an impaired blood supply, characterized by intrahepatic strictures and dilations on ultrasound, computed tomography, and magnetic resonance cholangiopancreatography (MRCP). However, patients with these imaging appearances are generally advanced cases and have already missed the optimal treatment chances. Although endoscopic retrograde cholangiopancreatography (ERCP) and percutaneous transhepatic cholangiodrainage (PTCD) are the gold standards, they cannot be used as continuous monitoring tools for ITBLs. Therefore, the traditional diagnostic model is not effective for the diagnosis of ITBLs in the early stage, and this may delay therapy to a certain extent. Our center has applied the early diagnosis and intervention model (EDIM) for the diagnosis and treatment of ITBLs since February 2008. This model mainly includes preventive medicine treatment to protect the epidermal cellular membrane of the biliary duct, regular examination of liver function at an early stage, and weekly monitor of contrast-enhanced ultrasound (CEUS) to detect whether there are existing ischemic changes in the biliary duct. If there are enzymatic abnormalities and low or no enhancement in the wall of the hilar biliary duct as shown by CEUS during the arterial phase, early ERCP and PTCD are performed to confirm the diagnosis and to maintain continuous patency of the biliary drainage. Compared to the traditional model in use prior to February 2008, EDIM decreases the incidence of biliary tract infection (28.6% vs. 48.6%, $p < 0.05$), prolongs the survival of liver grafts (24 ± 9.6 m vs. 17 ± 12.3 m; $p < 0.05$) and improves the overall therapeutic effect of ITBLs.

Abstract # P-176

Clinical Analysis of Liver Transplantation and Multivisceral Transplantation Using Donation Aftercardiac Death Donors. Qiang Zhao, Zhiyong Guo, Xiaoshun He, Weiqiang Ju, Dongping Wang. Organ Transplant, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, Guangdong, China

Objective: To investigate organ donation in China and clinical characteristics and prognosis for liver and multivisceral transplantation.

Method: We retrospectively analyzed 52 cases of liver and multivisceral donation, including clinical data of transplant donors, surgery, recipients and their prognosis in follow-up from July 2011 to March 2013 operated in the First Affiliated Hospital of Sun Yat-sen hospital. Of all 52 donors, 3

were China Category I donors (Organ Donation after Brain Death), 25 were China Category II donors (Organ Donation after Cardiac Death), and 24 were China Category III donors (Organ Donation after Brain Death followed by Cardiac Death).

Result: Forty-nine out of 52 cases donated liver, while the other 3 donors donated multiviscerals (liver, pancreas and duodenum). The peaks of both alanine aminotransferase and aspartate aminotransferase of recipients that appeared at the first day after transplantation were: 1041 ± 936.2 U/L and 1806.3 ± 1951.9 U/L, and gradually decreased to near normal 15 days afterwards. Bilirubin peaked in the first day after transplantation (85.6 ± 60.4 mmol/L) and recovered in 30 days. 9 out of 49 cases of recipients died during the follow-up, in which 2 patients died of primary graft dysfunction, 3 died of tumor recurrence. Cumulative survival rate of recipients and graft in 1-month, 6-month and 12-month were 87.8%, 85.4% and 77.1%, respectively. Postoperative pulmonary infection, arterial thrombosis and biliary complication rate were 24.5%, 10.2% and 8.2%, respectively.

Of 3 cases of multivisceral transplant recipients, one had anastomotic leakage and the patient improved after treatment. All of them had good prognosis and successfully got rid of insulin therapy.

Conclusion: Transplants, no matter liver or multiple organs, donated by DCD donors according to organ donation in China are appropriate for transplantation. Although the rates of complications like postoperative infection or hepatic artery thrombosis are high, overall prognosis of DCD liver transplantation is satisfying. Appropriate choices of donors and recipients can further improve prognosis.

Abstract # P-177

Portopulmonary Hypertension: Prevalence and Survival in Patients Undergoing Liver Transplantation. Emica Shimozone, Cristina A.A. Caruy, Adilson R. Cardoso, Derli C.M. Servian, Ilka E.S.F. Boim. *University of Campinas, Campinas, São Paulo, Brazil*

Portopulmonary hypertension (PPH) is characterized by elevated of pulmonary arterial pressure due to increased resistance to pulmonary blood flow caused by portal hypertension.

It is defined as a mean pulmonary arterial pressure (MPAP) > 25 mmHg, pulmonary vascular resistance (PVR) > 240 dynes.s.cm⁻⁵, pulmonary capillary wedge pressure (PCWP) < 15 mmHg, or transpulmonary pressure gradient (TPG) < 10 mmHg according to the diagnostic criteria of the European Respiratory Society and European Association for the Study of Liver Task Force on Pulmonary Hepatic Disorders, 2004.

The PPH prevalence in patients with cirrhosis ranges from 2-6 % and the literature data on the prevalence of PPH in patients undergoing liver transplantation are quite conflicting. Mortality is directly proportional to the measured mean pulmonary arterial pressure and pulmonary vascular resistance. Some studies suggest that the mean pulmonary arterial pressure preoperatively is an independent predictor for mortality, and many centers consider that pulmonary arterial pressure above 50 mmHg is an absolute contraindication for liver transplantation. Objective: To analyze the prevalence and survival in PPH patients undergoing liver transplantation. Methods: We analyzed retrospectively, records and database of Liver Transplant Unit, at the Unicamp Clinics Hospital, in patients undergoing liver transplantation, a 21-years period. The population was separated into two groups according to the measurements of mean pulmonary arterial pressure: MPAP < 25mmHg and MPAP > 25 mmHg. We studied the preoperative examinations, hemodynamic variables, intraoperative complications and survival. Result: Although we found 50 cases with MPAP > 25 mmHg, only one patient met the criteria for MPAP > 25 mmHg, PVR > 240 dynes.s.cm⁻⁵, PCWP < 15 mmHg or TGP < 10 mmHg, according to ERS Task Force on PHD and two cases of MPAP > 50 mmHg which had procedure canceled, therefore the PPH prevalence in patients undergoing TF was 0.25 %. Conclusion: The prevalence rate observed was lower than that describe literature. Although 50

(12.9%) patients showed MPAP > 25 mmHg, 49 (12.6%) of these patients had normal pulmonary vascular resistance and therefore no PPH. This was probably due hyperdynamic circulation and / or volume overload. The fact that pulmonary artery was > 25 mmHg in these patients had no influence on graft survival.

Abstract # P-178

Influence of Donor-Recipient Gender Mismatch on Graft Survival after Liver Transplantation. Florin Botea, Vladimir Brasoveanu, Mihnea Ioan Ionescu, Radu Zamfir, Dana Tomescu, Irinel Popescu. *Center of General Surgery and Liver Transplantation, "Fundeni" Clinical Institute, Bucharest, Romania*

BACKGROUND. The influence of donor-recipient gender mismatch on survival after liver transplantation (LT) is controversial. The aim of this study was to assess the effect of donor and recipient gender disparity on graft survival after LT.

MATERIAL AND METHODS. Patients who underwent whole deceased LT in our center between 2000 and 2012 were enrolled in the study. Clinical and demographic data were collected at the time of LT and each follow-up. The recipients were divided according to the donor gender pairing into the following groups: (1) recipients with the same gender as the donor, (2) female recipients with male donors, and (3) male recipients with female donors. In order to assess graft survival, Kaplan-Meier method compared by log-rank test was used, and factors found with $p < 0.1$ were introduced in the multivariate Cox regression.

RESULTS. A total of 361 subjects fulfilled the criteria and were included in the analysis. Graft survival different significantly among the three groups of patients, with an estimated survival time of 103 months (group1), 122 months (group2), and 88 months (group 3) ($P = 0.046$). The female-to-male transplants had the poorest graft survival of all groupings ($P = 0.019$). This difference remained significant after multivariate regression adjusted for recipient and donor variables ($P = 0.013$; HR 1.9, CI = 1.2-3.1).

CONCLUSION. Female-to-male graft mismatching in liver transplantation seems to lead to poorer graft survival when compared with other donor-recipient gender pairing.

Abstract # P-179

HLA Variants Related to Primary Sclerosing Cholangitis Influence Rejection after Liver Transplantation. Bjarte Fosby^{1,3}, Sigrid Næss¹, Johannes R. Hov¹, James Traherne⁴, Kirsten M. Boberg^{1,3}, John Trowsdale⁴, Aksel E. Foss³, Pål D. Line³, Andre Franke⁵, Espen Melum¹, Helge Scott², Tom H. Karlsen^{1,3}.

¹Norwegian PSC Research Center, Division of Cancer, Surgery and Transplantation, Oslo University Hospital, Oslo, Norway; ²K.G. Jebsen Inflammation Research Centre, Oslo University Hospital, Oslo, Norway; ³Department of Transplantation Medicine, Division of Cancer, Surgery and Transplantation, Oslo University Hospital, Oslo, Norway; ⁴Division of Immunology, Department of Pathology, University of Cambridge and Cambridge Institute for Medical Research, Cambridge, United Kingdom; ⁵Institute of Clinical Molecular Biology, Christian-Albrechts University, Kiel, Germany
AIM: To investigate influence of human leukocyte antigen (HLA) and killer immunoglobulin-like receptor (KIR) genotypes on risks of acute rejection (AR) after liver transplantation (LTX).

METHODS: In this retrospective study we included 148 adult donor-recipient pairs with a minimum of 6 months follow-up after LTX for whom DNA was available from both donor and recipients. The diagnosis of AR was based on clinical, biochemical and histological criteria. All suspected episodes of AR were biopsy confirmed. Key classical HLA loci (HLA-A, HLA-B, HLA-C and HLA-DRB1) were genotyped using Sanger sequencing. 16 KIR genes were genotyped using a novel real time PCR.

RESULTS: Forty-five (30%) patients were transplanted on the basis of PSC, 40% of them had AR versus 24% in the non-PSC group ($P = 0.04$). No significant impact of donor-recipient matching for HLA and KIR genotypes was detected. In the overall recipient population an increased risk of AR was detected for HLA-B*08 [$P = 0.002$, OR=2.5 (95%CI: 1.4-4.4)], HLA-C*07 [$P = 0.0005$, OR=2.4 (95%CI: 1.5-4.1)] and HLA-DRB1*03 [$P = 0.02$, OR=1.6 (95%CI: 1.1-3.4)] and a decreased risk for HLA-DRB1*04 [$P = 0.0002$, OR=0.2 (95%CI: 0.1-0.5)]. For HLA-B*08, HLA-C*07 and DRB1*04 the associations remained evident in a subgroup analysis of non-PSC recipients ($P = 0.04$, $P = 0.005$ and $P = 0.007$, respectively). In PSC recipients corresponding P values were 0.002, 0.17 and 0.01 for HLA-B*08, HLA-C*07 and DRB1*04, respectively. A dosage effect of AR prevalence according to the PSC associated HLA alleles was also notable in the total recipient population.

CONCLUSION: We found significant associations between the PSC-associated HLA-B*08, HLA-C*07, HLA-DRB1*03 and HLA-DRB1*04 alleles and risk of AR in liver transplant recipients.

Abstract # P-180

Impact of MELD Allocation System on Survival after Liver Transplantation in France. Carine Jasseron, Corinne Antoine, Camille Legeai, Christian Jacquelin, The Liver Transplant Advisory. Direction Prélèvement Greffe Organes-Tissus, Agence de la Biomédecine, Saint-Denis La Plaine, France

Background: Concerns related to equity and efficacy of our previous zonal and center-based allocation system led us to introduce in 2007 a patient-based allocation score taking into account MELD for cirrhosis and MELD+waiting time for hepatocellular carcinoma. This new allocation policy resulted in a significant decrease in dead and too sick patient delisting. The same result reported in Germany with the introduction of the MELD in the Eurotransplant zone was noteworthy associated with a decrease in post-transplant survival. Therefore the impact of implementation of allocation based on MELD has to be evaluated in France.

Objectives: The objective of this study was to compare post-transplant survival before and after implementation of the new allocation score.

Methods: The study included all patients aged 18 years or over registered on the national transplant registry CRISTAL and transplanted with a liver in 2004-2011 (N=6852). We excluded living donor and high urgency transplants. We compared 1-year post-transplant survival in 2 periods constructed according to the date of implementation of the score: period 1: patients transplanted in 2004-2006 (n=2389) and period 2: 2007-2011 (n=4463).

Results: Patients transplanted in period 2 were older (age > 56 years: 46% vs 39%; p<0.01) and sicker with a higher proportion of hospitalization (23% vs 16%; p<0.01) at the time of transplantation and higher MELD scores (14.7 vs 17.4).

Globally, post-transplant 1-year survival was similar in both periods: 85.9% [84.4% - 87.3%] in period 1 versus 85.3% [84.2% - 86.4%] in period 2; p=0.5 and this result was true whatever the indication and for patients with MELD < 30. But patient with MELD ≥ 30 at transplantation had a better survival in period 2. Last, patients transplanted in 2008 (year just after the score implementation), had a significantly lower 1-year survival: 82.4% [79.6% - 84.9%].

Conclusion: The introduction of MELD as an allocation criteria led to transplant sicker patients. This evolution had no sustained impact on the overall post-transplant 1-year survival. Interestingly, the better access to liver transplantation for patients with MELD ≥ 30 was also associated with better post-transplant results. The decrease in 1-year survival in patients transplanted in 2008 is consistent with a learning curve in the post-transplant management of sicker patients.

Abstract # P-181

Pretransplant Serum Levels of C-Reactive Protein Predict Prognoses in Patients Undergoing Liver Transplantation for Hepatocellular Carcinoma. Young-Kyu Kim¹, Seong Hoon Kim^{1,2}, Seung Duk Lee¹, Hana Shin², Yumi Lee², Soon-Ae Lee¹. ¹Center for Liver Cancer, National Cancer Center, Goyang, Korea; ²Organ Transplantation Unit, National Cancer Center, Goyang, Korea

Preoperative absolute C-reactive protein (CRP) has been shown to correlate with prognoses in various malignancies, including HCC. The aim of this study was to investigate whether pretransplant CRP levels predict prognoses in patients undergoing liver transplantation (LT) for HCC. We retrospectively analyzed clinicopathological factors in 211 patients with available pretransplant serum CRP levels who underwent LT for HCC between January 2005 and April 2012. By ROC curve analysis, a CRP of >0.3 mg/dL was considered elevated. By multivariate analysis, the high CRP level, the maximal tumor size >5 cm, the presence of intrahepatic metastasis, and positive findings in pretransplant ¹⁸F-FDG PET/CT were related to tumor recurrence, whereas the high CRP level, the presence of intrahepatic metastasis, and positive findings in pretransplant ¹⁸F-FDG PET/CT were related to poor overall survival. When subgroup analysis was conducted according to radiological the Milan criteria, the high CRP level was an independent factor for predicting poor outcomes in patients with HCC beyond the Milan criteria (P = 0.002 for recurrence and P = 0.009 for survival), and not for patients within the criteria. Pretransplant serum CRP levels can predict prognoses in patients undergoing LT for HCC, especially in patients with HCC exceeding the Milan criteria.

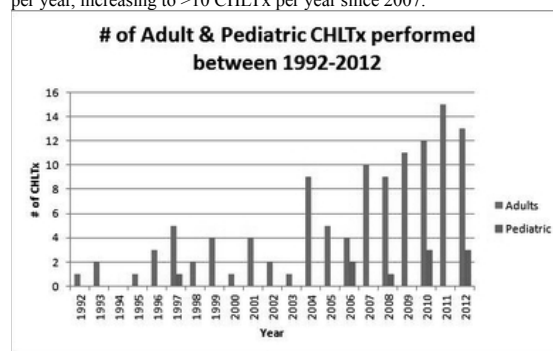
Abstract # P-182

Analysis of UNOS Data Regarding Combined Heart-Liver Transplant for Failing Fontan and Cardiac Cirrhosis from 1988 to 2012. Richard A. Lirio¹, Fernando Zapata¹, Wendy J. Grant², David F. Mercer², Alan Langnas², Ruben E. Quiros-Tejeira¹. ¹Pediatric Gastroenterology/Hepatology/Nutrition, University of Nebraska Medical Center/Children's Hospital, Omaha, NE, USA; ²Transplant Surgery, University of Nebraska Medical Center, Omaha, NE, USA

Introduction: The Fontan procedure is a palliative measure for single ventricle physiology, diverting systemic venous circulation to pulmonary circulation. Pulmonary vascular resistance increases over time though, leading to increased systemic venous pressure, and eventual cardiac cirrhosis, adding to the known cardiac complications post-Fontan.

Methods: We requested and analyzed United Network for Organ Sharing (UNOS) data involving adult and pediatric combined heart-liver transplants (CHLTx) in the United States.

Results: Second only to amyloidosis in incidence, congenital heart defects accounted for approximately 21% of the patients listed for CHLTx. According to the UNOS data we reviewed, a total of 124 CHLTx (114 adults) were performed in the US from 1988 to 2012. Prior to the early 1990s, CHLTx occurred sporadically; however, since then, there has been at least one CHLTx per year, increasing to >10 CHLTx per year since 2007.



Survival rates of CHLTx were comparable to isolated heart or liver transplantation.

Kaplan Meier Survival Rates of Adults Post-CHLTx

Years	# s/p CHLTx	1 year	3 year	5 year
10/1/87 - 10/31/01	24	83.33%	79.17%	74.51%
11/1/01 - 10/31/06	24	91.67%	83.33%	83.33%
11/1/06 - 10/31/08	22	86.36%	81.28%	81.28%
11/1/08 - 10/31/10	22	77.27%		

Note: Pediatric CHLTx data insufficient to calculate Kaplan Meier

For this subset of patients, there was no uniform protocol to list for CHLTx – and the current scoring systems may not necessarily be an accurate measure of disease severity in this patient population.

Discussion: For the significantly increasing numbers of patients with failing Fontan and cardiac cirrhosis, adult and pediatric CHLTx could be a viable option. However, simple, cost-effective, and minimally invasive prognostic diagnostics; possible earlier interventions; and revised guidelines for listing these CHLTx patients need to be addressed and optimized.

Abstract # P-183

Liver Transplant Wait List Mortality in a Tertiary Care Hospital in Southern India. Joy Varghese, Lakshmi Suganya, Srinivasa Reddy, Cherian Tom, Venkataraman Jayanthi, Srinivasan Vijaya, Mohamed Rela. Department of Hepatology, Institute of Liver Disease & Transplantation, Chennai, Tamilnadu, India; Department of Hepatology, Institute of Liver Disease & Transplantation, Chennai, India; Institute of Liver Disease & Transplantation, Chennai, India; Institute of Liver Disease & Transplantation, Chennai, India; Institute of Liver Disease & Transplantation, Chennai, India; Institute of Liver Disease & Transplantation, Chennai, India; Institute of Liver Disease & Transplantation, Chennai, India

Introduction: Most centres in India have resorted to living donor liver transplant (LDLT). Most southern States in India, including our centre are performing both LDLT and deceased donor liver transplant (DDLT). End

Stage Liver disease (ESLD) patients are registered for liver transplantation (LT) based on MELD score.

The aim of study was to determine the survival and mortality rate of patients after registration for LT and the influence of ESLD related complications at the time of registration.

Material and Methods: For the study, all patients registered for LT between January 2010 to April 2013 were included in the study. The clinical presentation and baseline biochemical information was noted including variceal bleed, refractory/resistant ascites, hepatic encephalopathy (HE), spontaneous bacterial peritonitis (SBP), Hepato Pulmonary syndrome (HPS) and Acute Kidney Injury (AKI) at the time of registration.

Results: Of the 332 ESLD patients registered, 93 (28.0%) underwent transplant, 72 (21.7%) were alive, 167 (50.3%) were dead. The median age was similar among those surviving (53 years) and those dead (56 years). There were more males waiting for LT compared to females (68:5). The median duration from registration to death was significantly lower 95 (1 to 915) days compared to those alive at 125.5 (1 to 1130) days (KW $p < 0.005$). The median waiting period was 202 (2 to 975) days for DDLT. Complications associated with risk for death were HE and AKI with a relative risk (95% CI) of 1.58 (1.0 to 2.5), and 2.7 (1.4 to 5.2) respectively. Among the dead, the median duration of survival among those with HE and AKI was 150 days (4 to 849) and with AKI was 68 (1 to 849) days.

Conclusion: Waiting list mortality is higher than West because of scarcity of the organ and more registration due to increased awareness and associated HE & AKI further reduces the survival period significantly.

Abstract # P-184

Demographic Characteristics of Organ Donor in China: A Single Center Report. Xiaoping Wang, Min Hang, Xiaopeng Yuan, Chuanbao Chen, Xingyuan Jiao, Xiaoshun He. *Organ Transplant Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, Guangdong, China*

Background: Organ shortage is the greatest challenge in the field of organ transplantation today in china. Use of organs from cardiac death organ donation has been advocated to address the shortage. The research of demographic characteristics of organ donor can promote donation rates in china.

Method: 70 individuals who were consented for and progressed to organ donation in the First Affiliated Hospital of Sun Yat-sen university from July 2011 to March 2013, The data were collected from the Volunteer Book of Human organ donation signed by each donor's family. Items Including: native place, sex, age, nationality, marital status, next of kin, occupations, education, willing to donation, Etc. and who of next of kin help to donate his or her organs.

Results: 13 provinces' residents in the Guangdong region achieved donation after cardiac death, local residents in Guangdong Province accounted for 45.7%; Donation of 70 cases in 43 hospitals and in 12 cities to come true, The donation cases resulted in an average of 2 cases per hospital in Secondary hospitals. The average age 31.3 ± 15.1 (0.8-59) years; Male-dominated 81.4%, of ages 15-34 years old (37.1%); Han nationality accounts for 95.7%; 55.7% unmarried, the Educational Level of primary school and junior middle school education accounting for 78.6%; peasants, workers, both of them accounting for 57.2%.

Conclusions We detect a significant distinguishing feature of the donated demographic characteristics as follows: male, young adults, Han nationality, unmarried, junior middle school education, manual workers are the donated demographic characteristics. The potential donor who has those characteristics may have the high probability of realization donate.

Abstract # P-185

Hangzhou Criteria and Neutrophil-Lymphocyte Ratio Used To Select Hepatocellular Carcinoma for Liver Transplantation. Guangqin Xiao, Yan Zhong, Jiayin Yang, Lunan Yan. *West China Hospital of Sichuan University, Chengdu, China*

Introduction: Several research demonstrated the adverse impact of elevated neutrophil-lymphocyte ratio (NLR) on the prognosis of post-transplant hepatocellular carcinoma (HCC) patients. And Hangzhou criteria is one of the most well-accepted criteria in mainland China. Therefore, our study aims to establish a scoring model involving both elevated NLR and Hangzhou criteria to select HCC candidates for liver transplantation (LT).

Methods : We retrospectively collected the data of HCC patients undergone LT at our LT center from February 1999 to September 2012. $NLR > 4$ was determined elevated, using receiver operating characteristic (ROC) analysis. Univariate and multivariate analysis were used to analyze risk factors for

outcome of post-transplant patients. Then we categorized the patients into four groups according to Hangzhou criteria and the serum level of NLR, followed by comparing their outcome. We further brought up a scoring model consisting of both elevated NLR and Hangzhou criteria. At last, we used ROC analysis to investigate its sensitivity and specificity.

Results: A total of 305 patients were eligible for this study. Of them, 197(64.6%) patients had elevated NLR. The 1, 3, 5-year recurrence-free survival (RFS) of the patients with elevated NLR was significantly worse than that of the patients with normal NLR (50.1%,21.7%, 20.2% vs. 80.5%, 58.7%, 56.4% ; $P < 0.001$). The elevated NLR group also showed worse 1, 3, 5-year overall survival (OS) than the normal NLR group (60.8%, 27.0%, 22.5% vs. 78.4%, 51.1%, 47.8%; $P < 0.001$). Multivariate analysis demonstrated that $NLR > 4$ ($P = 0.034$, $HR = 1.703$), total tumor size $> 8cm$ ($P = 0.005$, $HR = 1.496$), $AFP > 400mg/L$ ($P = 0.007$, $HR = 2.083$) and vascular invasion ($P = 0.003$, $HR = 2.202$) were independent predictors for outcome of post-transplant HCC patients. We proposed a scoring model based on elevated NLR and Hangzhou criteria. ROC analysis showed that the patients with score ≥ 1 had area under curve (AUC) of 0.745.

Conclusion: The scoring model involving both Hangzhou criteria and elevated NLR can be used to select HCC candidates for LT in mainland China.

Abstract # P-186

Diaphragmatic Hernia after Liver Transplantation in Children: Single Centre Experience. M. Cortes, S.E. Khorsandi, N. Tapuria, E. Kontis, H. Vilca-Melendez, M. Rela, N. Heaton. *Liver Transplantation, Institute of Liver Studies, London, United Kingdom*

Background: Diaphragmatic hernia (DH) is a rare complication after paediatric liver transplantation (LT) with unclear underlying pathophysiology. It is a potentially life threatening condition requiring early diagnosis and surgical treatment. DH after LT has been reported in a total of 17 patients, in 7 case series in the literature. We report 10 cases from our institution with a view to understand the underlying pathophysiology.

Methods: The study sample included all paediatric patients (< 18 years), who underwent LT from October 1989 to August 2013 at King's College Hospital and were subsequently diagnosed with DH. From 4433 LT, 1032 were in paediatric recipients. Ten cases of diaphragmatic hernia after LT have been recognised, all underwent surgical treatment. Risk factors assessed included age, gender, weight, body mass index, previous surgery, graft type, indication for transplantation, cold ischemia time, graft body weight ratio (GBWR), intraoperative findings and postoperative complications.

Results: Mean age of presentation was 4.9 years with no difference in incidence between genders. All 10 recipients received a left lateral segment (LLS) graft, 8 from cadaveric and 2 from living donors. Five of the patients underwent previous surgery before the LT. The mean GBWR was 3.28 ± 1.28 (range 1.7-5). Six patients had primary muscle closure after LT, three had temporary closure with silastic mesh and one had skin closure only. Postoperative ascites and pleural effusion did not appear to be a dominant feature. Diagnosis by radiology was made in 8 of 10 patients. The small bowel herniated in six children, small bowel and large bowel in two and large bowel in two. All patients underwent prompt surgical intervention and only one child presented evidence of diaphragmatic dysfunction.

Conclusion: Post liver transplant DH may be more common than previously recognised. Different factors seem to contribute to the development of this complication including small size of the patient, young age, previous surgery and LLS graft. In our series, early age, the use of split grafts, high GBWR are the predominant factors which may account for higher incidence of DH. High index of suspicion and prompt surgical intervention are necessary in managing these patients as DH presents with subtle symptoms and if it is not recognised it may become a cause of major bowel loss.

Abstract # P-187

Management and Incidence of EBV Infection in Pediatric Liver Transplant Patients Treated With Tacrolimus. Marcelo Dip, Daniela Borgia, Esteban Halac, Walter Arrieta, Guillermo Cervio, Rojas Luis, Martinito Roxana, Sarkis Claudia, Jacobo Dillon Agustina, Bosalesh Andrea, Davilla Maria, Imventarza Oscar. *Pediatric, Liver Transplant, Hospital de Pediatr a Prof. Dr. JP Garrahan, Ciudad Autonoma de Buenos Aires, Buenos Aires, Argentina*

Posttransplant lymphoproliferative disorder (PTLD) causes significant morbidity and mortality in pediatric recipients of liver transplantation (LTX). Objective: Describe the management and outcome of patient (pts) with EBV infection diagnosed by quantitative competitive polymerase chain reaction (PCR). Materials and Methods: Retrospective study of 91 pediatric hepatic transplants between 2009 and 2012 in the Garrahan hospital: The immunosuppressive (IS) regimen used was basiliximab induction and maintenance with tacrolimus. (TAC). In pts with asymptomatic elevated EBV viral loads the immunosuppression was decreased (preemptive strategies). The median time of follow up was 21.5 months (r: 3.6 to 40). Results: 38,7% (31/91) of patients developed EBV with a median EBV load at diagnosis was 3.3 log (1.56-6.08) copies/ml blood. The median time to diagnosis and 29% (9/31) of infection was 81 days (r: 5-872) after transplantation. The median age at time of infection was 1 year (r: 0,4-17), 61,3 % of patients were EBV high risk before LTX and 77% had concomitant infection with CMV. The rate of acute rejection in patients with EBV infection was 64,5% (20/31) . Eight of 20 pts (40%) rejected before the EBV infection. Rejections were all successfully treated with increased IS and steroids. 17 of 31 became chronic carriers (4,2 log for more than 6 months). Four (4.3%) developed PTLD and were treated with Rituximab. The median time to diagnosis was 364 days (171-572) and peak load for PCR 5,8 log (5-6,8) and 75% were chronic carriers. The overall patients survival in this series was 96% .One death was related to PTLD (1/4). Conclusion: Viral load monitoring and preventive immunomodulation is an effective and safe strategy for patients with EBV infection. Younger patients, EBV-naive recipients, those with concomitant infection with CMV , chronic carriers and with more rejection episodes, seem to be at the highest risk for PTLD.

Abstract # P-188

Osteoporosis in Pediatric Liver Transplantation. Walid Faraj, Abdallah Abou Niaj, Nancy Nakhoul, Ghada Elhajj Fuleihan, Bernard Sagharian, Ali Haydar, Ali Shamseddine, Ghatas Khoury, Samar Jabbour, Mohamed Khalife. *Liver Transplantation and Hepatopancreaticobiliary Surgery, American University of Beirut-Medical Center Beirut-Lebanon, Beirut, Lebanon*

Introduction: Liver transplantation provides an important, often life-saving treatment for end-stage liver disease. Osteoporosis post liver transplantation has been described in adults however this has not been described in the pediatric population to date.

Case Presentation

We present a case of a 13 year old female patient who presented to our institution with liver failure in July 2011. She had a full investigation panel which didn't reveal any etiology for her liver failure. A year prior to her presentation she was diagnosed to have psoriasis and was treated with Ultraviolet radiation as well as methotrexate. She was not given any steroid at that time. In January 2013, she underwent orthotopic liver transplantation for cryptogenic liver cirrhosis. Her immunosuppressant regimen was Tacrolimus and Prednisone (20 mg then tapered to reach 5 mg per day). Four months post-transplant she started complaining of bilateral lower limb pain and limping while walking. This progressed to a point where she was almost immobile. Magnetic Resonance Imaging of the pelvis showed bilateral avascular necrosis involving the weight bearing surfaces of both femoral heads with more than 50% involvement of the surface area, in addition to the extensive edema involving both hip joints. Bone Mineral Densitometry (BMD) was below normal for her age at the hip and forearm (Bone density 0.63g/cm² -2.7 below the standard deviation). She was started on high dose calcium and vitamin D supplement as well as weekly zoledronic acid with a remarkable symptomatic and functional improvement.

Conclusion: Osteoporosis in pediatric patients post liver transplantation is a very rare entity that has not been well described in the literature. Osteoporosis should be excluded in pediatric patients presenting with lower extremity pain after liver transplantation with steroid part of the immunosuppression regiment.

Abstract # P-189

Diagnostic Value of Ceruloplasmin for Fulminant Wilson's Disease. Jung Ah Kim, Seak Hee Oh, Jin Min Cho, Kyung Mo Kim. *Department of Pediatrics and 2Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea*

INTRODUCTION: The first step in screening for Wilson's disease (WD) is ceruloplasmin measurement in serum. Despite the rarity of WD in general populations, ceruloplasmin is routinely screening in patients with hepatitis. The specificity of ceruloplasmin is known to be low for WD, because wide spectrums of health conditions can affect serologic level of ceruloplasmin. Nonetheless, ceruloplasmin is the most important method to differentiate WD from non-WD acute liver failure (ALF) in the emergent settings. Therefore, we evaluated the diagnostic value of ceruloplasmin for WD in patients with hepatitis.

METHODS: We retrospectively reviewed ceruloplasmin measurements as one of serologic evaluation for patients with hepatitis at Seoul Asan Medical Center between January, 2009 and November, 2013. To determine the diagnostic accuracy, receiver operation characteristic (ROC) curves were constructed and then the areas under the ROC curves (AUC) were calculated.

RESULTS: The measurement of ceruloplasmin resulted in new WD diagnosis of 43 patients among 1965 patients, who had serologic evaluations for their hepatitis. One-fifths of non-WD patients had low ceruloplasmin (< 20 mg/dL). Ceruloplasmin's sensitivity, specificity, and positive predictive value (PPV) for WD (< 20 mg/dL) were 93%, 80%, and 9.4%, respectively. Using ROC curve, the ceruloplasmin level of 16.5 mg/dL showed highest AUC value (0.913) with sensitivity of 93% and specificity of 89.6%. Among WD and non-WD patients with ALF, the ceruloplasmin level of 20 mg/dL showed improved PPV; sensitivity, specificity, and positive predictive value for WD (< 20 mg/dL) were 94.4%, 79.5%, and 68%, respectively.

CONCLUSION: The PPV of ceruloplasmin was very low for WD among non-WD patients with hepatitis. However, the PPV was improved in WD patients with ALF, suggesting the measurement of ceruloplasmin may be more valuable for the diagnosis of fulminant WD.

Abstract # P-190

Outcome of 10-Year Survivors of Pediatric Liver Transplantation in a Single Center in Korea. Sanghoon Lee, Kyo-Won Lee, Jin Yong Choi, Wontae Cho, Seunghwan Lee, Hyung Hwan Moon, Jong Man Kim, Choon Hyuck D. Kwon, Jae-Won Joh, Suk-Koo Lee. *Department of Surgery, Samsung Medical Center, Seoul, Korea* Background) More than 10 years has passed since the first cases of liver transplantation (LT) were performed in Korea. Information on the status of long-term survivors of LT is relatively scarce in the literature.

Methods) From June 1996 to December 2002, 233 cases of LT were performed in Samsung medical Center (Seoul, Korea). Among these, 50 were pediatric cases. Retrospective review of medical records of 36 recipients who are still alive as of January 2013 was done.

Results) 33 patients received living donor LT and 3 patients received deceased donor LT. Biliary atresia was the most common indication for LT (22/36, 61%). Median age at LT was 11 months (range 4 months ~ 14 years). Thirty-two patients were on tacrolimus monotherapy at 10 years post-LT with a mean tacrolimus trough level of 2.95 ng/ml. Four patients were maintaining stable graft function without any means of immunosuppression. There were no cases of hypertension requiring antihypertensive medication and one case of diabetes mellitus. Chronic renal failure was absent among the entire population of 10-year survivors. Post-transplant lymphoproliferative disease (PTLD) was diagnosed in six patients, and one patient discontinued immunosuppression for the management of PTLD. Mean body weight z-score was -1.18 prior to LT and -0.09 at 10 years post-LT. Pre-LT height z-score was -1.35 and 10-year height z-score was 0.05.

Conclusion) Hypertension and diabetes was nearly absent among 10-year survivors of pediatric LT. Weight and height were close to the age-appropriate mean levels for these patients.

Abstract # P-191

Pathology of Pediatric EBV-induced Fulminant Hepatic Failure-A Critical Indication for Liver Transplantation-

Atsuko Nakazawa¹, Natsuko Nakano¹, Kentaro Matsuoka¹, Ken-Ichi Imadome², Seisuke Sakamoto³, Mureo Kasahara³. ¹Pathology, National Center for Child Health and Development, Tokyo, Japan; ²Infectious Diseases, National Research Institute for Child Health and Development, Tokyo, Japan; ³Transplant Surgery, National Center for Child Health and Development, Tokyo, Japan

The utility of liver transplantation (LT) in patients with EBV-induced fulminant hepatic failure (EBV-FHF) has been reported. However, severe EBV infection can induce systemic symptoms, such as hemophagocytic syndrome (HPS). Predicting which patients require LT is the most important task for clinicians. We analyzed clinical and laboratory data and pathological features of the liver in order to evaluate the pathogenesis in patients with EBV-FHF.

Methods: Among 43 pediatric FHF patients transferred to our hospital for consideration of LT, four had EBV-FHF. Clinical data were collected from the patients' medical records. EBV DNA in the peripheral blood (PB) was examined using quantitative PCR. Liver tissue specimens were examined histologically and immunohistochemically.

Results: Three patients underwent LT, two with HPS who received living donor LT after high-dose dexamethasone and cyclosporine A therapy and one who received urgent deceased donor LT. The explanted liver tissues uniformly exhibited massive necrosis and diffuse CD8-positive T-cell infiltration. EBV was detected in the liver and PB. In one case, a liver biopsy showed hepatocyte ballooning and dense CD8- and EBER1-positive lymphocytic infiltration in the portal area. The patient received chemotherapy under a diagnosis of EBV-positive T-cell lymphoproliferative disorder (LPD) of childhood. EBV DNA was detected at a high level in mononuclear cells, although it was negative in plasma.

Discussion: LT is the only treatment that can radically influence the course of FHF. From the retrospective pathological analysis of explanted liver tissues, LT is effective for repairing the liver function and removing EBV-infected lymphocytes concentrated in the liver. Liver biopsies are very useful for diagnosing systemic leukemia-like disease, namely EBV-positive T-cell LPD of childhood. Detecting EBV DNA in the PB with quantitative PCR is also informative.

Conclusions: Accurately evaluating the underlying pathogenesis is essential for developing a treatment strategy in patients with EBV-FHF. LT is effective for treating localized hepatic lesions, and liver biopsies are critical for detecting systemic disease.

Abstract # P-192

Monogenic Liver Diseases - Liver Transplantation As Gene Therapy. Kumar Palaniappan, Manoj Shrivastav, Naresh Shanmugam, Rajesh Rajalingam, Rajasekhar Perumalla, Gomathy Narashiman, Mohamed Rela. Institute of Liver Diseases & Transplantation, Global Hospitals, Chennai, Tamilnadu, India; Institute of Paediatric Diseases & Transplantation, Global Hospitals, Chennai, Tamilnadu, India

INTRODUCTION: Inherited metabolic diseases with genetic defects primarily in the liver cells may cause liver injury and liver failure. Although these disorders are a frequent cause of liver failure in children and a leading indication for liver transplantation in the pediatric age group, they represent a minority of transplants in adults. Gene therapy application is still strongly limited by the difficulty to devise efficient delivery systems to allow local transfer and expression of the therapeutic benefits. Organ transplantation remains the standard therapy for a variety of life-threatening monogenic diseases, offering either a curative approach or an improvement in the quality of life.

MATERIALS & METHODS: From 2009 till 2013, a total of 276 OLT were performed in our institution. The paediatric transplant program was started in 2010 & of the 77 paediatric liver transplants, 28 were done for metabolic liver diseases. Preoperative, intraoperative & postoperative outcomes were maintained in a database, which was analysed.

RESULTS: Progressive familial intrahepatic cholestasis (35.7%), Wilson's disease (28.5%), Primary Hyperoxaluria Type I (17.8%), Tyrosinemia Type I (14.2%) & Propionic acidemia (3.5%) were the indications. Four patients of tyrosinemia had hepatocellular carcinoma. Preoperatively two patients had undergone internal biliary diversion & TACE was performed in two patients. Of the 28, living donor liver transplantation was done in 23, split liver transplant in 4, Auxiliary liver transplant in 1. Heterozygosity was

detected in 8 donors. Four of the five children with Primary Hyperoxaluria underwent renal transplantation. Genetic screening was possible in only 46.4%. The one year survival patient survival was 93%. All the living donors were discharged well.

CONCLUSION: Orthotopic liver transplantation achieved excellent survival in paediatric patients with monogenic metabolic syndromes and represents a model of personalized genomic medicine by providing gene therapy through solid organ transplantation. The use of heterozygous donors had no negative impact on patient survival.

Abstract # P-193

3 Years Biliary Complications in 72 Paediatric Split Liver Transplantation. M. Platto¹, D. Pinelli¹, L. Locatelli², M. Guizzetti¹, E. Marini¹, M. Zambelli¹, A. Aluffi¹, V. Corno¹, L. D'Antiga², A. Lucianetti¹, M. Colledan¹. ¹Chirurgia III, Ospedale Papa Giovanni 23, Bergamo, Italy; ²Pediatria 2, Ospedale Papa Giovanni 23, Bergamo, Italy

Biliary complications (BC) are reported with an incidence from 15 to 40% after segmental pediatric liver transplantation (Tx). We analyzed the outcome of our preemptive management policy in 72 consecutive isolated split liver Tx (SLT) performed in a single center between January 2010 and December 2012. Data on SLTs were collected prospectively and analyzed retrospectively. All the donors were brain dead and livers were splitted in situ. After the transplant and throughout the follow up, all the patients (pts) with even slight increase in cholestasis associated with histological signs of mechanical cholestasis underwent a percutaneous transhepatic cholangiography (PTC) even in the absence of jaundice, hyperbilirubinemia, itching or bile duct dilatation. Any detected stricture was aggressively treated percutaneously and surgically in case of failure.

The median age at Tx was 1.82 years (92 days–16 years). 58 grafts were used for primary transplant, 14 grafts were used for reTx. 5 SLT were performed for acute liver failure. The median total ischemia time was 360 minutes (125–650). 1 pt had a retransplant due to artery thrombosis and was excluded. Grafts with single bile duct were 52. Grafts with double bile ducts requiring double anastomoses were 20. Grafts with BC were 24, of them 8 had double bile duct anastomoses.

There were 29 (40%) BC: 19 stenosis and 10 leaks.

14(19.7%) pts had biliary stenosis. 5 were diagnosed by clinical signs and 9 by alteration in liver function test in asymptomatic pts. 12 were treated by PTC and 2 underwent surgical reoperation with new biliary anastomoses.

5(7%) pts had biliary leak. 4 were diagnosed by clinical signs and 1 by radiological findings. 2 were treated with drain insertion, 2 with PTC and 1 with surgical reoperation.

Pts experiencing both BC were 5 (7%) and diagnoses was made by clinical signs. Biliary leak was treated with surgical reanastomoses in 3 cases and in 2 cases with drain insertion. 4 biliary stenosis were treated with PTC and 1 with surgical relook.

No grafts were lost due to biliary complication.

BC continue to be the major source of morbidity among liver transplant recipients. Early detection and preemptive treatment by radiological intervention and eventually, by surgical relook in case of failure allows to resolve this complication with no pt or graft lost.

Abstract # P-194

Combined Liver Kidney Transplantation in Pediatric Patients: A Single Centre Experience. Jesus Quintero, Olalla Rodriguez, Leire Gondra, Ramon Vilalta, Mar Miserachs, Elisenda Busquets, Gema Ariceta, Ramon Charco. Paediatric Liver Transplant Unit, Hospital Universitari Vall d'Hebron, Barcelona, Spain; Paediatric Nephrology, Hospital Universitari Vall d'Hebron, Barcelona, Spain; Paediatric Nephrology, Hospital Universitari Vall d'Hebron, Barcelona, Spain; Paediatric Nephrology, Hospital Universitari Vall d'Hebron, Barcelona, Spain; Paediatric Liver Transplant Unit, Hospital Universitari Vall d'Hebron, Barcelona, Spain; Paediatric Liver Transplant Unit, Hospital Universitari Vall d'Hebron, Barcelona, Spain; Paediatric Nephrology, Hospital Universitari Vall d'Hebron, Barcelona, Spain; HPB Surgery and Transplants, Hospital Universitari Vall d'Hebron, Barcelona, Spain

Background: Combined liver–kidney transplantation (CLKT) remains a relatively infrequent procedure in children with only 10 to 30 paediatric procedures performed annually worldwide.

Objectives: The study aims to report outcomes of CLKT in a cohort of paediatric patients.

Methods: We retrospectively analyzed all paediatric CLKT performed in our centre between September 2000 to January 2013. Donor and recipient demographic data, pre and post-operative renal and liver function, complications pre and post CLKT, survival and data of the combine transplant procedure itself were collected.

Results: A total of 12 CLKT were performed during the study with a median age and weight at transplant of 9.5 years and 32.6 kilograms respectively. The indication for CLKT were Autosomal Recessive Polycystic Liver and Kidney Disease (7/12), Primary Hyperoxaluria (PH-1) (4/12) and idiopathic portal hypertension with ESRD (1/12). The median waiting time on list was 6.5 months. The normalization of renal function was achieved at post-operative day 10.5 (range 4-92). Patients with PH-1 tended to present a delayed recovery of renal function compared to patients transplanted with other indications (42.5 vs 6.5 days respectively, P: 0.075). The median follow-up time was 54.0 months. Kidney graft survival rates at 6 months, 1 and 5 years were 100%, 83.3%, 75.0% respectively. We achieve a patient survival rates at 6 months, 1 and 3 years after the CLKT of 100%, 91.7% and 91%. Not other liver grafts were lost.

Conclusion: The long-term results of CLKT in children are encouraging being comparable to those obtained with isolated Liver Transplantation. In our study, patients with PH-1 tended to present a slower recovery of renal function than patients transplanted for other causes.

Abstract # P-195

ABO Incompatible Living Related Liver Transplant in Children: Saudi Single Center Experience. Mohammad Shagrani¹, Martin Burdelski¹, Talal AlGoufi¹, Hussah AlHussaini², Asma Fayyad¹, Mohamed AlSebayel¹, Hamad AlBahili¹, Dieter Broering¹. ¹Organ Transplant Center, King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia; ²Pathology & Laboratory Medicine, King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia

INTRODUCTION: No. of children requiring transplantation without suitable donors is increasing. ABO incompatible liver transplantation is an alternative option for these children.

METHODS: Blood typing and cross-matching with irregular antibody screening were performed prior to transplantation. Isohemagglutinins titers were drawn pretransplantation and monitored post transplantation as per protocol.

Indications for plasmapheresis was increased isohemagglutinin titers associated with allograft dysfunction, picture of hemolysis and histological evidence of rejection.

POSTTRANSPLANT IMMUNOSUPPRESSION PROTOCOL: Consisted of two doses of basiliximab . I.V.Methylprednisolone given during anhepatic phase at the time of biliary anastomosis, followed by prednisolone tapered slowly. Mycophenolate mofetil was started at 20 mg/kg/day on postoperative day 1. Oral Tacrolimus begun on postop day 7 . In the absence of rejection, Steroids were planned to be discontinued within 12 months post transplantation.

RESULTS: There was neither vascular nor biliary complications post transplantation. No acute cellular or antibody mediated rejection were identified. Our 1-yr actuarial patient and graft survival for ABO-I were 100 %. None of the patients required plasmapheresis either pre- or post-transplantation or extra medical therapy i.e. (I.V. Rituximab or immunoglobulins). Low ABO-Isotitre for the median follow up period of 277.5 days was observed.

DISCUSSION: Even though we are reporting similar experiences to Japan and Atlanta/USA, none of our patients required plasmapheresis, IV immunoglobulins or Rituximab. This is the first series in the Middle East and in spite of the small no. of cases we conclude that pediatric recipients with ABO-I grafts have same or superior outcome compared to ABO compatible grafts. Crossing blood groups will play significant role in avoiding children mortality waiting for liver transplant . We do believe in role of HLA matching in our cases.

Demographic Data			
Patient	Diagnosis	Age at Transplant (Months)	Blood Group
1	Biliary Atresia	27	O+
2	Biliary Atresia	13	B+
3	Biliary Atresia	30	B+
4	?PFIC2	6	B+
5	Biliary Atresia	11	A+
6	Cirrhosis Najjar Synd	6	O+

Abstract # P-196

ABO-Incompatible Pediatric Liver Transplantation: Experience of a Single Center. Sergey V. Gautier, Irina E. Tsurulnikova, Vitaly N. Poptsov, Olga M. Tsurulnikova, Olga P. Shevchenko. *Federal Research Center of Transplantology and Artificial Organs named after V.I. Shumakov, Moscow, Russian Federation*

Purpose: to investigate the outcome of ABO-incompatible (ABOi) living donor liver transplantation (LDLT) in pediatric recipients.

Methods: since March 2010 29 patients (12 boys and 17 girls) have passed ABOi LDLT. Median age was 13.3 (4-29) months and median weight was 8.5 (5-14) kg. In addition to routine examination protocol, all children were tested for the titres of ABO antibodies.

Results: In 23 patients initial IgG and IgM anti-ABO titres were 1:8 or less, no special preparation was necessary. In 20 of these 23 children the ABO antibodies disappeared postoperatively. The rest three patients received plasmapheresis after transplantation. In 6 patients with high anti-ABO titres plasmapheresis was carried out preoperatively; three of them also received rituximab infusion; only one of these 6 children needed plasmapheresis postoperatively too. Basic immunosuppressive protocol in all cases included basiliximab induction, tacrolimus and steroids; in 9 patients MMF was added. One patient died 2 days after LDLT because of acute cardiovascular insufficiency, and other one died after a month postoperatively due to severe gastro-intestinal bleedings. Other 27 patients are alive. The mean follow-up period is 14.8 (1-45 months). They demonstrate good graft function. Acute rejection occurred in 2 patients, in both cases it was successfully treated by intravenous steroid pulse therapy, in one of them – in combination with plasmapheresis (due to increased level of ABO antibodies). There were no vascular complications. The patient and graft survival and the incidence of biliary and infectious complications were comparable to ABO-compatible (ABOc) transplantation in similar recipients.

Plasma levels of transforming growth factor (TGF)-b before, one month and one year after ABOc and ABOi LDLT did not differ (p=0.75, 0.72 and 0.95, resp.), as well as values of anti-HLA I and anti-HLA II.

Conclusion: ABO-incompatible transplantation can be a safety and effective method of treatment for children with end-stage liver disease without possible ABO-compatible living related donors. Short and long-term results of ABOi LDLT in children are similar to those of ABOc LDLT, without significant augmenting of immunosuppressive therapy but with using plasmapheresis for antibody removal if necessary.

Abstract # P-197

Usefulness of Hepatobiliary Scintigraphy for Detecting Biliary Leak in Living Donor Liver Transplant Recipients. Dinesh Balakrishnan, Unnikrishnan Gopalakrishnan, Ramachandran N. Menon, Raghavendra Babu, Viju Bharathan, S. Sudhindran. *Solid Organ Transplantation, Amrita Institute of Medical Sciences, Kochi, Kerala, India*

Introduction: Biliary complications, the Achilles's heel of liver transplantation is more common following living donor liver transplantation (LDLT) and results in significant morbidity. Hepatobiliary scintigraphy (HIDA scan) is presumed to be a sensitive indicator for detecting biliary leaks.

Aim: To investigate the usefulness of HIDA scan for evaluation of early post-transplant biliary leaks following LDLT.

Materials and methods: Data of 69 patients who underwent HIDA scan within 8 weeks following LDLT was analysed. Following intravenous injection of 4mCi of 99mTc Mebrofenin, anterior dynamic and serial static images upto 90 minutes was obtained using a variable angle dual head gamma camera. Bile leak was diagnosed by any one of the following methods: bilirubin rich (more than serum bilirubin) fluid in the drain, presence of biloma proven by percutaneous drainage or ERCP/MRCP findings consistent with bile leak. The validity of HIDA scan in detecting bile leak was verified.

Results: Of the 230 LDLT recipients, 69 patients underwent hepatobiliary scintigraphy. Indications for hepatobiliary scintigraphy were abnormal symptoms and/or liver function tests suggesting bile leak as a possibility. Mean duration after liver transplantation to scintigraphy was 27.2 days. Scintigraphy identified biliary leak in 30 patients out of which all but one was corroborated to have biliary leak with other tests. Only one patient did not manifest clinically evident biliary leak and he had an uneventful recovery. HIDA scan ruled out biliary leak in the 39 remaining patient. However, only 27 of these 39 were confirmed not to have bile leak whilst 12 patients demonstrated biliary leak with other tests of verification. The sensitivity specificity, positive predictive value and negative predictive value of HIDA in detecting biliary leak was 70.73%, 96.43%, 96.67% and 69.23% respectively. The overall accuracy was 81.16%. Scintigraphy additionally

detected 2 patients with biliary strictures, which were confirmed by MRCP. Conclusion: Hepatobiliary scintigraphy has high specificity and positive predictive value in detecting biliary leaks after LDLT. Nevertheless, due to low sensitivity and negative predictive value, its utility as a screening test to detect biliary leaks following LDLT is of questionable value.

Abstract # P-198

Intraoperative Trans-Liver Surface Approach in Management of Hepatic Venous Occlusion during Pediatric Living Donor Liver Transplant. Yu-Fan Cheng^{1,2}, Shin-You Ou^{1,2}, Leo Leung-Chit Tsang^{1,2}, Chun-Yen Yu^{1,2}, Tung-Liang Huang^{1,2}, Tai-Yi Chen^{1,2}, Chao-Long Chen². ¹*Diagnostic Radiology, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan;* ²*Liver Transplantation Program, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan*

Post-transplantation hepatic venous occlusion or thrombosis was not a rare complication in pediatric living donor liver transplant. Percutaneous transjugular approach with balloon angioplasty or with stenting was accepted to be a treatment of choice. In case that complete hepatic venous occlusion during living donor liver transplantation (LDLT), transhepatic surface approach is an alternative method in treatment of this venous complication... A 2-year-old Chinese boy with biliary atresia underwent LDLT with left lateral segment graft from his mother. Preoperative imaging modalities showed separated V2 and V3 hepatic vein in the donor. 2 to 1 venoplasty was performed and connected to IVC with triple venoplasty however independently occlusion of the V3 hepatic vein was detected by Doppler ultrasound. Directed trans-hepatic approach with puncture of the V3 hepatic vein was performed using a 21-gauge Chiba needle under ultrasonographic and fluoroscopic guidance. Venography showed total occlusion of the V3 hepatic vein. A wallstent (10mmx4.0cm) was placed through the stenosis with resultant of patency and complete recovery after transplant was achieved. Through this pathway, direct puncture of the occluded hepatic orifice from the inferior vena cava can be achieved. Catheterization and manipulation straight forward along the direction of the hepatic vein with well visualization of lesion point may increase the successful rate in treatment. It is an alternative way in treatment of hepatic venous occlusion during operation with advantage of time shortening of the interventional procedure and a large diameter stent (10mm) can be displayed safely.

Abstract # P-199

The Relationship between Meld Score and Hemodynamic Parameters in Diffuse Chronic Parenchymal Liver Disease. Naile Bolca Topal¹, Ahu Ulca Sahin¹, Halit Ziya Dundar², Pinar Tasar Sarkut², Ekrem Kaya². ¹*Radiology, Uludag University, School of Medicine, Bursa, Turkey;* ²*General Surgery and Liver Transplantation Group, Uludag University, School of Medicine, Bursa, Turkey*

Aim: In this study we aim to investigate the relationship between portal hemodynamic changes and etiology and MELD score in chronic parenchymal liver disease

Material and Methods: Portal Vein (PV) and hepatic artery (HA) Doppler ultrasonography (DUSG) findings of 121 chronic liver disease cases were analyzed retrospectively. The MELD scores were also calculated in all cases at DUSG time. The spleen size, PV diameter and flow, HA resistive index (RI) and pulsatile index (PI) were measured with B-mode US and DUSG. The relationship between the etiology and PV hemodynamic parameters and MELD scores was also analyzed.

Results: There was no correlation between the MELD scores and etiology and hemodynamic parameters. There was a positive correlation between MELD score and HA RI in each etiology group ($p < 0.001$, $r = 0.616$). PV velocity was higher in patients with a re-canalised umbilical vein than the others ($p < 0.007$) and lower in patients with esophageal varices and spontaneous splenorenal shunt than the others ($p < 0.001$).

Discussion and Conclusion: According to this study there is a significant correlation between MELD score and HA RI in chronic liver disease. PV velocity is variable depending on collateral locations.

Abstract # P-200

A Comprehensive Analysis of Downstaging To Meet Listing Criteria for Hepatocellular Carcinoma. Richard Gilroy, Marc Heronemus, Elizabeth Charlton, Steven Lemons, Timothy Schmitt, Philip Johnson. *Transplantation, University of Kansas Medical Center, Kansas City, KS, USA*

Introduction: It has been shown that hepatocellular carcinoma (HCC) patients who respond to downstaging and those who met Milan criteria have similar survival rates after liver transplantation. The cost of chemoembolization (CE) has been investigated; however, effectiveness of downstaging by CE has not been defined.

Methods: A single center study of patients who received (CE) for the purpose of downstaging of HCC to meet Milan criteria for transplant from June 2008 to May 2013 was performed. Patient gender, age and liver disease were recorded. HCC size and number, downstaging selection criteria, time to listing, transplant wait time from listing and number of (CE) procedures were recorded. Laboratory values, diagnostic imaging and hospitalizations were monitored Pre and Post (CE) procedure. Successful downstaging leading to transplant was analyzed using Medicare reimbursement rates: (CE) \$1617; CT Chest \$242; CT abdomen \$346; MRI \$478.

Results: A total of 45 patients underwent HCC downstaging with (CE) during this time frame. 144 (CE) procedures were performed on the 45 patients (3.2procedures/patient). No significant difference in number of tumors or tumor size in those successfully downstaged versus not successfully downstaged. The average number of imaging studies per patient were: CT Chest 2.5, CT Abdomen 1.8, MRI Abdomen 3.6, and Bone Scan Whole Body 1.6. There were a total of 33 hospitalizations with 5 patients having more than 1 hospitalization. Of these 45 patients, 18 (40%) were successfully downstaged and transplanted. There was no significant difference in age, gender or number of procedures between patients who were transplanted and those who did not meet criteria. The cost to successfully downstage a patient was \$19986 and number to treat was 2.5. There was no significant difference in reimbursement between successfully and unsuccessfully downstaged patients.

Conclusion: Although downstaging is not approved by many private payers in the United States, a significant number of patients benefit from this therapy. The approximate cost to successfully downstage a patient are \$20,000/patient, excluding hospitalizations. In an era where medical expenditure will need justification, downstaging appears to be cost effective.

Abstract # P-201

Effectiveness of Protocol Doppler Ultrasonography in Salvaging Grafts in Post Orthotopic Liver Transplant. Karthik Mathivanan, Anand Khakhar, Anand Ramamurthy, Mahesh Gopasetty, Manish C. Varma. *Centre for Liver Disease and Transplant, Apollo Hospitals, Chennai, Tamil Nadu, India*

Background: Hepatic Artery Thrombosis (HAT) is a devastating complication that most commonly arises in post-Orthotopic Liver Transplant (OLT) patients in the first one week after transplantation. It commonly results in high mortality and graft loss; and in many cases requires re-transplantation. Protocol Doppler Ultra Sonography (DUSG) has been proven to be a sensitive and inexpensive tool in the early detection of HAT and in salvaging grafts. Hence, reducing the chance of undergoing a re-transplantation.

Methods: Retrospective analysis of 279 cases of OLT performed at a single private institution between March 2008 and October 2013. All the patients underwent DUSG intraoperatively after completion of vascular anastomosis. The first 5 post operative days was the protocol period when DUSG was performed once every day. Further; thrombosis detected through DUSG was confirmed by a CT angiography. This study evaluated; the duration for detection of HAT, clinical correlation, surgical procedures, graft salvage and mortality rate. **Results:** Totally 11 patients out of 279 (4%) were diagnosed with HAT through DUSG. Out of the 11; 5 patients (45%) were diagnosed during the protocol period. Out of the 5 patients; 4 patients underwent revision anastomosis and 1 patient was conservatively managed with anti-coagulants. 6 patients developed HAT within a period of 9-34 days after transplantation (with a mean of 16 days). 5 patients underwent re-exploration and 1 patient who also presented with biliary ischemia underwent re-transplantation. The results for liver function tests were normal (or within appropriate levels) for all the patients in the protocol period. Also, during that period they were asymptomatic. 9 patients (81%) at the time of discharge had normal liver function and arterial flows. 3 patients (19%) who were diagnosed with HAT after the protocol period were critically ill due to sepsis and other issues. They were listed for re-transplantation but succumbed before it was performed.

Conclusion: The rate at which HAT was presented in patients who underwent OLT in the specified period at our institute was 4%. DUSG protocol screening was effective in identifying arterial flow abnormalities before clinical or biochemical manifestation and resulted in salvaging 5 out of 5 grafts (100%) during the protocol period with good overall outcome.

Abstract # P-202

Multislice Computerised Tomography (MDCT) for Graft Size Assessment and Volumetric Analysis in Living Donor Liver Transplants (LDLT). Ankur J. Shah¹, Sharad Maheshwari², Kapil Yadav¹, Vibha Varma¹, Sorabh Kapoor¹, Barun Nath¹, Jayshri Shah¹, Vinay Kumar¹. ¹Liver Transplantation, Kokilaben D Ambani Hospital(KDAH), Mumbai, India; ²Radiology, KDAH, Mumbai, India

Aims:

In order to overcome donor shortage. LDLT was developed. To ensure low recipient mortality and acceptable morbidity, accurate analysis of donor graft weight is of paramount importance.

The aim of this study was to Co-relate the volume predicted by MDCT using Myrian Intrase's® software to the actual intra-operative graft weight.

Methods:

All living donor liver transplants from March to November 2013 were included in this retrospective study which was evaluated from a prospectively maintained database. After initial satisfactory work-up, all prospective donors underwent a triple phase CT volumetry and the volumes were assessed using Myrian Intrase's® software.

The actual graft weight was measured on the backbench, once the donor liver was retrieved and flushed. Estimated values of the liver graft between CT volumetry and intraoperative weight were compared. Statistical test for co-relation was performed with SPSS® version 17.00.

Results:

There were 30 transplants performed; of which 28 were LDLT. 25 patients received a right lobe (with MHV); 2 left lobe and 1 child received a reduced Left lateral graft.

Overall the mean estimated value was 673.8 gm (S.D. = 160.7 gm) and actual intra-operative weight (mean) was 669.4gm (S.D of 30.6 gm). The difference between the actual and predicted value ranged from -166gm to +138 grams (Mean = -6.7 gm; Median -12.5gm).

Overall, CT overestimated the graft weight in 13/28 patients (Range 5-138 gm; Mean and Median= 54 grams). However, the Graft to weight ratio (GRWR) decreased to below 0.8% in only 1 patient.

Conclusion:

From the current series of graft volume analysis till date, it can be concluded that CT volumetry can be reliably used to predict the weight of the liver graft in LDLT.

Abstract # P-203

Magnetic Resonance Improvement during the Peri-Operation Period of Liver Transplantation for a Child With Hyperbilirubinemia. Zhenhua Tu^{1,2}, Min Zhang^{1,2}, Weilin Wang^{1,2}, Shusen Zheng^{1,2}. ¹Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, Zhejiang University, School of Medicine, Hangzhou, China; ²Key Laboratory of Combined Multi-Organ Transplantation, Ministry of Public Health & Key Laboratory of Organ Transplantation of Zhejiang Province, First Affiliated Hospital, Zhejiang University, School of Medicine, Hangzhou, China

Abbreviations: Liver transplantation (LTx), Magnetic resonance spectroscopy (MRS)

AIM To explore the Magnetic resonance results during the peri-operation period of Liver transplantation (LTx) for Hyperbilirubinemia.

METHODS We present one case of a child with kernicterus diagnosed by clinical. LTx was practised 5d after the kernicterus broken out. Fortunately, the neurological symptoms recovered successfully.

RESULTS Magnetic resonance spectroscopy and magnetic resonance imaging showed encouraging improvement after the LTx.

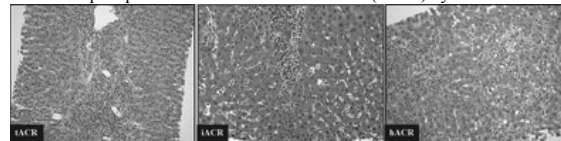
CONCLUSION The Magnetic resonance shows the improvement of the recipient with genetic hyperbilirubinemia and neurological symptoms after LTx.

The guidelines of the Ethics Committee of our hospital, the current regulation of the Chinese Government, and the Declaration of Helsinki were strictly followed for each organ donation and transplant performed in our center. No donor livers were harvested from executed prisoners.

Abstract # P-204

Sinusoidal Infiltrative And/Or Plasma Cell-Poor Hepatitis: Immediate and Long-Term Implications of an Under-Recognized Pattern of Acute Cellular Rejection. Iram Siddiqui¹, Nazia Selzner², Max Marquez², Oyedele A. Adeyi^{1,2}. ¹Laboratory Medicine Program, University Health Network, Toronto, ON, Canada; ²Multi-Organ Transplant Program, University Health Network & Univ. of Toronto, Toronto, ON, Canada

Background: The Banff scale of biliary epithelial, portal and hepatic phlebitis define typical acute cellular rejections (ACR). A relatively steroid-resistant plasma cell-rich hepatitis variant is also recognized in later period. We now report two hitherto un-reported patterns of early ACR: sinusoidal infiltrative (iACR) and hepatitis (hACR), the latter having parenchymal inflammation/necrosis, ostensibly due to sinusoidal endothelial and hepatocellular allo-injuries. We describe their presentation, response to Solu-Medrol boluses (SB) and compare to typical moderate to severe ACR (tACR). Methods: Patients who had LTX from 2007 -2012 at the University Health Network, the largest transplant program in Canada, and who had biopsy-proven ACR in the 1st year were identified and their liver biopsies reviewed. Patients with non-alloimmune hepatitis (e.g. HCV) were excluded. Transaminase (AST), alkaline phosphatase, and bilirubin at baseline, time of ACR, and followup were analyzed. Results: 28 biopsies from 27 patients were included; 15 /28 (53.6%) had tACR as described by the Banff criteria. 6 (21.4%) had marked hepatitis inflammation (hACR) in addition to tACR features; and 7 (25.0%) had tACR plus prominent sinusoidal infiltration (iACR) by T-cells.



The iACR tends to occur later than the tACR (p=0.032) and had higher rise in AST than tACR, with mean ΔAST of 289 U/L versus 109 U/L (p = 0.046) for tACR; but only 1/7 (14.3% vs. 40% in tACR) failed SB and required thymoglobulin (TG). The hACR had similar ΔAST (p=0.12) but higher bilirubin than tACR (160 μmol/L vs. 35 μmol/L; p= 0.039) and more often failed SB, requiring TG in 4/6 (66.7%) cases. Conclusions: The iACR and hACR are currently poorly defined for grading. They occur in the 1st yr with the iACR having higher ΔAST than tACR but responded to usual SB better than tACR and hACR. The hACR is different from plasma cell-rich late-occurring ACR in its pattern but shares with it poor SB response.

Abstract # P-205

Predictive Factors of Acute Cellular Rejection during Triple Therapy in Liver Transplant Recipients. Victoria Aguilera^{1,2}, Carmen Vinaixa^{1,2}, Ana Braithwaite¹, Maria Garcia^{1,2}, Angel Rubin^{1,2}, Salvador Benlloch^{1,2}, Martin Prieto^{1,2}, Marina Berenguer^{1,2}. ¹Hepatology and Liver Transplantation Unit, Hospital Universitario La Fe, Valencia, Spain; ²CIBERehd, Instituto de Salud Carlos III, Valencia, Spain

Background and aims: Triple therapy (TT) in live transplant (LT) recipients is associated with better efficacy results compared with dual therapy but with higher incidence of adverse events as acute cellular rejection (ACR). Our aim was to analyze the risk of developing ACR in LT recipients treated with TT and to identify basal features capable to predict ACR.

Methods: We included all LT recipients (N=32) treated with TT between February 2012 and September 2013, analyzing donor and recipient features, histological (explant & biopsy pre-treatment), autoimmune and biochemical data, pre and on-treatment.

Results: Five patients developed ACR. Median treatment time was 32 weeks. The median time for development of ACR was 18 weeks (range 15-21). Basal features of patients with ACR vs those non-ACR were: age: 45 vs 58 (p:ns), Men: 60% vs 85% (p:ns), diabetes: 60% vs 15% (p:0.057), IL28B-CC: 50% vs 20% (p:ns), cholestatic fibrosing hepatitis: 20 vs 11% (p:ns), immunosuppression with ciclosporin: 60 vs 40% (p:ns). Donors were younger in those with ACR: 51 vs 59 years (p:ns), without differences in sex: 60% of men respectively. Histological data in the explanted liver showed: low-

moderate necro-inflammatory activity in 80% of ACR group vs 50% in the non-ACR (p:NS). Liver biopsy before treatment showed plasma cells in 20% of cases in both groups. Three of the four (75%) patients with ACR had positive autoantibodies before LT vs 5 of 22 (23%), p=0.07. GGT and bilirubin before treatment were higher in the ACR group, without differences in other variables analyzed. All patients were treated with steroids boluses, three patients need re-transplantation in 3 (60%). No factors were found to be associated with increased risk of rejection in the multi-variate analysis. Conclusions: ACR during treatment with TT is an infrequent adverse event but with significant impact on graft survival. There are no clear data before treatment capable to predict the development of ACR. However diabetes pre-treatment, young donor and recipient, recipient women and immunosuppression with cyclosporine should alert in case of disfunction during treatment.

Abstract # P-206

Donor Derived Familial Hypercholesterolemia and Impact Upon Clinical Outcomes. Marc Heronemus¹, Richard Gilroy¹, Ryan Taylor¹, Timothy Schmitt¹, Patrick Moriarty². ¹Transplantation, University of Kansas Medical Center, Kansas City, KS, USA; ²Pharmacology, University of Kansas Medical Center, Kansas City, KS, USA

Background: Familial Hypercholesterolemia (FH) is one of the most common genetic defects in the United States (1:250), primarily due to defective hepatic low-density lipoprotein receptors (LDLr). FH causes an increase in plasma levels of LDL-cholesterol (LDL-C) and premature cardiovascular disease (CVD). Cardiovascular risk was calculated using Framingham Risk Score. Here we describe donor derived FH and response to statin therapy.

Case 1

58YOM transplanted for Autoimmune Hepatitis with no history of CVD. The donor was a 42-YOF who died from a cerebral vascular event (CVE). Post-transplant immunosuppression included tacrolimus, mycophenolic acid and prednisone taper to zero at 3 months. Pre and post-transplant lipid levels are outlined in table 1. Following the transplant statins were initiated but discontinued due to lack of efficacy (pravastatin 40mg/qd) and myalgias (atorvastatin 20mg/qd). Patient's present LDL level is 289 mg/dL and he initiated pitavastatin 20mg/qd with benefit and safety to be determined.

Case 2

57YOF transplanted for alcoholic cirrhosis. The donor was a 59-YOF who also died of an CVE and had a history of CVD(coronary bypass grafting and endarterectomy). Post-transplant immunosuppression included tacrolimus, mycophenolic acid and a prednisone taper to zero at 6 months. Lipid levels pre/post-transplant and post stain therapy (atorvastatin 20mg/qd) are outlined in table 1.

Table 1- FH Lipid Profile and Impact on Cardiovascular Risk Post-Transplant

	Pre-Transplant				Post-Transplant				Post-Statin				CV Risk	
	TC	TG	HDL	LDL	TC	TG	HDL	LDL	TC	TG	HDL	LDL	CRP	10-year MI Risk NHLBI
Case 1	94	47	40	42	398	205	61	320	246	75	27	169	12.4	9%
Case 2	91	132	13	11	342	197	65	196	190	73	47	127	0.6	30+%

TC, total cholesterol; TG, triglycerides

Discussion

To the best of our knowledge, these are the first two cases of patients with FH reported in deceased donor liver transplantation. The need for screening of FH in deceased liver donors may be warranted, specifically if the donors have a family history of CVD or dyslipidemia. With proper screening, risk may be assessed for individual recipients based on their prognosis and medical history.

Abstract # P-207

The Impact of HBV Recurrence on the Survival of HBV Related Liver Transplant. Tsung-Hui Hu¹, Chao-Long Chen², Chih-Che Lin², Chih-Chi Wang², King-Wah Chiu¹, Yueh-Wei Liu², Yu-Hung Lin². ¹Medicine, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan; ²Surgery, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

Background

Recurrent HBV reinfection after liver transplantation (LT) is known to be associated with an increased risk of graft failure and reduced survival, the impact of post-LT HBsAg-positivity on the long term outcome of LT is not well defined.

Aim

To retrospectively analyze the impact of HBV recurrence on the survival of HBV related liver transplant.

Patients and Methods

This study included 316 patients who underwent deceased donor liver transplantation (DDLT) or living donor liver transplantation (LTLT) for HBV-related liver disease between January 2000 and May 2011 at Kaohsiung Chang Gung Memorial Hospital in Taiwan. They received antiviral prophylaxis consisting of entecavir (0.5 mg daily)(n=145) or lamivudine (100 mg daily) plus low-dose, on-demand HBIG after LT. Hepatitis B virus markers were screened ever 3 months after transplant. HBV recurrence refers to HBsAg positivity post transplant.

Results

After LT, in the entecavir cohort, 2/145 (1.37%) patients experienced HBV recurrence at 9 months (with detectable HBV DNA) and 25 months (undetectable serum HBV). By comparison, in the lamivudine cohort, 11/171 (6.4%) patients became HBsAg(+) post-LT at 1 (n=2), 2 (n=2), 3 (n=1), 6 (n=2), 9 (n=1), 18 (n=1), 43 (n=1), or 88 (n=1) months post-LT. The cumulative probability of HBV recurrence after LT was borderline significantly higher in lamivudine-treated than in entecavir-treated patients (p=0.052). During post-LT follow-up there were 17 deaths (ETV: 2; LVD: 15). Of these, 5 patients had experienced HBV recurrence (ETV: 1; LVD: 4); however, only 1 patient (LVD) died from clinical complications directly associated with HBV recurrence (ALT flare and hepatic failure). The 4 other deaths were due to recurrent HCC (3) and perioperative bleeding during re-transplantation (1). The causes of death in the 12 patients without HBV recurrence were sepsis (4), perioperative bleeding (2), vascular complication (1), recurrent HCC (2), de-novo gastric cancer (1), acute myocardial infarction (1), and traffic accident (1). Overall, HBV recurrence was significantly associated with a lower probability of overall survival post-LT (p <0.001).

Conclusions

We found that, HBsAg-positivity post-LT was associated with lower overall survival. However, despite this association, it appears that HBV recurrence is not a direct cause for mortality.

Abstract # P-208

Utility of Quantiferon-GOLD for Diagnosis of Latent Tuberculosis Infection (LTBI) in Liver Transplant Recipients (LTRs) from a High Prevalence Area.—An Interim Analysis of a Prospective Study. Arikichenin Olithselvan, Vivekanandan Shanmugam, Mukul Vij, Naresh Shanmugam, Gomathy Narasiman, Rajasekar Perumalla, Srinivas Reddy, Joy Vargese, Dinesh Jothimani, Mohamed Rela. *Liver Disease and Transplantation, Global Hospitals and Health City, Chennai, India*

Background: Tuberculosis continues to be a global scourge and India accounts for one-fifth (21%) of the global disease burden. It is estimated that about 40% of Indian population is infected with TB-bacillus. The prevalence of LTBI in LTRs in India is unknown but data from renal transplantation suggests a high burden of LTBI in India. Tuberculin skin testing (TST) is not suitable in the Indian scenario and the utility of Interferon-Gamma Release Assays (IGRAs) in this setting is also unknown

Aims: To study the utility of IGRAs in the diagnosis of latent tuberculosis among LTRs.

Method: Prospective study from June 2011 including all LTRs in our center. All potential liver transplant recipients were ordered to undergo Gold quantiferon testing along with the routine chest x-ray and pulmonologist opinion during pre-transplant evaluation. Data on pre-transplant age, disease severity, ethnicity, IGRA status, type of transplant and development of tuberculosis post-transplant were abstracted in a standardized manner. Result: A total of 68 tests (68/210, 31%) were available of 210 consecutive LTRs. Fifty six were negative, four were intermediate and a further eight were positive. None of the eight positive or the four intermediate result patients have developed tuberculosis after a minimum of 12 months follow up. One patient (IGRA+) also had granuloma in the liver explant and was given isoniazid prophylaxis. In this period, we had 5 patients who have developed tuberculosis after liver transplantation, one of whom had a negative test and the remaining four did not undergo the test.

Conclusion: We observed a very low rate of use of IGRAs in a high prevalence area, given the costs and perceived lack of utility. IGRAs have poor positive predictive value for post-transplant tuberculosis. Completion of this prospective study may yield better information. The limitations of current diagnostic techniques for LTBI in LTRs remain and future research is needed in this direction.

Abstract # P-209

Comparative Prospective Study of Three Solutions for Liver Preservation: Celsior, IGL-1 and UW. R. Adam^{1,2,3}, V. Karam¹, M. Sebahg^{1,2,3}, O. Ciacio¹, G. Pittau¹, P. Bucur¹, M. Gelli¹, E. Vibert^{1,2,3}, A. Sa Cunha^{1,2,3}, F. Saliba^{1,2,3}, D. Samuel^{1,2,3}, D. Castaing^{1,2,3}. ¹AP-HP Hopital Paul Brousse, Villejuif, France; ²Univ Paris-Sud, Villejuif, France; ³Inserm, Villejuif, France

Minimization of damage from cold ischemia and reperfusion is critical to the success of liver transplantation (LT). A variety of solutions for graft preservation and reperfusion are today used worldwide.

Methods. The aim of this study was to compare the liver function of transplanted grafts stored in IGL-1, Celsior (CEL) or University of Wisconsin (UW). After exclusion of partial grafts, living and domino LT, we analyzed data of 400 consecutive cadaveric full-size LTs (representing 160 CEL, 117 IGL-1 and 123 UW) performed between June 2007 and January 2012. Primary non-function (PNF) and primary dysfunction (PDF), perioperative transfusion, kinetic of liver function, reperfusion biopsy, vascular and biliary complications, acute rejection and infection, length of hospital stay, patient and graft survival, and cause of graft loss were compared for the 3 groups. **Results.** The 3 groups were similar in terms of donor variables, recipient variables, and surgical techniques. In post-LT main results were: (1) the peak of Alanine aminotransferase was lower with IGL-1 (1035±1088 IU/L) than with CEL (1519±2802 IU/L) or UW (1529±2289 IU/L) p<0.04, and INR at day-5 was lower with CEL (1.32±0.24) than with IGL-1 (1.37±0.26) or UW (1.39±0.27) p<0.03; (2) rate of PNF-PDF with UW (28%) was lower than with CEL (36%) or with IGL-1 (35%), but this difference was not statistically significant; (3) perioperative transfusion, reperfusion biopsy lesions, vascular and biliary complications, acute rejection and infection were not statistically different. UW, CEL and IGL-1 graft survivals were respectively 91%, 92% and 98% at 3 months and 85%, 85% and 89% at 1-year; (4) Cause of graft loss was similar in the 3 groups.

Conclusion. The ischemia-reperfusion injuries are reduced with IGL-1 and liver function recovery is better with Celsior. However, this potential benefit did not translate onto the incidence of PNF or PDF, nor on the rate of graft survival.

Abstract # P-210

Portal Vein Thrombosis: A Real Challenge for Liver Transplantation. Bulent Aydinli¹, Gurban Ozturk¹, Abdurrahim Colak², Sukru Arlan¹, Ercan Korkut¹. ¹Ataturk University, Department of General Surgery and Organ Transplantation Center, Erzurum, Turkey; ²Ataturk University, Department of Cardiovascular surgery, Erzurum, Turkey

Introduction

Portal vein thrombosis is a not rare in patients listed for liver transplantation. It is commonly presented with massive ascites and large collaterals. Both during the surgery and postoperatively it is a serious risk and has severe complications. We present herein our experience with portal vein thrombosis in our liver transplant patients.

Patients and methods

Between July 2009 and December 2013 a total of 94 patients underwent liver transplantation. Among them 14 had portal vein thrombosis in various degrees. The data of these patients were collected retrospectively.

Results

Between July 2009 and December 2013 94 patients underwent liver transplantation and 14 had portal vein thrombosis (14.9%). Mean age was 44 (14-61), 9 patients were men. Median MELD score was 21 (17-28). Among these 14 patients 4 had grade 1, 6 had grade 2, 3 had grade 3 and 1 had grade 4 portal vein thrombi according the Yerdel classification. Primary indication for liver transplant were cirrhosis in 13 (10 hepatitis B, 1 hepatitis C and 2 cryptogenic) and hepatic alveolar echinococcosis in one. Thirteen patients underwent veno-thrombectomy and one resection of the portal vein with re-construction using a cadaveric graft. Mean operation time was 197±71 minutes. Postoperative complications included bleeding (1 patient), portal vein re-thrombosis (2 patients), delayed graft function (1 patient), pulmonary complications (3 patients) and 1 patient suffered from cerebral hypoxia after a cardiac arrest and 5 minutes cardio-pulmonary resuscitation. One patient died (1 postoperative day 8, 1 postoperative 3 month). One patient had postoperative partial thrombosis treated with Coumadin.

Conclusion

Portal vein thrombosis is a technically challenging but fortunately it is no more a problem that makes liver transplant impossible. However these patients have already advanced disease and therefore outcome can be worse.

Abstract # P-211

Recipient Splenic Artery Utilization in Orthotopic Liver Transplantation. Rodrigo P. Braga, Carlos E.S. Baia, Margareth P. Lalee, Fabio Crescentini, Eloiza Quintela. *Division of Liver Transplantation, Transplant Hospital "Euryclides de Jesus Zerbini, Sao Paulo, SP, Brazil*

Background: Adequate arterial supply is essential for successful orthotopic liver transplantation. The prevalence of vascular complications as hepatic artery thrombosis and hepatic artery stenosis is 5-20%.

In cases of the patient's native hepatic artery is inadequate are frequently used donor iliac artery conduits from infrarenal or supraceliac aorta. The purpose of the present work is describe a case report and review of literature in which the recipient splenic artery is a safety technique for supply blood to the graft

Case Report: The case was a 65 year old woman with hepatitis C and diabetes who received an OLT for decompensated cirrhosis complicated by refractory ascites. The doppler ultrasound revealed thrombosis parcial vein porta with extension to vein mesentery superior. The hepatic hilum dissection was complicated due cavernous transformation with large porto portal collateral, her native proper hepatic artery was stenotic with minimal flow and intimal dissection during manipulation. The patient's splenic artery was tortuous and dilated and demonstred an excellent pulse. The proximal splenic artery was dissected until a vascular clamp was easily accommodated. The distal stump was ligated and the proximal stump was prepared for end-to-end anastomosis with the donor celiac trunk without patch. The control doppler ultrasound demonstrated normal arterial flow through the splenic artery reconstruction. Postoperative case was uneventful and graft function was excellent.

Discussion: Katz et al. in 1992 is the first description of using recipient splenic artery in the arterial reconstruction in five patients. Figueras et al. describe 23 patients in whom anastomosis was performing using the splenic artery. Piskin et al. described 317 living donor liver transplantation and in six patients used splenic artery for arterial re-anastomosis due intimal dissection, inadequate blood flow or infiltration of hepatic artery. All the series revealed that there were no splenic infarction, pancreatitis or other related complication due ligation of the splenic artery. **Conclusion:** The use of the splenic artery is an alternative technique simple, safe and practical that should be added to the surgeon's armamentarium when the native hepatic artery is inadequate and splenomegaly is present. Isolation of the splenic artery requires minimal dissection and graft interposition is not necessary.

Abstract # P-212

High Applicability and Low Rate Complications of Choledochcholedochostomy Without T-tube in Adult Liver Transplantation. Mireia Caralt¹, Amaia Gantxegi², Daniel Andrada¹, Paula Jimenez¹, Sofia de la Serna¹, Gonzalo Sapisochin¹, Cristina Dopazo¹, José Luis Lázaro¹, Itxarone Bilbao¹, Ramon Charco¹. ¹HepatoBiliaryPancreatic Surgery and Transplants, Hospital Vall d'Hebron, Barcelona, Spain; ²Hospital Vall d'Hebron, Barcelona, Spain

Background:

Choledochcholedochostomy (CC) is probably the most used technique for biliary reconstruction using a whole graft in liver transplantation (LT). Whether to use T-tube or not is controversial and several studies reached different conclusions. At the beginning, in 1989, CC with T-tube was our standard reconstruction technique for the biliary tree. Since 1991, we perform CC without T-tube whenever possible due to complications inherent to the T-tube. However, many groups recommend the use of T-Tube arguing its capacity to prevent leakage and stenosis and thus low rate of complications.

Objective:

The aim of this study is to ascertain the applicability of CC without T-tube in our center and to analyze biliary complications (BC) using this technique.

Material & Methods:

LT performed in our center between April 2004 and December 2012 were analyzed. Patients with previous hepaticojunostomy (HJ), primary sclerosing cholangitis and secondary biliary cirrhosis with previous manipulation of the bile duct were not candidates for CC and were excluded from the study group. Minimum follow-up: 12 months.

Results:

435 LT were eligible for a CC without T-tube. Finally, due to technical reasons CC without T-tube was performed in 371 (87.6%). BC associated to arterial complications were excluded from the analysis (10 LT; 2.6%). BC occurred only in 25 LT (6.7%) (table 1).

Complications (n=25)

Anastomosis	
Stenosis	56%
Leak	20%
Biloma+Stenosis	4%
Other	
Stenosis	8%
Cholangitis	4%
Cholecholelithiasis	4%
Odditis	4%

Among them, 36% took place during the postoperative course and 64% after hospital discharge with a median time of appearance of 3.5 months (r: 0.4-45.3). Treatments of complications are described in table 2.

Treatment (n=25)

Conservative	24%
Percutaneous drainage	4%
ERCP	8%
PTC	16%
Surgical drainage	4%
HJ	44%

ERCP: endoscopic retrograde cholangiopancreatography. PTC: percutaneous transhepatic cholangiography

At the end of the study, 6 patients were dead, none of them because of BC.

Conclusions:

CC without T-Tube is a feasible technique in most eligible transplants. In our center, BC after CC without T-tube was as low as the complications rate reported in the literature by groups recommending the use of T-tube.

Abstract # P-213

Liver Transplantation With Pre-Existing Diffuse Portal Vein Thrombosis: Outcomes in Peru. Jose C. Chaman, Pedro M. Padilla, Carlos F. Rondon, Felix A. Carrasco, Omar A. Mantilla, Wilmer Bacilio. *Transplant Department, Guillermo Almenara National Hospital, Lima, Peru*

OBJECTIVE: To show the outcomes for surgical strategies for liver transplantation in the case of diffuse portal vein thrombosis in a single center in Peru.

METHODS: Review the charts of liver transplant patients with pre-existing diffuse portal vein thrombosis during liver transplantation.

RESULTS: We reviewed 156 liver transplant procedures. There were 3 cases with diffuse portal vein thrombosis during liver transplantation, 2 patients (NASH and alcohol cirrhosis with HCC) underwent conventionally cavoportal hemitransposition anastomosis as an end-to-end anastomosis; portal vein arterialization (PVA) was carried out in one patient undergoing simultaneous liver and kidney transplant for NASH cirrhosis and HCC. None patient died after operation and all of the patients are still alive. Two of them show normal liver and kinase function, and one developed severe cholestasis after liver transplantation related to non-stricture biliary anastomosis and with a longest follow-up of 7 months.

CONCLUSION: Portal vein thrombosis is no longer an absolute contraindication to liver transplantation. This news techniques are useful and reliable for liver transplantation.

Abstract # P-214

Arterio-Portal Fistula Encountered Immediately in Left Lobe Hepatic Graft after Living Donor Liver Transplantation: Report of a Case. Wen-Tsan Chang, Wen-Long Su, Sen-Ren Wong, Shin-Chang Chuang, Kung-Kai Kuo, Jong-Shyone Chen, King-Teh Lee. *Division of Hepaticobiliary and Pancreatic Surgery, Department of Surgery, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan*

The reported incidence of post- liver biopsy Arterio-portal fistulas (APF) was at 4-5%. However, there were few than 15 reports of APF in deceased-donor transplanted livers till 2012. And up to now, there is no case of APF in a partial hepatic graft of living donor liver transplantation has been reported. Herein, we reported a patient suffered from cryptogenic liver cirrhosis and complications of portal hypertension for 2 years. Because of autoimmune hepatitis or other genetic predisposition of this recipient could not be excluded, liver biopsy of the donor was undergone two week before this living donor liver transplantation. This liver biopsy of potential graft showed no particular pathological finding. Then, she received left lobe hepatic graft from his brother in June, 2013. The operative course was uneventful and the graft-recipient weight ratio was 1.6%.

However, the postoperative day 1 Doppler sonography showed marked turbulence of main portal vein and arterialization of S4 portal vein branch.

The resistance index (RI) of hepatic artery was 0.577. Thus, APF of this left lobe graft was impressed.

Fortunately, there was no sequence of hemodynamic significance, such as portal hypertension, hemobilia, biliary obstruction, sepsis, or pulmonary hypertension, of this APF encountered. Thus, no endovascular and no surgical treatment of this APF of this patient was performed and only observation and close follow-up by Doppler sonography was undergone.

The ultrasound findings of turbulence of main portal vein and arterialization of S4 portal vein branch persisted but improved gradually and RI of hepatic artery increased to 0.671 after 2 weeks after this transplant. And the abnormal ultrasound finding disappeared 3 weeks after operation. Both the patient and graft are in good condition at present.

APF may induce significant hemodynamic sequence and led to graft failure and even mortality of recipient. We suggest liver biopsy should only be performed selectively in living liver donor during preoperation evaluation process. And the possibility of APF should be keep in mind when abnormal ultrasound findings, such as turbulence of portal vein, arterialization of portal vein, or abnormal low hepatic artery RI or a drop in RI(>0.1), were found.

Abstract # P-215

A New Liver Autotransplantation after In-Situ Graft Hepatectomy for Huge Hepatocellular Carcinoma Involving IVC. Young Seok Han¹, Dong Lak Choi¹, Ghil Suk Yoon². ¹*Abdominal Organ Transplantation, Catholic University of Daegu School of Medicine, Daegu, Republic of Korea;* ²*Pathology, Kyungpook National University School of Medicine, Daegu, Republic of Korea*

Curative resection of liver is impossible in patient with huge hepatocellular carcinoma (HCC) involving hepatic vein and inferior vena cava (IVC). The aggressive techniques including the Ex-vivo liver resection or hypothermic ante-situm resection followed by autotransplantation have been introduced. However, when the extension of tumoral thrombus into suprahepatic IVC is identified, the ex-vivo or ante-situm resection techniques by previous reports have the possibility of spread of tumor thrombus during the liver mobilization. We presented a 40 year old man with a huge HCC which was extended suprahepatic IVC through right hepatic vein and the invasion of middle hepatic vein. The hepatic mass occupied his whole right lobe. We could not detect the extrahepatic metastases by laboratory and imaging studies and Child a liver cirrhosis was also confirmed. As the first step of treatment, the modified extended left hepatectomy had been performed and the middle and left hepatic veins were reconstructed with Dacron graft and cryopreserved iliac vein during Bench-work. Supra- and infra-hepatic IVCs were clamped after meticulous dissection and total inflow occlusion was also performed with the concomitant extracorporeal veno-venous bypass. The complete thrombectomy of IVC after total hepatectomy of remnant liver with HCC was performed. The implantation of the explanted left lobe was performed by means of the technique of living donor liver transplantation. His postoperative course was uneventful except medically controlled ascites.

We introduce the new technique of liver autotransplantation after In-situ hepatectomy for huge hepatocellular carcinoma involving supr-hepatic IVC and this procedure will be valuable in selected cases in our opinion.

Abstract # P-216

Intraoperative Embolization of Splenic Vein for Preventing Portal Vein Thrombosis after Splenectomy in Liver Transplantation Patient. Eol Choi, Deok Bok Moon, Seung Kyu Lee, Jae Hyeon Kwon. *Asan Medical Center, Seoul, Republic of Korea*

Splenectomy is indicated after liver transplantation (LT) for various reasons, including left-sided portal hypertension, trauma, and hemorrhage prevention in patients with splenic artery aneurysms. Complications of splenectomy may include infections, bleeding, and portal vein thrombosis (PVT). The sequelae of PVT are particularly serious in LT recipients.

Here we describe a case of an LT recipient who was successfully prevented from PVT by intraoperative splenic vein embolization.

The patient was a 60-year-old female who suffered from end-stage liver disease secondary to complications from alcohol abuse. She underwent LT on November 7, 2013. The biopump was used with a biliary duct-to-duct anastomosis. Splenectomy was planned with this patient and received intraoperative embolization of splenic vein by cannulation of portal system using the Amplatzer Vascular Plug (AVP).



A postoperative ultrasound examination demonstrated no flow abnormality in the portal system. A follow-up CT scan revealed a good flow in the portal vein and embolized splenic vein.

This case demonstrates that intraoperative embolization of splenic vein via a cannulation of portal system can be both safe and effective. It may represent another viable option that prevent portal vein thrombosis after splenectomy. This is, however, only a single case. In order to determine the best therapeutic measures for this type of complication, multicenter experiences and studies are warranted.



Abstract # P-217

Conversion Hepaticojunostomy for Biliary Anastomotic Stricture after Right Lobe Living Donor Liver Transplantation.

Murat Dayangac, Tonguc U. Yilmaz, Necdet Guler, Onur Yaprak, Murat Akyildiz, Gulum Altaca, Yildiray Yuzer, Yaman Tokat. *Liver Transplantation Unit, Florence Nightingale Hospital, Istanbul, Turkey*

Despite excellent outcomes of living donor liver transplantation (LDLT), biliary anastomotic strictures continue to be a significant morbidity. Endoscopic and percutaneous interventions are the mainstay of management, and surgical revision is considered the salvage intervention for failed drainage procedures. We reviewed our experience with conversion hepaticojunostomy (HJ) for biliary stricture after right lobe (RL) LDLT. Of 451 RL LDLTs performed between July 2004 and May 2013, 84 (18.6%) patients developed biliary stenosis. Clinical outcomes of 16 patients who required conversion HJ for stenosis of duct-to-duct (DD) biliary anastomosis were analyzed. Diagnosis of biliary anastomotic stricture was made based on clinical, biochemical, and radiological results. All patients underwent multiple interventional procedures before the surgical revision. Median

time from LDLT to conversion HJ was 17.0 (9.0-17.2) months. Median operation time was 330 (300-360) minutes, and median hospitalization after HJ was 8.0 (6.0-12.0) days. There was no perioperative mortality. Two patients had major postoperative complications: one had iatrogenic hepatic artery injury requiring repeated microvascular anastomosis, and one other developed intraabdominal abscess, which was treated by ultrasound guided catheter drainage. In a median follow-up of 48.0 (16.0-57.0) months post-HJ, 6 (37.5%) patients developed re-stenosis, which required percutaneous transhepatic biliary drainage (PTBD). There were 4 late mortalities: two patients had recurrent hepatocellular carcinoma, one patient had severe lower gastrointestinal bleeding, and one other patient died because of post-PTBD bleeding. Of three patients, whose intraoperative liver graft biopsy confirmed secondary biliary cirrhosis, one underwent a successful re-LDLT. Conversion HJ after RL LDLT is technically challenging and re-stricture rate is high. However, timely surgical correction of stenosis of DD biliary anastomosis is essential to prevent the complications of percutaneous interventions and the development of secondary biliary cirrhosis.

Abstract # P-218

Vena Cava Preservation With Temporary Porto Caval Shunt, an Excellent Technique To Initiate a Liver Transplant Program in a Low Resource Area. Juan V. del Rio Martin, Pedro Hernandez Rivera, Rafael Pastrana, Ivan Antunez, Ramon Cao Alvira, Carlos Garcia. *Liver Transplantation and Hepatobiliary Surgery, Hospital Auxilio Mutuo, San Juan, PR, Puerto Rico*

Introduction: Initiating a liver transplant program in a low resource area requires the clinical expertise to overcome limitations for organ quality, blood product supply, substitutive therapies and generalized skepticism.

Methods We reviewed the experience of our liver transplant program from our prospectively collected database of liver transplants performed during the first 20 months. We reviewed demographics, diagnosis, immunosuppression, MELD score, Cold and Warm Ischemia Time, intraoperative transfusions, length of stay, complications according to the Dindo-Clavien Classification and perioperative and one year graft and patient survival. The surgical technique chosen was vena cava preservation with temporary portocaval shunt. Hepatic artery anastomosis is performed by GDA patch to GDA patch with running 7/0 prolene suture. Bile duct reconstruction is performed with end to end choledoco-choledocostomy using 5/0 PDS running suture without the use of stent. Most high quality local organ donors are syphoned out to high volume centers on our UNOS region.

Results

Forty eight orthotopic liver transplants have been performed in 46 patients between February 24th 2012 and December 12th 2013. One patient underwent two retransplantations after the first year.

Average and median length of stay are 12.8 and 9 days

Average intraop PRBCs is 2.8 with 25 (54%) cases without any transfusion.

30 day organ and patient survival is 98% (42 cases)

1 Year organ and patient survival is 90.5% (First 21 cases)

Forty six local donors and two imports were used.

Immunosuppression consists on Simulect, cell cept, prograf and prednisone.

Results							
N	Age avg	Diagnosis	MELD	Compl Dindo-Clavien	CIT/WIT	LOS Avg/median	Read 12/46
46/2 Rtx	51.6 (23-69)	AIH 4	Avg 20.5 (13-40)	30 non	240/30 mins	12.8/9d (6-90)	4 ACR
	Age median	FHF 4	Status 1 4 cases	7 IIIb			2 CMV
	53	Ald 5	Crypto 3	2 IVb			1 UGIB
Gender		HCV20		2 V			1 Ischemic bowel
30 males/16 femal		PBC 4/ PSC 2		1 IIa, IIb, IIIa			
		NASH 4		0 Biliary/Vascular			
		HCC 7					

Conclusion The usage of the Vena Cava Preservation with Temporary Porto Caval Shunt technique allows for minimal blood product utilization and low complication rate. Minimizing CIT allows us for usage of low quality local organ donors.

Abstract # P-219

Broncho-Biliary Fistula after Living Right Lobe Liver Donation: Case Report and Literature Review. Mohamed Z. Elkelani¹, F. Enani¹, B. Bader¹, Kh. Omar², M. Hassan¹, Yehia E. Elmersy¹, Koichi Tanaka³, S. Bazarra¹, N. Farid¹, N. Hammad¹, S. Radwan¹. ¹*Surgery, ICU, Gastroenterology and Radiology, Doctor Soliman Fakeeh Hospital, Jeddah, Saudi Arabia;* ²*Surgery, National Guard Hospital, Riyadh, Saudi Arabia;* ³*Surgery, Institute of Biomedical Research and Innovation, Kobe, Japan*

BACKGROUND: Bronchobiliary (BBF) and pleurobiliary (PBF) fistulas are uncommon complications after hemihepatectomy, trauma, hydatid disease, choledocholithiasis and other causes of biliary obstruction. BBF can be treated conservatively or surgically. In case of conservative treatment failure, there is no agreement about the best surgical approach. **METHODS:** We report a 22-years-old female post right lobe donation to her father who had end-stage hepatitis B cirrhosis. She had postoperative biliary leakage from both the cystic duct and right posterior bile duct that has been controlled conservatively by ultrasonography guided percutaneous aspirations with pigtail catheters insertion and placement of biliary stent (BS) through endoscopic retrograde cholangiopancreatography (ERCP). Unfortunately on the 5th postoperative month she developed BBF and PBF that had been diagnosed clinically by the presence of biliptysis with dyspnea and bronchopneumonia. Diagnosis was confirmed by bronchoscope and ERCP which showed a fistulous tract between the leaking bile duct stump and the right pleura, lower lung lobe and bronchus. All trials of endoscopic biliary stenting to bypass the leaking duct were failed. **SURGICAL TECHNIQUE:** The patient had been treated surgically by 2 stages through abdominal approach with 2 weeks interval. Biliary reconstruction was done by performing Roux-en-Y left hepaticojejunostomy. **RESULTS:** The abdominal surgical approach alone was successful with complete fistula closure and complete resolution of the abdominal and pulmonary complications without the need to do any thoracic surgical procedure. The patient improved dramatically and had no recurrence of biliptysis. **CONCLUSION:** Biliary complications can lead to serious complication. If BBF occurred, conservative treatment should be tried first. In case of failure or complication of conservative treatment, the abdominal approach alone is effective and can cure both BBF and PBF, therefore avoiding thoracotomy with its related complication.

Abstract # P-220

Clinical Relevance of Microbiological Analysis of Stool and Bile during Cholangiography in Liver Transplant Recipients.

Anna Hüsing, Vito R. Cicinnati, Miriam Maschmeier, Hartmut H. Schmidt, Susanne Beckebaum, Iyad Kabar. *Department of Transplant Medicine, University Hospital Münster, Münster, Germany*

Background: Immunosuppression, denervation of the biliary tract, anatomic variations, and presence of biliary strictures favor colonization of bile with microorganisms after liver transplantation (LTx). Little is known about the clinical relevance of this colonization. This present study aimed to evaluate the microbiological spectrum and clinical significance of specimens identified in bile of liver transplanted patients.

Methods: Prospectively bile and feces were collected in 80 patients, who underwent ERCP after LTx. Samples were analyzed for colonization and antibiotic susceptibility. Follow up of patients was clinically observed with respect to development of infectious complications.

Results: Sixty eight of eighty samples [85%] were tested positive, whereas 12 [15%] specimens revealed no bacterial or fungal growth. A total of 168 microorganisms (98 [58.3%] gram-positive, 48 [28.6%] gram-negative and 11 [13.1%] candida albicans) were tested. 67% of isolates were sensitive to given prophylaxis, 35% were resistant to all 3 typically used antibiotics. 37% were tested sensitive to all 3 antibiotics. In 19 patients [23.8%], all isolates identified in bile were also detectable in feces. In 62 patients [77.5%] at least one microorganism was observed in both bile and feces. In 18 patients [22.5%] microorganisms were detectable in bile but not in feces. 15 Patients developed clinical signs of infection. In 12 of them [80%], blood cultures were positive. In 16 of 19 samples [84%], given peri-ERCP antibiotic prophylaxis was ineffective. 8 of the 16 samples revealed gram positive bacteria, 7 showed gram negative and one presented with Candida albicans. Notable, all gram positive bacteria [50%] were sensitive on vancomycin or linezolid.

Conclusion: Systematic monitoring of bile colonization during ERCP and gut flora prior to endoscopic interventions on biliary tract could help to select effective prophylactic antibiotic regimes as well as to facilitate the choice of suitable antimicrobial therapy in case of septic complications.

Abstract # P-221

The Cause and Management of Liver Abscess after Orthotopic Liver Transplantation. Ming Han, Xiaoping Wang, Xiaopeng Yuan, Jian Zhou, Xiaoshun He, Yi Ma. *Organ Transplantation Center, The First Affiliated Hospital, Sun Yat-sen University, GuangZhou, Guangdong, China*

Objective To investigate etiology, diagnosis and the alternative treatment of liver abscess after orthotopic liver transplantation(OLT). **Methods** Of 558 recipients of OLT from January 2007 to December 2012 in our transplant center, liver abscess were identified in 10 recipients (1.8%). The clinical presentation included fever, hepatic dysfunction, hypoalbuminemia and anemia. They were diagnosed mainly according to the clinical presentation and ultrasonography or CT scan. The treatments included aspiration and drainage of abscess, exterior and interior percutaneous transhepatic cholangial drainage (PTCD), antibiotics and supportive therapy and liver retransplantation. **Results** 8 Of 10 patients were cured, 6 cases by drainage and 2 cases by retransplantation. 2 cases died of pyemia. The cure rate was 80%. **Conclusions** The etiology of liver abscess after OLT is complicated. It may be related to hepatobiliary anastomotic stoma stenosis or obstruct, hepatobiliary ischemia or necrosis, the interventional therapy of hepatoma recurrence, hepatic artery thrombosis or stenosis and MP pulse therapy. Its prognosis seemed pessimistic, but early identified diagnosis and promptly correct treatment can improve its prognosis.

Abstract # P-222

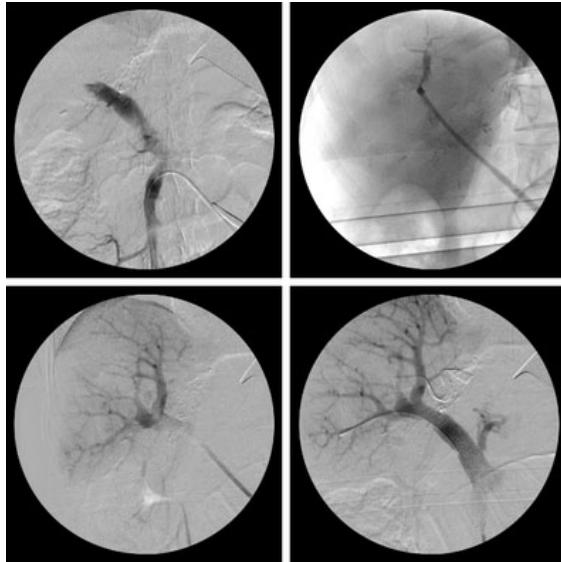
Successful Treatment of Diffuse Portal Vein Thrombosis after Splenectomy Following Living Donor Liver Transplantation

Sung-Hwa Kang, Shin Hwang, Sung-Gyu Lee, Eol Choi, Jae-Hyun Kwon. *Division of Hepatobiliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center, Seoul, Korea*

Splenectomy is performed after living donor liver transplantation (LDLT) for various reasons. Portal vein thrombosis (PVT) is rare but dreaded complication after splenectomy in LDLT recipients that can compromise patient and graft survival. We recently experienced a case of acute and diffuse PVT after splenectomy in LDLT recipient who was successfully treated with thrombectomy and anticoagulation therapy. The patient was a 56-year-old female who underwent LDLT using modified right lobe graft on June 2, 2006. Recently she developed thrombocytopenia and splenomegaly. We performed splenectomy to resolve thrombocytopenia. On postoperative fifth day, she complained pain on her left shoulder. A CT scan showed diffuse portal vein thrombosis.



The patient was taken immediately to the operating room. We opened splenic vein stump and Fogarty thrombectomy was attempted under intra-operative ultrasound guiding. After thrombectomy, portogram revealed recanalization of the splenic vein and main portal vein but still remained intra-hepatic PVT. An interventional radiologist put the McNamara thrombectomy catheter into intra-hepatic portal vein via inferior mesenteric vein. After several times of aspiration thrombectomy, portogram showed completed recanalization of intra-hepatic portal vein. We put the stent into spleno-mesenteric junction to prevent recurrent PVT.



Systemic heparinization was started immediately after operation and was converted warfarin and antiaggregation therapy. A postoperative Doppler ultrasound and CT scan showed patent portal vein. This case showed that PVT after splenectomy can be treated with surgical thrombectomy, intra-operative interventional procedure and anticoagulation therapy.

Abstract # P-223

A Rare Infectious Complication after Living Donor Liver Transplantation. Joo S. Kim, Doo J. Kim, Jae P. Jung, Jang Y. Jeon, Tae You, Samuel Lee. *Surgery, Hallym University, Seoul, Korea*

Despite the remarkable advances of liver transplantation, infections are still the most common and often life-threatening postoperative complications. Methicillin-resistant *Staphylococcus aureus* (MRSA) infection frequently complicates the postoperative course of liver transplant recipients. It has been well described that MRSA associated bacteremia, pneumonia and surgical site infection are common. However, MRSA infection manifesting as pyogenic spondylodiscitis is very rare. To our knowledge, pyogenic spondylodiscitis due to MRSA in lumbar spine after living donor liver transplantation (LDLT) has not been previously reported. Here, we report a 50-year-old man who developed pyogenic spondylodiscitis caused by MRSA after LDLT. Our patient underwent LDLT for HBV related cirrhosis. Immunosuppressive treatment was administered with basiliximab, tacrolimus, corticosteroids and mycophenolate mofetil. He discharged on postoperative the 28th day with uncomplicated course. At one week after discharge the patient was readmitted for abdominal pain and high fever. Bile leakage at the anastomosis site was found by ERCP and managed successfully with endoscopic nasobiliary drainage (ENBD). The culture of drained fluid showed MRSA and he was treated with vancomycin for 4 weeks. These treatment resulted in resolution of the infection. However, one month later the patient presented with severe back pain. At this time, MRI showed massive spondylodiscitis of lumbar 2-3 spine and paraspinous abscess formation. The patient underwent surgical debridement and primary bone graft. MRSA was cultured from the abscess. Postoperatively, the patient received intravenous vancomycin for 2 weeks and revealed complete outcome with no neurological sequelae. Presently he is followed up and doing well without rejection and other complications.

Abstract # P-224

Supply of Probiotics Reduces Posttransplant Early Infection Rates after Liver Transplantation: A Single Center Observational Cross-Sectional Cohort Study. Young-Kyu Kim¹, Seong-Hoon Kim^{1,2}, Seung-Duk Lee¹, Hana Shin², Yumi Lee², Soon-Ae Lee¹. ¹Center for Liver Cancer, National Cancer Center, Goyang, Gyeonggi, Korea; ²Organ Transplantation Unit, National Cancer Center, Goyang, Gyeonggi, Korea

Bacterial infections frequently occur early after liver transplantation (LT) and main cause of posttransplant death. Recently, there are several reports about that probiotics can reduce postoperative infections in patients undergoing colorectal resection for cancer. Now, our aim is to investigate whether the

posttransplant outcomes can be better in patients receive supply of probiotics following LT. An observational cross-sectional study was undertaken in 381 LT recipients. Comparison was made between one group (A) receiving a probiotics and another group (B) did not. One hundred thirty patients belonged to group A and 251 patients belonged to group B. Probiotics was given in group A on the postoperative day 1 and continued until the first day of a clinic visit. Early infection rate (within one month), duration of antibiotic therapy, noninfectious complications and one year mortality rate were recorded. The incidence of posttransplant early bacterial infections was significantly reduced [group A (2.3%) versus group B (7.2%); $P = 0.049$]. Postoperative hospital stay was significantly shorter in group A. However, there was no significant difference in one year mortality rate between both groups. Supply of probiotics (hazard ratio = 0.22, 95% confidence interval (0.05-0.89, $P = 0.034$) was an independent factor for early bacterial infection in multivariate regression analysis. Posttransplant supply of probiotics reduces early bacterial infection rates with a reduction of hospital stay following LT. Multicenter randomized prospective study is required to confirm our findings.

Abstract # P-225

Risk Factors for the Development of Early Hepatic Artery Thrombosis after Liver Transplantation. Luis M. Marin-Gomez¹, Carmen Bernal-Bellido¹, Gonzalo Suarez-Artacho¹, Jose M. Alamo-Martinez¹, Francisco Porras², Juan Serrano-Diaz-Canedo¹, Francisco J. Padillo-Ruiz¹, Miguel A. Gomez-Bravo¹. ¹Liver Transplantation Unit, University Hospital "Virgen del Rocío", Seville, Spain; ²Intensive Care Unit, University Hospital "Virgen del Rocío", Seville, Spain

- Introduction: Early hepatic artery thrombosis (HAT) represents a devastating complication after liver transplantation (LT). The aim of this study is to assess the different risk factors related to the eHAT.

- Methods: We prospectively analyzed per-operative variables from 271 consecutive adult LT from January '07 and December '12. We assessed: real MELD, creatinine and pretransplantation ascites, tabaquism, etiology of the LT, age and CMV-serology donor - recipient, cold ischemia time, number of arterial anastomoses, type of biliary anastomoses, arterial and portal flow before the closure, intraoperative transfusion of hemoderivates and fibrinogen, surgical time, GPT-peak in first 48 h post-LT and eHAT. Results were expressed as the median (percentil 25-75) for the continuous variables and as percentage for qualitative variables.

- Results: Of the 271 patients included in the study, 20 (7.4%) had eHAT. The global median of the outcome was 24 (8-46) months. We divided the series into two groups (with or without eHAT), that were homogeneous. The median of the arterial flow with/without was 109.5 (85.75-143) vs 164.5 (119-244) ml/min, $p=0.002$, respectively. The median of the portal flow with/without was 1.287 (1.005-1.933) vs 1.748 (1.352-2.400) ml/min, $p=0.014$, respectively. We use ROC analysis to calculate the cut-off value to predict the lack of eHAT, and we selected 137 ml/min (sensitivity: 0.676, 1-specificity: 0.278) for the arterial flow and 1.364 ml/min (sensitivity: 0.739, 1-specificity: 0.389) for the portal flow. The median of packed red blood cells transfused with / without eHAT was 4 (2.25-6.75) vs 3 (1-5) units respectively, $p=0.044$. The median of arterial anastomoses with / without eHAT was 1 (1-2) vs 1 (1-1) respectively, $p=0.017$. The median of the GPT-peak with / without eHAT was 2618 (875-3473) vs 475 (263-985) U/ml respectively ($p=0.044$).

- Conclusion: In our experience, the arterial and portal flow before the closure during LT, number of arterial anastomoses and intraoperative red packed cells transfused are risk factors in the univariate analysis for the development of eHAT.

Abstract # P-226

Minimizing Incidence of Hepatic Artery Thrombosis in Living Donor Liver Transplantation. Naimish N. Mehta, Vivek Mangla, Vibha Varma, Shailendra Lalwani, Vinay Kumaran, Samiran Nundy. *Department of Surgical Gastroenterology & Liver Transplantation, Sir Ganga Ram Hospital, New Delhi, India*

Background

Hepatic artery thrombosis (HAT) following liver transplantation (LT), a major source of morbidity and mortality, is more common in children and after living donor liver transplantation (LDLT). This study was done to analyze the results of our arterial anastomotic technique in LDLT.

Methods

Between July, 2010 and November, 2013, we performed 148 LT procedures (145 LDLT and 3 DDLT). Hepatic artery (HA) anastomosis was done using 2.5 x loupe magnification in 146 and operating microscope in two patients.

Doppler ultrasound was done daily for five post-operative days routinely and as required thereafter. Data for all patients undergoing LT is maintained in a prospectively maintained database.

Results

There were 123 right liver (RL), 16 left liver (LL), 5 left lateral segment (LLS) and 1 dual lobe (RL and LL) grafts. Mean age of patients was 43 years. Nine patients were < 12 years and 3 were <1 yr of age. Inflow artery was the recipient right hepatic artery (RHA) in all 5 LLS grafts. Amongst left liver (LL) grafts, 14 patients had a single graft artery, inflow was obtained from left Hepatic artery (LHA) in 9, RHA in 4 and segment 4 Artery (s4A) in 1 patient. Two patients with LL grafts needed two arterial anastomosis (LLS artery to recipient LHA, s4A to RHA). Amongst right lobe (RL) grafts, 12 grafts had two arteries, 7 required one and 5 required two separate anastomoses. Inflow in RL grafts with single arterial anastomosis was obtained from recipient RHA in 108, LHA in 6, Hepatic artery proper in 2. Two patients required aortohepatic conduits (autologous left saphenous vein) because of dissection in recipient hepatic artery.

One adult patient with pre-operative portal vein thrombosis (PVT) developed both HAT and PVT on post-operative day 5 detected on Doppler. He was re-explored with revision of both anastomoses. However, the patient succumbed to delayed graft function and sepsis subsequently despite a normal Doppler ultrasound. No other patient developed early or late HAT in the entire series. Incidence of HAT was 0.7% in this series. Median ICU and post-operative hospital stay were 5 and 13 days respectively. Overall mortality was 12% (n=18).

Conclusion

Incidence of HAT can be significantly reduced in LDLT by following a standardized technique and confirming a satisfactory flow on intra-operative Doppler ultrasound thereby improving outcomes.

Abstract # P-227

The Hemothorax Caused By the Chest Tube Insertion in the Deceased Donor Liver Transplantation Patient: A Case Report.

Ju Ik Moon, Seong Uk Cheon, In seok Choi. *Department of Surgery, Konyang University Hospital, Konyang University School of Medicine, Daejeon, Korea*

Introduction: Pleural effusions occur in almost patients underwent liver transplantation. However, some patients required a thoracocentesis or insertion of a chest tube as treatment for the effusion. The remaining patients either had spontaneous resolution of the effusion or responded to diuretic therapy. Chest tube insertion in patients can lead with complications including pneumothorax, hemothorax, empyema, electrolyte abnormalities, and renal failure. Although many authors have cautioned against chest tube insertion in patients, this procedure is still performed. Thus, this is a case report for the hemothorax caused by the chest tube insertion in the deceased donor liver transplantation patient

Case: A 48-year-old female with alcoholic liver cirrhosis was referred for liver transplantation. Her MELD score was 40. From the deceased donor, the liver transplantation has been performed. Before the transplantation, chest X-ray shows that large amount of pleural effusions at both lungs. We performed chest tube insertion after liver transplantation. On the postoperative 3day, we found large sized mass at left lung field by chest x-ray. We observed about 10X5 cm sized loculated hematoma at left pleural space by chest computer tomography scan. But, hemoglobin level and ABGA remains stable. We decided conservative management with thoracic surgeon. Afterward, there was no pleural effusion or decreased hemoglobin level detected, we removed chest tube at left lung. And the patient discharged on post-operative day 146.

Conclusion: the prevalence and mortality of the liver transplantation patient may correlate toward morbidity after the liver transplantation. Therefore, in order to drainage of pleural effusion, the usage of the chest tube insertion would be done with caution, because the injury on the lung parenchyma and pleura caused the hemothorax and pneumothorax.

Abstract # P-228

Abdominal Closure with Bogota Bag after Pediatric Liver Transplantation. Koray Kutluturk, Emrah Otan, Ertugrul Karabulut, Cemalettin Aydin, Cuneyt Kayaalp, Sezai Yilmaz. *General Surgery, Inonu University Institute for Liver Transplantation, Malatya, Turkey*

Introduction:Most of the pediatric liver transplantations (PLT) require arrangement for accommodating the donor graft which is relatively bigger. Bogota bag is a sterile plastic bag for temporary closure of abdominal wounds enlarging abdominal cavity and lowering intraabdominal pressure. This study

presents our experience with bogota bag used for abdominal closure of PLT. **Materials and Methods:**Retrospective review of 151 consecutive PLT performed at our center between July 2009 and October 2013. A sterile saline plastic bag tailored to the abdominal wall was sewn in 66 patients. Results of mortal cases unrelated to procedure was excluded. Remaining 30 recipients' demographics, clinical, details, were analysed.

Results:Thirty PLT required abdominal wall closure with bogota bag. Demographic and clinical details are given.

Demographic and clinical details of the patients

DATA	N	Percent (%)
Female	13	43,3
Male	17	56,6
Living donor liver transplantation	16	53,3
Cadaveric donor liver transplantation	14	46,6
Bogota bag following initial operation	19	63,3
Bogota bag following second or later operation	11	36,6
Primary closure of the bogota bag	11	36,6
Bogota bag left to secondary healing	9	30
1 revision for bogota bag	11	36,6
Revision more than once for bogota bag	19	63,3

Indications for the second operation group was abdominal compartment syndrome in 5 (16,6%),transplantation related early complications in 3(10%),re-transplantation in 2(6,6%) and hepaticojejunostomy in 1(3,3%) patients. Intestinal perforation rate was 4 in 30 patients(13,3%).5 (16,6%) cases had biliary leakage. Abdominal sepsis rate was (33,3%). Mortality rate was 23,3%.

Discussion: Most of the PLT are performed with donor grafts, larger in dimension than required. Alternative abdominal wall closure techniques to provide enough space for accommodating the abdominal content postoperatively. Bag was applied during initial operation in most of the patients (63,3%) to limit the abdominal pressure. Alternatively, procedure was applied following a second surgery to provide direct observation postoperatively. Abdominal sepsis and intestinal injury was observed in some of the patients. Procedure is potentially reversible.

Conclusion:Bogota bag is a safe and reliable method for abdominal closure providing a reduction in abdominal pressure and opportunity for direct observation of the abdominal cavity postoperatively.

Abstract # P-229

Double Trouble in Living Donor Liver Transplantation – Implications of Double Graft Artery. Kumar Palaniappan, Vivekandan Shanmugam, Srinivas Reddy, Mohamed Rela. *Institute of Liver Diseases & Transplantation, Global Health City, Chennai, Tamilnadu, India*

INTRODUCTION: Hepatic artery thrombosis (HAT) after living-donor liver transplantation (LDLT) is a potentially life-threatening complication. Although the introduction of microsurgical techniques has significantly decreased the incidence of HAT after LDLT, it remains a challenge for surgeons. The need for revascularisation of multiple graft arteries in living donor liver transplantation is controversial. The aim of this retrospective study is to analyse the outcomes of patients who had grafts with multiple arteries. **METHODOLOGY:** A total of 181 patients underwent living donor liver transplantation between Jan 2010 & Dec 2013 at our institution. All the donors were screened by a standard protocol & all had a preoperative Triphasic CECT Scan for arterial anatomy. Donors who had more than one graft artery were included in the study.

RESULTS: None of the grafts had more than two arteries. 19 grafts (10.4%) had multiple arteries. The liver grafts were grouped into three. Group I (n=162) had a single graft which was reconstructed. Group II (n=15) single vessel being reconstructed & Group III (n=4) where two arteries were reconstructed. The decision to reconstruct was based on vascular supply pattern based on the preoperative CECT abdomen & also intra operatively in the donor (looking for back bleed, by simultaneously clamping the portal venous inflow & clamping one of the arteries). The decision was reconfirmed in the recipient, by assessing the back bleed after re-vascularising the graft with one artery. In two patients, back table reconstruction was done to the graft & two patients had two separate anastomosis. Two patients (10.5%) in group II had bile leak & re-exploration was done in one. There was no arterial thrombosis. The biliary stricture rates were not statistically significant. **CONCLUSION:** Based on our criteria, we had an excellent outcome of grafts with multiple arteries. So we recommend a single arterial revascularisation of the graft, if the criterion is fulfilled.

Abstract # P-230

The Liver Packing for the Control of Intraoperative Hemorrhage during Liver Transplantation: A Single-Center Experience.

Damiano Patrono, Francesco Tandoi, Fabio Maroso, Elisabetta Magra, Costanza Ajani, Bertolotti Giovanni, Romagnoli Renato, Salizzoni Mauro. *General Surgery 2U - Liver Transplantation Center; A. O. Città della Salute e della Scienza di Torino - University of Turin, Turin, Piedmont, Italy*

Background: Temporary liver packing (LP) is an accepted technique for the control of bleeding after severe liver trauma, a setting very similar to that of profuse hemorrhage occasionally occurring during Liver Transplantation (LT).

Aim: To evaluate the safety and the efficacy of LP in the setting of LT.

Patients and Methods: We retrospectively reviewed the charts of the LT recipients treated with LP after failure of conventional hemostasis techniques. Collected data included baseline pre-LT status, donor features, intraoperative variables, and postoperative outcomes. LP patients were compared with a simultaneous cohort of patients transplanted without LP.

Results: 107 patients were treated with LP in the period from January, 2003 to July, 2013, representing 7.7% of the 1396 adult patients transplanted during the same period. The indication for LP was diffuse peri-hepatic bleeding, damage of the liver allograft, or hemorrhage related to outflow obstruction in 83 (77.6%), 12 (11.2%) and 12 (11.2%) cases, respectively. At the moment of LP, median pH, temperature, lactate and INR were 7.25, 34.5 °C, 5.4 mmol/L and 3.81, respectively. LP was invariably effective in controlling hemorrhage and could be removed during a single second-look operation in 94 (88%) patients after a median time of 48 hours after LT. Severe (Dindo-Clavien grade 3-4) post-LT complications were observed in 35 (33%) patients. Three-months patient and graft survival was reduced in patients undergoing LP (98% versus 90%, $p < 0.001$, and 95% versus 83%, $p < 0.001$, respectively). However, at multivariate analysis, LP per se was not a significant predictor of a reduced 3-months patient or graft survival. Rather, 3-months patient survival was associated with recipient's age, MELD score, number of blood units transfused and serum lactate at the end of the transplant operation, whereas 3-months graft survival was associated with macrovesicular steatosis and end-procedure serum lactate.

Conclusion: LP in the course of LT allows an effective control of hemorrhage even in case of deep acidosis, hypothermia and coagulopathy. The reduced survival rates observed in these patients are the result of the pre-LT status and of intraoperative events rather than of the LP itself.

Abstract # P-231

ERCP Versus MRCP for Diagnosis of Anastomotic Biliary Strictures in the Recipients after Orthotopic Liver Transplant.

Yunsheng Qin. *First Affiliated Hospital, Medical School of Zhejiang University, Hangzhou, China*

Background and Objective: Anastomotic biliary stricture (ABS) is one of the leading causes of morbidity and mortality in orthotopic liver transplant (OLT) recipients. MRCP is considered as the most convenient approach for the diagnosis of ABS, but the diagnostic accuracy remains unsatisfactory. Endoscopic retrograde cholangiography (ERC) is increasingly being used for diagnosis. Further, the technique can be used to treat this disease at the same time. However, the diagnostic accuracy and operation-related risk of ERCP for OLT patients remain unknown. In this article, we aimed to investigate the diagnostic effect of ERCP in OLT recipients with ABSs.

Methods: Retrospective evaluation of all ERCPs performed in OLT recipients with ABSs at our institution during the past 6 years. The diagnostic effect of ERCP is analyzed with receiver operation characteristic (ROC) curve.

Results: a total of 200 ERCPs performed in 93 LT recipients with duct-to-duct anastomotic strictures. The composite sensitivity and specificity of ERCP were 0.95 (95% CI, 0.92-0.98) and 0.93 (95 CI, 0.90-0.96), respectively. The area under curve (AUC) is significant larger than that of MRCP ($P < 0.05$). Meanwhile, the total complications related to ERCP are 8% in OLT patients.

Conclusions: ERCP is a safe and effective approach for the diagnosis of anastomotic stricture post-OLT.

Abstract # P-232

Recurrent Hepatitis C Virus Genotype 4 Infection after Living Donor Liver Transplantation: Risk Factors and Outcome.

Emad Hamdy Salem¹, Mohammed Taha², Ayman Alsebaey³, Amr Aziz⁴, Khaled Abou El-Ella⁵. ¹Hepatobiliary Surgery and Liver Transplantation, National Liver Institute, Menoufiya University, Shihin El-Kom, Menoufiya, Egypt; ²Hepatobiliary Surgery and Liver Transplantation, National Liver Institute, Menoufiya University, Shihin El-Kom, Menoufiya, Egypt; ³Hepatobiliary Surgery and Liver Transplantation, National Liver Institute, Menoufiya University, Shihin El-Kom, Menoufiya, Egypt; ⁴Hepatobiliary Surgery and Liver Transplantation, National Liver Institute, Menoufiya University, Shihin El-Kom, Menoufiya, Egypt; ⁵Hepatology, National Liver Institute, Menoufiya University, Shihin El-Kom, Menoufiya, Egypt

Objectives: The recurrence of HCV genotype 4 post liver transplantation endangers the patient and graft survival. The aim is to analyze the different factors for HCV recurrence, the effect of the recurrence and its management on the outcome of liver transplantation. **Materials and Methods:** After exclusion of the 6 months mortality, dual HCV and HCC patients, about 55 HCV related LDLT patients were enrolled in the study and were followed up from 6 to 60 months. Demographic, preoperative, intraoperative and postoperative data were studied. HCV recurrence was defined by elevated transaminases, positive serum HCV RNA and liver biopsy findings. Univariate and multivariate analysis were done on previous data to detect the favoring factors of HCV recurrence. **Results:** About 21/55 of the patients had HCV recurrence and one of them developed cirrhosis on follow up. By univariate analysis; CMV infection, acute cellular rejection, pulse steroids treatment and multiple pulse steroids treatment were predictors of HCV recurrence. Multivariate analysis revealed only acute cellular rejection to be a predictor. The overall survival of all patients, non-recurrent HCV and recurrent HCV was 90.9%, 91.2% and 90.5% respectively.

linear cox logistic regression test of risk factors of recurrence

Model	P value	Lower Bound(95% CI)	Upper Bound(95%CI)
CMV	0.391	0.153-	0.386
Operative time/ h	0.117	0.008-	0.074
Acute rejection	0.000	0.281	0.840
Multiple Pulse steroid	0.769	0.459-	0.618

Conclusion: The occurrence of acute rejection was independent predictor of HCV recurrence post LDLT, so its prevention is required to decrease this recurrence. Similarly, prevention of CMV infection, decreasing number of pulse steroids and operative time is important to decrease post transplant HCV recurrence.

Abstract # P-233

Reconstruction of Variant Right Hepatic Artery in Liver Transplantation: Comparison of Two Techniques.

Ailton Sepulveda¹, Louise Barbier², Grazia Fusco², Federica Dondero², Fabiano Perdigao¹, Olivier Scatton¹, Jacques Belguit², Olivier Soubrane¹. ¹Hepatobiliary Surgery and Liver Transplantation, Hôpital Saint Antoine - APHP, Paris, Ile-de-France, France; ²Hepatobiliary Surgery and Liver Transplantation, Hôpital Beaujon - APHP, Clichy, Ile-de-France, France

The presence of an accessory right hepatic artery (RHA) in liver grafts requires a reconstruction to provide a single axis for recipient implantation. The classical reconstruction (Cla) consists of a Carrel patch between the superior mesenteric artery (SMA) and the celiac trunk. An alternative technique (Alt) may be performed directly between RHA and splenic or gastroduodenal artery. This study compared classical and alternative techniques on whole cadaveric liver transplant. Endpoints comprised arterial and biliary complications, re-transplantation and death. Between January 2009 and June 2013, 735 liver transplants were performed in two centers. We identified 47 (6.4%) recipients that had grafts with a RHA that necessitated arterial reconstruction. Classical technique was performed in 22 cases, and an alternative reconstruction in 25 cases. Nine (41%) patients in Cla group had arterial complications, compared to seven (28%) in Alt group ($p=0.379$). In Cla group, 3/9 patients (33%) with arterial complications developed secondary biliary complications, compared to 4/7 patients (57%) in Alt group ($p=0.614$). There were 4 deaths in Cla group related to arterial complications, versus 1 in Alt group ($p=0.613$). There was one re-transplantation in Cla group, and none in Alt group ($p=1.000$). In conclusion, the presence of an accessory RHA is associated with a high rate of arterial complications. There is no significant difference in terms of arterial complications between the two techniques, although classical reconstruction tends to generate poorer outcomes.

Abstract # P-234

Risk Factors of Late Arterial Complications in Liver Transplantation. Andres Valdivieso^{1,2}, Lorea Martinez-Indart³, Mikel Prieto¹, Mikel Gastaca^{1,2}, Alberto Ventoso¹, Patricia Ruiz¹, Amaya Mataranz¹, Javier Bustamante⁴, Ibone Palomares¹, Jose Ramon Fernandez⁴, Milagros Testillano⁴, Maria Jesus Suarez⁴, Miguel Montejo², Jorge Ortiz-de-Urbina¹. ¹HPB and Liver Transplant Unit, Cruces University Hospital, Bilbao, Spain; ²Medicine School, University of Basque Country, Leioa-Bilbao, Spain; ³Clinic Epidemiology Unit, Cruces University Hospital, Bilbao, Spain; ⁴Hepatology Unit, Cruces University Hospital, Bilbao, Spain

Knowing the risk factors of late arterial complications (LAC) in liver transplantation (LT).

From February 96 to February 2013 we have performed 1000 LT on 952 patients. LAC were considered when they appeared after 30 days from the LT. In order to perform univariate and multivariate analysis we retrospectively studied the following parameters: donor age>60, stroke as cause of donor death, steatosis >30%, necrosis of the liver after reperfusion >20%, receptor age >60, underlying disease, TACE, CMV positive in the donor and negative in the recipient, red cell >4 units, plasma >10 units, platelet transfusion, cold ischemia time >360 min, warm ischemia time >60 min, 2 or more arterial anastomosis, arterial ischemia time >50 min, high risk anastomosis according to the surgeon opinion, hepaticojunostomy, acute cellular rejection treated with bolus of steroids and hemoperitoneum requiring reoperation. Results: 19 LAC were diagnosed after 30 days from the LT (1.9%). There were 13 stenosis and 6 thrombosis. In the univariate analysis, the transfusion of platelets, >5 red cell blood package, >10 fresh frozen plasma and arterial ischemia time >50 min, were involved in the risk of developing a late arterial complication. In the multivariate analysis, only the transfusion of platelets and the time of arterial ischemia >50 min are involved.

Multivariate analysis

	β	p-value	OR	I.C. 95% OR	
				Lower	Higher
Platelets	1.601	0.012	4.972	1.433	17.247
Arterial Ischemia Time	1.112	0.023	3.042	1.168	7.923

Table 1: Multivariate logistic regression

Conclusions: Only the transfusion of platelets during the surgery and an arterial ischemia time >50 min were associated with high risk of late arterial complications after LT.

Abstract # P-235

ERCP-Related Complications in Liver Transplant Recipients With Anastomotic Biliary Strictures. Kang-Jie Chen, Qi-Yong Li, Yun-Sheng Qin, Fu-Chun Yang, Shu-Sen Zheng. *Department of Hepato-Biliary-Pancreatic Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China*
Background and Objective: Anastomotic biliary strictures (ABSs), is one of the most common complications after orthotopic liver transplantation (OLT). ERCP is increasingly being used to solve this problem. However, the incidence and risk factors for post-ERCP complications remain unclear. In this study, we aimed to investigate the incidence, risk factors, and short-term outcome of post-ERCP complications in OLT recipients with ABSs. Methods: Retrospective evaluation of all ERCPs performed in OLT recipients with ABSs at our institution during the past 6 years. A cohort of patients received ERCPs at the same period were selected as control group. Predictive factors were determined by univariate and multivariate analyses. Results: A total of 200 ERCPs performed in 93 LT recipients with duct-to-duct anastomotic strictures. The rate of overall complications, including pancreatitis, cholangitis, postsphincterotomy bleeding, and perforation, is 8% in OLT patients, slightly higher than that of the control group. No patients died of ERCP-related complications. Logistic regression identified malignant disease, concurrent of choledocholithiasis and more than 2 pancreatic duct contrast injections as independent risk factors for post-ERCP complications. Conclusions: ERCP is a safe and effective approach for the treatment of anastomotic stricture post-OLT. However, complications were more common in OLT recipients with malignant tumors and those concurrent with choledocholithiasis, and more than 2 pancreatic duct injections.

Abstract # P-236

Clinical Observation of Liver Transplantation for Adult Langerhans Cell Histiocytosis. Jian Zhou, Weiqiang Ju, Zhiyong Guo, Xiaoping Wang, Chuanbao Chen, Xingyuan Jiao, Xiaoshun He. *Organ Transplantation Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China*

Objective: To study the clinical effect of liver transplantation for adult langerhans cell histiocytosis (langerhans cell histiocytosis, LCH) with hepatic involvement.

Methods: A total of 998 patients was performed liver transplantation at organ transplantation center, the First Affiliated Hospital, Sun Yat-Sen University, from 2000 to 2012, of which only 1 patient was diagnosed primary LCH before liver transplantation. The clinical data was analyzed retrospectively. Results: The operation using modified piggyback orthotopic liver transplantation, and the blood group between donor and recipient was identical, and operation time was 7 hours, and the anhepatic phase was 40 minutes. Warm ischemia time of liver graft was 4 minutes, and cold ischemia time was 6 hours. Postoperative liver function recovered well, and the recipient discharged on 12 days post-transplant. Half a year of follow-up, the function of the transplanted liver was normal.

Conclusion: LCH with hepatic involvement is a rare indications for liver transplantation, and the good effect after liver transplantation can be achieved.

Abstract # P-237

Diagnosis and Treatment of Hyperosmolar Non-Ketotic Hyperglycemic Coma Induced By Methylprednisolone Pulse Therapy for Acute Rejection after Liver Transplantation. Jian Zhou, Weiqiang Ju, Xiaopeng Yuan, Chuanbao Chen, Xiaoping Wang, Ming Han, Xingyuan Jiao, Xiaoshun He. *Organ Transplantation Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China*

Objective: To summarize the diagnosis and treatment of hyperosmolar non-ketotic hyperglycemic coma (HNKHC) induced by glucocorticoid pulse therapy for acute rejection after liver transplantation.

Method: A retrospective analysis of 913 cases performed liver transplantation at organ transplantation center, the First Affiliated Hospital, Sun Yat-Sen University, only 1 case with postoperative HNKHC induced by glucocorticoid for acute rejection, the clinical data was summarized and relative literatures was reviewed.

Results: The morbidity of HNKHC was 1.09‰ in this study. HNKHC was a serious emergency, and deteriorated very fastly without special clinical features. The management of large amounts of glucocorticoid was the chief incentive. The principles of treatment included large amounts of fluid infusion, dripping small dose of insulin, redressing disorder of electrolyte and oxidos. Conclusions: HNKHC was a rare, but potentially fatal disease. Timely accurate diagnosis and reasonable therapeutic measures were essential for good prognosis. Clinicians should pay more attention to the occurrence of HNKHC after liver transplantation.

Abstract # LB-10

Immunomodulation by Prostaglandin E1 Reduces the Risk of Early HCC Recurrence Following Liver Transplantation. Arno Kornberg¹, Ulrike Witt¹, Katharina Thrum², Helmut Friess¹, Dietmar Gottschild³. ¹Surgery, Technical University, Munich, Germany; ²Pathology, Helios Klinikum, Berlin, Germany; ³Nuclear Medicine, Friedrich-Schiller-University, Jena, Germany

Background:

Early posttransplant recurrence of hepatocellular carcinoma (HCC) is associated with inferior prognosis after liver transplantation (LT). There is increasing evidence that ischemia-reperfusion injury (I/R) promotes engraftment of circulating tumor cells (CTC) and, thereby, early posttransplant recurrence of HCC. The aim of this trial was to analyze the impact of targeting I/R by post-LT administration of a prostaglandin E1 analogue (Alprostadil) on early (within 1 year) posttransplant HCC recurrence.

Patients and methods:

A total of 103 liver transplant patients with HCC were included in this retrospective study. Based on final pretransplant clinical staging, patients were classified as Milan In and Milan Out recipients. According to early allograft function (aminotransferases) and perfusion (arterial resistive index) liver recipients received i.v. Alprostadil for a minimum of one week post-LT.

Clinical tumor variables (Milan status, tumor macromorphology, TACE, PET status), variables of I/R and PGE1-treatment were correlated to early post-LT HCC recurrence.

Results:

Sixty-two patients have finally received i.v. Alprostadil posttransplantation. Disease-free survival rates at 5 years post-LT were 86.5% in PGE1-patients and 60% in non-PGE1-recipients ($P = 0.001$). Seven patients of the non-PGE1-group (17.1%) but only one of the PGE1-subpopulation (1.6%; $P = 0.01$) suffered from early HCC recurrence, although numbers of Milan Out patients were comparable between both subgroups (38.7% versus 39%; $P=0.9$). In univariate analysis, total tumor diameter, diameter of largest tumor nodule, cold ischemia time, total ischemia time, estimated blood loss, and PGE1-treatment had significant impact on tumor-related outcome. In multivariate analysis, only Alprostadil-therapy remained as independent predictor of freedom from early HCC recurrence ($P = 0.03$).

Conclusion:

Our preliminary results implicate that immunomodulation by PGE1 may be a useful approach for reducing risk of CTCs engraftment and, thus, of early HCC recurrence. These results have to be confirmed by a controlled prospective approach, including analyzing molecular mechanisms of action.

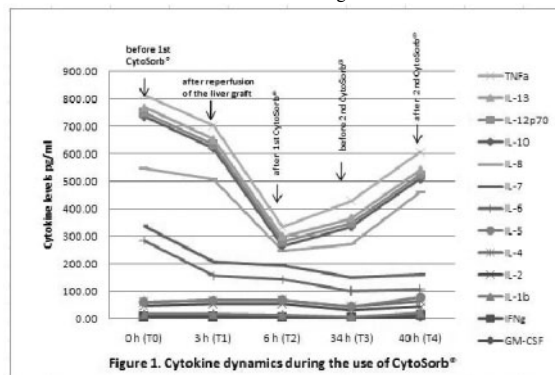
Abstract # LB-11

First Use of a Hemoadsorption Device (Cytosorb®) During Continuous Venovenous Hemofiltration (CVVH) in a Patient Undergoing Retransplantation With ABO Incompatible Graft for Acute Graft Dysfunction. Dana Tomescu¹, Mihai Popescu¹, Cristiana Pistol-Tanase², Anca Nastase³, Simona O. Dima³. ¹Anaesthesiology and Critical Care, Fundeni Clinical Institute, Bucharest, Romania; ²Biochemistry Proteomics, Victor Babes National Institute of Pathology, Bucharest, Romania; ³General Surgery and Liver Transplantation, Fundeni Clinical Institute, Bucharest, Romania

Acute graft dysfunction (AGD) after liver transplantation (LT) represents a life-threatening event, with fatal outcome without retransplantation (rLT). The systemic inflammatory response syndrome (SIRS) accompanying AGD is mainly responsible for severe systemic complications and death.

Methods. We report the case of a 46 years old man undergoing emergency rLT with an ABO incompatible graft for AGD. During surgery CVVH was used with a hemoadsorption device (Cytosorb®). A second CVVH session with Cytosorb® was necessary 24 hours after rLT, because of a hyperdynamic hemodynamic status interpreted as SIRS. Cytokine levels were measured at the beginning of rLT (T0), after graft reperfusion (T1), at the end of rLT (T2) and before (T3) and after (T4) the second CVVH session. Hemodynamic parameters and laboratory data were assessed.

Results. During the first session of CVVH with Cytosorb®, proinflammatory cytokines IL-1b, TNF- α , IL-6 and IL-8 levels decreased and IL-4, IL-13 remained constant and within the normal range.



Also, IL-10 and MCP-1 levels decreased 10-fold to near normal levels. The patient had an improvement in hemodynamics with a continuous decrease of vasopressor support during surgery. A further decrease was observed in IL-6 and MCP-1 levels during the use of the second Cytosorb® while the level of other cytokines remained constant. An improvement in cardiac output

(CO) was observed after the second CVVH session with Cytosorb®: cardiac index decreased from 7.2 to 4.1 l/min/m² systemic vascular resistance index increased from 823 to 1438 dyn*s*cm⁻⁵*m².

Conclusion. The use of Cytosorb® during a non-infectious SIRS was associated with an improvement in both CO and hemodynamics during surgery. Hemoadsorption devices may be useful in bridging patients with AGD to LT.

Abstract # LB-12

Everolimus Plus Mycophenolate Mofetil as Initial Immunosuppression after Liver Transplantation. M. Jiménez Pérez¹, R. González Grande¹, F.J. Rando Muñoz¹, J. de la Cruz Lombardo¹, M.A. Suárez Muñoz², J.L. Fernández Aguilar², J. Santoyo Santoyo², J.M. Rodrigo López¹. ¹Liver Transplant-Hepatology Unit. UGC de Aparato Digestivo., Regional University Hospital, Málaga, Spain; ²Unit of HBP Surgery and Liver Transplantation., Regional University Hospital, Málaga, Spain

Introduction: Everolimus (EVL) and mycophenolate mofetil (MMF) both have a safety profile sufficient to be used in cases of renal dysfunction and neurologic or neoplastic disorders, all situations that are often related with calcineurin inhibitor (CNI) toxicity. However, their use as de novo immunosuppression in a CNI-free therapy after liver transplantation has not been fully established.

Objectives: To evaluate the efficacy and safety of a de novo immunosuppression regimen using EVL plus MMF without CNI after liver transplantation.

Material and methods: 16 men and 4 women who underwent liver transplantation received immunosuppression with EVL plus MMF without CNI, with induction with steroids and 16 patients with basiliximab as well. In 10 cases the treatment was indicated as induction immunosuppression without CNI as prevention for nephrotoxicity or neurotoxicity or recurrence of hepatocarcinoma in predisposed patients and in another 10 after suspending CNI during the immediate post-transplant period before hospital discharge, due mainly to nephrotoxicity or neurotoxicity or the presence of hepatocarcinoma with a high risk of recurrence in the hepatectomy specimen.

Results: The mean follow-up period was 24 months (range 8-66 months). One patient had a recurrence of the hepatocarcinoma 8 months post-transplant. All the cases of nephrotoxicity or neurotoxicity resolved favorably. There were 7 rejections (23%) (4 were confirmed by biopsy); 2 coursed to chronic rejection both requiring a retransplant, 2 resolved after dose adjustment, and in 3 cases conversion to CNI was necessary. The secondary effects seen were hyperlipidemia (25%), surgical wound dehiscence (10%), lymphedema (10%), CMV infection (25%), myelotoxicity (25%), and proteinuria in one case (5%), this latter being the only patient who required interruption of the regimen.

Conclusions: The regimen reported here proved efficient at preventing or treating nephrotoxicity and neurotoxicity with an acceptable tolerability profile. However, the high rate of associated rejections means much caution must be exercised in its use during the immediate post-transplant period. It is advisable to associate the regimen with low doses of CNI.

Abstract # LB-13

Chimeric Tolerogenic Regulatory CD8+ T Cells Induced By Trogocytosis, a Bridge To Immune Tolerance. Xian Liang Li, Dong Dong Han, Ping Li, Fei Pan, Jian Tao Kou, Hua Fan, Qiang He. HBP Department, Bei Jing Chao Yang Hospital, The Capital Medical University, Bei Jing, China

Exchanges of membrane patches and cytoplasm (Trogocytosis) split theoretical and actual functions of immune cells. Through Trogocytosis, intercellular transfer of histocompatibility complexes class II (MHC II) molecules has been thoroughly observed in T lymphocytes, the function of transferred MHC II antigens in T lymphocytes is still a subject of much debate, especially its relevance with transplant tolerance and regulatory T cells (Tregs) generation remain unknown.

By using a model of transplant tolerance mediated through CD8+ Tregs in rats, here, we showed that the increased expression of MHC II molecules on CD8+ Tregs was not only a marker to identify tolerogenic CD8+ Tregs, also functional mediated the tolerance induction after adoptive transfer. Trogocytosis occurred between CD8+ Tregs and autogenic or allogenic pDCs and was observed in vivo in spleen and allograft section and in vitro coculture experiment, by which induced the higher expression of MHC II antigens in CD8+ Tregs. The intercellular exchanges between CD8+ Tregs and pDCs

were bidirectional and included not only the membrane anchored proteins, but also cytoplasmic protein, hence induced the generation of chemiric donor specific tolerogenic CD8⁺ Tregs.

In conclusion, here, we explored a novel mechanism of the generation of donor specific CD8⁺ Tregs by Trogocytosis, chemiric tolerogenic CD8⁺ Tregs were generated by capturing the MHC II molecules from pDCs, and then mediated the tolerance induction.

Abstract # LB-14

Remote Ischemic Preconditioning Protects Against Liver Ischemia-Reperfusion Injury via Heme Oxygenase-1-Induced Autophagy. Xiangcheng Li, Yun Wang, Chenyu Jiao, Jian Shen, Yonghua Xu, Hai Zhang, Yuan Tian, Changjun Huang, Ke Wang, Aihua Yao, Yue Yu, Xuehao Wang. *Liver Transplantation Center, The First Affiliated Hospital of Nanjing Medical University, Nanjing, Jiangsu, China*

Background: Growing evidence has linked autophagy to a protective role of preconditioning in liver ischemia/reperfusion (IR). Heme oxygenase-1 (HO-1) is essential in limiting inflammation and preventing the apoptotic response to IR. We previously demonstrated that HO-1 is up-regulated in liver graft after remote ischemic preconditioning (RIPC). The aim of this study was to confirm that RIPC protects against IR via HO-1-mediated autophagy. **Methods:** RIPC was performed with regional ischemia of limbs before liver ischemia, and HO-1 activity was inhibited pre-operation. Autophagy was assessed by the expression of light chain 3-II (LC3-II). The HO-1/extracellular signal-related kinase (ERK)/p38/mitogen-activated protein kinase (MAPK) pathway was detected in an autophagy model and mineral oil-induced IR in vitro. **Results:** In liver IR, the expression of LC3-II peaked 12–24 h after IR. The liver ultrastructure after IR revealed abundant autophagosomes in cells. Autophagy was inhibited when HO-1 was inactivated, which we believe resulted in the aggravation of liver IRI in vivo. In a hepatocyte in vitro IRI model, Hemin-induced autophagy protected rat hepatocytes from IRI, which was abrogated by HO-1 siRNA. Phosphorylation of p38-MAPK and ERK1/2 were up-regulated in Hemin-pretreated liver cells, and down-regulated after treatment with HO-1 siRNA.

Conclusions: RIPC-induced autophagy is protective of IRI in the liver, via HO-1/p38-MAPK-dependent signaling.

Abstract # LB-15

Impact of Intra-operative Blood Transfusion on Long-Term Outcomes of Liver Transplantation for Hepatocellular Carcinoma. S.H. Kenneth Chok¹, T.T. Cheung¹, C.Y. Albert Chan¹, W. William Sharr¹, H.Y. Simon Tsang¹, Y.Y. James Fung^{2,3}, W.C. Jeff Dai¹, S.C. Chan^{1,3}, C.M. Lo^{1,3}. ¹*Surgery, The University of Hong Kong, Hong Kong, Hong Kong*; ²*Medicine, The University of Hong Kong, Hong Kong, Hong Kong*; ³*State Key Laboratory for Liver Research, The University of Hong Kong, Hong Kong, Hong Kong*

Objective: To investigate the impact of intra-operative blood transfusion on the long-term outcomes of liver transplantation for hepatocellular carcinoma. **Patients and Methods:** Data of all adult patients who had liver transplantation for unresectable and unablatable hepatocellular carcinomas within the UCSF (University of California, San Francisco) criteria at Queen Mary Hospital in the period from January 2005 to December 2012 were reviewed. Patients with salvage transplantation were excluded from study.

Results: Ninety-nine patients were included in the study. Sixty-two (62.6%) patients received blood transfusion and 37 (37.4%) did not during transplantation. In comparison, patients with no transfusion were younger (54 vs. 56 years; p=0.04) and had a lower Model of End-stage Liver Disease Score (11 vs. 14; p<0.001). More of them had stage-1 tumours (64.9% vs. 37.1%; p=0.007) and fewer of them had postoperative complications of grade 3A or above in the Clavien-Dino classification (21.6% vs. 48.4%; p=0.008). No differences were observed in terms of hospital mortality (3.2% vs. 2.7%; p=1.00), 5-year overall survival (90.8% vs. 89.2%; p=0.611), and 5-year disease-free survival (90.5% vs. 89.2%; p=0.835). Multivariate analysis showed that only the presence of postoperative complication of grade 3A or above was associated with worse survival outcome (hazard ratio 7.108; 95% confidence interval 1.455-34.712; p=0.015).

Conclusions: Intra-operative blood transfusion has no significant impact on the long-term outcomes of liver transplantation for hepatocellular carcinoma whereas postoperative complications of grade 3A or above are associated with adverse survival outcomes.

Abstract # LB-16

DCD Grafts in HCC Patients: Oncological and Clinical Outcome. Irene Scalera, Moustafa Mourad, Thamara Perera, Hynek Mergental, Darius Mirza, Simon Bramhall, John Isaac, Paolo Muesan. *Liver Unit, Queen Elizabeth Hospital, Birmingham, United Kingdom*

Background

Patients listed for liver transplantation for hepatocellular carcinoma (HCC) is on the rise. However the shortage of organ donors cannot meet the current demand: there is a constant uptrend of patient dropout from the transplant list. In recent years an increasing number of HCC recipients have been transplanted with Donation after Circulatory Death (DCD) livers in the attempt to reduce waiting list mortality. The aim of this study was to analyse the oncological and clinical outcomes of HCC patients transplanted with DCD grafts.

Methods

All DCD donor liver transplants for HCC performed between June 2004 and January 2013 were included in the study and compared with DBD recipients transplanted for HCC in the same study period.

Donor and recipient characteristics were collected from a prospectively held database. Outcomes analysed included patient/graft/disease free survival, vascular/biliary and renal complications. A step-wise multivariate analyses for recurrence was performed.

Results

In the study period a total of 61 DCD liver transplant patients for HCC were compared with 76 DBD HCC recipients. Donor, recipient and tumor characteristics were similar between the two groups (except for an expected higher donor risk index and lower MELD in DCD group).

The DCD group showed a similar patient survival compared with DBD recipients at 1 year (84% vs. 85%), 3 years (69% vs. 71%) and 5 years (50% vs. 62%). Similarly no difference was found for graft survival at 1 year (82% vs. 84%), 3 years (67% vs. 69%) and 5 years (49% vs. 63%) and for disease-free patient survival (92% vs. 92%, 87% vs. 87% and 76% vs. 87%). Clinical outcomes were similar between the 2 groups in terms of primary non-function rates (4% vs. 6.6%), hospital stay (2 days vs. 3) and vascular/biliary complications (7/15% vs. 8/7%). The DCD recipients had a higher rate of renal replacement therapy (38% vs. 21%). AFP levels rather than the type of graft were an independent risk factor for recurrence.

Conclusion

DCD liver grafts in HCC patients provided similar oncological and clinical results compared with DBD recipients. Thus a DCD liver graft is not an independent risk factor of recurrence. Further studies are needed using matched pair analyses.

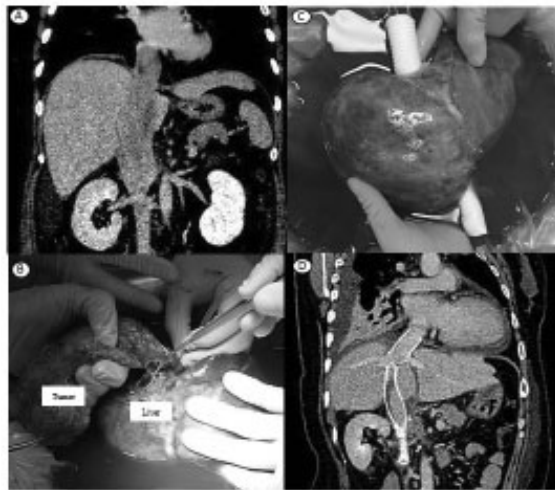
Abstract # LB-17

Auto Liver Transplantation for IVC Tumor. Susumu Eguchi, Mitsuhiro Takatsuki, Akihiko Soyama, Masaaki Hidaka, Tamotsu Kuroki. *Surgery, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan*

IVC tumor is rare, and generally, the only possible treatment is resection. There are several reports which showed the successful removal of the tumor with infrahepatic IVC, using artificial vessels. However, there have been no reports of successful removal of far advanced IVC tumor, extended beyond the orifice of hepatic veins. Here, we describe a case of IVC tumor extended to right atrium, successfully treated with auto liver transplantation.

A 40-year-old female presented with leg edema and was eventually diagnosed as having an IVC tumor originating at the level of the confluence of the right renal vein, extending to the right atrium. Three confluences of major hepatic veins were involved, and thus the liver and IVC including the whole tumor were removed en block with a cardiectomy, using extracorporeal circulation. After the IVC and tumor were removed from the liver on a back table, the liver was perfused with histidine-tryptophan-ketoglutarate solution via the portal vein. The liver was implanted after the hepatic veins were anastomosed to the prosthetic IVC, using the same procedure as that used for conventional whole-liver transplantation.

Figure: Auto liver transplantation for IVC tumor



The pathological diagnosis indicated leiomyosarcoma of the IVC. The patient is currently doing well with good liver function and patent hepatic veins, confirmed by contrast-enhanced computed tomography.

There are several reports of very aggressive hepatectomy using back table procedure for advanced liver tumor, using the technique of liver transplantation. Herein, we showed this approach can be applied not only for liver tumor, but for advanced IVC tumor. When the tumor is located at infrahepatic IVC, it can be removed with preserving the liver. When the tumor is extended up to the level of the orifice of hepatic veins, IVC tumor removal with right or left hepatectomy can be performed. However, in this case, the tumor was extended beyond hepatic veins up to right atrium, so that we decided to perform auto liver transplantation with removing IVC tumor with whole liver.

Abstract # LB-18

Transplantation Ethics. Aparna Dalal. *Anesthesiology, University of Washington Medical Center, Seattle, USA*

Several ethical dilemmas are encountered in endeavors to increase organ supply. Are body/human organs state property? The concept of presumptive consent involves normative consent and a conscription model, where body/human organs are a state property unless the individual chooses to "opt-out". Altruism is an ethical doctrine that holds that the moral value of an individual's actions depend solely on the impact on other individuals, regardless of the consequences on the individual itself. Though organ donation is theoretically founded on altruism, in reality, is egoism served? The presumed consent laws represent persuaded altruism designed by the egoistic needs of the society. Explicit consent is based on "direct reciprocity". Living donation satisfies "psychological egoism".

Ancient Chinese Confucian Book of Filial Piety asserts that "All parts of my body, hair and skin, which are received from my parents, should not be injured. This is the starting point of filial piety" Confucian ethical concepts and practices include ren, yi, and li. Ren is an obligation of altruism and humaneness. Yi is the upholding of righteousness and the moral disposition to do good. Li is a system of norms and propriety that determines how a person should properly act in everyday life.

The above concepts impact views regarding prisoners as organ donors. Should a prisoner be allowed to be an organ donor if he voluntarily consents? It gives the prisoner an opportunity to himself and others that he can do something worthwhile. Also, donation benefits both prisoner as well as society by compensating for crimes against society. On the other hand, free and voluntary consent is prohibited by prison environment. Should incentives such as reduction of prison term be offered for voluntary organ donation? Should financial incentives be officially allowed? Altruism is absent in the motivation, in reality, these donors are "sellers". Should respect for autonomy be weighed against moral dignity and limits of what money can buy?

Should a transplant program provide ongoing treatment to patients who have secured transplant organs under ethically questionable circumstances? Core commitments to nonjudgmental regard, beneficence, and fiduciary responsibility play a significant role in these circumstances.

Lastly, does encouraging living donor transplantation violate the principles of primum no nocere? There is no escaping the fact that the surgery to remove the transplantable graft carries a risk even when the prospective donor is in excellent health.

Abstract # LB-19

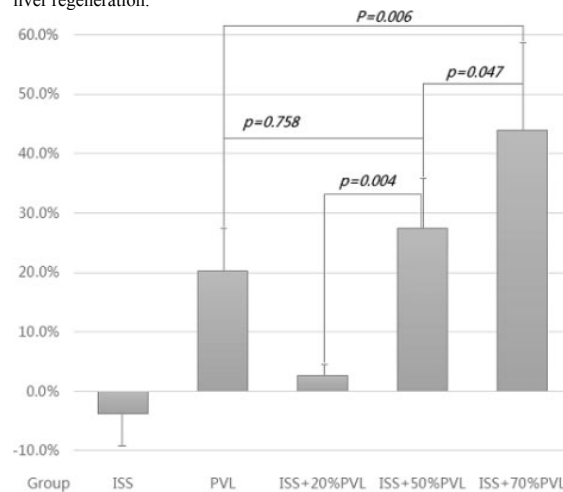
The Rabbit Liver Could Be Split: A Rabbit Model of Associated Liver Partition and Portal Vein Ligation. Mingheng Liao, Tao Zhang, Haichuan Wang, Lixi Luo, Han Qin, Gang Pan, Zhaoyan Yu, Kunlin Xie, Jiwei Huang, Hong Wu, Yong Zeng. *Centre of Liver Transplantation, West China Hospital, SCU, Chengdu, Sichuan, China*

Background: Associating liver partition and portal vein ligation (ALPPS) has been introduced as an efficient strategy to induce rapid hypertrophy of the future liver remnant. However, the high morbidity and mortality of ALPPS had drawn much controversy and impeded further utilization. The aims of this study were: first to set up a liver-splitting and portal vein ligation animal model; second to explore possible factors associated with rapid liver hypertrophy.

Method: 30 Male New Zealand white rabbits were allocated into two protocols. In protocol 1, there were two subgroups, either the liver parenchymal transection (LPT, n=5; the liver was split between left medial and right lobe) or portal vein ligation (PVL, n=5) was performed. In protocol 2, there were three subgroups with different portal vein branches ligated combined with liver partition. In LPT+20%PVL group (n=5), only the caudate portal branch was ligated; in LPT+50%PVL group (n=5), the left portal trunk was ligated; in LPT+70%PVL group (n=10), both the caudate and left portal vein were ligated. The CT-volumetry was performed on 1d. Blood samples were harvested before surgery, 3d, 7d and 14d for liver function evaluation. Most rabbits were humanly sacrificed on 7d, except for 5 of 10 in LPT+70%PVL group were sacrificed on day 14. After sacrifice, the liver was divided into lobes and weighted, biopsies of each lobe and immunohistochemical staining were taken.

Results: The change of right lobe volume (Δ RLV) were calculated, Δ RLV increased significantly with more portal branch ligated: LPT+20%PVL (Δ RLV=2.7% $\pm$ 1.7%), 50%PVL (Δ RLV=27.5% $\pm$ 7.3%), 70%PVL (Δ RLV=43.9% $\pm$ 13.5%). The percentage of Ki-67+ cells in the right lobe was significantly higher in protocol 2 compared with protocol 1.

Conclusion: The rabbit ALPPS model is feasible, and the success of the procedure relies on an experienced micro-surgeon. Our findings also reveal that the portal inflow after ALPPS plays a major role in triggering residual liver regeneration.



Abstract # LB-20

Unusual Events in Donor Surgery: The Near Misses. Neerav Goyal, Manav Wadhawan, Shaleen Agarwal, Ramdip Ray, Shishir Pareekh, Giriraj Bohra, Muhammed Nayeem, Ravichand Siddachari, Pankaj Lohia, Subash Gupta. *Centre for Liver and Biliary Sciences, Indraprastha Apollo Hospital, New Delhi, Delhi, India*

Background

Donor safety takes precedence over recipient in Living Donor Liver Transplant (LDLT). Still donor hepatectomy can have potential life threatening complications and 'near misses'. We are a high volume liver transplant center predominantly involved in LDLT. Over years, we have had 'near misses' and potentially life threatening events in donor hepatectomy and learning from them our technique and decision-making has evolved to make donor hepatectomy safer. We share our experience with the same.

Methods

From September 2006 to Dec 2013, 1200 donor hepatectomy were performed. We retrospectively analyzed 'near misses' by dividing them into complications involving the: hepatic Veins and IVC; portal vein, hepatic artery; bowel injury; DVT and pulmonary embolism; anesthetic and metabolic complications. These donors were evaluated for errors in preoperative assessment, intra operative events, duration of hospital stay, remedial measures, repetitiveness of similar complications.

Results

Seventeen donors (1.4%) had near miss events. Two donors had slippage of RHV clamp leading to torrential bleeding with one developing AKI. One donor had cautery injury over IVC during transection of caudate lobe after the hanging maneuver. Three donors developed limited thrombus of the RPV intraoperatively, 2 of these had type C portal vein anatomy. Three donors developed intimal dissection of the RHA. One of these was a post cholecystectomy donor. One donor developed small bowel perforation peritonitis due to inadvertent burn from cautery or CUSA. Two donors developed DVT of lower limbs post operatively and one developed pulmonary embolism. One donor developed intra operative malignant hyperthermia from use of isoflurane. Another donor, had ventilator issues after intraoperative cholangiogram. One donor had postoperative hemolysis and high serum bilirubin of 9mg%. One donor developed an anaphylactic reaction to intraoperative administration of I.V Diclofenac sodium. Six donors of nineteen had a prolonged hospital stay but all were subsequently discharged and did well. Modifications were made in technique and monitoring after each of these instances, which have made donor surgery safer.

Conclusion

Safety in donor surgery is of prime importance. Technical modifications have led to making it safer and reducing morbidity and mortality.

Abstract # LB-21

Anaphylactic Shock and DIC Due to Hepatitis B Immunoglobulin during Liver Transplantation - A Case Report. Achal Dhir, Fatimah Alsalah, Stephen Morrison. *Anesthesia, London Health Sciences Center, London, Canada*

A 39 years old male with Hepatitis B cirrhosis (MELD Na 23) and platelet count 30 x 10⁹/L presented for orthotopic liver transplantation. General anesthesia was induced and invasive monitoring placed as per our protocol. Pre anhepatic stage was uneventful and vascular clamp tolerated well. 15 minutes into the anhepatic phase, Hepatitis B immunoglobulin (HBIG) infusion was started & 10 minutes later, he developed sudden and severe hypotension (systolic BP in 30s) and tachycardia (140/ min). Immediate resuscitation was started and HBIG infusion stopped immediately. Resuscitation lasted about 10 minutes. Rescue TEE ruled out massive pulmonary embolism and revealed hyperdynamic but empty heart with no regional wall motion abnormalities. Severe distention of the small bowel was noticed and he became severely coagulopathic requiring massive blood transfusion. Once resuscitated, IVC & portal vein anastomosis were done and the clamps were released. TEE revealed showers of air embolism. He was on vasopressor infusions to maintain acceptable hemodynamics. Hepatic artery anastomosis was completed but the liver appeared dusky. Bile duct anastomosis could not be performed due to small bowel distension, abdomen was packed and he was transferred to ICU. He continued to be coagulopathic requiring super massive blood transfusion. He was taken back to the OR for exploration and pack removal. Because of primary dysfunction of the allograft he was relisted and re-transplanted successfully. He was in ICU for three weeks, recovered well and was discharged home.

A total of 121 units of PRBC's, 91 units of FFP, 22 adult units of platelets, 10 adult doses of cryoprecipitate and 2 doses of activated factor VIIa were transfused within first 24 hours.

Severe anaphylactic or anaphylactoid reactions and thromboembolism have been reported to HBIG. Cause of severe hypotension during anhepatic phase in our patient could not be ascertained and most probably was multifactorial. Bleeding and hypovolemia, reaction to HBIG, & air embolism contributed to hemodynamic instability.

There is enough evidence to suggest poor outcome after significant blood transfusion with no survival after 80 units.

References:

1. Mikhail Menis. Hyperimmune globulins and same-day thrombotic adverse events as recorded in a large healthcare database during 2008–2011. *Am. J. Hematol.* 88:1035–1040
2. Patricia Butler. Blood transfusion in liver transplantation. *Transfusion.* 1985 ; 25(2): 120–123.

Abstract # LB-22

Genetic Polymorphisms in FMO3 and CYP3A5 Associate with Tacrolimus Metabolism in Chinese Liver Transplant Patients.

Fan Junwei, Wang Zhaowen, Chen Dawei, Zhong Lin, Peng Zhihai. *Department of Hepatobiliary Pancreatic Surgery, Shanghai First People's Hospital, School of Medicine, Shanghai Jiao Tong University, Shang Hai, China*

Background & Aims: Flavin-containing monooxygenases (FMOs) represent the second most important human Phase I drug-metabolizing enzymes system, after cytochrome P450. FMO3 is the major FMO isoform that contributes to hepatic drug metabolism. This study evaluated the relationships between genetic polymorphisms of FMO3 and tacrolimus elimination in Chinese liver transplant patients.

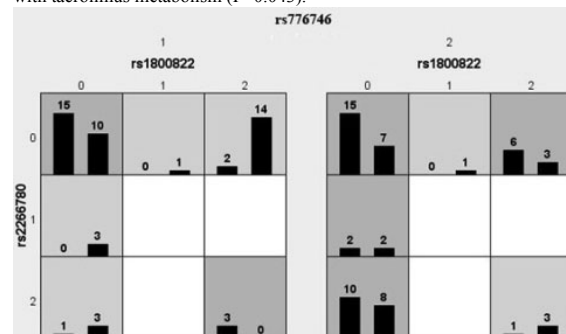
Methods: Genomic DNA was isolated from donor and recipient liver tissue from 110 Chinese liver transplant patients. 28 different SNPs involved in Drug Metabolizing Enzymes and Transporter array of FMO3, together with rs776746 from CYP3A5 were genotyped using a Mass ARRAY platform. Tacrolimus blood concentrations were continuously recorded for 1 month post transplantation. Hardy-Weinberg equilibrium, allele frequency, linkage disequilibrium and haplotype analysis were undertaken using SHEsis software.

Results: Among 28 FMO3 SNPs analyzed, rs1800822 (S147S), rs2266782 (E158K), rs1736557 (V257M), rs909530 (N285N), and rs2266780 (E308G) variants have a relatively high population distribution in the studied subjects. Donor FMO3 rs1800822 allele T and rs909530 allele T were associated with a fast tacrolimus metabolism.

Comparison of tacrolimus C/D ratios in different groups of donor FMO3 polymorphisms after transplantation

Gene	Locus	Genotype	C/D ratios	P
FMO3	rs1800822	CC	139.0±89.8	0.008
		TC+TT	99.0±82.5	
	rs909530	CC	156.0±101.5	0.001
		TC	100.2±71.2	
		TT	99.2±69.2	

Also, considering multi-gene combined effects, we investigated the gene-gene interaction between FMO3 and CYP3A5 and found interactions between the rs1800822, rs2266780 polymorphisms in the FMO3 gene and the rs776746 polymorphism in the CYP3A5 gene that revealed a significant association with tacrolimus metabolism (P=0.043).



Conclusions: These findings have laid the foundation for personalized tacrolimus medication for Chinese liver transplant patients and may lead to optimal dosing recommendations, reduced adverse drug reactions and improved drug efficacy.

Abstract # LB-23

Donor Liver Allocation According To Urgency Or Outcome.

Results of a Survey. Katrin S. Umgelter¹, Aida Anetsberger¹, Moritz Tobiasch², Manfred Blobner¹, Andreas Umgelter². ¹Department of Anaesthesiology, Technical University of Munich, Munich, Germany; ²2nd Medical Department, Technical University of Munich, Munich, Germany

Background: Under scarcity of donor livers, prioritisation according to urgency may impair outcome measured as long-term survival per transplant. Normative decisions on allocation rules should take values of potential donors into consideration.

Methods: A survey among non-transplant associated surgical patients and medical personnel using a multiple-choice questionnaire.

Results: Overall, 567 (54.9%) of 1032 respondents approved, and 465 (45.1%) disapproved of the statement "Averting immediate death (urgency) is a more important criterion for organ allocation than prospects of long-term success" ($p = 0.002$ compared to indifference).

The proportions approving the above statement among persons occupied in health care (24% of the total) were significantly lower compared to the other interviewees (46% vs 58%; $p = .001$). The same was true for the 17% of respondents excluding transplantation for themselves (45% vs 54%; $p .043$). Choosing between two imaginary cases, respondents were more likely to give a sole donor liver to the younger (40 yrs) patient with lower mortality risk if un-transplanted (50% at two years) and 80% chance of 1-year survival if transplanted than to the older (60 yrs) patient with 100% short-term mortality and 50% chance of 1-year survival (63.8% vs 34.7%). 52.9% respondents rejected the statement "The sickest patients should not be transplanted at all to avoid wasting donor organs" and 61.4% approved of the statement "Patients without other chances to survive should be transplanted urgently, even if long-term results are inferior".

For 21.1%, 9.5% and 21.9% of respondents, a 5-year survival of 50%, 33% and 10% constituted the lower limit of an acceptable result of liver transplantation, respectively. 47.5% of respondents thought that even patient-groups with an expected 5-year survival of less than 10% should be transplanted if that was the only option to avert immediate death.

Binary logistic regression revealed younger age, being a health care professional, higher education and excluding transplantation for one-self to be independently associated with favouring outcome over urgency.

Conclusion: A small majority of respondents rank urgency before outcome optimisation. Attitudes differ between health care professionals and patients. The public may accept worse outcomes than the transplant community.

Abstract # LB-24

A Case Report of Carcinoid Syndrome: Which Organ to Tackle First – Heart or Liver? Achal Dhir, Aphichat Supathamwit, Stephen Morrison, Wojciech Dobkowski. *Anesthesia and Perioperative Medicine, London Health Sciences Centre, London, ON, Canada*

Carcinoid syndrome, a rare, slow growing neuroendocrine tumor of GI tract can metastasize to liver & heart. Which organ to operate first is the questions with no clear guidelines. We present a case of carcinoid affecting both liver and heart.

A 54-year old female presented with carcinoid syndrome, metastatic lesions in the right liver and severely affecting tricuspid & pulmonary valves. Trans Thoracic Echo showed severely dilated RV, severe TR, moderate PR and mild PS. She had previous chemoembolization of hepatic artery & was on Octreotide and Furosemide

Cardiac surgeons did not want to replace tricuspid valve first because of the fear of carcinoid affecting the bioprosthesis again. Hepatic surgeons were also reluctant to operate first because of the right heart failure and liver congestion. After team discussion, it was decided to do a right hepatectomy with total vascular exclusion first.

After inserting awake arterial line and a large bore peripheral IV, anesthetic induction was smooth and uneventful. Octreotide infusion was started and TEE performed intra-operatively (Fig). Initial surgical dissection was uneventful but the trial IVC clamp failed despite Norepinephrine infusion. VV bypass was instituted and liver resection performed successfully. Total duration of surgery was 9 hours with VV bypass time of 1 hour. Estimated blood loss was 5 litres. She received 8 litres of crystalloids, 1 litre of voluven, 6 units of PRBC and 4 units of FFP. She was transferred to the ICU where she remained for 5 days. She was discharged home on the 15th Post op day. Six months later, she underwent a successful tricuspid valve replacement with a bioprosthesis and is doing well.

There is limited data to support cardiac surgery in asymptomatic patients. However, early surgical intervention is recommended for patients presenting with mild cardiac symptoms. Perioperative mortality is high in patients with RV failure. Safety of cardiac surgery has been reported followed by hepatic resection. However, our cardiac surgical team thought otherwise, and we were still able to tackle both organs.



POSTER SESSION II

Abstract # P-238

An Increase in RBC Transfusion Requirements during Orthotopic Liver Transplantation after Market Withdrawal of Aprotinin. Freeha Arshad, Andrie Westerkamp, Ton Lisman, Marieke T. de Boer, Robert J. Porte. *Surgery, University Medical Center Groningen, Groningen, Netherlands*

Background: Blood loss during orthotopic liver transplantation (OLT) remains a topic of concern and is currently managed by transfusion of red blood cells (RBC), fresh frozen plasma (FFP), platelet concentrates, fibrinogen and/or antifibrinolytic drugs. Besides evolvement of surgical and anesthesiological techniques, a restrictive transfusion policy and a better overall understanding of hemostasis has led to a significant decrease in blood loss and transfusion requirements in the past decades. We, amongst others, previously reported transfusion free OLT in around 30% of primary liver transplantations. Unfortunately, in the past years we are observing an increase in RBC transfusion requirements in our center. We hypothesized that this increase is related to the withdrawal of the antifibrinolytic drug aprotinin from the market.

Aim: To investigate the role of aprotinin in the recent increase in transfusion requirements.

Methods: Blood transfusion records and data on recipient, donor and surgical factors for 373 consecutive adult patients undergoing primary OLT's in our center between 2000 and 2012 were analyzed. Besides the discontinuation of aprotinin, we considered a variety of potential causes for the increase in RBC transfusion requirements in the past few years.

Results: The proportion of patients without any RBC transfusion decreased from 40% in the era 2000-2007 to 21% in the era after 2007 ($p < 0.001$). The median amount of RBC transfusion increased from 2.0 (IQR 0- 5.7) to 4.0 units(IQR 1.8-10.0) before and after 2007 ($p < 0.001$). In a uni- and multivariable analysis, using binary logistic regression models, the need for RBC transfusion was significantly less in patients that received aprotinin during OLT compared to patients who did not receive aprotinin (OR 0.41 95%CI 0.23-0.72 $p = 0.002$). Other significant factors associated with the need for RBC transfusion in the multivariate model were older recipient age, longer cold ischemia time, female recipient gender and higher score in the Model for End-Stage Liver Disease (MELD-score).

Conclusion: RBC transfusion has significantly increased in the era after market withdrawal of aprotinin in 2007. Based on these results we plea for reconsideration of aprotinin in OLT.

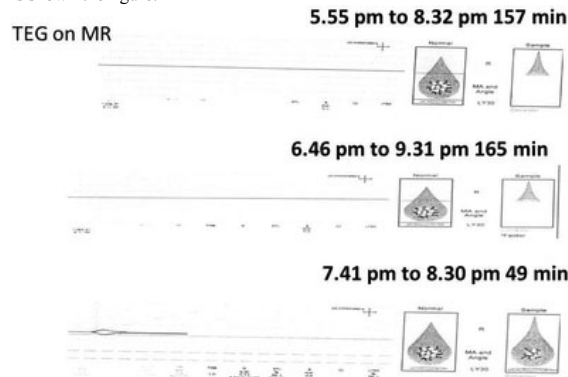
Abstract # P-239

Use of Recombinant Activated Factor VII (rFVIIa) during Liver Transplantation (LTx) for Primary Dysfunction Or Delayed Function of Hepatic Allograft. N. Brister², M. Kerestury², D. Johnson³, A. Karachristos¹, M. Maloo¹, K. Lau¹, A. Di Carlo¹, A. Jain¹. ¹*Surgery, Temple University Hospital, Philadelphia, PA, USA;* ²*Department of Anesthesia, Temple University Hospital, Philadelphia, Pa, USA;* ³*Department of Pharmacy, Temple University Hospital, Philadelphia, PA, USA*

Introduction: With increasing demand and relatively static donor pool, often more marginal organs are utilized for liver transplantation. Primary dysfunction, delayed primary function or primary non function, although undesirable do occur. Often during the surgery, there is a severe coagulopathy until hepatic allograft recovers. Use of rFVIIa may be a lifesaving in this situation. **Aim** of the present study is to examine the outcome, from our new small volume program, after using rFVIIa in presence of post hepatic perfusion coagulopathy.

Patient method: Since the beginning of the program February, 2009 till November 2013. 96 liver transplants have been performed. rFVIIa was only used when thromboelctogram (TEG) could not be improved despite utilization of blood products in abscent of any obvious surgical bleeding.

Results: In all 7 (7.3%) patients received rFVIIa, usually first dose has been 45 µ/kg after 3 to 6 hours if required additional 30 to 45 µ/Kg dose was administered. Total dose never exceeded 90µ/Kg. An example of utilization of rFVIIa in presence of severe coagulopathy, not corrected by fresh frozen plasma, platelets and cryoprecipitate, for nearly 200 minutes is shown the figure.



This patient responded to rFVIIa.

All seven patients survived and retained the graft. One patient had incidental asymptomatic findings of pulmonary embolism on CT scan performed 3 months post LTx to rule out recurrence of hepato cellular carcinoma. No other complication of hepatic vascular thrombosis, deep vein thrombosis or pulmonary embolism was identified.

Conclusion:

In carefully selected primary dysfunction or delayed hepatic graft function utilization of divided dosages of rFVIIa is useful and is our experience without any significant complication. All patients survive without retransplantation. However great care with dosage timing may be necessary.

Abstract # P-240

Comparison of the Anesthetic Management of Single and Dual Grafts Living Donor Liver Transplantation. Kwok-Wai Cheng¹, Chih-Hsien Wang¹, Chao-Long Chen², Shao-Chun Wu¹, Tsung-Hsiao Shih¹, Sheng Chun Yang¹, Chia-Jung Huang¹, Bruno Jawan¹. ¹*Anesthesiology, Kaohsiung Chang Gung Memorial Hospital, Chang Gung University, College of Medicine, Kaohsiung, Taiwan;* ²*Liver Transplant Program, Kaohsiung Chang Gung Memorial Hospital, Chang Gung University, College of Medicine, Kaohsiung, Taiwan*

Background

The liver volume for both the recipient and the donor should be sufficient to meet the requirement of the body metabolism. Insufficient liver volume may develop to liver dysfunction and liver failure. In case of mismatch in the liver volume with small for size liver volume for the donor and or for the recipient, dual grafts liver transplantation may be done. Surgical technique

and outcome of using dual grafts have been reported, the aim of current paper is to compare the anesthetic management of single graft and dual graft liver transplantation.

Methods and patients

Anesthesia records of 60 single graft liver transplantation recipient (GI) and 6 dual graft recipient were review retrospectively. Patients' characteristics and intraoperative data between groups were compared with Mann-Whitney t test. P-value <0.05 was regarded as significant.

Results

Table 1 shows that the patients' characteristics were similar between groups. Intraoperative data such as blood loss, blood products used, fluids replacement were also similar between groups. Significant different was noted in the total anesthesia time and the anhepatic time. Both times were significantly longer in GII in compare to GI, sodium bicarbonate used was also significantly more in GII to maintain the pH in acceptable range.

Conclusion

Dual graft living donor liver transplantation is surely technically more challenging and demanding procedure, total anesthesia time is longer, especially in the anhepatic phase. Overall the anesthesia management in term of blood loss and fluids management is not much different between groups.

Table 1 Patients characteristics and intraoperative anesthesia data of two groups.

	GI (N=60)	GII (N=6)	P value
Age (year)	52.4 ± 7.3	54.3 ± 7.8	0.520
Weight (kg)	68.6 ± 11.2	74.6 ± 15.1	0.400
Anesthesia Time (hr)	14.2 ± 1.4	19.5 ± 2.1	0.000*
Anhepatic Time (min)	88.4 ± 29.4	131.8 ± 21.0	0.001*
Blood Loss (ml)	6312 ± 10927	8973 ± 6529	0.129
RBC (ml)	4262 ± 6423	7794 ± 8004	0.118
FFP (ml)	886 ± 1504	127 ± 1048	0.182
Platelet(ml)	125.6 ± 216	369.0 ± 340.5	0.080
Crystalloids (ml)	13813 ± 11222	17180 ± 9158	0.154
Post-op Hemoglobin (g/dL)	9.2 ± 1.5	10.5 ± 2.3	0.182
NaHCO3 (mEq)	191.5 ± 257.2	402.7 ± 255.6	0.044*

Abstract # P-241

Paravertebral Block Catheters Improve Post-Operative Pain Control after Living Donor Right Lobe Hepatectomy.

Jennifer Leiting¹, Jacob L. Hutchins³, David M. Radosevich¹, Raja Kandaswamy¹, John R. Lake², Timothy L. Pruett¹, Srinath Chinnakotla¹. ¹*Surgery, University of Minnesota, Minneapolis, USA;* ²*Medicine, University of Minnesota, Minneapolis, USA;* ³*Anesthesiology, University of Minnesota, Minneapolis, USA*

INTRODUCTION:

Post operative pain control after living right lobe liver donation(LRD) is paramount. We use a right sub-costal incision as it provides the best exposure and safety. However, subcostal incision is associated with increased post-operative pain compared to midline-incision. Paravertebral block catheter(PVC) is a novel technique that blocks both the visceral and somatic nerves with potential of decreasing post operative abdominal pain and incisional pain without risk of hypotension(vs. epidural).

MATERIALS AND METHODS:

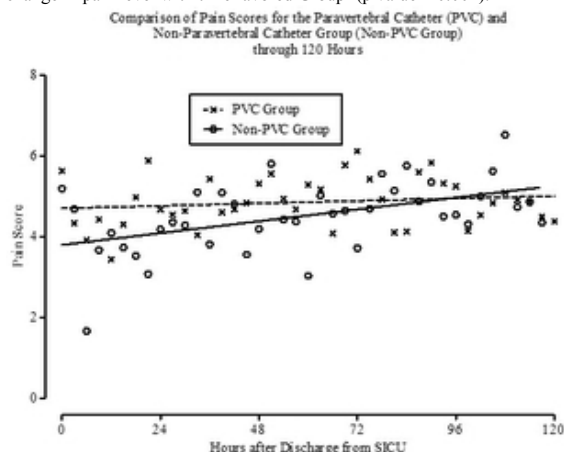
We prospectively studied use of PVC in 11 LRD donors(Group I). 10 prior LRDs served as controls(Group II). There were no PVC related complications noted. The trajectory of change in pain ratings(0-10) were compared using a generalized linear mixed model for the separate effects of(1) PVC,(2) time from discharge from PACU, and(3) PVC by time. Technique of PVC: Ultrasound guided right T8 paravertebral catheter was placed in Pre-op. Elastomeric pump containing 0.2% ropivacaine was run at 10-14 ml/hour. Infusion was started one hour prior to closure of incision and ran continuously for up to seven days post placement.

RESULTS:

The pre donation characteristics were similar between the two groups except for slightly more female donors in Group(p = 0.050).

	N	%	Mean	SEM	P Value
PVC Group					
Donors	11				
Female Donor	3	27			
Age			37.2	2.3	
BMI			25.7	1.1	
LOS			7.2	0.7	
Control					
Donors	10				
Female Donor	7	70			0.050
Age			30.7	3.0	0.100
BMI			27.0	1.1	0.424
LOS			6.7	1.2	0.728

The maximum number of pain ratings was between 83 and 240 hours (median = 136 hours); based on the mixed model results, we found no statistical differences between group I&II (p value = 0.471), however, the trajectory of change in pain level with time favored Group I (p value = 0.004).



CONCLUSION:

PVC catheters could potentially help ameliorate post operative pain after LRD. Future randomized studies are needed to validate the results.

Abstract # P-242

Anaemia and Liver Transplantation: Time for Action? Ben Clevenger, Matthew Henley, Susan Mallett. *Royal Free Hospital, London, United Kingdom*

Introduction

Transfused blood can negatively affect outcome after orthotopic liver transplantation (OLT).[1] There is a cumulative risk demonstrated between volume transfused and adverse events.[2] Patient Blood Management (PBM) is defined as "the timely application of evidence-based medical and surgical concepts designed to maintain haemoglobin concentrations, optimise haemostasis and minimise blood loss in an effort to improve patient outcome." [3]

Methods

200 consecutive OLTs were retrospectively analysed. Anaemia was defined as haemoglobin (Hb) <11 g/dL. Iron deficiency was defined by ferritin <100 umol/L or ferritin <100 umol/L and transferrin saturation (TSAT) <20%.

Results

Baseline mean(SD) Hb was 10.9 (2.3) g/dL. 104 patients (52%) had a baseline Hb <11.0 g/dL.

Demographic and Outcome Data (median [IQR])

	Hb<11 g/dL	Hb>11g/dL	
Age (y)	54 [45-60]	55 [50-61]	p=0.165
MELD	17 [11.5-22]	13 [9-15]	p=<0.001
Platelets (x10 ⁹)	92 [60-144]	97 [63-153]	p=0.827
INR	1.6 [1.4-1.9]	1.4 [1.2-1.7]	p=<0.001
Creatinine (umol/L)	81 [63-98]	74 [60-88]	p=0.164
RBC transfused (units)	4 [2-6]	2 [0-4]	p=<0.001
Ventilator days	2 [1-5]	1 [1-2]	p=0.029
1 yr survival	87.5%	93.7%	p=0.139

52 (26%) OLTs took place without transfusion, 48% received 1-5 units, and 26% received 6 or more units (considered a massive transfusion). Of those patients who received no blood, 71.2% had an Hb >11g/dL at baseline. Only 14.4% of those with a starting Hb<11g/dL received no RBCs intraoperatively. Of the 70 anaemic patients with haematitic data, 40% were iron deficient. (figure1)

Conclusions

Greater than 50% of patients were anaemic. Anaemic patients were significantly more likely to require RBC transfusion, and to receive more blood. Patients who were not transfused had significantly less ventilator days and shorter ICU stays. 1-year mortality was greater in anaemic patients. This may be secondary to sicker patients having lower Hb, but also the consequence of greater exposure to allogenic blood. Iron deficiency was prevalent. In applying the principles of PBM to OLT, this anaemia could be treated whilst on the waiting list, reducing the risk of blood transfusion and improving outcomes.

References

- [1] de Boer, M et al. The Impact of Intraoperative Transfusion of Platelets and Red Blood Cells on Survival After Liver Transplantation. *Anesth Analg* 2008
- [2] Boin, I et al. Intraoperative Massive Transfusion Decreases Survival After Liver Transplantation. *TPS* 2008
- [3] Shander, a et al. Patient blood management- The new frontier. *Best Pract Res Clin Anaesthesiol* 2013.

Abstract # P-243

Thrombotic Thrombocytopenic Purpura after Living Donor Liver Transplantation. A Case Report of an Unusual Complication. Manuel E. De Guglielmo¹, Erika Medina¹, José L. Ledezma¹, Elena Pestana¹, Miguel Vasallo¹, Carlos Rodríguez¹, Damelys Marin¹, Christiane Saltiel¹, Tomoaki Kato², Pedro Rivas¹. ¹Programa Metropolitano de Trasplante de Hígado - Fundahígado, Caracas, Distrito Capital, Venezuela; ²Department of Surgery, Center for Liver Disease and Transplantation, Columbia University, New York, NY, USA

Background: Liver transplantation (LT) is the only therapeutic option for patients with end stage liver disease. Thrombotic microangiopathy (TMA) after living donor liver transplantation is a well documented, rare and severe complication although its mechanism is not fully understood.

Case report: We report a case of TMA in a 23 year old female patient who underwent living donor liver transplantation for autoimmune hepatitis related cirrhosis Child-Pugh B class and MELD score 22 at the time of transplantation. She received a left lobe graft of 355gms from a completely healthy living related donor 28 years old for a GRWR of 0.7. During surgery the patient received 3 red blood cell (RBC) and 4 fresh frozen plasma units. Splenectomy was performed to further prevent small for size graft syndrome. Immunosuppression was initiated with corticosteroids, mycophenolate mofetil and tacrolimus, however calcineurin inhibitor was suspended after 1 day due to impaired renal function. At day 4 after transplantation the patient's platelet count diminished to 22,000/mm³ with a lowest count of 15,000/mm³ at day 7, associated with anemia (that required red blood cell transfusions), elevated lactate dehydrogenase, bilirubin and reticulocyte count. The platelet count did not improve after multiple transfusions. Diagnosis was confirmed at day 8 with a peripheral blood smear showing large amounts of fragmented RBC. A high dose corticosteroid regimen was used without tacrolimus, achieving progressive improvement of anemia and platelet count at day 10, without need for plasma exchange therapy. Once improved renal function and stable platelet count were reached, the steroid dose was tapered and tacrolimus reinitiated, with a progressive rise in platelet count, complete recovery was achieved and patient was discharged and is currently doing well with a normal graft function.

Abstract # P-244

Primary Graft Dysfunction after Liver Transplantation: Effectiveness of Coupled Plasma Filtration Adsorption. Halit Ziya Dunder¹, Remzi Iscimen², Pinar Tasar Sarkut¹, Fahri Ozkalemkas³, Ekrem Kaya¹. ¹General Surgery and Liver Transplantation Group, Uludag University, School of Medicine, Bursa, Turkey; ²Anesthesiology and Reanimation, Uludag University, School of Medicine, Bursa, Turkey; ³Hematology, Uludag University, School of Medicine, Bursa, Turkey

Primary graft dysfunction (PGD) is a life-threatening problem in post-operative to liver transplantation (LT). GD may be sometimes associated with delayed functional hyperbilirubinemia(HB). Coupled plasma filtration adsorption (CPFA) is generally used as a bridge treatment until more definitive treatments. We present 2 cases of persistent HB in the post-operative period of LT where CPFA was used as an effective treatment.

CASE1: A 44-year old female in hepatic coma due to primary biliary cirrhosis with a MELD score of 36, had been followed in ICU (total bilirubin(TB):44.4 mg/dL,direct bilirubin(DB):27.7 mg/dL).After 1 cycle of CPFA treatment, TB and DB values decreased to 21.7 and 12.9 mg/dL respectively. On the same day patient underwent LT. The graft was retrieved from an 81-year old donor with 70% steatosis and total ischemia time (TIT) was 420 minutes. On postoperative day 1TB and DB values decreased to 13.5 and 7.7 mg/dL. Tac, MMF and steroid were started. On day 2 TB and DB values increased to 23.5 and 13.39 mg/dL (INR:2.5,AST:226,ALT:969). The patient regained consciousness on POD 8. Treatment continued in ICU with 7 more cycles of CPFA due to high bilirubin values and the patient was discharged from ICU after 72 days.

CASE2: A 64-year old male with NASH and a MELD score of 15 underwent cadaveric LT. The donor was a 34-year-old male. TIT was 450 minutes. Immunosuppression was started with Tac, MMF and steroids. Graft biopsy after reperfusion showed as active inflammatory infiltration, congestion, and focal necrosis. The patient remained unconscious after the operation and on POD 7 hyperammonemia (210 µg/dL) and HB (TB: 19.43 mg/dL, DB: 12.3 mg/dL) developed. In Doppler there were neither vascular problems nor biliary dilatation. After two days hemodialysis and 3 cycles of CPFA treatment amoniac values decreased to 79 and TB and DB values were 4.6 mg/d L and 2.2 mg/dL respectively. The patient remained consciousness on POD 15. To date 12 more cycles of CPFA have been applied and the patient is still being followed in ICU.

Conclusion: CPFA may be suggested as a treatment method for HB following LT and may decrease the need for retransplantation.

Abstract # P-245

Continuous Veno-Venous Hemodiafiltration As a Prognostic Factor during Early Postoperative Period of Liver Transplantation. Elena Giráldez Vázquez¹, Rita Fernández Garda¹, F. Gude Sampedro², Juan R. Fernández Villanueva¹, Enrique Ferrer Vizoso¹. ¹Critical Care Unit, Hospital Clínico Universitario, Santiago de Compostela, A Coruña, Spain; ²Preventive Medicine, Hospital Clínico Universitario, Santiago de Compostela, A Coruña, Spain

Objective: To evaluate Continuous Veno-Venous Hemodiafiltration (CVVHD) in early postoperative period of Liver Transplantation (LT) as a Survival Prognostic Factor.

Material and Methods: Survival analysis of an observational study of the complete number of patients undergoing Liver Transplantation at the Intensive Care Unit of Clinic University Hospital of Santiago de Compostela (Spain) from August 1994 to July 2011. 644 patients were studied by variables of Age, Gender, Cirrhosis Etiology, Cold Ischemia Time (CIT), Blood Products Transfusion (BPT), morning Creatinine serum levels, Diuresis and Water Balance hourly during the first 7 days after LT. All of them had Parenteral Nutrition first 4 days after LT and same immunosuppressive treatment: Corticosteroids, Anticancer drugs (Tacrolimus): 1 mg/K daily and Monoclonal antibody therapy (Basiliximab) in two doses: 20 mg the very first day and 20 mg the fifth day after LT. When Renal Failure was considered (Creatinine serum levels ≥ 1.2 mg/dl) plus Acute Oligoanuria (Total Daily Diuresis ≤ 500 ml), CVVHD was started. A Multivariable Analysis was made including: Age, Gender, BPT, Cirrhosis Etiology, CIT and CVVHD.

Results: 75% of patients (484) were Men. Range of Age from 5 years old to 71 years old with Media: 51 years old and a Standard Deviation: 11. Cirrhosis Etiology Alcohol was the most frequent (61%), Hepatitis C virus (20%), Hepatitis B virus (5%) and Acute Liver Failure/Fulminant Hepatitis (5%). Hepatocellular carcinoma was present in 27% of cases. CIT range between 3 and 15 hours, Media: 7 hours and Standard Deviation: 2.1. BPT range between 0 and 62 units, Media: 8 units and Standard Deviation: 8.4. Median Follow-up time of the study was 2854 days. Mortality rate of the study: 35%, and during the very first year after LT: 15% of the cases. 12% of patients needed CVVHD with a Mortality Rate of this subgroup of 53%. In the Multivariate Analysis, patients with CVVHD have a Risk of Death 2.6 higher than LT recipients without CVVHD [HR: 2.60 (CI 95%: 1.77 to 3.81)] $p < 0.01$.

Conclusions: In LT recipients with Acute Renal Failure and Oligoanuria in need of Renal Replacement Techniques (CVVHD) during early postoperative period of LT, Risk of Death is 2.6 higher [HR: 2.60 (CI 95%: 1.77 to 3.81)] $p < 0.01$.

Abstract # P-246

Impact of Platelet Transfusion on Hospital Stay in Patients With MELD Score ≤ 24 Undergoing Living Donor Liver Transplantation. Nikunj Gupta, G. V. Premkumar, Jayanti Shankar, Annu Jolly, Seema Bhalotra, Vijay Vohra. Medanta Liver Institute, Medanta The Medicity, Gurgaon, Haryana, India

Background

Platelet transfusion is known to have a dualistic role during liver transplant surgery. In this study we analyzed the impact of platelet transfusion on hospital stay with respect to MELD score.

Methods

512 consecutive adult patients undergoing LDLT between July 2010 to November 2013 were retrospectively analyzed. Patients were divided into two groups according to MELD score- Group 1 ($n = 440$) MELD ≤ 24 , and Group 2 MELD > 24 ($n = 72$).

Both the groups were further subdivided into 2 on the basis of platelet transfusion. Subgroup 1A did not receive intraoperative platelet transfusion, whereas Subgroup 1B received it. Hospital stay was compared between the subgroups. Secondary variables compared were intraoperative transfusion of packed red cells (PRBC) and fresh frozen plasma (FFP).

The same parameters were analyzed in the subgroups 2A and 2B.

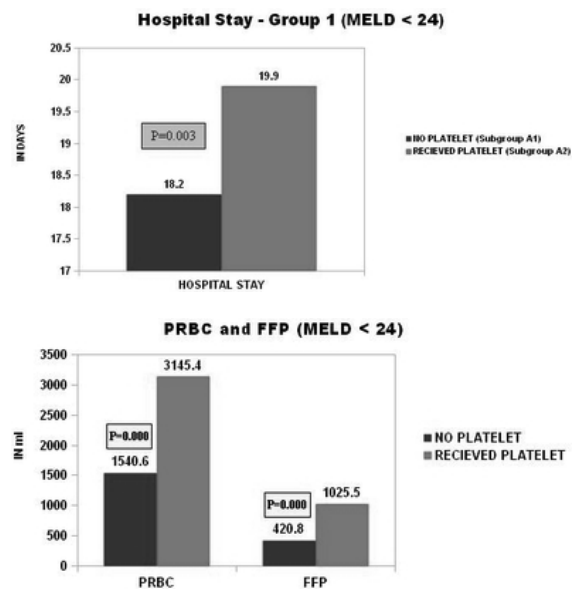
Results

In patients with MELD Score ≤ 24 , hospital stay was significantly longer in Subgroup 1B who received platelets intraoperatively (19.9 vs. 18.2 days). PRBC and FFP requirement too were higher in this Subgroup.

GROUP 1 - MELD ≤ 24

	SUBGROUP 1A, N= 233	SUBGROUP 1B, N=207	"P" VALUE
HOSPITAL STAY (days)	18.2 $\pm$ 6.531	19.9 $\pm$ 9.838	.003
PRBC (ml)	1540.6 $\pm$ 1025.191	3145.4 $\pm$ 1856.200	.000
FFP (ml)	420.8 $\pm$ 384.722	1025.5 $\pm$ 675.063	.000

*Levene's Test for Equality of Variances



No statistically significant difference was noted in the subgroups 2A and 2B (MELD > 24).

Conclusion

The hospital stay, intraoperative red blood cell and fresh frozen plasma requirement is higher in patients with MELD ≤ 24 who received platelet transfusion.

Abstract # P-247

Can the History of Esophageal Bleeding Be Used To Predict the Hemodynamic Instability of Inferior Vena Cava Clamping during Living Donor Liver Transplantation? Chia-Jung Huang¹,

Kwok-Wai Cheng¹, Chao-Long Chen², Shao-Chun Wu¹, Tsung-Hsiao Shih¹, Sheng Chun Yang¹, Bruno Jawan¹, Chih-Hsien Wang¹.

¹Anesthesiology, Kaohsiung Chang Gung Memorial Hospital, Chang Gung University, College of Medicine, Kaohsiung, Taiwan;

²Liver Transplantation Program and Surgery, Kaohsiung Chang Gung Memorial Hospital, Chang Gung University, College of Medicine, Kaohsiung, Taiwan

Background

In liver transplantation (LT), esophageal varices bleeding (EVB) is an important indication of patients that may have severe liver cirrhosis, portal hypertension and portosystemic collaterals with esophageal varices. Esophageal varices serves as an ascending shunt, which shunts the partial portal flow through esophageal plexus and azygos directly to the heart bypassing the inferior vena cava (IVC). The prospect of patients with a

history of EVB to be used clinically to predict the tolerability or hemodynamic instability during clamping of the IVC and portal vein in liver transplantation is to be elucidated.

Methods and patients

Fifty patients undergoing living donor liver transplantation were reviewed, analyzed and compared retrospectively. Patients without history of EVB were grouped in GI and the other with EVB in GII. The number of patients with decrease of the cardiac index (CI) of 20, 30 and 40 % from their pre-clamped value after IVC clamping between groups were compared with Chi-Square, and p value < 0.05 was regarded as significant.

Results

Table 1 shows that the incidences with decrease of CI of 20, 30 and 40% after five minutes clamping of the IVC were not significant difference between groups.

Conclusion

Clamping of the portal vein and IVC without performing veno-venous bypass in living donor LT has a significant negative impact in CI in both groups due to the drastic reduction in the venous return. Statistic analysis revealed that the history of EVB can not be used to predict the tolerability or severity of hemodynamic instability of IVC clamping.

Table 1 Number of patients with decrease of CI of 20, 30 and 40% after five minutes clamping of the IVC between groups.

	GI (n=33)	GII (n=17)	P- value
CI drop 20% (n)	24	10	0.318
CI drop 30% (n)	12	8	0.465
CI drop 40% (n)	5	2	0.744

Abstract # P-248

New Index for Liver Transplant Regarding Marginal Donors.

Iago Justo, Félix Cambra, Naim Fakihi, Oscar Caso, Rebeca Sanabria, Alberto Marcacuzco, Alejandro Manrique, Jorge Calvo, Alvaro García-Sesma, Carmelo Loinaz, Paula Rioja, Carlos Bermello, Manuel Abradelo, Enrique Moreno, Carlos Jiménez. *General Surgery, Abdominal Transplantation, "12 de Octubre" University Hospital, Madrid, Spain*

INTRODUCTION: The Mccluskey index is a good parameter for selection of recipients for liver transplantation (LT) with higher and lower risk of transfusion. The main limitation of this index is the few categories it includes (only 3), as well as no taking into consideration the donor type for its calculation. We present a modified index trying to overcome with both limitations.

PATIENTS AND METHODS: Between May 1998 and June 2013, we performed 938 LT, of which 808 required transfusion of hemoderivatives. We divided the groups with respect to classic parameters of the Mccluskey index. We then added as novel parameters the category of marginal donor, which added 2 points to this index. Afterwards, the patients were divided with the new score into: 1- Low risk (LR)(0-1 point) with 113 patients; Medium risk (MR) (2-3 points) 438 patients; High risk (HR)(4-5 points) 220 patients; Very High risk (VHR) (>6 points) 37 patients.

RESULTS: The mean age in the groups were as follows: 52.7±13.3 years for LR; 53.3±11 for MR; 54.5±10 for HR RA and 57.1±7.9 for VHR (p=0,089). The mean MELD score was: 9.9±3.4 for LR; 15.2±5.2 for MR; 19.3±6.9 for HR and 23±7.5 for VHR (p=0,000). The mean MELD-Na score was 12±4.1 for LR; 17.7±5.7 for MR; 21.7±6.8 for HR and 25.1±6.9 for VHR (p=0,000). The percentage of HCV patients was: 37.5% for LR; 45.6% for MR; 48% for HR and 38.5% for VHR(p=0,230).

With respect to blood transfusion, the mean requirements of red blood cells for each group were: 6.7±8.1 units for LR; 8.9±12.4 for MR; 13.6±12.4 for HR and 17.9±11.5 for VHR (p=0,000). The mean plasma use was: 10.5±6.6 units for LR; 15.3±12.1 for MR; 17.9±12 for HR and 19.2±10.3 for VHR (p=0,000). The actuarial recipient survival rates at 1, 3 and 5 years were respectively: 88.2%, 81.9% and 78.3% for LR; 84.1%, 76.8% and 71.4% for MR; 80.1%, 73.9% and 67.9% for HR; and 74.2%, 66.9% and 63% for VHR (p=0,011).

CONCLUSION: We observe in this study that this new index divides in more groups the risk of bleeding, and is well related to the transfusion requirements of hemoderivatives and hospital stay, as well as the survival of patients, although these results must be confirmed in future trials.

Abstract # P-249

Validating the Mccluskey Index for the Necessity for Hemoderivative Transfusion in Our Liver Transplant Serie.

Iago Justo, Oscar Caso, Félix Cambra, Naim Fakihi, Rebeca Sanabria, Alberto Marcacuzco, Alejandro Manrique, Jorge Calvo, Carmelo Loinaz, Alvaro García-Sesma, Paula Rioja, Cristina Cobo, Carlos Bermello, Manuel Abradelo, Enrique Moreno, Carlos Jiménez. *General Surgery, "12 de Octubre University Hospital, Madrid, Spain*

INTRODUCTION: The haemorrhage during the liver transplantation (LT) is associated with high morbimortality rates and lower graft survival, thus its prevention is fundamental in LT. The Mccluskey index has been used as a tool for the prediction of massive bleeding (>6 units). The objective of this study is to verify its efficacy in our patients.

PATIENTS AND METHODS: Between May 1998 and June 2013, we performed 938 LT, of which data with respect to hemoderivative transfusion could be recorded in 808 patients. We divided the patients into groups with respect to the original study of the Mccluskey serie: Low Risk (LR) 5 patients; Medium Risk (MR) 379 patients; and High Risk (HR) 446 patients.

RESULTS:

The mean recipient age in the 3 groups was: 31.8±6.7 years for LR; 53.78±11.6 for MR and 53.96±11 for HR (p=0,000). The mean MELD score was 10±2.5 for LR; 12.96±4.78 for MR and 18.54±6.73 for HR (p=0,000). The percentage of HCV patients was 20% for HR, 42.2% for MR and 47.2% for LR (p=0,186), whereas that of patients with hepatocarcinoma was: 0% for LR; 31.6% for MR and 16.7% for HR (p=0,000). No significant differences were observed with respect to hospital stay.

With respect to hemoderivatives transfusion between the 3 groups we observed what follows:

Transfusion of red blood cells: 5±2.5 units for LR; 8.67±10.5 for MR and 11.7±13.3 for HR (p=0,001).

Transfusion of plasma: 11±4.6 units for LR; 14±10.4 for MR and 16.9±12.4 for HR (p=0,002).

Transfusion of platelets: 0±0 units for LR; 3±4 for MR and 4.2±4.5 for HR (p=0,000).

Transfusion of fibrinogen (in grams): 0±0 for LR; 0.98±2.1 for MR and 1.6±2.63 for HR (p=0,006).

CONCLUSION: The Mccluskey index is a good indicator of the risk of haemorrhage, and hence, for the necessity of transfusion. The clinical utility of this index would be more practical if the groups could be divided into more groups, to have a more specific index.

Abstract # P-250

Myocardial Performance Index Using Tissue Doppler Imaging Has Prognostic Value of Posttransplant Hospitalization in Pediatric Patients Undergoing Liver Transplantation.

Jung-Won Kim, Dong-Min Jang, Sun-Key Kim, Won-Jung Shin, Gyu-Sam Hwang. *Anesthesiology and Pain Medicine, Laboratory for Cardiovascular Dynamics, University of Ulsan College of Medicine, Seoul, Korea*

Introduction: Cardiac structural and functional alterations have been known to be prevalent in infants and children with biliary atresia. We evaluated the prognostic value of myocardial performance index (MPI), which reflects both ventricular systolic and diastolic function, in pediatric patients undergoing liver transplantation (LT).

Methods: A total of 116 pediatric patients who underwent LT at Asan Medical Center, Seoul, Korea, between January 2007 and August 2012, were enrolled. Of these, 42 patients (median age=16 month, interquartile [IQR] age 9-87 month; biliary atresia =43%) who underwent preoperative echocardiography and measured MPI with tissue Doppler imaging were included in this retrospective study. An MPI ≥0.5 (Z-score ≥2) was defined as abnormal.

Results: A 24% (10/42) of patients showed abnormal MPI (median [IQR]= 0.53 [0.50-0.55]). Compared with An MPI <0.5 group (n=32), MPI ≥0.5 group, however, showed no significant differences in other echocardiographic parameters, such as ejection fraction, fractional shortening, left ventricular mass, early (E) and late (A) transmitral flow velocities, E/A ratio, systolic (S'), early diastolic (E'), and late diastolic (A') myocardial velocities and E/E' ratio. In posttransplant hospitalization analysis, MPI ≥0.5 group showed significantly longer hospital stay (median, 49 vs 30 days; P=0.005).

Conclusions: In pediatric LT patients, measuring preoperative echocardiographic MPI has prognostic value to predict posttransplant hospitalization.

Abstract # P-251

Differences between Radial and Femoral Arterial Blood Pressure Measurements during Orthotopic Liver Transplantation.

Matthew Lee, Laurence Weinberg, Brett Pearce, Nicholas Scurrah, David Story, Param Pillai, Peter McCall, Larry McNicol, Philip Peyton. *Anaesthesia, Austin Health, Melbourne, Victoria, Australia*

Objective

We set out to identify differences between radial and femoral arterial blood pressure measurements in patients undergoing orthotopic liver transplantation surgery (OLTx) in order to assess whether arterial cannula insertion sites can be used interchangeably.

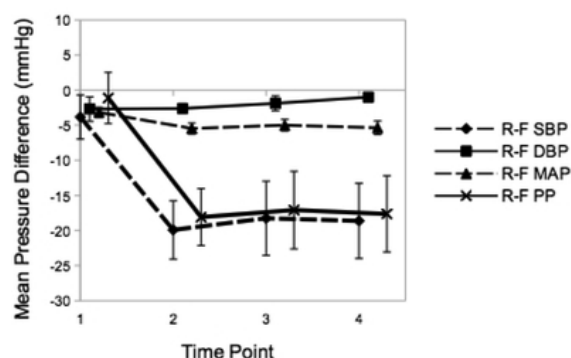
Methods

Twenty-five patients were enrolled. Radial and femoral arteries were cannulated with a standardised arterial line kit. Mean arterial pressure (MAP), systolic arterial pressure (SAP), diastolic blood pressure (DAP) and pulse pressure (PP) were measured at four time points. For each patient, an overall difference in each blood pressure parameter was calculated by averaging across the four time points. Agreement between arterial sites was assessed by the method described by Bland and Altman. Correlation was assessed by Pearson's correlation coefficient.

Results

Overall radial femoral arterial pressure differences are expressed as mean difference (standard deviation), p value, percentage error.

Mean Pressure Difference vs Time



MAP: -4.8 (4.5) mmHg, p=0.0001, 13.1%

SAP: -14.9 (24.8) mmHg, p=0.0006, 47.0%

DAP: -2.0 (5.2) mmHg, p=0.0023, 20.8%

PP: -13.5 (25.5) mmHg, p=0.0024, 91.8%

Figure 1 shows the difference between measurement sites at each time point, with error bars (1 standard error).

Conclusion

SAP measurements obtained from the radial artery in patients undergoing liver transplantation surgery underestimate measurements made at the femoral artery in an unpredictable way, with wide scatter in agreement. This makes SAP at the radial artery an unreliable measurement for guiding haemodynamic management in these patients. For MAP and DAP, radial and femoral sites can be used interchangeably.

Abstract # P-252

Liver Transplant and the Bloody Glove: Treat Dieulafoy before You Acquit. Peaches Orallo, Jeffrey White, Lauren Hemmerich.

Anesthesiology, Univ. of Florida, Gainesville, FL, USA

Introduction

We present a challenging case for repeat orthotopic liver transplantation (OLT) of a 53 yr old female with graft failure secondary to recurring HCV. Unanticipated non gastric hemorrhage complicated the surgery. Massive transfusion of products and vasopressors was required, but persistence in obtaining a diagnosis was lifesaving.

Description

Patient had a MELD of 39, Grade II esophageal varices, and gastric ulcer. A challenging surgery was expected due to prior OLT, interval abdominal surgeries and INR 2.2. After induction of general anesthesia, an atraumatic orogastric tube (OGT) was placed. The 75 min. anhepatic phase was marked by surgical bleeding requiring pressors, calcium and blood transfusion. We noted the OGT draining dark blood, a glove over the OGT sump full and tense, and blood passively issuing from the patient's mouth. Meanwhile, reperfusion syndrome was apparent in the neohepatic phase which responded

to norepinephrine and vasopressin infusions, Amicar and bolus epinephrine. EBL from the OGT continued to mount. Blakemore tube and stat GI consult were discussed with the surgeons who replied that they were dealing with a torn portal vein and ruptured spleen. Eventually, all bleeding abated and MAP stabilized. Surgeons debated whether to do biliary anastomosis or postpone until another day. We insisted upon GI consultation to address GI bleeding. During the hour long stat endoscopy, gastric EBL increased 8L. Endoscopists diagnosed gastric ulcer vs. Dieulafoy, and ruled out esophageal varices. Bleeding was refractory to endoscopic treatment. Surgery resumed, but surgeons were unable to ligate the bleed. Patient was taken directly to Interventional Radiology for embolization of the Gastroduodenal artery, and then transferred to SICU without vasopressors and transfusion. Total transfusion input was considerable: EBL 40L, 45U PRBC, 45U FFP, 20U cryo., and 4U plts.



Discussion

A GI bleeding source must be considered and treated during OLT with unremitting hypotension. Our patient experienced massive EBL from a Dieulafoy lesion, most likely triggered by sequelae of hepatic artery clamping and coagulopathy of advanced liver disease.

Abstract # P-253

Fast Tracking in Adult Living Donor Liver Transplantation - Is It Feasible and Safe? G.V. Premkumar, Pooja Bhangui, Nikunj Gupta, Annu Jolly, Seema Bhalotra, Vijay Vohra. *Medanta Liver Institute, Medanta The Medicity, Gurgaon, Haryana, India*

BACKGROUND : A fast-track approach has been used in deceased donor liver transplantation with the aim of a more efficacious use of medical resources; the safety of the same has been shown in a multicentric study. However, only few small series have reported immediate post operative extubation in the living donor liver transplant (LDLT) setting. We report a series of 14 adult LDLT recipients, who were extubated immediately after liver transplant in the operating suite.

METHODS: Between January and November 2013, 195 adult LDLTs were performed at our center. Of these, 14 patients were successfully extubated immediately after transplant in the operating suite. We retrospectively reviewed demographics, intra operative details, post operative course and hospital stay in these patients. There were no prefixed criteria for extubation. Based on an uneventful intraoperative course, hemodynamic stability at the end of reperfusion of the graft, and improvement of metabolic parameters after implantation and vascular anastomosis, a decision for likely post operative

extubation was made by the anesthetist in consultation with the operating surgeon at the time of biliary anastomosis, which allowed for adequate time to start weaning off the patient.

RESULTS: Among the 14 patients, 12 were males, mean age was 42.92 ± 12.58 years, mean BMI was 22.78 ± 2.68 kg/m², and mean MELD score was 14.92 ± 5.99 . Associated co-morbidities included hypothyroidism in 2 patients and diabetes mellitus in 1 patient. The mean duration of surgery was 661 ± 79.03 minutes. Three patients required more than 3 units of packed red cell transfusions intra operatively (maximum 5 units in 1 patient). Same anesthesia technique was used in all the patients. After immediate extubation none of the patients needed re-intubation either in the operating room or in the ICU. Only 1 of the 14 patients (7.1%) had minor pulmonary complication and needed non-invasive ventilation for 2 hours. All other patients 12/14 (92.9%) had an uneventful postoperative course in the ICU and hospital.

CONCLUSION: Fast tracking is safe and feasible in the adult LDLT setting due to advances in surgical technique and perioperative management. Careful assessment of the intra operative course, immediate graft function, and general condition of the recipient (including co-morbidities) is important when making a decision to extubate immediately after surgery.

Abstract # P-254

Anesthesiologist Training as a Determinant of Institutional Care Standards in Adult Liver Transplantation. Wayne Soong, Andre M. De Wolf. *Department of Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL, USA*

We previously presented results of a survey on intraoperative TEE use among US liver transplantation (LT) anesthesiologists. The current study examines unpublished data from the original survey to further assess the effect of anesthesiologist training on use of monitoring during adult LT.

METHODS: Participation in an online questionnaire was solicited of the transplant anesthesiology director, anesthesiology chair, or other known contact at each of the 97 US transplant centers performing 12 or more LT operations in 2011. The survey addressed practice demography, use of intraoperative PA catheter and TEE, and anesthesiologist training in TEE. For groups not routinely utilizing TEE, 5-point Likert items were presented to further assess obstacles to its use. Data were collected between June and September 2012.

RESULTS: 79 (81.4%) institutions completed the survey, representing 83.2% (4,831) of US 2011 LT volume. 62 (78.5%) centers reported routine PA catheter use; 17 (21.5%) reserve it for special circumstances or rescue situations. 30 (38.0%) centers reported routine TEE use, 45 (57.0%) for special circumstances or rescue situations, and 4 (5.1%) not at all. There was no discernible relationship between PA catheter and TEE use. Groups with at least one member of the LT team also practicing on the cardiac anesthesiology team are significantly more likely to routinely use TEE ($p=0.036$). In programs not customarily using the device, insufficient anesthesiologist training emerged as an influential variable. Accordingly, a cardiologist or second anesthesiologist is four times more likely to be consulted to perform the exam at centers reserving TEE for special circumstances or rescue situations as compared to those centers using the device routinely [68.9% (31/45) vs 16.7% (5/30), $p<0.0001$].

CONCLUSIONS: PA catheterization and TEE availability are nearly universal practice during LT. Currently, reported training deficiencies have a significant impact on utilization patterns of TEE. With generational shifts in technological training, the frequency of TEE use may progress, like PA catheterization has, toward a de facto care standard, despite inconclusive evidence of either device's benefit.

Abstract # P-255

Effect of Intra-Operative HES 130/0.4 Use on Post-Operative Renal Function in LDLT Recipients. V. Vijay, G.V. Prem, G. Nikunj, J. Annu, B. Seema, S. Jayanti. *Liver Transplant, GI Anesthesia and Critical Care, Medanta Liver Institute, Gurgaon, Haryana, India*

Background: There have been recent reports from Europe regarding the adverse effect of hydroxyethyl starch use on renal function of patients. This colloid – HES 130/0.4 has been in regular use as one of the preferred colloid for volume replacement intraoperatively since September 2012. We therefore reviewed our intraoperative use of 6% Hydroxyethyl Starch 130/0.4 (HES) in recipients of Living Donor Liver Transplant (LDLT) and studied its effect on early postoperative renal function.

Methods: The intraoperative use of HES and postoperative data of all patients who underwent LDLT from Sept 2012 to October 2013 was reviewed. Those less than 18 years, acute liver failure, preoperative dialysis and retransplant

within 30 days were excluded from analysis. The patients were divided into groups according to the quantity of HES received intraoperatively – Group I - Less than 30ml/kg, Group II- more than 30 ml/kg. The groups were compared for their preoperative status including demography, MELD score, postoperative RIFLE score on day 1,3,5 and 7, need for renal replacement therapy, intensive care unit stay and hospital stay.

Results: 260 patients underwent liver transplant during this period, of which 218 met the eligibility criteria. The demographic data, preoperative serum creatinine and MELD score of the two groups was comparable. 9.2% (20/108) developed Risk/ Injury according to RIFLE criteria on 5th postoperative day in group I compared to 3.2% (7/110) in group II, which was statistically significant ($p=.006$). None of the patients in both the groups progressed to failure (creatinine > 3times or ≥ 4 mg%) in the first seven postoperative days. Two patients required Renal Replacement Therapy in the 30-day follow up, one each from group II and I.

The duration of ICU and Hospital stay was comparable in both the groups - 6.8 ± 6.1 vs 6.6 ± 4.0 , 17 ± 6.8 vs 17.8 ± 8.5 days respectively.

RIFLE CRITERIA - RISK/ INJURY*

Volume	Day1 - n(%)	Day3 - n(%)	Day5 - n(%)	Day7 - n(%)
Group I - HES < 30ml/kg (n=108)	6 (2.8)	15 (6.9)	20 (9.2)	11 (5.0)
Group II - HES > 30ml/kg (n=110)	5 (2.3)	10 (4.6)	7 (3.2)	5 (2.3)

*RISK - $\uparrow$ S. Creatinine x 1.5, *INJURY - $\uparrow$ S. Creatinine x 2.0, *P=0.006 (Day5)

Conclusion: The new generation Hydroxyethyl starch - 6% HES 130/0.4 did not cause any significant post-operative renal dysfunction in 218 LDLT patients analysed in this study.

Abstract # P-256

Intraoperative Management for Liver Transplantation and Combined Liver-Intestinal Transplantation. Xiaoxing Song¹, Douglas G. Farmer², Ronald W. Busuttil², Victor W. Xia¹. *¹Anesthesiology, University of California, Los Angeles, Los Angeles, CA, USA; ²Surgery, University of California, Los Angeles, Los Angeles, CA, USA*

Liver transplantation (LT) and combined liver-intestinal transplantation (CLIT) are standard therapeutic options for patients with liver and liver-intestinal failure. Although LT has been extensively studied, there are few reports on the intraoperative management of CLIT or on comparison of the two. The aims of this study were to examine perioperative variables and to identify factors that may impact outcome. After IRB approval, a retrospective study was performed. Patients who underwent LT or CLIT at our center between Jan. 2006 and Dec. 2012 were identified. Pre-, intra, and post-operative variables were collected. Student t or chi-square tests were used. During the study period, more than 1500 patients underwent LT and 45 patients underwent CLIT. A total of 90 LT patients were matched with 45 CLIT patients by age, gender, surgery date, and preoperative ventilation requirement. Analysis showed that there were no significant difference regarding pretransplantation clinical variables and baseline laboratory values between two groups (Table 1). However, after the reperfusion of transplanted graft(s), patients in the CLIT group had significantly worse base excess, higher potassium concentrations and the incidence of postreperfusion syndrome compared with those in the LT group. In addition, intraoperative blood transfusion requirement was significantly higher in the CLIT group. Postoperatively, CLIT patients required significantly longer ventilator support. Herein we report the first perioperative comparison between LT and CLIT patients. While the patients did not significantly differ preoperatively, CLIT patients were more prone to develop intraoperative acid-base imbalance, electrolyte disorders, and required more blood transfusion. Postoperatively, CLIT patients required longer ventilation compared with LT patients.

Table 1. Comparison of LT and CLIT[†]

	LT (n=90)	CLIT (n=45)	p
Age (yr)	8.53 $\pm$ 14.1	8.44 $\pm$ 14.2	0.974
Age group ≤ 5 yo (%)	63.3	62.2	0.523
Age group > 5 yo (%)	36.7	37.8	0.523
Male/Female (%)	57.8/42.2	51.1/48.9	0.470
Worst postreperfusion base excess	-5.4 $\pm$ 7.9	-11.6 $\pm$ 3.9	<0.001
Highest postreperfusion K ⁺ (mmol/L)	3.9 $\pm$ 0.8	5.2 $\pm$ 1.4	<0.001
Red blood cell transfused (ml/kg)	49.7 $\pm$ 56.0	99.0 $\pm$ 77.9	<0.001
Postreperfusion syndrome (%)	2.3	15.9	0.007
Postoperative ventilation days	11.8 $\pm$ 14.0	44 $\pm$ 6.5	0.001

Abstract # P-257

Regulatory T Cells Balance the Immune Activation of Effector T Cells By Contact-Dependent Immune Suppression and Immune Stimulation By Cytokine Production. Stalin Chellappa¹, Morten Hagness^{1,2}, Kjetil Taskén¹, Einar M. Aandahl^{1,2}. ¹The Biotechnology Centre of Oslo, University of Oslo, Oslo, Norway; ²Section for Transplantation Surgery, Oslo University Hospital Rikshospitalet, Oslo, Norway

Human regulatory T cells (Tregs) maintain the immune homeostasis by suppressing autoreactive T cells. Tregs can be divided into thymus-derived naturally occurring Tregs (nTregs) and induced/adaptive Tregs (iTregs). Both nTregs and iTregs need to be activated to gain immunosuppressive activity. In this study, we have explored the relative impact of contact-dependent and cytokine dependent immune suppression of effector T cells at various time intervals after separate activation of the nTregs and the effector T cells prior to co-culture. Fixation of the Tregs was performed to distinguish between contact-dependent suppression and humoral factors. iTregs suppressed by cytokine production only. However, nTregs suppress by a contact-dependent mechanism(s) until 48 hours after activation when the suppressive activity rapidly declines and disappears. Throughout the activation period of nTregs from time zero to 72 hours after activation, supernatants were collected and assessed for immunosuppressive activity. Supernatants collected in the first 24 hours after stimulation partly reversed the contact-dependent immunosuppressive capacity of fixed nTregs, whereas IL-2 substitution did not abolish the suppressive activity. This indicates that the suppressive capacity of viable nTregs is balanced between contact-dependent immune suppression and secretion of cytokines that tunes the effector T cell immune response. Multiplex analyses of the nTreg supernatants revealed a particular high level of IL-8 production in the first 24-hours after activation. We further analyzed the timeframe where effector T cells are susceptible to nTreg-mediated immune suppression. nTregs are able to suppress effector T cells up to 24 hours after separate stimulation of the effector T cells. Phospho-flow analyses of signaling phospho-substrates at various time points throughout a 4-day proliferation assay indicated that contact-dependent immune suppression by fixed nTregs modulate the activation profile in the effector T cells in a time-dependent manner. These results demonstrate complex balance between contact dependent and independent mechanisms of immune regulation by nTregs that operates in a sequential manner and at specific time frames in the activation process of effector T cells.

Abstract # P-258

Carbonic Anhydrase II Reduces Endoplasmic Reticulum Stress and Apoptosis in Fatty Liver Grafts Preserved in IGL-1 Solution. Mohamed Bejaoui¹, Eirini Pantazi¹, Mohamed Amine Zaouali¹, Emma Folch-Puy¹, Gina Hotter¹, Hassen Ben Abdennebi², Joan Roselló-Catafau¹. ¹Experimental Pathology, Institute of Biomedical Research of Barcelona, Barcelona, Spain; ²Biologie et Anthropologie Moléculaire Appliquées au Développement et à la Santé, Faculty of Pharmacy, Monastir, Tunisia

Antecedents: The dramatic shortage of organs lead to consider transplantation of liver with steatosis. However, steatotic livers show a poor tolerance against ischemia reperfusion injury (IRI) due to microcirculation alterations and exacerbated endoplasmic reticulum stress (ERS). In hypoxic conditions, as those occurring in many tumors, it has been reported that carbonic anhydrases (CAs) are over-expressed to confer survival advantage to tumors cell. Moreover, CAII is able to generate high levels of cytoprotective NO from nitrite in response to a decrease in pH, as similarly occurred in organ cold storage. Taking this into account, we have explored if in similar hypoxic conditions as those happen during cold graft preservation, the CAII could play a protective role against IRI.

Aim: We investigate the benefits of IGL-1 solution supplemented with CAII for increasing fatty liver graft preservation and to study the ER stress changes.

Experimental: Steatotic livers from obese Zucker rats (9 weeks aged) were preserved for 24h (4°C) in IGL-1 solution with and without CAII (10 mg/ml). Livers were then “ex-vivo” perfused for 2 hours at 37°C. Liver injury (transaminases, histology) and function (bile production and bromosulphophthalein (BSP) clearance) were measured. ACII, MAPKs (p38, ERK and JNK), apoptosis (caspases 3, Caspases 9, Cytochrome C, GSK3b) and ERS (p-eLF, IRE-1, p-PERK, GRP78) were also determined by western blot.

Results: Fatty livers preserved in IGL-1+CAII showed lower injury (transaminases, histology) and better function (bile production, and BSP clearance) compared to IGL-1 alone. CAII was down regulated after

prolonged cold ischemia. The preservation of fatty livers in IGL-1+CAII induced a significant reduction of ERS. Also, a significant decrease in MAPKs (ERK, p38 and JNK) after 2 hours reperfusion was observed. This was consistent with a major decrease of liver apoptosis parameters (Casp3, Casp9, CytC and GSK3b).

Conclusion: CAII is a promising additive to IGL-1 solution for protecting steatotic livers from IRI. This effect is associated with the inhibition of ERS and apoptosis as well as the decrease of MAPKs.

Abstract # P-259

Condition Cardiorespiratory and Functional in Patients Postoperative Liver Transplantation. Thais C. Campacci, Marcela M. Carvalho Da Silva, Aurea M. Oliveira da Silva, Ilka F.S.F. Boin. *Universidade Estadual de Campinas, Campinas, Brazil*

Patients with liver disease show alterations in cardiorespiratory and physical systems functional due to the base pathology. However new complications arise in these systems due to the Liver transplantation, which is considered upper abdominal and major surgery, time of hospital stay, length of intubation and adynamia contribute to negatively affecting the general condition of the patient. Given the shortage of studies that characterize its condition in the postoperative period, and the limitation of its evaluative measures, the aim of this work was to study the cardiorespiratory and physical functional status of patients undergoing liver transplantation through physical therapy evaluation. This study was conducted at a university hospital in the city of Campinas, Brazil, with five patients average age 47.2 (7.1) year, in the postoperative period average 2.2 (1.3) months of liver transplantation and after obtaining the signature of the informed consent form. We excluded patients with renal or cerebrovascular impairment, with history of pulmonary surgery, incapable to perform the proposed tests, or patients in disagreement with the adherence to the study. The following evaluations were submitted: Initial Questionnaire, Quality of Life “36 Short Form” (SF 36), evaluation of surface electromyography of the bilateral diaphragm muscle (RMS- root means square), evaluation of respiratory muscle strength (IPM- Inspiratory Pressure Maximal and EPM- Expiratory Pressure Maximal), pulmonary function test (FVC- Forced Vital Capacity; VEF1- Volume Expiratory Forced in one second and FEF25-75% Flpw Expiratory Forced) and Six Minute Step Test (SMST). For statistical analysis, the significance level was 5%. For correlation tests Pearson’s correlation test was used. The following results were observed: RMS Right 51.56 (24.70)mV; RMS Left 29.67 (8.09) mV; IMP 85 (28.28) cmH2O; EPM 98.4 (17.11) cmH2O; FVC 85.2 (6.61) L; VEF1 88.2 (7.92) L; FEM 25-75% 96.8 (21.25) L/s; SMST 90.6 (19.7) steps; SF 36 Functional Capacity 33 (26.12); restriction by physical aspects 5 (11.18); Pain 44.8 (11.49) and Social Aspects 45 (67.08). These data do not correlate with each other. There was conclude that the patients presented a reduction in respiratory and functional capacities, such as decreased respiratory muscle strength and lung function, increased diaphragmatic effort, reduced quality of life and low performance on Six Minute Step Test.

Abstract # P-260

Epithelial To Mesenchymal Transition and Hepatic Stellate Cell: The Double Face of Everolimus. Amedeo Carraro¹, Valentina Masola², Gianluigi Zaza², Elena Tibaldi³, Anna Maria Brunati³, Umberto Montin¹, Paola Violi¹, Antonio Lupo², Umberto Tedeschi¹. ¹Department of General Surgery and Odontoiatrics, Liver Transplant Unit, University Hospital of Verona, Verona, Italy; ²Department of Medicine, Renal Unit, University Hospital of Verona, Verona, Italy; ³Department of Molecular Medicine, University of Padova, Padova, Italy

Introduction: Everolimus (EVE), a mammalian target of rapamycin inhibitor, is currently under development for liver transplantation. Although an appropriate tolerance, it may induce several adverse effects, such as fibro-interstitial pneumonitis due to the acquisition of activated myofibroblasts. The exact molecular mechanism associated to epithelial to mesenchymal transition (EMT) may be crucial also in the liver context. For EMT to occur in liver, the transcriptional activation of genes to sustain mesenchymal-type functions must occur in hepatic stellate cells (HSC). This work examines the role and the molecular mediators of EMT in HSC and the potential role of EVE to maintain the epithelial phenotype rather than to act as a potential initiators of EMT.

Methods: Several biomolecular strategies (Real time-PCR, immunofluorescence, zymography and migration assay) have been used to assess the capability of different doses of EVE (10, 50, 100, 200 and 500 nM) to induce an in vitro EMT in HSC.

Results: Biomolecular experiments confirmed that multiple intracellular signaling pathways are involved in mediating EMT, in which EVE may play be implicated in a dose-dependent manner. Results showed that, among different concentrations, high doses of EVE (>50nM) determines a significant up-regulation (more than 2 fold increase) of several genes encoding for well known EMT markers [(alpha-smooth muscle actin (alpha-SMA), Vimentin (VIM), Fibronectin (FN) and matrix metalloproteinase-9 (MMP9) and -2 (MMP2)], an enhancement of MMP-2 activity and increment of cells motility in HSC. On the contrary, all these effects were absent with EVE at the therapeutic concentration 10nM

Conclusions:

Liver EMT and consequent fibrosis is characterized by an orchestrated, highly regulated process. Of the many factors that influence EMT in different ways, EVE may play a significant role in a dose-dependent manner, capable of initiating and completing the entire EMT course with high doses of the drug. Preliminary results suggests that clinicians should administer the adequate dosage of EVE in order to increase efficacy and reduce potential adverse effects.

DISCLOSURE: Carraro, A.: Grant/Research Support, Novartis., Tedeschi, U.: Grant/Research Support, Novartis.

Abstract # P-261

Rapamycin Attenuates Hepatocellular Injury and Fibrosis in Bile Duct-Ligated Rats and Human Hepatic Stellate Cells. Yinghua Chen, Wenhui Luo, Yi Ma, Xiaoshun He. *Organ Transplantation Center, The 1st Affiliated Hospital of Sun Yat-san University, Guangzhou, Guangdong, China*

AIM. To investigate the anti-hepatofibrotic effects of Rapamycin in liver fibrosis.

METHODS. Male Sprague Dawley rats underwent common bile duct ligation (BDL) for 14 d and were treated with Rapamycin by gavage. The effects of Rapamycin on liver fibrosis and the detailed molecular mechanisms were also assessed in human hepatic stellate cells (LX-2) in vitro.

RESULTS. Treatment with Rapamycin decreased serum alanine aminotransferase (BDL vs. BDL + 1.5 mg/kg Rapamycin, 132.6±15.2 U/L vs. 105.7±10.6 U/L, P=0.005) and aspartate aminotransferase (BDL vs. BDL + 1.5 mg/kg Rapamycin, 171.8 ± 23.2 U/L vs. 122.1 ± 19.5 U/L, P=0.002) as well as hydroxyproline (BDL vs. BDL + 1.5 mg/kg Rapamycin, 416.6±29.2mg/g vs 289.3±18.1mg/g liver tissue, P=0.001) after BDL. Furthermore, Rapamycin significantly reduced liver mRNA and/or protein expression of transforming growth factor b1 (TGF-b1), collagen type (Col) and α-smooth muscle actin (α-SMA). Rapamycin significantly suppressed the upregulation of TGF-b1, Col and α-SMA in LX-2 exposed to recombinant TGF-b1. Moreover, Rapamycin inhibited TGF-b1-induced Smad2 phosphorylation in LX-2 cells.

CONCLUSION. Rapamycin exerts anti-fibrotic effects in the liver fibrosis and may represent a novel anti-fibrotic agent.

Abstract # P-262

FK506 Accelerates CoCl₂ - Induced Cytotoxicity via ER Stress Pathway. Sang Young Chung, Soo Jin Na Choi. *Department of Surgery, Chonnam National University Hospital, Gwangju, Korea*

Background: The effects of FK506 on the endoplasmic reticulum (ER) mediated stress pathway accelerates CoCl₂ - induced cytotoxicity in human hepatoma HepG2 cell line were investigated.

Methods: We examined the effects of FK506 on CoCl₂ - induced cytotoxicity by western blotting of poly ADP-ribose polymerase (PARP), CHOP, GRP78, Nrf2, ATF4, ATF6, XBP-1, Bak, Bax, and Bcl-2. And the catalytic activity of caspase-3 and -12 caspase in HepG2 cells was also measured.

Results: FK506 and CoCl₂ significantly induces the synergistic effect of HepG2 cytotoxicity in dose dependent manner. Increased active-PARP expression occurred at 24 hours after FK506 treatment on cobalt chloride-induced HepG2 cytotoxicity and peak activation of cleaved caspase-3 was also observed at 24 hours. FK506 aggravates cobalt chloride-induced HepG2 cytotoxicity. GRP78 expression was increased 24 hours after FK506 treatment on cobalt chloride-induced HepG2 cytotoxicity. CHOP and caspase-12 expressions were increased 24 hours after FK506 treatment on cobalt chloride-induced HepG2 cytotoxicity. Expressions of ATF4 and ATF6 were same manners. Expression of XBP-1 was decreased beginning at 6 hours. FK506 exasperate endoplasmic reticulum stress by cobalt chloride-induced cytotoxicity. Bcl-2 protein expression decreased, but FK506 induces expression of Bak and Bax by cobalt chloride-induced cytotoxicity. Nrf2 expression was also noted.

Conclusions: FK506 and CoCl₂ significantly induces the synergistic effect of cytotoxicity in dose dependent manner. FK506 aggravates cobalt chloride-induced cytotoxicity. FK506 exasperate endoplasmic reticulum stress by cobalt chloride-induced cytotoxicity. FK506 accelerates expression of ER-stress related nuclear transcriptional factor.

Abstract # P-263

Is There Correlation between Functional Capacity and Respiratory Assessment of End-Stage Liver Disease Patients Candidates for Liver Transplant? Daniele Costa dos Santos,

Vivian Limongi, Aurea Maria Oliveira da Silva, Raquel Silveira Bello Stucchi, Ilka Fatima Santana Ferreira Boin. *Faculty of Medical Science, State University of Campinas, Campinas, Brazil*

Introduction: End-stage liver disease is responsible for metabolic disorders, malnutrition, loss of muscle mass and function, mechanical changes in chest mobility and diaphragm, secondarily to fators as ascites and muscle weakness.

The association of such factors can induce an global motor impairment and physical inactivity, adversely interfering the daily activities of end-stage liver disease individuals who are considered candidates for liver transplantation.

Objectives: To verify if there is correlation between functional capacity and respiratory assessment of liver disease patients candidates for liver surgery or transplantation at Unit of Liver Transplantation of State University of Campinas (UNICAMP). **Methods:** This study was performed at Unit of Liver Transplantation of State University of Campinas (UNICAMP) and were included 42 patients with liver dysfunction preoperatively who had clinical conditions to perform functional tests that have been proposed. They were submitted to the following evaluations: medical history, six-minute walk test (6MWT), assessment of maximal inspiratory pressure (MIP) and expiratory (MEP) and pulmonary function test (PFT). Data were evaluated by the Pearson correlation between the variables, and the significance level was set at p < 0.05. **Results:** Correlations were found between MIP and MEP with the distance walked at 6MWT. There was also correlations between MIP and dyspnea sensation pre-6MWT, and forced vital capacity (FVC) in PFT with all initials respiratory parameters of 6MWT. **Conclusion:** In this study we can conclude that functional capacity of patients with end-stage liver disease evaluated is related to the their respiratory capacity.

Abstract # P-264

Liver Transplantation Monitoring of Serum Cytokines as Biomarkers for Overall Immunosuppression. S. Geier², A. Mukerji³, H. Parekh², P. Lai², A. Karachristos¹, M. Maloo¹, A. Jain¹.

¹Surgery, Temple University Hospital, Philadelphia, PA, USA; ²Pathology & Laboratory, Temple University Hospital, Philadelphia, PA, USA; ³Surgery, Bronx Lebanon Hospital, Bronx, NY, USA

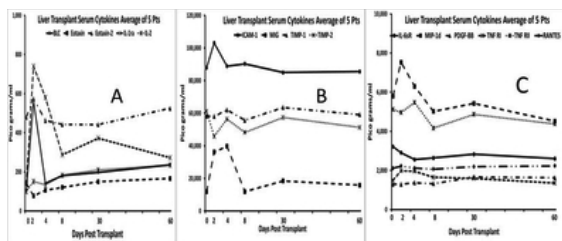
Introduction: Effective immunosuppression in transplant patients is critical for organ and patient survival; unfortunately, there are very few tests to help identify over or under immunosuppression. In this study, the level of 40 serum cytokines was evaluated in five liver transplant patients during the first two months post transplant, to identify biomarker patterns which may be used to monitor immunosuppression.

Aim: To develop serum biomarkers which will enable appropriate immunosuppression in liver transplantation.

Method: Serum samples from five pre and post LTx at several time points were tested in quadruplicate in a Quantibody® Human Inflammation, multiplexed cytokine ELISA antibody glass slide array (Ray Biotech, Inc). The five patients: 4 male, ages 50-71, 3 HCV, 1 ETOH and 1 NASH, and none had acute infections. Induction and post immunosuppression with TAC, MMF & MP.

Results: Compared to day 0, there were generally three serum cytokine patterns:

1. Eleven increased 1.5-5.3 fold between days 2-4 and ended day 60 with a 1.5-3.7 fold increase: BLC, IFNg, IL-1a, 1ra, 2, 10, 15, MIG, MIP-1a, b & TNFa. (Fig A)
2. Eighteen changed very little: Eotaxin, Eotaxin-2, ICAM-1, MCP-1, MIP-1d, PDGF-BB, RANTES, TIMP-1, 2, TNF RI, RII, & IL-1b, 4, 6sR, 8, 12p40, p70, 16. (Fig B)
3. Seven gradually increased to 1.6-3.4 fold by day 60: GM-CSF, I-309, TNFb & IL-5, 6, 7, 13. (Fig c).



IL11, 17, MCSF & G-CSF levels were generally below the limit of detection. **Conclusions:** Pattern #1 may reflect a delay in suppressing immune and inflammatory cells, with some resurgence by day 60. Whether these cytokine patterns can serve as biomarkers for over and under immunosuppression, will require an expanded patient study with comparisons of the immunosuppression levels and other immune function assays like the Immuknow® assay.

Abstract # P-265

Long-Term Survival Recipients Are Characterized By the Higher Levels of Circulating CD19+CD24hiCD38hi B Cells. Lei Geng, Junjun Jia, Lin Zhang, Saxiao Tang, Shusen Zheng. *Hepatobiliary Surgery, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, China*

Purpose: Numerous reports have highlighted the central role of regulatory T cells in long-term allograft tolerance, but few studies have investigated the B-cell aspect. Herein, we analyzed the levels of circulating a regulatory subset of B cells marked as CD19+CD24hiCD38hi in the setting of human liver transplantation.

Method and materials: The frequent of circulating CD19+CD24hiCD38hi cells were detected longitudinally in patients with liver transplantation at different point of after liver transplantation by flow cytometry and the health people as control.

Result: CD19+CD24hiCD38hi cell frequency was 3.49%, 1.64%, 1.63%, 2.04%, 3.85% and 4.12% respectively at the time point of pre-operation, 3m, 6m, 1y, 3y, 5y, while the control frequency was 3.81%.

Conclusion: The higher frequency of CD19+CD24hiCD38hi cell was correlated with the long-time survival recipients and CD19+CD24hiCD38hi cell may contributed to the allograft tolerance.

Abstract # P-266

Neuropeptide PACAP Promotes Hepatoprotection in Mouse Liver Ischemia-Reperfusion Injury (IRI) Via CREB-KLF4 Dependent Autophagy. Haofeng Ji¹, Yu Zhang¹, Yuanxing Liu¹, Xiu-da Shen¹, Feng Gao¹, Ronald W. Busuttill¹, Joseph Pisegna², Jerzy W. Kupiec-Weglinski¹. ¹Dept of Surgery, *Dumont-UCLA Liver Transplant Center, Los Angeles, CA, USA;* ²Dept of Medicine, *Division of Gastroenterology, Hepatology and Parenteral Nutrition, Los Angeles, CA, USA*

Background: Autophagy ("self-eating") represents a critical homeostatic mechanism in oxidative stress defense. We have shown that by innervating the liver and immune cells, neuropeptide PACAP (Pituitary Adenylate Cyclase-Activating Polypeptide) regulates hepatic IRI. Here, we hypothesize that PACAP enhances parenchyma cell autophagy and promotes hepatocyte survival in IR-stressed livers. **Methods & Results:** In our model of liver warm ischemia (90min) and reperfusion (0-24h), autophagic activity peaked at 6h of reperfusion, coinciding with the maximal hepatocellular damage. Treatment with PACAP ameliorated liver IRI, and enhanced autophagy, evidenced by increased hepatic LC-3a/Bcl-1 expression. As PACAP and cAMP-PKA signaling are functionally linked with CREB-KLF4 survival pathway, we then focused at self-renewal Krüppel-like transcription factor 4 (KLF4) that regulates proliferation, differentiation and cell survival. Indeed, KLF4 gene induction peaked in the early phase (1-2h) of liver IRI, and its frequency was enhanced by concomitant PACAP therapy. This was accompanied by up-regulation of CREB, enhanced autophagy, and HGF (Hepatocyte Growth Factor)/c-Met signaling. Strikingly, PACAP-facilitated autophagy was abolished and hepatocellular damage restored after adjunctive treatment with CREB inhibitor (CAS92-78-4) or KLF4 inhibitor (Kenpaullone). Consistently, PACAP-induced autophagy prevented hydrogen peroxide (H2O2)-triggered hepatocyte necrosis in primary hepatocyte cultures. The regulatory effect of PACAP on hepatocytes in vitro was confirmed by decreased LDH release, increased conversion of LC3-I/LC3-II, and abundant visualized endogenous LC3 punctae. In contrast, addition of CREB

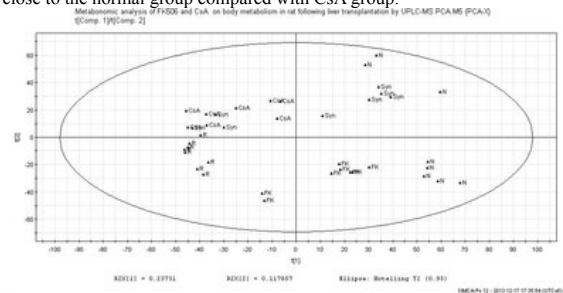
or KLF4 inhibitors reversed PACAP-induced hepatocellular autophagy in vitro. **Conclusion:** This is the first report to provide evidence that harnessing neuroimmunomodulatory mechanisms by PACAP in liver IRI: 1) promotes hepatocellular autophagy; 2) enhances CREB-KLF4 signaling; 3) exerts cytoprotection via integrated PACAP-cAMP/PKA axis and CREB/KLF4 binding proteins. Hence, PACAP-promoted hepatocyte survival may represent a refined therapeutic option to mitigate liver IRI in transplant recipients.

Abstract # P-267

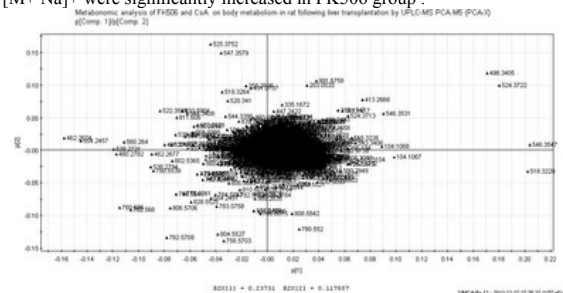
Metabonomic Study of Immunosuppressant on Body Metabolism in Rat Following Liver Transplantation by UPLC-MS. Jianwen Jiang¹, Zhigang Ren¹, Junjun Jia¹, Deying Chen², Weilin Wang¹, Lin Zhou¹, Da Yu¹, Shusen Zheng¹. ¹Department of Hepatobiliary Pancreatic Surgery, *Key Lab of Combined Multi-organ Transplantation, Ministry of Public Health, Hangzhou, Zhejiang Province, China;* ²State Key Laboratory for Diagnosis and Treatment of Infectious Diseases, *Hangzhou, Zhejiang Province, China*

Objectives: In this study, the effect of cyclosporine(CsA) and Tacrolimus(FK506) on body metabolism were investigated by UPLC-MS. **Methods:** The Lewis and BN rats were used to establish LT model, they were divided into normal control group (normal BN rat), syngeneic LT group (BN-BN), rejection group (Lewis-BN), CsA group (5mg/kg/day by gavage), FK506 group (1mg/kg/day by gavage), they were sacrificed four weeks after LT to draw sample to test liver function, liver morphology and plasma metabolomic analysis by UPLC-MS.

Results: As for the liver function, morphology and plasma metabolomic profile, the syngeneic group were close to the normal group four weeks after LT, however the rejection group showed the most significant deviation from the normal group. There were no rejection in the CsA group and the FK506 group, the liver function and plasma metabolomic profile still deviated from the normal group, but metabolomic profile in the FK506 group were more close to the normal group compared with CsA group.



As compared with CsA group, lysophosphatidylcholine (Lyso-PC)(16:0) [2M+ H]⁺ and bile acids and Lyso-PC (18:1)[M+ Na]⁺ were significantly decreased in FK506 group, while phatidylcholine[M+ H]⁺ and Lyso-PC(16:0) [M+ Na]⁺ were significantly increased in FK506 group.



Conclusions: The metabolomics profile of FK506 treatment were closer to healthy rat compared with CsA treatment following LT in rat, the above kind of substances may be the biomarker of side effects of immunosuppressants, which were worthy of in-depth research.

Abstract # P-268

Combined Targeting of mTORC1 and mTORC2 Synergistically Inhibits Proliferation of Hepatocellular Carcinoma Cells: Effects of Everolimus and Ku0063794.

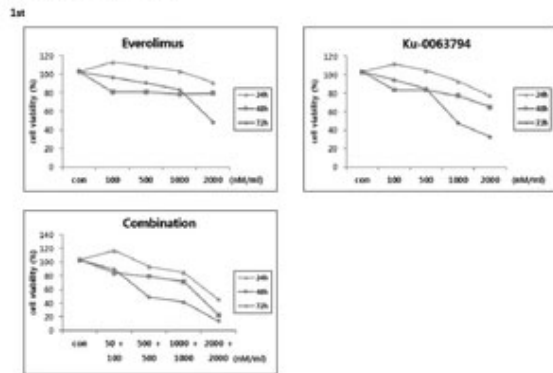
Say-June Kim, Ho-Joong Choi, Dong-Goo Kim. *Department of Surgery, Daejeon St. Mary's Hospital, the Catholic University of Korea, Daejeon, Korea; Department of Surgery, Bucheon St. Mary's Hospital, the Catholic University of Korea, Bucheon, Korea; Department of Surgery, Seoul St Mary's Hospital, the Catholic University of Korea, Seoul, Korea*

Background: The mTOR has recently generated great interest in cancer treatment. Rapamycin, which is both an immunosuppressant regimen and an effective inhibitor of mTOR as well, showed growth inhibitory and anti-angiogenic properties in certain gastrointestinal malignancies in experimental models. Furthermore, it was also reported that de novo rapamycin-based immunosuppression in patients who had received liver transplantation due to hepatocellular carcinoma was associated with the satisfactory oncologic outcome, even in selected patients beyond Milan criteria. However, rapamycin only exerts the inhibitory effects to mTORC1, its effects should be compared with the effects exerted by a complete mTORC1/2 blocker.

Method: Everolimus (Rapamycin analogue; mTORC1 inhibitor) and Ku-0063794 (mTORC1/2 inhibitor) was treated in HepG2 cell line respectively and with the combination. Ez-syntax assay, FACS, Autophagy assay, and Western blot were implemented.

Results: Increase in cell proliferation was pronounced in combined treatment with everolimus and Ku-0063794 compared with either drug alone.

Figure 1. Combining Everolimus with KU0063794 synergistically suppresses the growth of HepG2 cells.



The proportion of cells arrested in G1 and G0 phase was increased in the combination group. In the combination group, the cell death was demonstrated in the form of autophagy rather than apoptosis. Further, the combination could noticeably suppress tumor cell invasion and the phosphorylation of AKT, p70S6K and STAT3.

Conclusion: The combination of everolimus and Ku-0063794 effectively suppressed the tumor biology in terms of survival, cell cycling, invasion, and related signal transduction. Theoretically, solitary inhibition of mTORC1 can release the inhibition of PI3 kinase, which activates AKT, favoring tumor growth. Therefore, balanced blockage of mTORC1 and mTORC2 should be taken into consideration to effectively enhance anti-cancer effects.

Abstract # P-269

TLR4 Dampens Autophagy and Promotes Hepatic Sinusoidal Endothelial Injury in Marginal Liver Grafts.

Xin Li, Xiaobing Liu, Changxian Li, Hui Liu, Chungmau Lo, Kwan Man. *Surgery, The University of Hong Kong, Hong Kong, China*

Introduction

Hepatic sinusoidal endothelial cells (HSECs) represent the frontline barrier in the liver's confrontation with ischaemia-reperfusion injury (IRI). Here we sought to decipher the role of autophagy in HSECs during IRI of marginal liver grafts, its regulatory machinery, and the clinical significance of autophagy modulation.

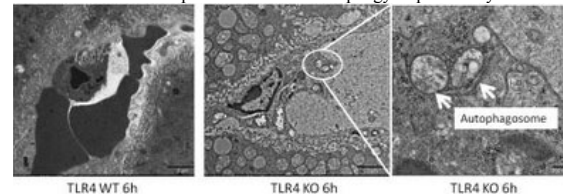
Methods

Autophagy and intra-graft TLR4 were assessed in clinical liver biopsies after transplantation. They were further validated in rat orthotopic liver transplantation models. TLR4 wild-type and -/- mice underwent warm liver IRI to discern the phenomenological association between TLR4 activation

and autophagy. Simulated IRI model was also established in HSEC cell line, and in vitro functional studies were carried out to depict the kinetics of autophagy during IRI.

Results:

Autophagy was depressed in marginal grafts compared to whole grafts post-transplantation both in human liver biopsies and rat samples, accompanied by TLR4 upregulation and augmented liver tissue damage. In the in vivo functional study, prominent autophagosome formation was observed in liver grafts of TLR4 -/- mice in which tissue damage was markedly ameliorated, in concordance with a protective role of autophagy as previously reckoned.



During simulated IRI in HSECs in vitro, autophagic flux demonstrated an incremental fashion within the first 24 hours after reperfusion, with 42% and 44% increase in LC3 conjugation at 6 hours and 24 hours respectively ($p=0.045$ and $p=0.035$). Heightened autophagy prevented the excessive generation of ROS, with an early peak of ROS activity at 6 hours ($p<0.05$). Concurrently, actin stress fibre reorganised in different cytoplasmic compartments, and autophagy inhibition significantly affected cell morphology and growth.

Conclusion

Dampened autophagy in marginal liver grafts during IRI fails to exert its primarily protective role in HSECs. TLR4 proves to be a potential upstream regulator of autophagy, and inhibition of TLR4 activation may help preserve graft function via maintaining autophagy.

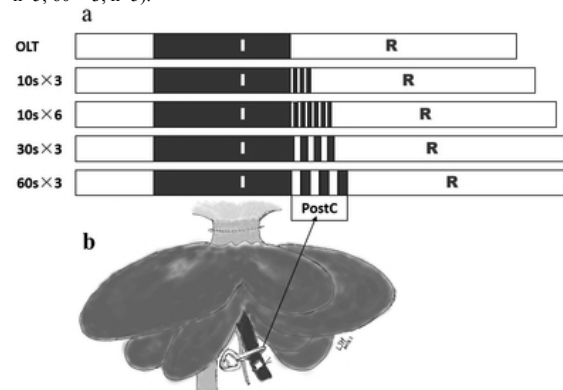
Abstract # P-270

Postconditioning the Orthotopic Liver Transplantation Grafts of Rats: Optimizing the Algorithm and Investigate the Underlying Mechanism.

Jianhui Li, Junjun Jia, Li Jiang, Shasha Chen, ShuSen Zheng. *Department of Hepatobiliary Surgery, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China*

Background: Hepatic ischemia/reperfusion (I/R) injury induces postoperative liver dysfunction and subsequently affects in the outcome of the patients undergoing transplantation. Postconditioning (PostC) is a known manual conditioning to decrease the hepatic IR. In this study we tried to optimize the applicable protocols and investigate the potential protective mechanism.

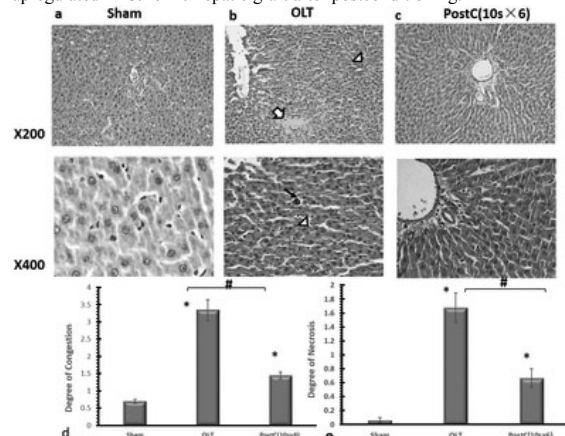
Methods: Sprague-Dawley rats were assigned randomly to the sham-operated control, Orthotopic Liver transplantation (OLT), PostC (OLT followed by occlusion and re-open the portal vein for different time intervals); the PostC group was then divided into 4 subgroups ($10'' \times 3$, $n=5$; $10'' \times 6$, $n=5$; $30'' \times 3$, $n=5$; $60'' \times 3$, $n=5$).



Serum transaminases, histopathologic changes, malondialdehyde (MDA), and myeloperoxidase (MPO) were evaluated. Expressions of p-Akt were also determined by western blot.

Results: Compared to the OLT group, the grafts subjected to PostC algorithm especially with short stimulus and more cycles ($10'' \times 6$) showed significant reduction of morphological damage (Figure 2) and improved the graft

function. Also, production of reactive oxidative agents (MDA) and neutrophil infiltration (MPO) were markedly depressed by PostC algorithm. p-Akt was upregulated in ischemic hepatic graft after postconditioning.



Conclusion: This study demonstrated that PostC with repetitive short stimulus and more cycles showed to be more effective against rat liver graft I/R injury. These beneficial effects may be associated with its antioxidant and anti-inflammatory activities and through the activation of p-Akt expression of RISK pathway. PostC for the liver graft may represent a promising therapeutic strategy for graft protection in the clinical settings.

Abstract # P-271

Effects of a Physiotherapy Intervention Program in Liver Transplantation Candidates from Unicamp Clinical Hospital - Preliminary Study. Vivian Limongi, Daniele dos Santos, Áurea da Silva, Ilka Boin, Raquel Stucchi. *Surgical Post Graduate Program Student, Department of Surgery/Unit of Liver Transplantation, State University of Campinas, Campinas, Sao Paulo, Brazil; Surgical Post Graduate Program Student, Department of Surgery/Unit of Liver Transplantation, State University of Campinas, Campinas, Sao Paulo, Brazil; Surgical Post Graduate Program Student, Department of Surgery/Unit of Liver Transplantation, State University of Campinas, Campinas, Sao Paulo, Brazil; Associate Professor of Digestive Surgery and Chairperson of Unit of Liver Transplantation, State University of Campinas, Campinas, Sao Paulo, Brazil; Infectologist and Assistant Professor of Unit of Liver Transplantation, State University of Campinas, Campinas, Sao Paulo, Brazil*

Candidates for liver transplantation may have malnutrition, fatigue, loss of muscle mass and function. The combination of these factors leads to overall physical disability and physical inactivity. The aim of the study was to evaluate the effects of a physiotherapy intervention program in liver transplantation candidates. We evaluated respiratory muscle strength, surface electromyography, spirometry and we applied the SF-36. 42 patients were evaluated, age 55.48 (± 8.67); body mass index 29.02 (± 5.31) and MELD 18.05 (± 4.71). Of the 42 patients, 12 were randomly assigned to the control group and 5 in the intervention group. The evaluations were performed before and after three months of it. The intervention consisted of an illustrative and explanatory manual to be followed at home, with the diaphragmatic breathing exercises, diaphragmatic isometric exercise, Threshold IMT®, lifting upper with bat and strengthening the abdominals. Results: After three months, on average, in the intervention group there was an increase of muscle strength, lung function and in all areas of the SF-36, except social aspects, but these changes were not significant. There was a significant difference ($p = 0.036$) between the root mean square of the diaphragm at the initial time and the rms end time, in the control group. In conclusion, the control group showed greater electrical activity of the diaphragm after three months, ie, the muscle was greater demand due to global weakness, which tends to increase with time. The intervention group benefited from the exercises, it did not present this worsening. It is likely that due to the small sample size and the time of three months for the exercises may have influenced the results.

Abstract # P-272

The Knockout of Telomere-Independent Rap1 Attenuates Hepatic Ischemia Reperfusion Injury by Suppressing Neutrophil Activation. K. Man, C.X. Li, Kevin T.P. Ng, C.M. Lo. *Department of Surgery, The University of Hong Kong, Hong Kong, China*

Background and Aim: Telomere-independent Rap1, a component of the telomerase protein complex, is a critical regulator of NF- κ B and mediates inflammatory responses. However, the role of Rap1 on liver injury has not been clearly explored. In this study, we aim to investigate the roles of Rap1 in hepatic ischemia reperfusion injury (IRI) and to explore the underlying molecular mechanism.

Methods: The intragraft Rap1 expression profile, inflammatory cytokines/chemokines, and neutrophil infiltration were examined in human liver graft biopsies. The role of Rap1 in liver injury was also explored in Rap1 knockout mice with hepatic IRI. Histological changes, liver function, expressions of neutrophil chemoattractants and adhesion factors, together with neutrophil infiltration were compared between Rap1 knockout mice and wild type controls. The interaction between hepatic endothelial cells and neutrophil migration/activation was further explored under the regulation of RAP1. In addition, primary neutrophils isolated from Rap1 knockout or wild type mice were activated by fMLP. The migration and activation of neutrophil were compared between those primary neutrophils from Rap1 knockout mice and wild type controls.

Results: Over-expression of intragraft Rap1 was associated with lots of neutrophil infiltration (36.2/HPF in liver graft vs 3.5/HPF in normal liver, $P=0.00$) and high expressions of inflammatory cytokines/chemokines in human liver graft after transplantation. High expression of Rap1 was mainly expressed in neutrophils in liver graft. In mouse model, sinusoidal damage, liver function (ALT: 395.59 vs 280.67 U/L, $p=0.024$; AST: 522.886 vs 368.628 U/L, $p=0.025$), neutrophil infiltration (19.7 vs 9.2/HPF, $p=0.001$), expressions of neutrophil chemoattractants (CXCL2: 30.9 vs 12.7, $p=0.037$) and adhesion factors (ICAM1: 4.2 vs 2.4, $p=0.049$; VCAM1: 4.5 vs 2.1 folds of normal liver; $p=0.026$), and activation of NF- κ B were attenuated in Rap1 knockout mice. Furthermore, the knockout of Rap1 decreased the expressions of neutrophil chemoattractants and adhesion factors in endothelial cells and further suppressed neutrophil migration and activation.

Conclusion: The knockout of Rap1 attenuates hepatic IRI by suppressing the neutrophil migration and activation. Rap1 might be the potential treatment target for prevention of liver graft injury.

Abstract # P-273

Impact of Short-Term Rewarming Machine Preservation To Subnormothermia in Porcine DCD Liver Graft. Naoto Matsuno¹, Hiromichi Obara², Munekazu Naito³, Naoyuki Hatayama³, Shin Enosawa¹. *Innovative Surgery and Transplantatoin, National Center for Child Health and Development, Setagaya, Tokyo, Japan; ²Graduate School of Science and Engineering, Tokyo Metropolitan University, Hachioji, Tokyo, Japan; ³Anatomy, Tokyo Medical University, Sinjuku, Tokyo, Japan*

Utilization of grafts from donors after cardiac death (DCD) would greatly contribute to the expansion of the donor organ pool. However, the implementation of such a strategy requires the development of novel preservation technology to recover from injury due to warm and cold ischemia. To assess potential methods and effect, livers procured after 60 minutes of warm ischemic time (WIT) were perfused and preserved. (Methods) Porcine livers were perfused with newly developed machine perfusion (MP) system. The livers were perfused with modify UW-gluconate and amino acid. Euro-Collins solution used for simple cold storage (CS). All grafts were procured after acute hemorrhagic shock and ventilator off. Group 1 (n=4): Grafts were procured with WIT of 60 min and preserved with CS for 2 hrs and HMP for 2hrs. Group 2 (n=5): preserved with CS for 2 hrs and rewarming up to 22°C by MP for 2hrs. The preserved liver grafts were transplanted orthotopically (Results) The change of AST, ALT and LDH in perfusate as the difference from initial value maintained in low and stable in Group 2. Tissue IL-6 during preservation was lower in Group 2, but not difference in Caspase3, TNF α and NOS. Histologically, the necrosis of hepatocytes after reperfusion was less severe in Group 2. Survival rate was 0/4 and 3/5 respectively. (Conclusion) Rewarming to subnormothermic in MP is expected to facilitate the recovery and resuscitating function of DCD liver grafts.

Abstract # P-274

Clinical Significance of Long Intergenic Noncoding RNA-p21 in Hepatocellular Carcinoma Patients Following Liver Transplantation. Chuanhui Peng^{1,2}, Jian Wu^{1,2}, Chaofeng Ding^{1,2}, Shaobing Cheng^{1,2}, Shusen Zheng^{1,2}. ¹Minist Publ Hlth, Key Lab Combined Multiorgan Transplantat, Hangzhou, China; ²Zhejiang Univ, Div Hepatobiliary & Pancreat Surg, Dept Surg, Affiliated Hosp 1, Sch Med, Hangzhou, China

A novel large intergenic noncoding RNA termed lincRNA-p21 has been reported as a suppressing modulator for both transcription and translation, and has a significantly lower expression in colorectal cancer tissue compared with paired normal tissue. However the clinical significance and biological role of lincRNA-p21 on human hepatocellular carcinoma (HCC) remains to be determined. Thus, we examined expression level of lincRNA-p21 in 65 HCC samples following liver transplantation (LT) and analyzed its association with clinical parameters and prognosis. Knock-down experiments of lincRNA-p21 were also performed in vitro with small interfering RNA transfecting a HCC cell line BEL-7402 to explore its biological function. As a result, the expression level of lincRNA-p21 in HCC tissues was significantly lower than in adjacent noncancerous tissues ($p < 0.05$). Patients underwent LT with low level of lincRNA-p21 has lower cumulative recurrence-free survival than those with high level of lincRNA-p21 ($p < 0.05$). Moreover, knock-down of lincRNA-p21 in BEL-7402 promoted cell proliferation, cell cycle procession and cell invasion. In summary, lincRNA-p21 associates with poor prognosis of HCC patients underwent LT, and may contribute to HCC procession and metastasis.

Abstract # P-275

Research of Establishing Non-Heart-Beating Mouse Liver Transplantation Model. Yang Tian, Sheng Yan, Yan Wang, Yuan Ding, Haiyang Xie, Lin Zhou, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang Province, China*

Background

Organ shortage is one of the most difficult problems faced with transplantation. DCD and DBD organ transplantation have been performed for years to shorten the gap between recipients and donors. However, primary graft dysfunction after surgery and long-term biliary complications are the main challenges that affect recipients' life. Several models in big animals have been created to research such questions. In this study, we tried to establish a non-heart-beating donor related mouse liver transplantation model, and provide an animal platform for further research on DCD liver transplantation. Methods

C57Bl/6 mice were chosen as donors, while CBF1 mice were chosen as recipients. 100U heparin was injected into donor via tail vein. Then donor was sacrificed by asphyxia method with CO₂, and heart beating was checked by palpation. Respectively, 0min, 5min, 10min, 20 minutes after heart beating stop, graft was perfused with cold UW solution (N=7-10 for each group). Arterialized orthotopic liver transplantation was performed, and cold ischemia time was controlled into 2 hours. Then mice were kept in separate IVC cage with free water and food after surgery and their survival status was observed and recorded.

Results

The survival rate at 1 day, 4 days and 7 days after surgery was 100%, 100%, 100% in 0 min group, 100%, 80%, 60% in 5min group, 100%, 57%, 29% in 10min group, 33%, 11%, 11% in 20min group, respectively. There was significant difference among the survival curve of four groups which was examined by Log-Rank test ($P < 0.001$).

Conclusions

Caused by different warm ischemia time, the graft dysfunction would occur early after transplantation, which may be the key point leading to a poor survival rate after liver transplantation. By comparison with the four survival curve, we believed that 10min of non-heart-beating donor would be an optional time point to establish the non-heart-beating mouse liver transplantation model, which would assure a stable survival rate between 25% and 40%, and provide platform to study the early changes after DCD liver transplantation. It still needs to be further studied how to improve long-term survival rate and establish a stable non-heart-beating mouse liver transplantation model by drugs or other interfere methods.

Abstract # P-276

Decellularization of Human and Porcine Livers: Applications for Graft Engineering. Monique M.A. Versteegen, Sjoerd van den Hoek, Herold J. Metselaar, Jan IJzermans, Luc J.W. van der Laan, Jeroen de Jonge. *Erasmus MC, Rotterdam, Netherlands*

Liver transplantation is the only effective treatment for end stage liver disease, however, the number of good quality liver grafts is not sufficient to meet the need. Alternative approaches need to be explored to overcome this shortage, including the use of bioengineered hepatic tissue as transplantable grafts. Although from rodent models is known that decellularization of whole liver organs is feasible, currently there is limited experience with decellularization of larger liver sizes from pigs or humans. The aim of this study is to develop an effective method for decellularization of porcine and human livers.

Whole or partial porcine (n=3) and human livers that are rejected for transplantation (n=4) were cannulated via the portal vein and hepatic artery and perfused (60 ml/min) with heparinized 0.9% NaCl to remove blood, followed by 4% Triton X-100 + 1% NH₄OH to remove all liver cells. This process takes 8 hours in which 4L detergent is recirculated and refreshed every 4 hours. In between recirculation rounds, 2L Triton-solution is perfused through the liver. After the decellularization procedure, the extracellular matrix (ECM) is rinsed with 0.9% NaCl and DNase to remove all remnants of cells and nucleases.

The decelled matrix was analyzed for the absence of cells, RNA and DNA content and for the presence of matrix proteins. Histological analysis (H&E staining) showed that with the current method, virtually all nuclei were removed and that elastin and collagen fibers (Weigert's Resorcin-Fuchsin staining) was not affected by the decellularization process.

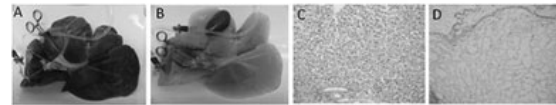


Figure 1. Porcine liver before (A) and after decellularization (B). Microscopic representation of hematoxylin and eosin (H&E) stained biopsies taken from porcine liver before (C) and after decellularization (D). 20x.

We found a $93\% \pm 3\%$ (average $\pm$ SD) reduction of RNA and a $47\% \pm 22\%$ (average $\pm$ SD) reduction of DNA content. Preliminary results of re-seeding the ECM with green-fluorescent labeled mesenchymal stem cells (MSC) indicate that the matrix is not toxic for stem cells. MSC adhere to the matrix and spread.

In conclusion, we established a method to make acellular ECM from porcine and human livers. These decellularized matrices provide an excellent scaffold for reseeded liver cells, liver organoids and/or stem cells for graft engineering.

Abstract # P-277

MiRNA CHIP Analyses of Grafted Liver after Mice Liver Transplantation. Yan Wang, Sheng Yan, Yuan Ding, Yang Tian, Lin Zhou, HaiYang Xie, ShuSen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China*

Background

Regulatory T cell, HSC and Kupffer cell have been confirmed to play a potential role in recent studies, however, the exact mechanism of spontaneous immune tolerance is still uncertain. By using miRNA CHIP, we investigate changes of different immune regulatory factors to find out the critical mechanism of spontaneous tolerance after mouse liver transplantation.

Methods

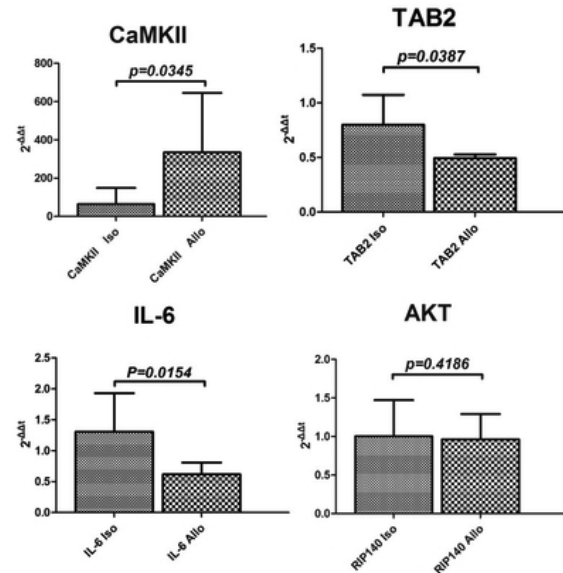
6-8w C57Bl/6 and C3H mice were used to perform allogeneic(C57-C3H) or syngeneic(C3H-C3H) liver transplantation. Samples of graft were collected 8 weeks after surgery. Differentially expressed genes in allogeneic/syngeneic grafts were analyzed by Affymetrix miRNA CHIP. After cross-comparison with Genbank data and references, we found out the immune regulatory targets relative with spontaneous tolerance and then confirmed by real-time PCR.

Results

miRNA CHIP analyses revealed that 12 miRNAs were differentially expressed after allogeneic liver transplantation. By cross-comparing with GenBank, we found the 12 miRNAs modify 188 different genes. After reference searching and target protein prediction, 11 of 188 different genes have a close relationship with immune regulation.

Systematic Name	realtime	fold change	Systematic Name	Target gene	Predicted target protein
mmu-miR-142-3p	0.039284	2.096914	mmu-miR-142-3p*	NC_000007.1	IL-6
mmu-miR-152	0.015278	1.152798		3	
mmu-miR-155	1.25E-09	33.95233	mmu-miR-152*	NC_000084.5	CaMKII α
mmu-miR-15a	0.007636	1.427048	mmu-miR-155*	NC_000076.5	TAB2 or
mmu-miR-1895	0.018199	0.582312		NC_000068.6	IL-1 beta
mmu-miR-210	0.033668	6.880669		NC_000073.5	uncoupling protein-2
mmu-miR-26a	0.009468	0.876999	mmu-miR-15a	NC_000086.6	Rab9b
mmu-miR-33	0.009303	20.795	mmu-miR-1895	NC_000067.5	cyclin M4
mmu-miR-338-3p	0.02321	0.363475	mmu-miR-210	NC_000078.5	Akt
mmu-miR-378*	0.038569	22.05339	mmu-miR-26a	NC_000074.5	toll-like receptor 3
mmu-miR-500	0.049056	0.685039	mmu-miR-33	NC_000082.5	RIP140
mmu-miR-689	0.03978	0.654757			

Verified by real-time PCR, we confirmed tab2, CaMK II, il-6 among the 11 predicted genes were expressed differentially between two groups ($P < 0.05$), which was coincident with our miRNA CHIP data.



Conclusion
miRNA CHIP analyses revealed that 12 miRNAs were differentially expressed after allogeneic liver transplantation. Based on Genbank data and previous studies, we suggested that mmu-miR-152-CaMK II-IL-6/IL-10 pathway which may play a role in immune regulation and spontaneous tolerance induction of mouse liver transplantation.

Abstract # P-278

Impaired Biliary HCO_3^- Protective Barrier: An Early Event of Pathogenesis of Ischemic-Type Biliary Lesions. Weiliang Xia, Penghong Song, Haiyang Xie, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China; Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China; Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China; Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China*

Objective: To evaluate the biliary HCO_3^- secretion ability and pathological change of bile ducts after ischemic-reperfusion treatment in mice model.

Methods: The C57BL/6N mice were anaesthetised using acid/base status-controlled technique, the portal vein in the hepatoduodenal ligament was isolated after incision of abdomen, the remaining connective tissue including hepatic artery and extrahepatic bile duct was clamped for 90 minutes using 2 micro-vessel clamps in the experimental group, but not clamped in the sham group. 1, 3, 7, 14 and 21 days later, the bile juice was collected under acid/base status-controlled anaesthetised situation, the bile juice output was determined by gravimetry, the biliary HCO_3^- concentration was determined by pH-stat titration, the hilar hepatic bile duct tissue was harvested and histologically evaluated.

Results: After the ischemic-reperfusion treatment, the biliary HCO_3^- concentrations decreased significantly to $76.2 \pm 5.3\%$, $73.3 \pm 6.8\%$ and $63.1 \pm 4.5\%$ of the sham groups on d7, d14 and d21, respectively, no differences on d1 and d3. The bile juice output was $79.7 \pm 3.3\%$ of sham group with a statistical difference, no differences in the other time points. The bile ducts showed no significant differences in pathological change on d1, d3 and d7 after treatment, on d21, the bile duct wall showed significant thickness and fibrosis, with some deciduous necrotic mucosa.

Conclusions: The biliary HCO_3^- secretion decreased significantly in the early stage of biliary lesions induced by ischemic-reperfusion, this indicates that the impaired biliary HCO_3^- protective barrier maybe involved in the early phase of pathogenesis of ischemic-type biliary lesions.

Abstract # P-279

SPA0355, a Thiourea Analog, Attenuates Ischemia/Reperfusion-Induced Liver Injury in Mice. Hee Chul Yu¹, Jae Do Yang¹, Sang In Bae¹, Baik Hwan Cho¹, Byung Hyun Park². ¹*Surgery, Chonbuk National University Hospital, Jeonju-si, Republic of Korea; ²Biochemistry, Chonbuk National University Medical School, Jeonju-si, Republic of Korea*

Hepatic ischemia/reperfusion (I/R) injury leads to oxidative stress and acute inflammatory responses that cause liver damage, a considerable impact on the postoperative outcome. Much research work has been done to develop possible protective techniques. We aimed to investigate the efficacy of SPA0355, a thiourea analog, in an animal model of hepatic I/R injury. Male C57BL/6 mice underwent normothermic 90 min partial liver ischemia followed by varying period of reperfusion. The animals were divided into four groups: sham operated, I/R, and SPA0355 (5 or 10 mg/kg) pretreated. Pretreatment with SPA0355 protected against hepatic I/R injury, as indicated by the decreased levels of serum aminotransferase and less parenchymal necrosis and apoptosis. Liver synthetic function was also restored by SPA0355 as reflected by prolonged prothrombin time. To gain insight into the mechanism involved in this protection, the activity of nuclear factor-kB (NF-kB) was analyzed, which revealed that SPA0355 suppressed the nuclear translocation of NF-kB subunits. Concomitantly, the expression of NF-kB target genes such as IL-1b, IL-6, TNF- α , and iNOS was significantly down-regulated. Lastly, liver antioxidant enzymes superoxide dismutase and catalase and glutathione were all up-regulated by SPA0355 treatment, which was correlated with the reduction of serum malondialdehyde. Our results suggest that SPA0355 pretreatment given prior to I/R injury could be an effective method to reduce liver damage.

Abstract # P-280

CADM1 Regulates G1/S Transition and Represses Tumorigenicity Through Rb-E2F Pathway in Hepatocellular Carcinoma. Wu Zhang, Haiyang Xie, Zhijun Jiang, Shusen Zheng. *Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang, China*

Purpose: The aim of the present study was to investigate CADM1 expression patterns in human hepatocellular carcinoma (HCC); elucidate the potential mechanism of CADM1 acting as a tumor suppressor; and eventually evaluate its potential predictive value for the prognosis of HCC patients after liver transplantation (LT).

Experimental Design: CADM1 expression in HCC cell lines and paired HCC specimens was measured by quantitative real-time PCR and immunohistochemistry. The function of CADM1 on tumor suppression in HCC cells was determined through proliferation assay, cell cycle analysis, EdU incorporation assay, colony formation analysis *in vitro* and tumorigenicity *in vivo*. Using western blot, we explored the potential mechanism of CADM1 on tumor suppression. The prognostic significance was assessed using Kaplan-Meier survival estimates and log-rank tests.

Results: Downregulation of CADM1 expression is frequently detected in both HCC cells and clinical samples. Restoration of CADM1 expression in 2 HCC cell lines significantly inhibits cell growth and negatively regulates G1/S transition. CADM1 overexpression can inhibit tumorigenicity of HCC cells *in vitro* and *in vivo*. Western blot analysis revealed that CADM1 suppresses tumorigenesis may through Retinoblastoma (Rb)-E2F pathway by upregulation of Rb protein in HCC. Multivariate analysis showed that loss of CADM1 expression is an independent prognostic factor for HCC treated with LT ($P = 0.012$).

Conclusion: Our data suggest that CADM1 may be a reliable predictor for poor prognosis of HCC patients after LT and may potentially provide new strategies for therapeutic intervention in patients with HCC.

Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China.

Abstract # P-281

Solanine Induced Reactive Oxygen Species Inhibit the Growth of HepG2. Wei Zhang, Xueqin Meng, Shen Yan, Zhijun Jiang, Weilin Wang, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China*

Background: Tumor recurrence still remains a significant problem post liver transplantation for hepatocellular carcinoma. Looking for an effective therapeutic method to cure HCC recurrence is the task of transplant physicians. **Objective:** To observe the effect of solanine promote HepG2 cells to produce Reactive Oxygen Species (ROS), and the molecular mechanisms leading to tumor cell apoptosis.

Methods: Solanine and negative, positive controls were given to HepG2 cells in vitro stimulation, using a variety of different cellular localization of ROS probes to detect ROS levels by flow cytometry. Western Blotting were used to detect apoptosis-related proteins (ASK1, TBP-2) and proliferation related proteins (TRX2) expression. Morphological changes study of the cell line and cell counts were observed by inverted microscope with the treatment of solanine and controls.

Results: Rich ROS including OH⁻, H₂O₂ were produced in HepG2 cells cytoplasm and mitochondria with solanine pretreatment using ROS probe DCFDA and DHR123 detection as compared with the control groups (p < 0.05). While O-2 specific probe DHE and MITSOX, which detect the O-2 product by solanine stimulation, valued no significant difference as compared with the control groups (p > 0.05). Western Blotting results showed solanine enhanced the ASK1, TBP-2 expression and kinase activity, while inhibit the proliferation related proteins TRX2 expression. Cell counting number was decreased with solanine pretreatment while controls not.

Conclusion: Solanine induced HepG2 cells to produce ROS with mitochondrial dependent and independent manner. Meanwhile, solanine elevated ASK1 and TBP-2 expression and kinase activity, and inhibit proliferation associated protein TRX2. Both signals are leading to HepG2 cell apoptosis. Solanine may be used as a new agent for the prevention of tumor recurrence after liver transplantation.

Keywords: Hepatocellular carcinoma; Solanine; Reactive oxygen species (ROS); Liver transplantation.

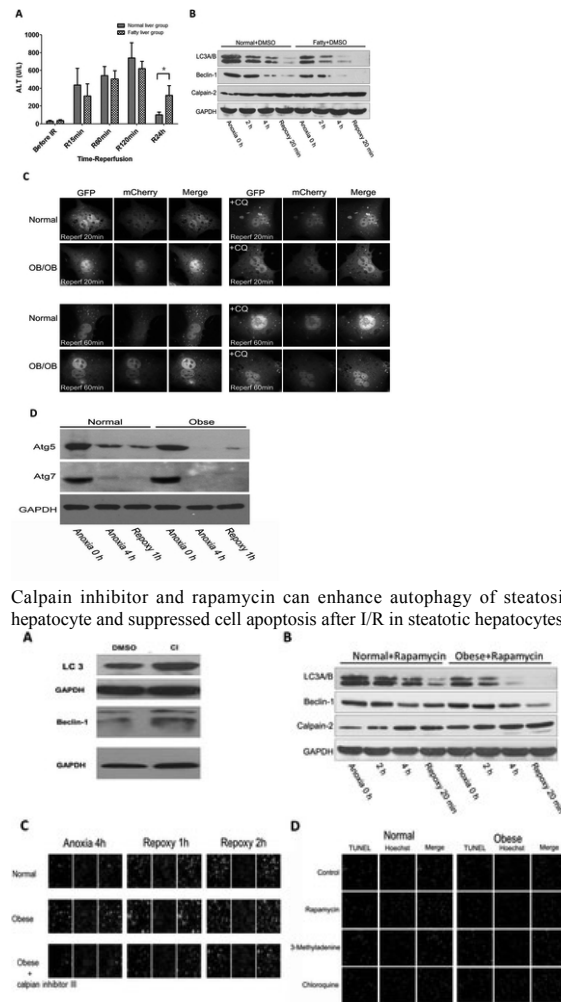
Abstract # P-282

Impaired Autophagy: A Mechanism of Fatty Liver Sensitive to Ischemia Reperfusion Injury. Qiang Zhao, Zhiyong Guo, Xiaoshun He, Weiqiang Ju, Dongping Wang. *Organ Transplant, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, Guangdong, China*

BACKGROUND & AIMS: Steatosis of the liver is common in Western countries, affecting about 25% of donors for liver transplantation and 20% of patients undergoing liver resection. Steatosis livers have significantly less reparative capacity following ischemia and reperfusion (I/R) injury, which occurs during transplantation. There are no strategies to reduce the steatosis-dependent I/R injury. We investigated the role of autophagy in the steatosis dependence of sensitivity to I/R injury.

METHODS: Hepatocytes and livers from normal and steatotic ob/ob mice were subjected to in vitro and in vivo I/R, respectively. We analyzed changes in autophagy-related proteins (Atg). Mitochondrial and autophagy dysfunction was visualized using confocal and intravital multi-photon microscopy of isolated hepatocytes and livers from anesthetized mice, respectively.

RESULTS: Immunoblot, autophagic flux, and imaging analyses all associated the increase in sensitivity to I/R injury with steatosis due to calpain 2 mediated degradation autophagy proteins. Further experiment showed ATG7 was significantly low expressed during I/R in steatosis hepatocytes.



Calpain inhibitor and rapamycin can enhance autophagy of steatosis hepatocyte and suppressed cell apoptosis after I/R in steatotic hepatocytes.

CONCLUSIONS: Calpain 2 mediated degradation autophagy proteins in steatotic hepatocytes increases their sensitivity to I/R injury. Increasing autophagy might ameliorate liver damage and restore cell function after I/R.

Abstract # P-283

Liver Transplants from Donors Aged 70 Plus (Analysis of Andalusian Cohort). Carmen Cepeda, Carmen Bernal, Gonzalo Suarez, Jose Maria Alamo, Luis Miguel Marin, Juan Serrano, Francisco Javier Padillo, Miguel Angel Gomez-Bravo. *Liver Transplant Unit, Virgen del Rocío University Hospital, Seville, Spain*

The progressive increase in the number of liver transplantation candidates has brought with it a consequent increase in waiting list mortality, making it necessary to revise donor selection criteria and to analyze the factors that optimize outcomes. This retrospective multicenter observational study of 1802 liver transplantations performed in Andalusia between 2000 and 2010 analyzes the outcomes from donors aged 70 years or older (n = 211) in terms of Q3 survival rates of the graft and the recipient, the type of transplant, donor age, and DMELD score. The most frequent reasons for transplantation were alcoholic cirrhosis (45.5%), hepatitis C cirrhosis (20.4%), and liver cancer (11.8%). The overall survival rate at 5 years was 67%; with a significant decrease in survival rates for recipients with a DMELD greater than 1400 (44%). In the 70-year-old-plus donor group, the overall patient and graft survival rates were 57% and 52%, respectively. The re-transplantation rate increased proportionately with donor age: 5.9% between 70 and 74 years, 9.5% from 75 to 79 years, and 17.6% from 80 to 84 years. In the alcoholic cirrhosis recipient sub-group, the overall survival rate at 5 years was 69% (P < .05) compared to 34% in hepatitis C patients (P < .05). The widening of the donor age selection criteria is therefore a safe option, provided that a DMELD score less than 1400 is obtained. Although re-transplantation rates increase

progressively with donor age, they remain less than 10%. It is necessary to carefully screen recipients of older organs, taking into account that the best results are obtained for patients who have alcoholic cirrhosis, are hepatitis C negative, and have a DMELD score that is less than 1400.

Abstract # P-284

Usage of Liver Grafts from Pediatric Cardiac Death Donors in Adult Recipients in China: A Single Center Experience. Weiqiang Ju, Zhiyong Guo, Chuanzhao Zhang, Dongping Wang, Ming Han, Xiaoshun He. *The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Background Pediatric donor (PD) livers would be sometimes allocated to adult recipients when there is no suitable pediatric recipient. However, the clinical outcome of liver transplant using such small grafts is controversial. **Methods** Records from adult patients undergoing liver transplantation between February 2010 and November 2013 who received whole grafts from PD donors (less than or equal to 13 years) were reviewed. And data from transplant patients using ideal adult donor (AD, donor age 18 to 35) years in the same period were collected as the controls. Patient survival, allograft rejection, vascular complications, biliary complications, and other complications of these two groups were compared.

Results Forty-five patients were analyzed, 12 of which were PD cases and 33 were AD cases. The baseline characteristics of two groups were similar except that donor allografts of PD group were smaller in size. The 6-month patient survival rates for PD and AD groups were 91.7% and 87.9% ($P>0.05$), respectively. No difference was presented concerning biliary complications, vascular complications, primary non-function, and early allograft dysfunction in the two groups. Although the difference was not statistically significant, there was a higher incidence of gastrointestinal bleeding and prolonged cholestasis following liver transplant in PD group. Besides, one patient in PD group developed small for size liver syndrome (SFSS) post-transplant.

Conclusion Using PD livers for adult recipients is a relatively safe procedure when appropriate recipients were selected. The risk of portal hyperperfusion induced complications should be considered.

Abstract # P-285

Criteria for Viability Assessment of Discarded Human Donor Livers during Ex-Vivo Normothermic Machine Perfusion. Michael E. Sutton¹, Sanna Op den Dries¹, Negin Karimian¹, Marieke T. de Boer¹, Janneke Wiersema-Buist¹, Annette S.H. Gouw², Henri G.D. Leuvenink¹, Ton Lisman¹, Robert J. Porte¹. ¹*Department of Surgery, Section of Hepatopancreatobiliary Surgery and Liver Transplantation, University Medical Center Groningen (UMCG), Groningen, Netherlands;* ²*Department of Pathology, University Medical Center Groningen (UMCG), Groningen, Netherlands*

Although normothermic machine perfusion of donor livers may allow assessment of graft viability prior to transplantation, there is currently no data on what would be a good parameter of graft viability. To determine whether bile production is a suitable biomarker that can be used to discriminate viable from non-viable livers we have studied functional performance as well as biochemical and histological evidence of hepatobiliary injury during ex vivo normothermic machine perfusion of human donor livers. After a median duration of cold storage of 6.5 hours, twelve extended criteria human livers that were declined for transplantation were ex vivo perfused for 6 h at 37°C with an oxygenated solution based on red blood cells and plasma, using pressure controlled pulsatile perfusion of the hepatic artery and continuous portal perfusion. During perfusion, two patterns of bile flow could be identified: 1) steadily increasing bile production, resulting in a cumulative output of ≥ 30 g after 6 h (high bile output group), and 2) a cumulative bile production < 20 g in 6h (low bile output group). Concentrations of transaminases and potassium in the perfusion fluid were significantly higher in the low bile output group, compared to the high bile output group. Biliary concentrations of bilirubin and bicarbonate were 4-times and 2-times higher in the high bile output group. Livers in the low bile output group displayed more signs of hepatic necrosis and venous congestion, compared to the high bile output group.

In conclusion, bile production is an easy assessable biomarker of hepatic viability during ex vivo machine perfusion of human donor livers. It could potentially be used to identify extended criteria livers that are suitable for transplantation.

Abstract # P-286

Long-Term Outcome of ABO-Incompatible Living Donor Liver Transplantation in a Single Center Experience. Naoki Kawagishi, Ikuo Takeda, Shigehito Miyagi, Kazushige Satoh, Noriaki Ohuchi. *Division of Transplantation, Reconstruction and Endoscopic Surgery, Tohoku University Hospital, Sendai, Miyagi, Japan*

INTRODUCTION: The survival rate in ABO-incompatible LDLT used to be much poorer than in ABO-compatible LDLT. The introduction of novel immunosuppressive regimens and apheresis has yielded excellent short-term results in ABO-incompatible LDLT. We present data regarding long-term results including complications of our series.

METHODS: We experienced 14 cases of ABO-incompatible LDLT out of 159 cases from 1991 up to 2013. Namely, 7 infants, 5 children and 2 adults. An IgM or IgG titer of more than 16 was an indication for preoperative apheresis. Plasma exchange or double filtration plasmapheresis was performed for 3 consecutive days before Tx and the patients were administered azathiopurine or MMF 3 days before Tx followed by tacrolimus or cyclosporine, as well as methylprednisolone. Six patients were treated with rituximab and 2 patients had infusion therapy with prostaglandin E1 and methylprednisolone.

RESULTS: Seven patients were subjected to preoperative apheresis. One patient who suffered rapidly progressing rejection died due to liver failure. Thirteen out of the 14 cases had survived from the surgery, and they were followed from 3 months to 19.5 years (mean 9.9 years). Nine patients experienced acute rejection and of them, 6 patients experienced steroid-resistant rejection that was treated with deoxyspergualin and apheresis. Three patients who were administered rituximab did not suffer severe rejection nor adverse effects. Nine late complications were occurred in 6 cases from 0.5 to 11.5 years, but 7 cases had no long-term complications. The long-term complications included biliary stenosis in 3 cases, PTLN in 2 cases, NODAT in 1 case, portal occlusion in 1 case, intestinal bleeding in 1 case, recurrence of HBV in 1 case. One case was dead due to HCC recurrence, but other 12 cases are in good conditions at present.

CONCLUSION: Although the high incidence of late complications after ABO-incompatible LDLT, the patients survival were secured.

Abstract # P-287

Outcomes of Liver Transplantation using Donation after Cardiac Death Grafts: Role of Tissue Plasminogen Activator Donor Flush. Chandrashekar A. Kubal, Richard S. Mangus, Jonathan A. Fridell, Joseph A. Tector. *Department of Surgery, Indiana University, Indianapolis, IN, USA*

OBJECTIVE: To assess the incidence of biliary complications after donation after cardiac death (DCD)-liver transplantation (LT) and the effectiveness of tissue plasminogen activator (tPA) flush during procurement of DCD livers.

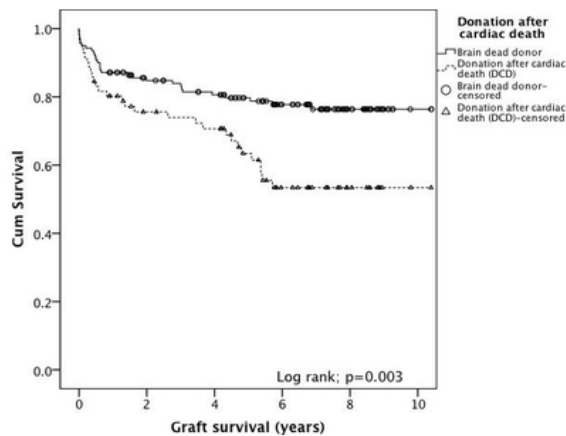
METHODS: From August 2003 to July 2013, 71 adult patients underwent DCD-LT. For the study analysis, each DCD-LT was matched with 2 age, sex and time period matched brain death donors (DBD) LT (n = 142) according to the period of transplantation. Primary outcome measures were ischemic cholangiopathy (IC), graft survival and patient survival. In 10 most recent DCD-LT recipients, 100 mg tPA mixed in 1 liter normal saline at room temperature was flushed at the procurement prior to cold HTK flush.

RESULTS: Demographics including donor age, recipient age, cold ischemic time (CIT) and warm ischemic time (WIT) were comparable. IC was significantly higher in DCD-LT in comparison with DBD-LT (13% vs. 1.4%; $p=0.001$).

Table 1: Outcomes stratified by type of donor

	DCD(n=71)	DBD(n=142)	p
ERC/PTC	41(58%)	59(42%)	0.02
Anastomotic stricture	31(44%)	41(29%)	0.07
Ischemic cholangiopathy	9(13%)	2(1.4%)	0.001
90-day graft loss	7(10%)	8(6%)	0.26
Overall graft loss	29(41%)	30(21%)	0.002
Overall patient loss	25(35%)	29(20%)	0.01

In DCD group all patients with IC lost grafts ($p=0.0001$). DCD-LT were also associated with increased overall graft loss compared to DBD (41% vs. 20%; $p=0.002$).



10/71 DCD-LT recipients donor livers were flushed with tPA at the time of procurement. In this group none developed IC, and there were 2 deaths (pneumonia and systemic herpes).

Table 2: DCD-LT outcomes stratified by tPA use

	TPA FLUSH(n=10)	NO TPA FLUSH(n=61)	
Anastomotic stricture	1(10%)	30(49%)	0.02
Ischemic cholangiopathy	0(0%)	9(15%)	0.34
90-day graft loss	0(0%)	7(12%)	0.58
Overall graft loss	2(20%)	27(44%)	0.18
Overall patient loss	2(20%)	23(38%)	0.48

CONCLUSIONS: DCD-LT is associated with significantly increased risk of graft loss from IC. Use of tPA flush during procurement seems to be encouraging, however a larger studies are required.

Abstract # P-288

Systematic Monitoring of Recipients of CDC High Risk Allografts: Single Center Experience. Isi E. Obadan, Sonia N. Chimienti, Paulo N. Martins, Babak Movahedi, Adel Bozorgzadeh. *University of Massachusetts, Worcester, MA, USA*

In 1994, the CDC issued guidelines to identify deceased donors at increased risk for transmission of bloodborne pathogens. In 2007, OPTN/UNOS mandated that transplant programs provide informed consent regarding the High Risk status of a donor to potential transplant recipients prior to transplant[1], and that they monitor recipients of these allografts post-transplant. Individual programs must determine how to provide this follow-up care. We report our experience with structured monitoring of recipients of CDC High Risk allografts over 4 years. **Methods:** On 1/1/2010, the University of Massachusetts Organ Transplant program instituted a structured program whereby a dedicated transplant Infectious Diseases physician provided follow-up evaluation of recipients of CDC High Risk (now PHS-increased risk, PHS-IR) allografts at 6 weeks, 3 months and 6 months post-transplant for a focused history, examination and screening laboratory testing. **Results:** Between 1/1/2010 and 6/30/13, 48 patients received PHS-IR allografts (19 livers (39.6%), 25 kidneys (52.1%), 1 pancreas (2.1%), and 3 SPKs (6.3%)). Mean age of recipients at transplant was 50 yrs (range, 27-69 yrs). Reasons for PHS-IR designation, based on 1994 CDC criteria, were: MSM activity in the 5 yrs prior (n=7, 14.6%); non-medical parenteral drug use in the 5 yrs prior (n=27, 56.3%); hemophilia/clotting disorders treated with human derived clotting factors (n=2, 4.2%); commercial sex work in the 5 yrs prior (n=2, 4.2%); current correctional inmates (n=5, 10.4%); testing of plasmadiluted specimens (n=1, 2.1%); exposure within the prior 12 months to known/suspected HIV+ blood (n=1, 2.1%), and unknown social history (New England Organ Bank criteria; n=3, 6.3%). Of these, 39 (81.3%) had at least 1 follow-up visit and 9 (18.8%) came for all 3 scheduled visits. 9 patients (18.8%) did not come to any scheduled appointments. No disease transmission events occurred during follow-up. **Discussion:** Structured follow-up post-transplant with a dedicated member of the transplant team, has excellent adherence, with 81% of patients returning for follow-up. Our experience demonstrates that appropriate utilization of PHS-IR allografts can potentially expand the donor pool. Programs taking this approach should establish a structured protocol for the follow-up to ensure timely detection and management of potential disease transmission.

Abstract # P-289

Improving Safety of ABO-Incompatible LDLT with a Simplified Protocol of Low-Dose Rituximab and Double-Filtration Plasmapheresis. A.S. Soin, Vikram Raut, R. Mohanka, A. Rastogi, S. Goja, B. Menon, A. Tiwari, V. Raina, N. Saraf, S. Saigal. *Medanta Liver Institute, Medanta The Medicity, Gurgaon, India*

Background

ABO-incompatible living-donor liver transplantation (ABO-i LDLT) is being increasingly accepted to augment the donor pool. However, ABO-i LDLT has increased risk of infections due to high immunosuppression used to deplete both B and T cells. We used low-dose (75mg) anti-CD 20 antibody (Rituximab®) and double-filtration plasmapheresis (DFPP) without graft infusion therapy and splenectomy in ABO-i LDLT to decrease the risk of infection.

Methods

From January 2012 to July 2013, 772 patients were evaluated for liver transplantation. 350 had blood-group matched donors and underwent LDLT. 82 had willing but incompatible donors. ABO-i LDLT offered to those without active infection, renal dysfunction and autoimmune aetiology of liver disease. Adults were pre-treated with 75 mg Rituximab® 3 weeks, Mycophenolate (MMF) 500 mg BD and DFPP (conventional PP was used in first patient) 1 week prior to transplant. Regular monitoring of CD-19 cells, anti-donor blood group antibody (ADA) titers and infective parameters was done. For children <7 years, DFPP and MMF started 7 days before, and elective peri-operative IVIG sufficed.

Results

Two children (8 mt male, 24 mt female) and 4 adults (mean age 38.6 yrs; 3 male; 1 female) underwent ABO-i LDLT with a follow up of 6-23 months. The incompatibility types were B to O (3), a to O (2) and AB to B (1). Their CD-19 counts became 1-2 cells/mm³ from a mean of 233 in 15 days. The pre-treatment ADA- IgG and IgM titers were: 1/128, 1/128; 1/256, 1/128; 1/512, 1/256; 1/1024, 1/512; 1/512, 1/256; and 1/64, 1/32 respectively. They reduced to <1/16 IgG and 1/8 IgM at transplant with 1-4 DFPP (7 conventional PP for one patient). The mean pre-operative conditioning time was 23 days (17-36 days). Post-transplant, all patients' attained normal liver function without antibody mediated rejection (AMR), arterial or biliary complications. Other complications included portal vein thrombosis (1, successfully re-explored), CMV (3), Pseudomonas and Klebsiella infection (2 each). One patient died due to sudden severe acute pancreatitis at 8 weeks with normal liver function, while the remaining 5 are well with normal graft function, and low ADA titers.

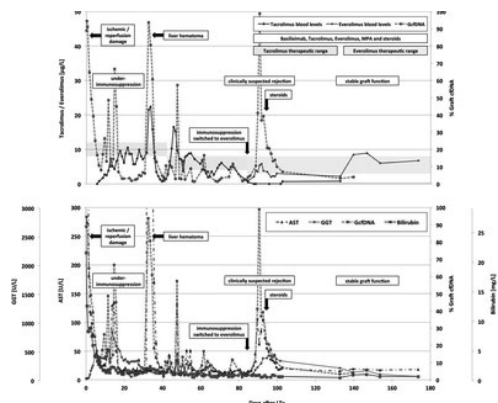
Conclusion

Low-dose Rituximab with DFPP can successfully overcome the ABO-barrier in LDLT, with low infection related morbidity and mortality.

Abstract # P-290

Graft Derived Cell-Free DNA as an Early Organ Integrity Biomarker after Liver Transplantation of a HELLP Syndrome Donor Liver. Jan E. Slotta¹, Philipp Kanzow², Ekkehardt Schütz³, Michael Oellerich², Otto Kollmar¹. ¹Department of General, Visceral and Pediatric Surgery, University Medical Center Göttingen, Göttingen, Germany; ²Department of Clinical Chemistry, University Medical Center Göttingen, Göttingen, Germany; ³Chronix Biomedical, Göttingen, Germany

Due to the current shortage of available donor grafts for solid organ transplantation, even marginal donors are often being utilized. This case report describes the successful liver transplantation (LTx) from a donor with HELLP syndrome. For the first time, graft derived cell-free DNA (GcfDNA) was used as a universal biomarker to monitor graft injury in the setting of a HELLP syndrome donor. The influence of ischemia / reperfusion injury, under-immunosuppression, as well as exogenous causes on the release of cell-free DNA (cfDNA) originating from the graft was shown. GcfDNA proved to be a useful tool to evaluate organ integrity.



The recipient showed stable graft function 6 months after transplantation.
DISCLOSURE: Schütz, E.: Employee, Chronix Biomedical; Stockholder, Chronix Biomedical.

Abstract # P-291

Liver Transplantation from HBcAb Positive Donors Carry Minimal Or No Risk of HBV Transmission To the Recipient.

Alan White, Samir Pathak, Magdy Attia, Ernest Hidalgo, Phaedra Tachtatzis, Antony Hale, Niaz Ahmad. *St James' University Hospital, Leeds, United Kingdom*

Introduction: There is variation of practice among UK liver transplant units in implanting livers from HBcAb +ve donors due to the perceived risk of transmission of hepatitis B (HBV) to the recipient. Centres transplanting such grafts have variable practice of antiviral prophylaxis with lamivudine ranging from no prophylaxis to life-long prophylaxis. The aim of this study was to assess the rate of HBV infection in HBsAg -ve recipients of liver allografts from HBcAb +ve, HBsAg -ve donors.

Methods: We conducted a survey of the UK liver transplant units regarding their practices of accepting HBcAb +ve donor grafts and the use of antiviral prophylaxis in the recipients of such grafts. All patients receiving a liver transplant (LT) from HBcAb +ve, HBsAg -ve donors between Jan 2002 and Dec 2011 were identified retrospectively from the UK Transplant Registry. Post operative virology data were also collected. All patients had a minimum follow-up of two years.

Results: The survey was not incomplete at the time of this analysis, hence the results are not presented. A total of 114 patients were identified who received liver grafts underwent from HBcAb +ve donors. Of these 27 were HBsAg +ve prior to transplantation and were excluded from the analysis. Of the remaining 87, none had evidence of HBV infection (HBcAb -ve). After liver transplantation only 21 patients (24.1%) had documented negative virology for HBV and 66 (75.9%) were recorded as "not reported". Of the 14 LT in our centre, no HBV transmission was recorded. All had received life-long lamivudine prophylaxis

Conclusions: Risk of HBV transmission following LT from HBcAb +ve donors remains low. None of the recipients in our cohort had a documented HBV transmission after receiving a liver graft from HBcAb +ve donor. Use of antiviral prophylaxis can help reduce this risk further. We suggest 100-day post-transplant lamivudine prophylaxis in LT from HBcAb +ve donors. There is a need for clear guidelines for safe and effective use of liver grafts from HBcAb +ve donors.

Abstract # P-292

Liver Grafts for Transplantation from Donors With Diabetes: An Analysis of the US National Database.

Jun Zheng^{1,2,3}, Jie Xiang^{1,3}, Jie Zhou^{1,3}, Zhiwei Li^{1,3}, Zhenhua Hu^{1,3}, ChungMau Lo², Weilin Wang^{1,3}. ¹Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang, China; ²Department of Surgery, University of Hong Kong, Hong Kong, China; ³Key Laboratory of Combined Multi-organ Transplantation, Ministry of Public Health Key Laboratory of Organ Transplantation, Zhejiang Province, Hangzhou, China

Patients with a history of diabetes mellitus (DM) have worse survival than those without DM after liver transplantation. However, the effect of liver grafts from DM donors on the post-transplantation survival of recipients is

unclear. Using the US national database (2004–2008), 25,413 patients were assessed. Among them, 2469 recipients received grafts from donors with DM. The demographics and outcome of patients were assessed. Patient survival was assessed using Kaplan–Meier methodology and Cox regression analyses. Recipients from DM donors experienced worse graft survival compared with recipients from non-DM donors (one-year survival: 81% versus 85%, and five-year survival: 67% versus 74%, $p < 0.001$, respectively). Graft survival was significantly lower for recipients from DM donors with DM duration > 5 years ($P < 0.001$) compared with those with DM duration < 5 years. (figure1) Cox regression analyses showed that DM donors were independently associated with worse graft survival (hazard ratio, 1.11; 95% confidence interval, 1.02–1.19). The effect of DM donors was more pronounced on certain underlying liver diseases of recipients. Increases in the risk of graft loss were noted among recipients from DM donors with hepatitis-C virus (HCV) infection, whereas those without HCV experienced similar outcomes compared with recipients from non-DM donors. These data suggest that recipients from DM donors experience significantly worse patient survival after liver transplantation. However, in patients without HCV infection, using DM donors was not independently associated with worse post-transplantation graft survival. Matching these DM donors to recipients without HCV may be safe.

Abstract # P-293

Molecular Adsorbents Recirculating System (MARS®): A Review of Clinical Course, Intervention and Outcome.

Jody Olson, Whitney Watson, Sean Kumer, Marc Heronemus, Richard Gilroy, Timothy Schmitt. *Transplantation, University of Kansas Medical Center, Kansas City, KS, USA*

Introduction: Molecular Adsorbents Recirculating System (MARS®) is an artificial liver support device to bridge a patient to transplantation or bridge a native liver to recovery in acute liver failure (ALF). This study looks at MARS® in some unique situations including bridging anhepatic states in patients post-transplant.

Methods: A retrospective study of patients at a single center who received MARS® from November 2010 to September 2013 was performed. Patient gender, age and liver disease were recorded. Indication for MARS®, clinical indices of ALF and post-treatment transplantation were assessed. Number of MARS® applications and average time of application were tabulated. Clinical parameters and laboratory values were monitored Pre and Post MARS® treatment.

Results: 15 patients undergoing MARS®, average age 37.8 years, 10 (66%) female, average MELD score 39 (31–57). ALF with encephalopathy was present in 13 of the 15 and 2 patients anhepatic post liver transplant for PNF complicated by refractory hemodynamic instability. Of those with ALF, 5 were due to acetaminophen overdose with 3 meeting King's College criteria (arterial pH < 7.3 or INR > 6.5 , Cr > 300 $\mu\text{mol/L}$ and grade III or IV encephalopathy), 3 fulminant Wilson's disease with severe hemolysis, 2 fulminant AIH, 1 acute fatty liver of pregnancy, 1 hemophagocytic syndrome and 1 acute on chronic liver failure. The average duration of treatment was 6.7 hours/treatment with three treatments per patient. Pretreatment average INR, bilirubin, albumin, and ammonia levels were 5.47, 18.75 mg/dL 210.9 mmol/L and post treatment the values were 2.57, 12.39 mg/dL, and 54.8 mmol/L, respectively. There were no complications associated with therapy. Four patients died on therapy and 3 died after treatment. In those with primary graft non-function, the average anhepatic time was 74.75 hours with evidence of encephalopathy prior to retransplantation with no neurological deficits remaining after retransplantation. Of the two patients with PNF, one died > 60 days after retransplantation of infectious complications of disseminated aspergillus.

Conclusion: Treatment with MARS® is associated with positive results in patients with acute liver failure and can be safely used as a bridge to transplantation or to native liver recovery.

Abstract # P-294

Liver Transplantation for Fulminant Hepatic Failure Due to Hepatitis E- A Single Center Experience.

Shailendra Lalwani, Vivek Mangla, Samiran Nundy, Naimish Mehta. *Surgical Gastroenterology and Liver Transplant, Sir Ganga Ram Hospital, Delhi, India*

BACKGROUND

Hepatitis E is a form of acute hepatitis, and is usually self-limiting; in some cases, the disease progresses to acute liver failure. The infection is particularly severe in pregnant women. Patients with chronic liver disease

and superimposed HEV infection also can present with severe liver injury. There is no much data in the literature on living donor liver transplantation in patients with hepatitis E related fulminant hepatic failure (FHF). We present our experience of living donor liver transplant (LDLT) in patients suffering from hepatitis E with with hepatitis E with FHF.

PATIENTS AND METHODS

We performed total 148 liver transplant procedures (145 LDLT and 3 deceased donor liver transplant (DDLT)) from July 2010 till November 2013, of which 4 patients presented with FHF due to Hepatitis E virus infection. We analyzed the clinical presentation and outcome in these patients after liver transplantation.

RESULTS

4 patients (3 females) presented with fulminant hepatic failure due to hepatitis E virus infection. Mean age at presentation was 30 years. All patients presented with progressively increasing jaundice and worsening hepatic encephalopathy. One patient was 39 weeks pregnant at presentation. The child was safely delivered by obstetrician, in the intensive care setting with all aseptic precautions before liver transplant procedure.

Mean bilirubin was 24.6 and mean INR was 7.6 at presentation. Pre-operative computed tomography scan brain was performed in all just before the surgery. All the above patients fulfilled King's college criteria for FHF and were subsequently subjected to LDLT procedure. Temporary porto-caval shunt during the anhepatic phase was routinely performed in all. Mean cold ischemia time was 85.75 minutes and mean warm ischemia time was 51.5 minutes. Mean graft to recipient weight ratio was 0.93. Right lobe graft implantation was done in all 4 patients; one with partial middle hepatic vein (MHV), two with subtotal MHV and one without MHV. Mean requirement of ventilation was 3.5 days. One patient was re-explored for post-operative bleeding. Mean Hospital stay was 14.6 days. There was no mortality in this group. At a mean follow up of 23.2 months all patients were doing well.

CONCLUSION

Though there is high mortality reported in patients suffering from Hepatitis E related FHF, timely intervention with LDLT can be life saving with good post-operative outcome.

Abstract # P-295

Perioperative Assessment and Outcome Result of Liver Transplantation for Acute Liver Failure in the Children and Adults. Mitsuru Nakatsuka, Martha Behnke. *Anesthesiology, Virginia Commonwealth University Health System, Richmond, VA, USA; Transplant Program Administration, Virginia Commonwealth University Health System, Richmond, VA, USA*

Acute liver failure (ALF) develops from an abrupt loss of hepatic function leading to hepatic encephalopathy with high mortality. We reviewed cases of ALF who underwent liver transplantation in the children and adults. Method : Total 41 cases of ALF who underwent liver transplantation in the children and adults were reviewed retrospectively from 1995 to 2011. 8 cases were children with mean age of 6.9 year old. 3 of them were less than 1 year old. 33 cases were adults with mean age of 41.3 year old. 3 of 8 children received living donor liver transplantation (LDLT) and 5 received cadaveric liver transplantation (CLT). 3 adults had LDLT and 30 adults had CLT. Result ; Preoperative and intraoperative data were shown in the table 1. Warm ischemic time (WIT) and Cold ischemic time (CIT) were documented. Outcome data were summarized in the table 2. 4 of 8 children developed Gr 3-4 encephalopathy and 24 of 33 adults developed Gr 3-4 encephalopathy. Mean waiting list days were 3 days for children and 2.6 days for adults. 1 month survival rate was 75% in children and 82% in adults. 1 year survival rate was 63% in children and 58% in adults. Conclusion ; Patients with ALF have a dismal mortality and morbidity despite significant improvement with intensive medical treatment. Liver transplantation whether CLT or LDLT seems to be a potential option to treat patients with ALF ,especially with Gr 3-4 encephalopathy in both children and adults.

Preoperative and Intraoperative Data

Preoperative Data		
Cases (41)	Children (8)	Adults (33)
MELR/PELD	24 (19-26)	33 (24-45)
PT	26.5 (26.1-39)	26.6 (13.2-82.1)
INR	2.7 (1.9-3.6)	2.5 (1.1-6.7)
Creatinine	2.0 (0.3-6.3)	1.8 (0.8-5.3)
Total bilirubin	15.4 (6.9-22.8)	18.9 (5.6-41.2)
GR 3-4 encephalopathy	4/8	24/33
LDLT/CLT	3/8	3/30
Waiting list days	3 (1-9)	2.6 (1-11)
Intraoperative Data		
Cases (41)	Children (8)	Adults (33)
CIT in LDLT (min)	50 (27-65)	27 (22-32)
CIT in CLT (min)	442 (291-631)	419 (289-717)
WIT in LDLT (min)	39.7 (29-60)	27 (18-35)
WIT in CLT (min)	46.7 (43-49)	38.3 (24-63)
Blood loss in LDLT (ml)	110 (100-120)	2294 (1083-4000)
Blood loss in CLT (ml)	375 (150-600)	3294 (200-1000)
Intraop dialysis (cases)	1	9

Outcome Data

Outcome Data		
Cases (41)	Children (8)	Adults (33)
ICU stay (days)	14 (1-60)	10 (2-37)
1 month survival	75% (6/8)	82% (27/33)
1 year survival rate	63% (5/8)	58% (19/33)

Abstract # P-296

Molecular Adsorbent Recirculating System (MARS) as Bridge to Liver Transplantation. The Oslo Experience. Per B.M. Olin, Håkon Haugaa. *Department of Emergencies and Critical Care, Oslo University Hospital, Rikshospitalet, Oslo, Norway*

The molecular adsorbent re-circulating system (MARS, Gambro, Lund Sweden) is used to remove albumin bound toxins from the blood stream in patients with liver failure. The most common indication is acute on chronic liver failure (AoCLF). However, and despite improvement of e.g. hepatic encephalopathy, studies have failed to show improved survival rates compared to standard medical therapy. As compared to patients with AoCLF, we consider the theoretical benefits of removing albumin bound toxins may be higher in the smaller group of patients with acute liver failure (ALF). Out of 80 patients treated with MARS at our institution since 2005, 57 critically ill patients (male/female: 25/32) were treated with the intention to safely bridge them to liver transplantation. Their median age was 37 years (range 1 month to 70 years). The Model of End Stage Liver Disease Score was median 41 (range 25-56) in the 46 patients who were older than 12 years of age. The filters were changed every 8-12 hours and the patients were treated for a median of 28 hours (range 1-240 hours). We had no MARS related complications that lead to disruption of the treatment and 47 patients (83 %) were successfully bridged to transplantation. 5 patients died of liver failure related complications before they could be transplanted, and five patients recovered before they were transplanted. 40 (85 %) of the transplanted patients were alive 30 days after transplantation. Our data suggest that MARS is a safe for patients with ALF.

Abstract # P-297

Racial/Ethnic Disparities in Post-Liver Transplantation Survival Among Acute Liver Failure Patients in the U.S. Robert J. Wong¹, Clark A. Bonham², Aijaz Ahmed¹. *¹Gastroenterology and Hepatology, Stanford University School of Medicine, Stanford, CA, USA; ²Surgery, Stanford University School of Medicine, Stanford, CA, USA*

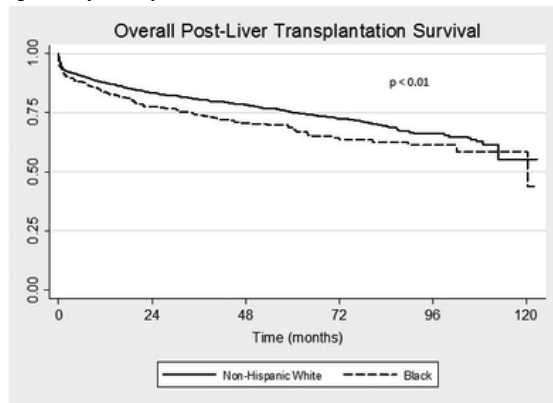
Background: Racial/ethnic disparities in survival among patients with acute liver failure (ALF) have been reported. However, among ALF patients that have progressive disease requiring liver transplantation (LT), it is not clear if post-LT survival differs by race/ethnicity.

Aim: To evaluate racial/ethnic disparities in the post-LT survival among patients with ALF in the U.S.

Methods: Adult patients with ALF undergoing LT in the U.S. from 2003-2012 were evaluated using data from the United Network for Organ Sharing registry. Race/ethnicity-specific comparisons were evaluated using chi square testing for categorical variables and Student's t-test for continuous variables. Stratified analyses also included comparisons by body mass index and etiology of ALF. Overall post-LT survival was evaluated with Kaplan Meier methods and multivariate Cox proportional hazards models (adjusted for age, sex, race/ethnicity, etiology of ALF, obesity, year of LT, and MELD score).

Results: A total of 2,924 patients with ALF underwent LT from 2003-2012. Among ALF patients undergoing LT, blacks had the highest rates of obesity (44.0%, n=210), followed by non-Hispanic whites (30.4%, n=556), Hispanics (30.3%, n=100), and Asians (17.5%, n=43), $p<0.001$. Overall 5-year post-LT survival was significantly lower in blacks compared to non-Hispanic whites (68.7% vs. 75.0%, $p<0.02$). When stratified by obesity status, there was a trend towards lower 5-year post-LT survival among obese blacks with ALF compared with obese non-Hispanic whites with ALF (67.1% vs. 73.9%, $p=0.09$). In the multivariate Cox proportional hazards model, there was a trend towards lower survival among blacks (HR 1.24, 95% CI 0.99-1.54, $p=0.06$) and significantly lower survival among obese ALF patients (HR 1.20, 95% CI 1.00-1.43, $p<0.01$).

Conclusions: Among patients with ALF requiring LT, blacks had significantly lower post-LT compared to non-Hispanic whites. Obese patients also had significantly worse post-LT outcomes.



Abstract # P-298

Telaprevir with Adjusted Dose of Ribavirin in Naïve CHC-G1: Efficacy and Treatment in CHC in Hemodialysis Population. TARGET C Trial- A Placebo Randomized Control Clinical Trial. P. Patrick Basu¹, Niraj J. Shah³, Ravi Siriki², Md Rahaman².

¹Columbia University College of Physicians and Surgeons, New York, NY, USA; ²NSLJHS/ Hofstra North Shore LIJ School of Medicine, New York, NY, USA; ³James J. Peters VA Medical Center, Icahn School of Medicine at Mount Sinai, New York, NY, USA

Objective: The prevalence of Chronic hepatitis C (CHC) in Hemodialysis population is 3%. Standard of care (SOC) offers reduced dose of Peg IFN Alfa (p-IFN α) and reduced Ribavirin (RBV) doses eliciting sub optimal SVR of 27%. Telaprevir is not cleared renally and hence is safe in the hemo-dialysis population. This study evaluated the efficacy of triple therapy with Telaprevir, adjusted dose of RBV and p-IFN α in naïve CHC-G1(CHC Genotype 1) individuals on hemodialysis as a Respond Guided Therapy (RGT)

Methods: Total of thirty five (n=36) naïve CHC-G1 were recruited and subdivided into three sub-groups.

Group A - (n=12): p-IFN α 135mcg weekly for 24 weeks, Telaprevir 750mg two tablets - TID for four days and three tablets BID post dialysis for three days for first 12 weeks. RBV 400mg daily for 24 weeks.

Group B - (n=12): p-IFN α 135mcg weekly for 36 weeks, Telaprevir 750mg two tablets - TID for four days and three tablets BID post dialysis for three days for first 12 weeks. RBV 400mg daily for 36 weeks.

Group C - (n=12): p-IFN α 135mcg weekly for 48 weeks, No Telaprevir. RBV 400mg daily for 48 weeks.

The IL28B was evaluated for all individuals. Hematological, Liver and renal parameters were followed regularly during the trial. Viral load was followed to evaluate for response guided therapy (RGT) in all individuals.

Results: See table (VRVR- Very Rapid Virological Response).

RESULTS	Group A (24 weeks)	Group B (36 weeks)	Group C (48 weeks)
RGT			
AVR (1st week)	4/12 (33%)	4/12 (33%)	3/12 (25%)
VRVR (2nd week)	5/12 (41%)	4/12 (33%)	3/12 (25%)
RVR (4th week)	6/12 (50%)	5/12 (41%)	3/12 (25%)
EVR (12th week)	7/12 (63%)	6/12 (50%)	4/12 (33%)
ETVR (24/36/48 weeks)	8/12 (67%)	6/12 (50%)	4/12 (33%)
SVR (48/60/72 weeks)	7/12 (63%)	6/12 (50%)	4/12 (33%)

Conclusion: Triple therapy in hemodialysis patients with CHC has a SVR of 63% in 24 weeks of fixed-duration treatment. Traditional SOC: For 48 weeks- SVR was 25%. Dual therapy with Placebo overlapped with reduced dose of RBV- yields SVR of 50%. Truncated fixed duration triple therapy may offer optimal cost-benefit ratio at the current time in this special population.

Abstract # P-299

The Role of N-Acetylcysteine, Protecting the Graft from the Fibrosis Progression Due To HCV Recurrence, after Liver Transplantation. Long Terms Results of a Randomized Controlled Study. Francesco D'Amico¹, Alessandra Bertacco¹, Alessandro Vitale¹, Eleonora De Martin², Alberto Zanetto², Giacomo Zanusi¹, Daniele Neri¹, Patrizia Burra², Umberto Cillo¹. ¹HPB Surgery and Liver Transplantation Unit, Padova University, Padova, Italy; ²Multivisceral Transplantation and Liver Disease, Padova University, Padova, Italy

Background/Aims: Anti-oxidant agents have the potential to reduce the ischemia-reperfusion damage of organs for liver transplantation (LT). We have analyzed the data from the data base of our original article published on the Journal Liver Transplantation (19:135-144, February 2013) considering the impact of the infusion of N-acetylcysteine (NAC) during the liver procurement procedure, on the LT outcome in relation to HCV recurrence and progression of fibrosis.

Methods. The protocol exposed in the article expected a systemic and loco regional infusion of NAC. Between December 2006 and July 2009, 140 grafts, assigned to adult candidates with chronic liver disease (79 HCV related) enlisted for first LT, were randomly included in the NAC protocol (NAC group = 69 patients including 41 HCV) or in the standard procedure without NAC (No-NAC group = 71 patients including 38 HCV).

Results. Donor and recipient variables were comparable in the two study groups: in particular the proportion of suboptimal livers was 55% in the NAC group and 63% in the no-NAC group ($P>0.05$).

The NAC group had significantly lower in particular the prevalence of graft primary dysfunction (PDF) (7% vs 21%; $P=0.02$) and early graft loss (< 3 months) (7% vs 18%; $P=0.04$).

Median follow up was 30 months with a maximum of 54 months. In consideration of this we have divided the cohort in 4 sub-groups (HCV yes/no in relation with NAC yes/no) analyzing the influence of HCV recurrence on survival (Biopsy proven).

Conclusion. The present study showed the following data related to HCV recurrence (Early graft loss excluded): HCV Yes / NAC Yes 1/4 dead for recurrence; HCV Yes/ NAC No 5/7 dead for recurrence ; HCV No / NAC Yes 4 dead ; HCV No NAC No 5 dead . There is a clear trend towards the protective effect of NAC on HCV patients. We are waiting the complete 5 years follow up on all the patients for July 2014.

Abstract # P-300

Quality of Life, Anxiety, Depression and Social Support in HCV Mono-Infected and HIV/HCV Co-Infected Patients Waiting for Liver Transplantation. V. Karam¹, I. Varescon², A. Untas², I. Sabar¹, D. Samuel^{1,3,4,5}, J.C. Duclos-Vallee^{1,3,4,5}. ¹Centre Hepato-Biliaire, AP-HP Hopital Paul Brousse, Villejuif, France; ²Laboratory of Psychopathology and Health Processes, Universite Paris-Descartes, Paris, France; ³Univ Paris-Sud, Villejuif, France; ⁴Unit 785, Inserm, Villejuif, France; ⁵DHU Hepatitov, Villejuif, France

Several studies have shown how psychosocial factors during the pre-transplantation period can predict well-being and quality of life (QOL) after transplantation. Most of them have focused mainly on the outcomes after liver transplantation (LT) and separately in HCV or HIV recipients. Little is known about the psychosocial characteristics of HCV mono-infected (HCV) or HIV/HCV co-infected (HIV/HCV) candidates to LT during the waiting period.

Method. A cross-sectional study was conducted at the Paul Brousse University Hospital. Twenty-eight HCV patients registered in the waiting list were enrolled: 15 HCV and 13 HIV/HCV. All participants completed self-report scales to assess quality of life (QOL), anxiety (HAD-A), depression (HAD-S) and social support (SSQ). To investigate associations between QOL and anxiety, depression and social support, Pearson's parametric bivariate correlations were used.

Results. Socio-demographic characteristics were similar in the two groups with the exception of patients' age. HCV were older than HIV/HCV patients (55 $\pm$ 7 vs 46 $\pm$ 4 yrs, $p<0.01$). The number ($p<0.05$) and the severity ($p<0.01$)

of physical symptoms, and the severity of psychological symptoms were higher in HIV/HCV patients. Moreover, HIV/HCV had a lower social support availability than HCV patients ($p<0.05$). Physical symptoms ($p<0.01$), well-being ($p<0.05$), personal function ($p<0.01$), and general health perception ($p<0.05$) in HCV patients were associated with depression. In HIV/HCV patients, only social and role function ($p<0.01$) was associated with depression. However, Severity of physical ($p<0.05$) and psychological ($p<0.01$) symptoms were associated with anxiety in this group. The higher social support was associated with well-being in HCV patients ($p<0.01$). Conclusion. HIV/HCV patients enrolled in waiting list for LT reported more psychosocial difficulties than HCV patients. The findings of this study highlight the importance of assessing psychosocial factors in HCV patients, and indicate the need for specific interventions to improve their QOL, more particularly in those with HCV/HIV co-infection.

Abstract # P-301

Leukopenia during Interferon Based Hepatitis C Treatment in Liver Transplant Recipients Is Associated With Increased Infection Risk. Ludi Koning¹, Kimberly D. Watt², Bettina E. Hansen¹, Julie K. Heimbach², Robert J. de Knecht¹, Michael R. Charlton³. ¹Erasmus MC University Medical Center, Rotterdam, Netherlands; ²Mayo Clinic Transplant Center, Rochester, MN, USA; ³Intermountain Medical Center, Salt Lake City, UT, USA

Background and aims: HCV infected Liver Transplant (LT) recipients are often treated with suboptimal interferon (IFN) doses due to low white blood cell (WBC) count requiring dose reductions in an attempt to avoid infections. However, it is unclear if leukopenia during HCV treatment is indeed predictive of infection in LT recipients. The aim of this study was to investigate the correlation between leukopenia and the occurrence of bacterial infection during IFN treatment in HCV infected LT recipients. **Methods:** N=123 LT recipients with chronic HCV were treated with pegylated (PEG) or non-pegylated IFN and evaluated on leukopenia, bacterial infections and dose reductions at 4-weekly intervals during HCV treatment. Bacterial infections were defined as either mild (no treatment, antibiotic treatment or dose reduction of IFN) or severe (hospital admission, discontinuation of IFN or death). Infections were correlated with lowest WBC count during 4-weekly intervals. **Results:** a total of 166 treatments in 123 LT recipients aged 33-75 years (mean: 54 years) were included. Baseline mean WBC was $4.6 \times 10^9/l$ (range 1.3-12.2) and on treatment mean WBC dropped to $2.1 \times 10^9/l$ (range 0.8-9.2). Seventy-nine infections were observed in 51 patients (41%); 21 upper respiratory tract, 17 wound infections, 9 pulmonary and 32 other. Twenty infections (25%) were defined as severe; 13 discontinuations, 16 hospital admissions and 1 death. In 14% of the 166 treatments, patients underwent IFN dose reductions and in 6% IFN was discontinued due to leukopenia. WBC count was log transformed to attain an equal distribution. In univariate analysis lowest log-WBC per 4 week treatment interval was correlated with infection (OR: 0.110; 95%CI 0.033-0.372). In multivariate analysis, the OR for log-WBC was 0.096 (95%CI 0.027-0.343) when corrected for age, PEG-IFN versus non-pegylated IFN, use of MMF or AZA and treatment for diabetes mellitus. **Conclusion:** Lower WBC counts are associated with an increased risk of infection in Liver Transplant patients treated with IFN for chronic HCV. These data suggest that, contrary to non-transplant patients, the institutionalized practice to reduce IFN dose when WBC count decreases should not be abandoned in LT recipients.

DISCLOSURE: de Knecht, R.J.: Grant/Research Support, Roche, Speakers Bureau and advisory arrangement; Speaker's Bureau, Merck, Advisory arrangement.

Abstract # P-302

Genotype 3 and Higher LDL Levels Are Predictors of Good Response for Hepatitis C Recurrence Post Living Donor Liver Transplantation. Sanjiv Saigal¹, Narendra S. Choudhary¹, Neeraj Saraf¹, Dheeraj Gautam², Ravi Mohanka¹, Amit Rastogi¹, Sanjay Goja¹, P. Balachandran Menon¹, Arvinder S. Soin¹. ¹Medanta Liver Institute, Medanta, The Medicity, Gurgaon, Haryana, India; ²Department of Histopathology, Medanta, The Medicity, Gurgaon, India

Background: Treatment of recurrent hepatitis C after liver transplantation is associated with poor sustained virological response (SVR) in genotype 1 and data on genotype 3 is limited to small numbers. We report one of the largest series of genotype 3 patients treated for recurrent hepatitis C following living donor liver transplantation (LDLT)

Methods: From Jan 2002 to Nov 2013, of 1349 transplants, 359 patients had hepatitis C. Patients with histological recurrence were treated with pegylated interferon in escalating dose regimen for 48 weeks and weight-based Ribavirin. Virological response was defined as - rapid virological response (RVR- 4 weeks), early virological response (EVR- 12 weeks), end of treatment response (ETR- 48weeks) and sustained virological response (SVR- 24 weeks after end of treatment). SVR and no SVR groups were compared for age, sex, body mass index, diabetes, total cholesterol, low density lipoprotein (LDL), high density lipoprotein, triglycerides, ferritin, genotype and HCV RNA levels before initiation of treatment.

Results: The study included 66 patients who had at-least 18-month follow-up after treatment initiation (45 males), aged 51 ± 6.3 years. Treatment was started after 13 (7-21 IQR months), baseline RNA was $6.9 \pm 1.2 \times 10^6$ IU/ml. There was no significant difference in SVR and no SVR groups regarding age, sex ratio, follow-up period, total cholesterol, triglycerides, high density lipoprotein, body mass index, prevalence of diabetes, RNA and ferritin levels. Genotype 3, RVR, EVR, ETR and higher LDL levels were significantly associated with SVR (table 1). Absence of RVR and EVR predicted treatment failure with specificity of 88% and 92%. IL28B rs 12979860 CC genotype was significantly associated with RVR [25/29(86.2%)] as compared to CT/TT genotypes [15/26(57%)], p 0.032.

Significant predictors of SVR

Parameter	SVR (n=38)	No SVR (n=28)	p value
Genotype 1,2,3,4	1,2,34,1	12,1,15,0	0.0001 between genotype 1 and 3
RVR	29/33	11/24	0.001
EVR	35/38	16/25	0.007
ETR	38/38	9/25	0.000
LDL mg/dl	88.7 ± 27.2	65.8 ± 20.7	0.012

Conclusion: Genotype 3 and higher LDL levels predict SVR in patients treated for hepatitis C recurrence following LDLT, whereas absence of RVR and EVR strongly predict treatment failure.

Abstract # P-303

Combination Therapy of Sofosbuvir and Simeprevir for Fibrosing Cholestatic Hepatitis C after Liver Transplantation. Melanie Lang¹, Susanne Polywka², Johannes Kluwe¹, Lutz Fischer³, Sabine Jordan¹, Mark Lütgehetmann², Bjoern Nashan³, Ansgar Lohse¹, Martina Sterneck¹. ¹University Medical Center Hamburg Eppendorf, Department of Medicine, Hamburg, Germany; ²University Medical Center Hamburg Eppendorf, Department of Microbiology, Hamburg, Germany; ³University Medical Center Hamburg Eppendorf, Hepatobiliary Surgery and Transplantation, Hamburg, Germany

Background:

Fibrosing cholestatic hepatitis (FCH) is a life threatening complication of HCV recurrence after OLT.

Methods:

Here we report the first successful treatment of a patient with sofosbuvir/simeprevir/ribavirin (SOF/SMV/RBV) over so far 12 weeks.

Results:

The 59 y old female patient underwent retransplantation on 9.6.2013 for decompensated HCV cirrhosis of the graft. Immunosuppression comprised of basiliximab induction, cyclosporine and prednisolone. Ten weeks thereafter she developed jaundice, a declining liver function (bilirubine 16.8 mg/dl, ASAT 89 U/l, ALAT 53 U/l, albumine 24 g/l) and a high HCV load (4×10^9 U/ml, genotype 1c, previous non-responder). Liver biopsy showed typical features of FCH. On 26.8.2013 treatment with PEG-IFN alpha 2b, ribavirin and 10 days later with telaprevir was initiated. Severe side effects occurred (anemia requiring erythropoietin, leukopenia requiring G-CSF, fever, severe malaise, nausea). On 18.9.2013 access to compassionate use of sofosbuvir and simeprevir was granted. PEG-IFN and telaprevir were stopped and sofosbuvir/simeprevir started. After 8 weeks of sofosbuvir/simeprevir/ribavirin HCV was undetectable and liver parameters almost normalized (bilirubine 1.5 mg/dl, ASAT 28 U/l, ALAT 43 U/l). No serious side effects occurred, Erythropoietin and G-CSF could be stopped. The patient's general condition improved and she was discharged. Cyclosporine levels were stable under sofosbuvir/simeprevir/ribavirin. Further follow-up will be given at the meeting.

Conclusions: The combination of sofosbuvir, simeprevir and ribavirin seems to be a hopeful option for difficult to treat patients with severe chronic hepatitis C after liver transplantation.

Abstract # P-304

Acute Hemolytic Anemia after Liver Transplantation Received Early Steroid Withdrawal in One Case. Yinghua Chen, Weiqiang Ju, Dongping Wang, Xiaoshun He. *Organ Transplantation Center, The 1st Affiliated Hospital of Sun Yat Sen University, Guangzhou, Guangdong, China*

Aim. To report a case of acute hemolytic anemia after liver transplantation received early steroid withdrawal and the therapeutic experience.

Methods. The patient of 6 years old received reduced-size orthotopic piggyback liver transplantation on December 2012, to cure the serious liver cirrhosis for tyrosinemia, received steroids to day 2 with tacrolimus and basiliximab after liver transplantation. Acute hemolytic anemia occurred at the 8th day after transplantation. The hemoglobin decreased from 88 g/L to 27 g/L in 1 day, and the Coomb test was 4+. The patient received washed red blood cells transfusion immediately. Then received steroids comprising i.v. Methylprednisolone (4 mg/kg [D1-D3], 2 mg/kg [D4-D6]), followed by oral prednisolone at a dose of 1 mg/kg.

Results. The general condition of the patient was improved. The hemoglobin increased gradually and returned to 86 g/L at 22 days after liver transplantation. At 11 months of follow-up, hemoglobin was within normal range.

Conclusion. The acute hemolytic anemia is a suspected relation to the early steroid withdrawal. Using graft blood type washed red blood cells transfusion and steroid is an effective therapeutic procedure when it occurs.

Abstract # P-305

Renal Function Deterioration Is Higher Within the First Year after Liver Transplantation: Results of the Italian Cross-Sectional, Multicenter Study (SURF). Paolo De Simone¹, Francesca Donato², Gianluca Mennini³, Umberto Cillo⁴, Denis Disegna⁵, Silvia Rosi⁶, Patrizia Burra⁷, Giovanni Vennarecci⁸, Donato Donati⁹, Rossella Brusa¹⁰, Stefano Fagioli¹¹.

¹Hepatobiliary Surgery and Liver Transplantation, University of Pisa Medical School Hospital, Pisa, Italy; ²General Surgery and Transplantation, Maggiore Hospital, Milan, Italy; ³General and Transplant Surgery, La Sapienza University Medical School Hospital, Rome, Italy; ⁴Hepatobiliary Surgery and Liver Transplantation, University of Padua Medical School Hospital, Padua, Italy; ⁵Medical Liver Transplantation Section, Internal Medicine, University of Udine Medical School Hospital, Udine, Italy; ⁶Gastroenterology, University of Padua Medical School Hospital, Padua, Italy; ⁷Liver and Multivisceral Transplantation, University of Padua Medical School Hospital, Padua, Italy; ⁸General Surgery and Transplantation, San Camillo Forlanini Hospital, Rome, Italy; ⁹Nephrology, Varese Hospital, Varese, Italy

Previous evidence suggests that renal function (RF) deterioration occurs early after liver transplantation (LT) when exposure to calcineurin inhibitors (CNI) is higher.

SURF was a cross-sectional, multicenter study to investigate the prevalence of renal dysfunction (eGFR <60 mL/min/1.73m²) and the retrospectively recorded evolution of RF after transplantation in maintenance (5 months (M) to 5.5 years) recipients of a primary liver graft.

From March 2012 to June 2013 a sample of 1,002 evaluable patients were enrolled at a mean of 28.6±16.5 M from LT. From LT to inclusion, mean eGFR decreased from 95.7±36.9 mL/min/1.73m² to 76.9±25.7 mL/min/1.73m². Mean yearly eGFR deterioration was -12.3±32.2 mL/min/1.73m² which resulted from a mean of -26.2±59 mL/min/1.73m² within 1 year after LT (n=964); -13.3±24.4 mL/min/1.73m² between 1 and 2 years (n=675); -8.5±15.5 mL/min/1.73m² between 2 and 3 years (n=437); -5.7±9.6 mL/min/1.73m² between 3 and 4 years (n=244 pts); and -3.9±8.2 mL/min/1.73m² between 4 and 5.5 years (n=98). 91% patients were on CNI-based immunosuppression at inclusion (726 TAC; 187 CsA) (monotherapy 54%; combination 46%). Mean duration of CNI monotherapy was 23.16±17.62 M, and was 26.79±18.19 M for CNI in combination.

LT recipients experience greater RF deterioration within the first post-transplant year, and the large majority are on CNI-based immunosuppression. These data call for preventative strategies early on after transplantation to slow down RF impairment.

DISCLOSURE: De Simone, P.: Grant/Research Support, Novartis, Astellas., Cillo, U.: Grant/Research Support, Novartis., Brusa, R.: Employee, Novartis., Fagioli, S.: Speaker's Bureau, Novartis.

Abstract # P-306

Everolimus Treatment in Liver Transplantation. A Spanish Multicentre Cohort. J. Fabregat¹, I. Bilbao², M. Salcedo³, Ma Gómez⁴, C. Jimenez⁵, J. Castroagudin⁶, C. Almohalla⁷, I. Herrero⁸, V. Cuervas-Mons⁹, A. Otero¹⁰, A. Rubin¹¹, M. Miras¹², J. Rodrigo¹³, T. Serrano¹⁴, G. Crespo¹⁵, M. De la Mata¹⁶, J. Bustamante¹⁷, M.L. González-Diéguez¹⁸, A. Moreno¹⁹, I. Narvaez²⁰, M. Guiler²¹.

¹H. Bellvitge, Hospitalet de Llobregat, Spain; ²H. Gregorio Marañón, Madrid, Spain; ³H. Vall Hebrón, Barcelona, Spain; ⁴H. Virgen Rocio, Sevilla, Spain; ⁵H. 12 Octubre, Madrid, Spain; ⁶H. U. Santiago Compostela, Santiago Compostela, Spain; ⁷H. Rio Hortega, Valladolid, Spain; ⁸C. U. Navarra, Navarra, Spain; ⁹H. Puerta Hierro, Madrid, Spain; ¹⁰H. U. A. Coruña, A Coruña, Spain; ¹¹H. La Fe, Valencia, Spain; ¹²H. Virgen Arrixaca, Murcia, Spain; ¹³H. Carlos Haya, Málaga, Spain; ¹⁴H. Clínico Lozano Blesa, Zaragoza, Spain; ¹⁵H. Clínic Barcelona, Barcelona, Spain; ¹⁶H. Reina Sofia, Córdoba, Spain; ¹⁷H. Cruces, Bilbao, Spain; ¹⁸H. Central Asturias, Oviedo, Spain; ¹⁹H. Ntra Sra Candelaria, Tenerife, Spain; ²⁰H. Infanta Cristina, Badajoz, Spain; ²¹Novartis Farmacéutica, Barcelona, Spain

We describe Everolimus (EVR) use according to local clinical practice criteria: indications, effectiveness, treatment regimens and safety.

Methods

Retrospective, multicentre (n=20) study in adult patients with liver transplantation (LT) converted to EVR between 2004-11.

Results

477 patients (488 LT): mean age (SD): 62 (9.8) years-old, male: 79%. LT indications: cirrhosis complications: 92.5% (49.3% alcoholic, 37.3% HCV). Tumour disease indication: 45.5%. Main reasons for EVR-treatment conversion: Renal Dysfunction (RD): 32.6%, hepatocellular carcinoma (HCC) (prevention or recurrence): 30.2%, de-novo-malignancy: 29.7%, neurotoxicity: 11.3%. The mean time to EVR-onset from LT was 3.8 (4.5) years (median: 23.8m, 7.1m, 68.7m in RD, HCC, de-novo-malignancy, respectively). RD patients increased estimated glomerular filtration rate (eGFR) (MDRD-4) post-conversion by 11 mL [baseline 45.8 (25.3) mL/min vs. 56.7 (27.6) mL/min] at 3-months post-conversion (p<0.0001), and remained stable at 12-months (7 mL). The eGFR improvement was higher in the early (<12m post-LT) conversion group (p<0.05). The HCC and de-novo-malignancy patients showed stabilization or clinical improvement in 58% and 69%, respectively. 11.4% stopped EVR treatment due to AEs.

Conclusions

EVR is a therapeutic option in LT, with good efficacy and tolerability in RD, HCC and de-novo-malignancy treatments. Early conversion is associated with higher renal function recovery. EVR efficacy and safety are being assessed in prospective studies.

DISCLOSURE: Guiler, M.: Employee, Novartis Farmacéutica.

Abstract # P-307

Efficacy of a Quadruple Therapy With Late Introduction of Advagraf in Postoperative Evolution after Liver Transplantation. Laura Llado, Ana Gonzalez-Castillo, Carme Baliellas, Joan Fabregat, Emilio Ramos, Jaume Torras, Juli Busquets, Lluís Secanella, Nuria Pelaez, Antoni Rafecas, Xavier Xiol. *Liver Transplant Unit, Hospital U Bellvitge, Barcelona, Spain*

Renal insufficiency is a main risk factor of morbidity and mortality after liver transplantation (LT). There is few experience in the use of Advagraf in the immediate postoperative evolution. The aim of this study is to evaluate the security and efficacy of late administration of Advagraf, combined with induction therapy, in the postoperative evolution after LT.

Material and Methods

Prospective study of liver transplanted patients in our center because of HCV negative cirrhosis since March 2011. The immunosuppression therapy used was induction therapy with Basiliximab, steroids, mycophenolate and late administration of Advagraf. We evaluate initial postoperative evolution, rejection and adverse events till 1 year after LT.

Results

Till now 63 patients have been evaluated. Mycophenolate was initiated the day 3.2 ± 3.6, being stopped in 20 cases temporally and in 8 definitively. Advagraf was initiated day 3.5 ± 1.3, being stopped in 10 cases temporally and 4 definitively. Advagraf through levels were: 7th day: 9.3 ± 5.2, 10th day: 9.4 ± 5.7, 1st Month: 8.1 ± 3.1; 6th month: 7.9 ± 4.3; 12th month: 7.4 ± 3.5 ng/mL.

During postoperative initial evolution, 14 patients (22.2%) were diagnosed of "de novo" hypertension (22.2%), "de novo" diabetes mellitus in 13 patients (20.6%), and renal insufficiency (MDRD < 60) in 18 patients (28.5%). Only 1 patient required renal dialysis (1.5%). During the first year follow up 26 patients had hipertensión (41.6 %), 23 patients diabetes mellitus (36.5%), and 24 patients renal insufficiency (38%). There were no rejection episodes during the first year after liver transplantation, the infection rate was 36 %, and mortality rate was 2 patients (3.1%).

Conclusions

This sequential quadruple therapy, with late administration of Advagraf, is safe and efficient. It achieves a low incidence of rejection episode, with low renal toxicity. Lower doses of calcineurinic inhibitor may be possible to even improve the infection and adverse events profile.

Abstract # P-308

Successful Immunosuppression With Sirolimus in Liver Transplantation. Long Term Follow-Up, a One Center Experience. Linda E. Munoz¹, Paula Cordero¹, Ana Silvera¹, Alfonso Gonzalez¹, Concepcion Sanchez², Edelmiro Perez³, Homero Zapata³, Miguel Escobedo³. ¹Liver Unit, "Dr. Jose Eleuterio Gonzalez" University Hospital, Monterrey, Mexico; ²Department of Nephrology, "Dr. Jose Eleuterio Gonzalez" University Hospital, Monterrey, Mexico; ³Transplant Group, "Dr. Jose Eleuterio Gonzalez" University Hospital, Monterrey, Mexico. Aim: Evaluate efficacy and safety of Sirolimus (SRL) as an immunosuppressor in patients with orthotopic liver transplantation (OLT).

Method: 38 patients post OLT converted from Tacrolimus (TAC) to SRL in the last five years were studied.

Results: Etiologies: HCV(9), ALD(8), AIH(6), NASH(3), HCV+HCC(3) and others(9). Main indications of SRL: renal dysfunction, neuropsychiatric symptoms and rejection. Mean time to switch: 15±18 months. Pre-conversion (preC) glomerular filtration rate 52±26mL/min vs post-conversion (postC) 74±2mL/min (p <0.012). Microalbuminuria(malb) preC in 2 patients: 1 progressed to mild albuminuria(albU) 500mg/dL postC and 1 remained at malb, though developed diabetes mellitus (DM) postC. Proteinuria in 7 patients postC: 3 patients with malb (30-180mg/dL); 1 patient with malb and DM preOLT; 1 patient with mild albU (398 mg/dL) with DM preOLT; 1 patient with malb plus DM postOLT; and 1 patient with severe albU (1,272mg/dL), how had DM preOLT. Triglycerides preC 199 ± 77mg/dL vs 153±92mg/dL postC (p = 0.058). Cholesterol preC 165±46mg/dL vs 209±116mg/dL postC (p = 0.004). 4 patients experienced rejection postC: 2 received SRL post OP and experienced rejection day 6 and 2 month postC, 2 were converted to SRL 2 and 6 months post OLT, both experienced rejection 2 and 4 months postC. 3 patients received methylprednisolone for rejection and were converted to SRL. TAC historic controls (13% [11/86]) experienced rejections. 9 patients died, none attributable to SRL. Neuropsychiatric manifestations preC (13%) resolved completely. There was no thrombosis of the hepatic artery; however 1 patient experienced portal vein thrombosis. Follow-up was 52 ± 35m. 13 patients reduced the dose of SRL to 1mg/day or 1mg every other day as the only immunosuppression.

Conclusions: SRL therapy can be safe in postOLT patients, by improving renal function and neuropsychiatric manifestations. 10% experienced rejection postC. 18% developed proteinuria, mostly mild. There was an increase in cholesterol and triglyceride decrease over time. SRL decrease to a minimum long term was achieved in 34% of cases.

Abstract # P-309

Azathioprine Immunosuppression Is Protective Against Recurrence of Primary Biliary Cirrhosis after Liver Transplantation. Francesca Saffioti¹, Pinelopi Manousou¹, Ioanna Parisi¹, Emmanuel Tsochatzis¹, Eleni Theodoridou¹, Amar P. Dhillon², Tu Vinh Luong², David Patch¹, James O'Beirne¹, Douglas Thorburn¹, Massimo Pinzani¹, Andrew K. Burroughs¹. ¹The Royal Free Sheila Sherlock Liver Centre, Royal Free Hospital and UCL Institute of Liver and Digestive Health, London, United Kingdom; ²Department of Histopathology, Royal Free Hospital, London, United Kingdom

Patients with primary biliary cirrhosis (PBC) can develop recurrent PBC(rPBC) post liver transplant (LT). It has been suggested that tacrolimus(FK) rather than cyclosporine(CYA) is associated with rPBC.

However these reports did not evaluate azathioprine(AZA), commonly associated with CYA but not with FK. The aim of this study was to evaluate the impact of AZA on rPBC.

We retrospectively evaluated 154 consecutive PBC LT patients (median follow-up 100.3(1-285) months) with protocol biopsies (356), scheduled at 1, 3, 5, 10, and 15 years post-LT (unless there were clinical indications for biopsy at other times) and/or abnormal cholestatic markers indicating rPBC (in absence of any other cause in 12 patients).

Cox regression was used to evaluate factors associated with rPBC: Model for End-Stage Liver Disease score pre-LT, age and gender of the recipient/donor, cold and warm ischemic times, HLA mismatches, rejection episodes and treatment, CMV infection and immunosuppressives (initial/maintenance). Median donor age was 39(8-71) years. rPBC occurred in 50 cases (32%), at a median of 75.8(8-200) months post-LT. CYA was used in 55(22 monotherapy) and FK in 93(26 monotherapy) patients. Steroids were discontinued in 126(median 5m post-LT) and maintained in 28. Mycophenolate mofetil(MMF) was used in 44 patients. AZA(1 mg/Kg) was used in 120 (42 in combination with CYA, 76 with FK, 1 with MMF): 61 discontinued at a median of 19.1m. rPBC was associated independently with non-use and/or discontinuation of AZA (p=0.001, OR=3.6, 95%CI 1.7-7.6) and steroid maintenance(>6 months) (p=0.024, OR=0.49, 95%CI 0.3-0.9). rPBC occurred at a median of 71m, 58m and 40m in patients who were treated, discontinued or never used AZA respectively. CYA or FK as monotherapy or in combination with AZA and/or MMF had no association with rPBC.

In our study, treatment with AZA in patients with PBC post-LT was independently protective against disease recurrence, but larger numbers are needed to show if the combination with CYA or FK results in further benefit.

Abstract # P-310

Everolimus Safety Profile in Liver Transplant Recipients With 3-Year Exposure in the H2304 Core and Extension Study. F. Saliba, X. Rogiers, W. Chapman, L. Caicedo, A. Alsina, L. Teperman, G. Junge, B. Rauer, G. Dong, P. De Simone. *For the H2304E1 Study Group, Villejuif, France*

Background: Patients undergoing liver transplantation (LTx) require long-term immunosuppression, which is associated with an increased risk for complications such as malignancies, cardiovascular disease, and renal failure. Follow-up safety information from randomised clinical trials beyond two years is sparse.

Methods: Patients on study medication who completed the randomised 24-month (M) H2304 core study were eligible to enter the extension period H2304E1 to continue on EVR (C0 3-8ng/mL)+ reduced tacrolimus (rTAC; C0 3-5ng/mL) (N=106) or tacrolimus control (TAC-C; C0 6-10ng/mL;N=125). Primary endpoints at M36 included comparison of composite efficacy failure (treated BPAR, graft loss, death) and renal function (eGFR;MDRD-4). Key safety endpoints included assessment of adverse events (AEs) and serious AEs.

Results: At M36, composite efficacy failure rate was 11.5% vs. 14.6% (no difference test, p=0.334) and mean eGFR was 78.7±25.7 and 63.5±18.3 mL/min/1.73m² (p<0.001) in EVR+rTAC and TAC-C arms, respectively. The overall incidence of AEs and serious AEs was comparable between the two arms. Nine patients in both arms (EVR+rTAC 8.5%, TAC-C 7.2%) discontinued study medication due to AE during the extension phase. Incidence of renal failure, cardiovascular events, and malignancies was numerically higher in the TAC-C arm. Infections were reported in 30 patients in each arm between M24 and M36 (Table). Recurrence of hepatocellular carcinoma occurred in one patient in each group. Two deaths (sudden death and hypoglycemia) were reported in the EVR+rTAC arm during the extension study; both were considered unrelated to the study drug.

Conclusion: Patients remaining on EVR+rTAC from M1 after LTx benefit from improved renal function compared to those on TAC-C. Three year follow-up data for this regimen raise no concern with regard to typical complications of long-term immunosuppression.

Table: Safety profile at M36

	Randomisation to M36		M24 to M36	
	EVR+rTAC N=106	TAC-C N=125	EVR+rTAC N=106	TAC-C N=125
Any adverse event	106 (100.0)	125 (100.0)	87 (82.1)	96 (76.8)
Any serious adverse event	63 (59.4)	75 (60.0)	32 (30.2)	28 (22.4)
Adverse events of clinical interest				
Renal failure	10 (9.4)	22 (17.6)	2 (1.9)	10 (8.0)
Cardiovascular event	6 (5.7)	12 (9.6)	3 (2.8)	6 (4.8)
Neoplasms (benign, malignant or unspecified)	12 (11.3)	18 (14.4)	3 (2.8)	9 (7.2)
Malignancies	10 (9.4)	9 (7.2)	3 (2.8)	7 (5.6)
Infection	75 (70.8)	80 (64.0)	30 (28.3)	30 (24.0)

DISCLOSURE: *Saliba, F.*: Grant/Research Support, Novartis, Astellas, Roche and Gambro; Speaker's Bureau, Schering Plough, MSD and Gambro; Other, Novartis, Astellas, Roche, Genzyme, Viropharma, Advisory Committee or Review panels, Vital Therapies, Advisory Committee or Review panels., *Chapman, W.*: Speaker's Bureau, Novartis., *Caicedo, L.*: Grant/Research Support, Novartis., *Alsina, A.*: Speaker's Bureau, Novartis, Bayer., *Teperman, L.*: Grant/Research Support, Gilead Sciences, Vertex, Vital Therapies, Janssen Services, LLC, Bayer Healthcare Pharma; Speaker's Bureau, Gilead Sciences, Vertex, Vital Therapies, Janssen Services, LLC, Bayer Healthcare Pharma; Other, Gilead Sciences, Vertex, Vital Therapies, Consulting advisory arrangements, Janssen Services, LLC, Bayer Healthcare Pharma, Consulting advisory arrangements., *Junge, G.*: Employee, Novartis., *Rauer, B.*: Employee, Novartis., *Dong, G.*: Employee, Novartis., *De Simone, P.*: Speaker's Bureau, Novartis.

Abstract # P-311

Correlation between Mycophenolic Acid Blood Level and Renal Dysfunction in Stable Liver Transplant Recipients Receiving Mycophenolate Monotherapy. Min-Ho Shin, Yo-Han Park, Shin Hwang, Gi-Won Song, Dong-Hwan Jung, Chul-Soo Ahn, Ki-Hun Kim, Deok-Bok Moon, Tae-Yong Ha, Gil-Chun Park, Sung-Gyu Lee, Eol Choi, Jae-Hyun Kwon. *1Division of Hepatobiliary Surgery and Liver Transplantation, Asan Medical Center, Seoul, Korea*

Purpose: Mycophenolate mofetil (MMF) is frequently used after liver transplantation (LT). Mycophenolic acid (MPA) metabolites are eliminated primarily via the kidneys. If renal function declines, clearance is significantly impaired. The aim of this study was to reveal the renal function-dependent changes of MPA level in stable adult LT recipients receiving MMF monotherapy.

Methods: Sixty-five LT recipients were selected from our LT database of >3500 cases. All had undergone MMF monotherapy with a daily MMF dose of 1000 mg or 1500 mg for more than 2 years, primarily because they could not tolerate calcineurin inhibitors. Their clinical profiles, including MPA therapeutic drug monitoring (TDM) and renal function, were analysed as a cross-sectional study.

Results: For the group treated with 1000 mg MMF (n=40), the 12-hour MPA trough level was 1.20 ± 0.35 mg/mL with serum creatinine (Cr) level ≤ 1.4 mg/dL in 13 patients, 2.78 ± 1.19 mg/mL with Cr > 1.4 mg/dL in 16 patients not undergoing hemodialysis, and 3.83 ± 0.87 mg/mL in 11 patients undergoing hemodialysis ($p < 0.001$). For the group treated with 1500 mg MMF (n=25), the MPA trough level was 2.23 ± 0.99 mg/mL with Cr ≤ 1.4 mg/dL in 6 patients, 2.81 ± 0.99 mg/mL with Cr > 1.4 mg/dL in 18 patients not undergoing hemodialysis, and 3.5 mg/mL in one patient undergoing hemodialysis ($p = 0.21$). **Conclusions:** Considering the potential therapeutic range of MPA, the suggested MMF dosage for Korean adult LT recipients requiring hemodialysis may be set around 1000 mg per day. We suggest to adjusting the MMF dosage on individualized basis according to the results of MPA TDM, particularly for patients with markedly impaired renal function.

Abstract # P-312

Effect of Glutamine-Supplemented Total Parenteral Nutrition on Postoperative Immune Dysfunction in Critically Surgical Patients. JiangLong Huang, ZongHeng Zheng, HongBo Wei, Yong Huang, WeiPing Guo, Bo Wei, TuFeng Chen, GuangShen Ou. *The Third Affiliated Hospital of Sun Yat-Sen University, GuangZhou, China*

BACKGROUND:

Glutamine has gain increasing attention because it is an important substrate for enterocyte and rapid proliferation cells. Studies have shown that during severe stress, glutamine is one of the most important amino acids that were mobilized from muscle tissue to supply energy and substrate to the host, resulting in depletion of glutamine stores. The depletion of glutamine stores seems to correlate with increased morbidity and mortality. Adding glutamine to the nutrition of clinical patients, may reduce morbidity.

OBJECTIVE:

To evaluate the effect of glutamine (Gln) dipeptide supplementation of total parenteral nutrition (TPN) on the immune response in critically surgical patients.

METHODS:

Those patients with APACHE II score > 12 were prospectively randomized to Gln group and control group. ALL patients were treated with TPN after

surgery for 7 days. Gln group received Gln 0.5 g /kg/day, and control group were treated without Gln. Blood samples were collected on 1th day and 6th day after surgery. Data about CD3, CD4, CD4/CD8, IgG, IgA were analysed.

RESULTS:

38 patients (16 women and 22 men) were examined. 19 patients underwent Gln group, and 19 in the control group. Patient demographics were similar between groups. The levels of CD4 cells were higher for the Gln group than for the control group [33.45 ± 1.15 % vs. (32.23 ± 1.81) %, $P < 0.005$]. No significant differences were found in the level of CD3 cells between the two groups [53.78 ± 8.59 % vs. (56.65 ± 3.24) %, $P > 0.005$]. But the patients in the Gln group after treatment had higher level of IgA and IgG than before.

CONCLUSION:

TPN supplemented with Gln dipeptide can increase the number of lymphocytes and the postoperative immunoglobulin in critically surgical patients, thus had beneficial effect on enhancing the immune response, and reduce morbidity.

Abstract # P-313

A Case Report of Using Anti-Thymocyte Globulin for Treatment in Steroid Resistant Rejection after Liver Transplantation. Hee Chul Yu, Jae Do Yang, Sang In Bae, Baik Hwan Cho. *Surgery, Chonbuk National University Hospital, Jeonju-si, Republic of Korea*

We present a case of first experience of antirejection treatment using anti-thymocyte globulin (ATG) to patient who had received deceased donor liver transplant at five years ago. A 61 years old man who was visited cause of elevations in hepatic enzymes and bilirubin levels during the conversion from Tacrobell® to Advagraf® and the dose adjustment. He was proven acute cellular rejection histologically, we started steroid pulse therapy and augmentation of the tacrolimus (12 mg/d) plus mycophenolate mofetil (2 g/d). Nevertheless, the liver function tests and the clinical findings were not improved. Therefore, ATG (1.5 mg/kg) was administered for eight days for alternative rescue therapy of the rejection. When that treatment finished, liver function tests and histological findings were improved. But ATG-related adverse events such as leukopenia and CMV infection were detected. The ATG can be a useful one of alternative rescue therapy to treat of steroid resistant rejection after liver transplantation.

Abstract # P-314

Application of ATP Value of CD4+ T Cells and T Cell Subsets Analysis in Monitoring Immune Function in Post-Liver Transplantation Recipients. Xiaofeng Zhu, Yangjie Ou, Zhiyong Guo, Xiaoshun He. *Transplantation Surgery, The First Affiliated Hospital, Sun Yet-sen University, Guangzhou, Guangdong, China; Transplantation Surgery, The First Affiliated Hospital, Sun Yet-sen University, Guangzhou, Guangdong, China; Transplantation Surgery, The First Affiliated Hospital, Sun Yet-sen University, Guangzhou, Guangdong, China; Transplantation Surgery, The First Affiliated Hospital, Sun Yet-sen University, Guangzhou, Guangdong, China*

Objective: To investigate the significance of ATP value of CD4+ T cells and T cell subset analysis in monitoring immune function after liver transplantation

Methods: Immuknow immune cell function kit was applied to test the ATP value of CD4+ T cells in peripheral blood from 48 patients undergoing liver transplantation and 30 healthy volunteers. Additionally, the frequency of CD3+, CD4+, CD8+ cell subsets was analyzed by Flow cytometry.

Results: For healthy volunteers, stable recipients, infectious recipients and recipients with rejection, the mean ATP levels were 331 ± 103 ng/ml, 364 ± 125 ng/ml, 182 ± 104 ng/ml and 479 ± 116 ng/ml, respectively. The ATP levels of rejection patients were higher than stable ones ($P < 0.001$) and patients with infections ($P < 0.001$). However, there was no statistical significance between stable recipients and recipients with rejection ($P = 0.216$). T cell subsets analysis showed that the CD4+ cell counts in the infectious patients was significantly different from stable ones ($P = 0.031$). However, the CD8+ cell counts and CD4+/CD8+ ratios showed no statistical significance between the two groups. In addition, no significant difference was observed in CD4+, CD8+ cell counts and CD4+/CD8+ ratio between stable group and rejection group ($P > 0.05$), neither between infection group and rejection group ($P > 0.05$).

Conclusions: The ATP levels in CD4+ T cell and T cell subsets analysis can indicate the immune status after liver transplantation to a certain extend.

Abstract # P-315

Liver Stiffness in Living Donors With “Normal” Liver Histology. Ayman Alsebaey¹, Naglaa Allam¹, Khalid Alsuwat², Imam Waked¹. ¹Hepatology, National Liver Institute, Menofeya, Egypt; ²Hepatology, Liver Research Center, King Saud University, Riyadh, Saudi Arabia

Purpose: Several studies have investigated liver stiffness by transient elastography measured by fibroscan in healthy populations, but very few included subjects with liver biopsy. The stiffness of the liver with “normal” histology needs further assessment. The aim of the study was to define the stiffness of the normal liver using transient elastography in donors with normal liver histology undergoing evaluation for living related liver transplantation. **Methods:** Fibroscan was performed in 50 healthy living liver donors (16 females, age 28.4 ± 5.9 years) who were being evaluated for liver donation for their relatives. All had normal liver blood tests, were negative for hepatitis B or C virus infection, and had normal liver and abdominal ultrasound. None had diabetes, hypertension, renal impairment, heart disease, or BMI >30 kg/m². All subjects had normal liver histology on liver biopsy. They all donated part of their liver with successful outcome. **Results:** Liver stiffness ranged from 1.8 to 7.1 kPa (mean 4.3 ± 1.2 kPa). Liver stiffness measurements were not significantly different between men (4.4 ± 1.1 kPa) and women (3.9 ± 1.3 kPa) (p=0.14), and did not correlate with age (p=0.85). Stiffness values were significantly lower in subjects with BMI <26 kg/m² than in those with BMI ≥ 26 kg/m² (4 ± 1.07 kPa vs 4.6 ± 1.2 kPa, p=0.046). This group of healthy liver donors with “normal” liver histology indicate that the 5th and 95th percentiles of normal liver stiffness would be between 2.6 and 6.8 kPa with a median of 4 kPa. **Conclusion:** Healthy liver donors with normal liver histology have median liver stiffness of 4 kPa. Stiffness values did not significantly change with age or gender, but increased with increase of BMI, even with normal liver histology.

Abstract # P-316

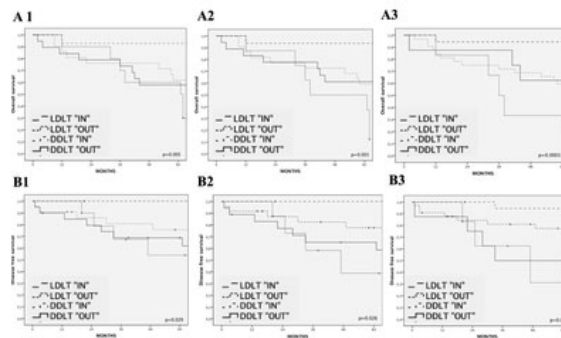
Living Donor Versus Deceased Donor Liver Transplantation for Hepatocellular Carcinoma Comparing the Milan, UCSF and Asan Criteria: Long-Term Follow-Up. Italo Bonadio¹, Isabelle Colle², Anja Geerts², Peter Smeets³, Marleen Praet⁴, Giammauro Berardi¹, Bernard De Hemptinne¹, Hans Van Vlierberghe², Roberto I. Troisi¹. ¹Department of General and Hepato-Biliary Surgery, Ghent University Hospital Medical School, Ghent, Belgium; ²Department of Gastroenterology and Hepatology, Ghent University Hospital Medical School, Ghent, Belgium; ³Department of Radiology, Ghent University Hospital Medical School, Ghent, Belgium; ⁴Department of Pathology, Ghent University Hospital Medical School, Ghent, Belgium

In patients with hepatocellular carcinoma (HCC) the outcome after liver transplantation (LT) is excellent if the tumour characteristics are within the Milan criteria (MC) whereas the expanded Asan criteria (AC) have not yet been validated in Western countries: in this study we compared the long-term outcome of LT for HCC in living donor liver transplantation (LDLT) and deceased donor liver transplantation (DDLT) according to Milan, the University of California at San Francisco (UCSF) and Asan criteria.

From January 2000 to December 2007, 76 patients with a pre-operative diagnosis of HCC underwent LT in our institution: 28 (37%) received a LDLT and 48 (63%) a DDLT. Kaplan Meier method and log-rank test were used to test the significance of overall survival (OS). A logistic regression analysis was performed to identify predictors of tumour relapse.

After a median follow-up of 72.5 months (6-153), the overall recurrence rate was 20.8% vs. 28.5% for LDLT and DDLT (p=0.48). The 5-year OS was similar within each criterion: 92.9% vs. 93.8% vs. 94.4% for LDLT and 61.9% vs. 59.1% vs. 59.4% for DDLT in MC, UCSF and AC respectively.

Figure 1: Overall (A) and disease-free (B) survival according to: 1) MILAN criteria; 2) UCSF criteria; 3) ASAN criteria.



The Asan criteria provided an increase of patient enrolment of up to 26% and 50% according to radiologic and pathological assessments. Number of nodules, macro-vascular invasion and tumour capsular invasion predicted recurrence at the multivariate analysis (p=0.01, 0.03 and 0.01 respectively). The extension of MC to radiological AC allows to increase up to 26% the number of patients eligible for LT providing excellent 5-year survival rates.

Abstract # P-317

The Significance of Weight Reduction in Living Donors with Fatty Liver in Liver Transplantation. YoungRok Choi¹, Suk-Won Suh¹, Jeong-Moo Lee¹, Hyeyoung Kim¹, Ok-Kyung Kim², Sang-Hee Song², Hae Won Lee¹, Nam-Joon Yi¹, Kwang-Woong Lee¹, Kyung-Suk Suh¹. ¹Surgery, Seoul National University College of Medicine, Seoul, Korea; ²Transplantation Center, Seoul National University College of Medicine, Seoul, Korea

Background

Fatty liver is critical for donor selection, which has been associated with a risk of complication for both donor and recipient after liver transplantation. After living donor weight reduction for a short-term, the change of liver fat percentile and pathologic findings were investigated.

Methods

A total of 356 living donor candidate were between January 2011 and November 2013 at a single center. Of them, 18 donors tried to lose their weight reduction. Fat fraction was estimated on preoperative non-invasive MR spectroscopy. And liver biopsy findings were analyzed before and after weight reduction.

Results

Eighteen donor candidates lose mean 3.6 ± 3.1 kg of their weight for mean 43.9 ± 31.0 days (range 7-107 days) and BMI was significantly decreased to 25.9 ± 3.1 kg/m² from 27.1 ± 3.2 kg/m² (p < 0.001). Their fat fractions were also significantly decreased to 6.8 ± 4.5% from 11.4 ± 4.7% (p < 0.001). Although preoperative liver biopsy showed that ballooning change (n=3, 23.1%), inflammation (n=9, 69.2%), fibrosis (n=2, 15.4%) and necrosis (n=3, 16.7%) before weight reduction, intraoperative biopsy showed no fibrosis, no necrosis, decreased inflammation (n=2, 17.6%) and improved ballooning change of hepatocyte (n=1, 5.9%) after weight reduction.

Pathologic Change of Liver after Weight Reduction of Living Donors

Pathologic findings	Preoperative (n=13)	Intraoperative (n=17)
Macrovesicular fatty change (n)	12.8 ± 9.8%	7.1 ± 7.1%
Ballooning (n)	3 (23.1%)	1 (5.9%)
Inflammation (n)	9 (69.2%)	3 (17.6%)
Fibrosis (n)	2 (15.4%)	0
Necrosis (n)	3 (16.7%)	0

But, one candidate could not donate his liver finally because of steatohepatitis.

Conclusions

Donor body weight reduction can expand donor pool and contributed to donor safety with recipient outcome.

Abstract # P-318

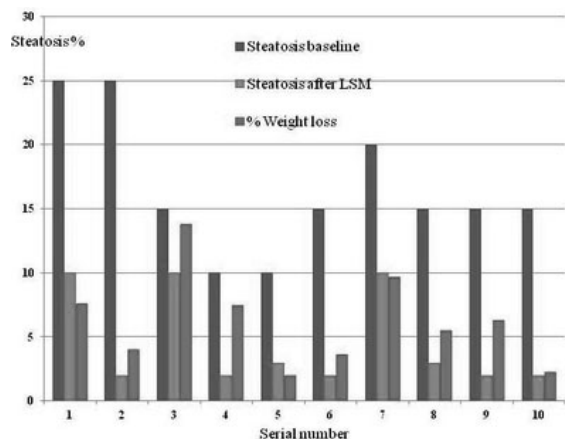
Successful Donation after Rapid Reversal of Liver Steatosis With Life Style Modification in Highly Motivated Liver Transplant Donors. Narendera S. Choudhary¹, Neeraj Saraf¹, Sanjiv Saigal¹, Dheeraj Gautam², Ravi Mohanka¹, Amit Rastogi¹, Sanjay Goja¹, P. Balachandran Menon¹, Arvinder S. Soin¹. ¹Medanta Liver Institute, Medanta, The Medicity, Gurgaon, Haryana, India; ²Department of Histopathology, Medanta, The Medicity, Gurgaon, India

Background: Liver steatosis is leading cause of donor rejection in LDLT. Rapid weight loss is difficult to achieve in a short period of time, moreover it may worsen liver histology.

Methods: Donors who had significant steatosis or borderline remnant liver volume were recommended a high protein, 1000 kcal/day diet, a minimum of 60 minutes/day moderate cardio training. One patient was advised statins for dyslipidemia, rest of donors had normal lipid profile. None of the donors had metabolic syndrome. A second ultrasound guided liver biopsy was done at 28±10 days. Donors with non-alcoholic steatohepatitis / fibrosis or >30% steatosis were not included.

Results: Out of 440 living donors from November 2011 to November 2013, 11 (7 males, age 29±8years) were advised aggressive life style modification; 10 successfully reduced weight, and underwent donation after favorable re-evaluation. Mean weight loss was 5.4±3.2kg (6.3±3.6%). Second liver biopsy showed reversal of steatosis (figure 1) and improvement of inflammation (two patients had mild inflammation at baseline biopsy; both had improvement in their second biopsy). None of the patients had worsening of steatosis (as shown in table 1) or inflammation. All the donors and their recipients had an uneventful postoperative course.

Serial no	Age years, sex	Baseline BMI Kg/m2	Interval between two liver biopsies in days	% Weight loss
1	36 M	25.9	38	7.6
2	36 F	28.9	34	4
3	27 M	25.2	50	13.8
4	22 M	27.3	22	7.5
5	38 F	29.5	21	2
6	28 M	28	15	3.6
7	23 M	25.9	29	9.7
8	21 F	27.5	32	5.5
9	20 M	26.7	23	2.2
10	36 F	31.6	21	7.6



Conclusion: Steatosis can be reversed in a short duration by aggressive life style modifications in highly motivated liver donors.

Abstract # P-319

To Do Or Not To Do Procure Middle Hepatic Vein Considering Donor and Recipient Safety in Adult Living Donor Liver Transplantation Using Right Lobe Graft. Chong Woo Chu, Young Mok Park, Kwnag Ho Yang, Ki Myung Moon, Je Ho Ryu. Surgery, Pusan National University Yangsan Hospital, Yangsan, Republic of Korea

Living donor liver transplantation (LDLT) using the right lobe graft is now a standard procedure for adult patients in order to alleviate the problem of graft size insufficiency. For successful LDLT, we should consider donor safety

primarily. In the center of donor safety, there is a middle hepatic vein (MHV). We have applied a kind of modified extended right lobe graft in LDLT since December 2011. It was named as caudal MHV trunk preserving right lobe graft (CMPRL). Parenchymal transection plane is same with the procedure during conventional right hepatectomy. Whereas, MHV procurement plane is different. Left side of MHV trunk is fully exposed until V5 and V4a area are seen clearly. Right side of MHV trunk is fully exposed until MHV joins with IVC. And then, the exposed V4a is sacrificed to get a caudal MHV trunk. Our team experienced 37 cases of CMPRL until August 2013. CMPRL was applied to the donor with remnant liver volume greater than 30% and minimal fatty changed liver. It was classified into V4a dominant type (n=22), V4b dominant type (n=10), and left hepatic vein (LHV) dominant type (n=5). When CMPRL group was compared with conventional modified right lobe (Con-MRL) group (n=33), operation time and bench work time was significantly decreased. V5 number was also significantly decreased and V5 diameter was significantly increased in the donor results of CMPRL group. Prothrombin time was significantly increased in CMPRL group donors but peak total bilirubin level was not different in both groups' donor. In comparison between V4a dominant group and V4b/LHV dominant group in CMPRL group donors, there was no difference in both groups. In the donor results of CMPRL group according to remnant liver volume, there was different neither. When CMPRL group was compared with Con-MRL group in the recipients, V5 patency was significantly prolonged in CMPRL group and other factors were not different.

Con-MRL is definitely better than ERL especially for donor safety. But Con-MRL raises concern about previously mentioned factors especially in inexperienced team. Several kinds of MERL were introduced but it was small series. PNUYH experience in MERL named CMPRL is primitive but it is comparable with other experiences.

Abstract # P-320

Living Donor Liver Transplantation in a Patient With Developmental Interruption of the Inferior Vena Cava With Hemiazygos Substitution. Ramazan Donmez¹, Ahmet Kargi¹, Tarik Artis², Serdar Aslan¹, Serafettin Yazar¹, Tamer Karsidag¹, Koray Guven³, Ahmet Turkoglu⁴, Kamil Y. Polat¹. ¹General Surgery&Transplantation, Memorial Atasehir Hospital, Istanbul, Turkey; ²General Surgery, Istanbul Medeniyet University Medical School, Istanbul, Turkey; ³Radiology, Istanbul University, Istanbul Medical School, Istanbul, Turkey; ⁴General Surgery, Dicle University Medical School, Diyarbakir, Turkey

INTRODUCTION: Liver transplantation (LT) is challenging for the patients with congenital vascular anomalies. Infrahepatic interruption of the inferior vena cava (IVC) is a rare congenital anomaly with the incidence of 1.3% to 3% and mostly found with congenital heart disease. Although LT in children with biliary atresia and polysplenia syndrome accompanying IVC anomalies have been routinely performed, to the best of our knowledge only one single deceased donor LT in an adult patient with developmental interruption of the IVC with hemiazygos substitution was reported. In this study we report for the first time a living donor liver transplantation (LDLT) in an adult patient with developmental interruption of the IVC with hemiazygos substitution and its' technical details. **CASE REPORT:** A 58-yr old male patient with a diagnosis of decompensated liver cirrhosis caused by the HBV is hospitalized for LT. Physical examination revealed splenomegaly and atrophic liver with ascites. MELD point was 15. Abdominal CT showed atrophic and cirrhotic liver, interruption of the IVC with hemiazygos substitution. A LDLT from his daughter was planned. At the laparotomy a diffuse nodular and atrophic liver with ascites was observed. After the liver was liberalized from its' ligaments, developmental interruption of the IVC with hemiazygos substitution was observed. The hepatic veins were draining into the right atrium at suprahepatic level. The donor hepatectomy was performed with a 990gr of right liver graft with the 4mm and 5mm veins draining the segment V, 7mm vein draining the segment VIII and 10 mm size inferior hepatic vein. The drainages of the segments V, VIII and inferior hepatic vein were performed with the implant of cadaveric iliac arteries into the 10cm segment of the cadaveric aortic graft at the back-table. The inferior opening of the aortic graft was closed and the LT was completed. Post-tx course of the patient was uneventful and he was discharged at post-transplant day 14. In his 6-months post-tx follow-up liver is functioning well without any complication.

Abstract # P-321

Totally Laparoscopic Right Hepatectomy for Adult Living Donor Liver Transplantation. An Initial Experience in Two Consecutive Cases. Rotellar Fernando¹, Pardo Fernando¹, Benito Alberto², Marti-Cruchaga Pablo³, Zozaya Gabriel¹, Lopez Luis³, Hidalgo Francisco³, Sangro Bruno⁴, Herrero Ignacio⁵. ¹HPB and Liver Transplant Surgery, University Clinic, University of Navarra, Pamplona, Spain; ²Abdominal Radiology, University Clinic, University of Navarra, Pamplona, Spain; ³Anesthesiology, University Clinic, University of Navarra, Pamplona, Spain; ⁴Liver Unit, Department of Internal Medicine, University Clinic, University of Navarra, Pamplona, Spain

Purpose: Present two consecutive full laparoscopic right hepatectomies (LRH) for Living Donor Liver Transplantation (LDLT).

Methods: Since May to December 2013, six liver donors were evaluated and two ultimately underwent donation.

Case 1. A 29 year-old male, (74.4 kg) donated his 62 kg father, suffering from Child-Pugh B-9 cryptogenic cirrhosis, refractory ascites, encephalopathy, type-1 hepatorenal syndrome and two episodes of spontaneous peritonitis. He had three hepatocellular carcinomas (Milan criteria). Meld score was 9. The estimated donor total liver volume (TLV) was 1726 cc, and the right lobe 1046 (60.6%). Graft to recipient weight ratio (GRWR) 1.67%. The right lobe had a single artery, portal branch and suprahepatic vein; the right posterior biliary duct drained into the left duct.

Case 2. A 27 year-old female offered to donate his 44 year-old brother (74.7 kg) with alcoholic cirrhosis and Child –Pugh score B8. He suffered from episodes of encephalopathy and refractory severe ascites. Donors TLV was 1359cc; right lobe was 791 ml (58.1%). GRWR was 1.58%. The right lobe had a single artery, portal branch and biliary duct. A significant retrohepatic inferior vein drained the 48% of the lobe.

Technique: After mobilization of the right lobe, a hanging maneuver was prepared and a Tourniquet placed for pedicle occlusion. Transection was performed with CUSA and Ligasure, bile duct divided under direct fluoroscopic control and V5-V8 MHV tributaries divided and later reconstructed in the back table.

Results: The procedures were completed under totally laparoscopic approach. Total operative times were 480/450 min and blood loss <100 ml. Both postoperative courses were uneventful, being discharged on the 4th p.o. day.

Conclusion: LRH for LDLT is feasible and safe. Hanging of the liver and fluoroscopic-controlled bile duct division resulted very useful maneuvers. Further experience is needed to assess the evolution of the learning curve as well as the results of LRH compared to the standard approach.

Abstract # P-322

1200 Living Donor Hepatectomy: A Single Center Experience With the Learning Curve. Neerav Goyal, Govindaraju Parthasarathi, Manav Wadhawan, Shaleen Agarwal, Ramdip Ray, Shishir Pareek, Giriraj Bohra, Mohammed Nayeem, Ravi Chand, Pankaj Lohia, Subash Gupta. *Centre for Liver and Biliary Sciences, Indraprastha Apollo Hospital, New Delhi, Delhi, India*

Objective: Living donor hepatectomy is a complex surgical procedure. Donor safety is of prime concern. Various modifications in techniques have evolved with increasing experience, which has considerably reduced morbidity of the procedure. We present our experience and follow up from our center

Methods: From September 2006 to December 2013, 1200 living donor hepatectomy were analyzed from a prospectively maintained database. Donor parameters studied were demographics, relation with the recipient, BMI, surgical anatomy of the liver graft, MHV inclusive and non inclusive grafts, intraoperative events, post operative complications, hospital stay, duration of follow-up and long term assessment. The donors were divided into 2 groups: group 1 included the first 500 donors and group 2 the next 700 donors. Data was analyzed using SPSS 20 statistical system

Results: 708 male donors and 492 female donors were operated. Significantly children of recipient made more donations. Median BMI was 22.9 (range 15–39). 44% were extended right hepatectomy grafts, 41.7% were modified right hepatectomy grafts, 3.5% each were left hemihepatectomy and left lateral sectionectomy grafts and 1.3% were posterior sectionectomy grafts. 84.8% of donors had an uneventful recovery, 6.6% had minor complications, 2.9% required intraoperative blood transfusion, 3.3% had an extended hospital stay, and 2% required radiological, endoscopic or surgical postoperative intervention. 17 donors (1.4%) had near misses from a catastrophic intraoperative or postoperative event but recovered. One donor mortality occurred due to postoperative sub arachnoid hemorrhage. The average

time for donor hepatectomy decreased in group 2, though not significantly. Significantly more extended right lobe hepatectomy ($p < 0.01$) were done in group 1, and posterior sector grafts in group 2. There was a trend towards significance in the decrease in biliary complications in group 2. Patients were followed for a median of 39 months (range 2–87 months). Wound pain was the commonest long-term complaint.

Conclusions: Living donor hepatectomy is a complex surgical procedure with a definite learning curve.

Abstract # P-323

Minimal Portal Vein Stenosis Triggers Contralateral Liver Hypertrophy Without Downstream Atrophy in a Porcine Model for Living Donor Preconditioning. Emilie Gregoire¹, Pauline Brige², Louise Barbier¹, Jean Hardwigsen¹, Y. Patrice Le Treut¹, Pierre Henri Rolland², Vincent Vidal². ¹Digestive Surgery and Liver Transplantation, Hopital de la Conception - Aix Marseille Université, Marseille, France; ²Research Laboratory in Interventional and Experimental Imaging, Aix Marseille Université - Faculté de Médecine de Marseille, Marseille, France

Background & Aims: The main hindrance in promoting living donor liver transplantation remains the morbi-mortality risk for the donor. Considering the opposed remodeling influence of portal and hepatic artery flows, our working hypothesis was to identify a lobar portal vein stenosis capable of inducing a contralateral liver mass compensatory enlargement, without the downstream ipsilateral atrophic response.

Methods: Twenty-four pigs entered this study. Six of them were used to establish hemodynamic changes following a progressive left portal vein (LPV) stenosis, in blood flow, pressure and vessel diameter of the LPV, main portal vein and hepatic artery. Sixteen pigs were divided into 4 groups: sham operated animals, 20% LPV stenosis, 50% LPV stenosis and 100% LPV stenosis. Daily liver biopsies were collected until post-operative day 5 to investigate liver regeneration and atrophy (Ki67, STAT3, LC3 and activated caspase3) according to the degree of LPV stenosis. Finally, changes in liver volumetry after 20% LPVS were investigated.

Results: A 20% LPV stenosis led to dilatation of the hepatic artery and a subsequent four-fold increase in hepatic arterial flow. Concomitantly, liver regeneration was triggered in the non-ligated lobe and the cell proliferation peak 5 days after surgery was comparable to that obtained after total LPV ligation. Moreover, 20% LPV stenosis preconditioning did not induce left liver atrophy contrary to 50 and 100% LPV stenosis.

Conclusions: A 20% LPV stenosis seems to be the adequate preconditioning to get the remnant liver of living donor ready to take on graft harvesting without atrophy of the future graft.

Abstract # P-324

Does the Development of Chronic Kidney Disease and Acute Kidney Injury Affect the Prognosis after Living Donor Liver Transplantation? Yusuke Inoue, Akihiko Soyama, Mitsuhisa Takatsuki, Masaaki Hidaka, Tomohiko Adachi, Amane Kitasato, Tamotsu Kuroki, Susumu Eguchi. *Department of Surgery, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan*

[Background and aims] Chronic kidney disease (CKD) has recently been discussed as a complication following living donor liver transplantation (LDLT). In addition, acute kidney injury (AKI) has been known to develop following LDLT. CKD and AKI have been reported to be associated with the long-term prognosis. The aim of this study is to clarify the relationships among CKD, AKI and the prognosis after LDLT. **[Methods]** This study included 95 patients who underwent LDLT between April 2005 and August 2011 in our department. CKD was diagnosed by Kidney Disease: Improving Global Outcomes (KDIGO), where grade 1 is characterized by an $eGFR \geq 90$ ml/min/1.73m², Grade 2, 60–89, Grade 3a, 45–59, Grade 3b, 30–44, Grade 4, 15–29 and Grade 5, < 15. The $eGFR$ was measured preoperatively, and at postoperative year (POY) 1 and 2. Grades 3, 4 and 5 were defined as CKD. The definitions of the degree of AKI were as follows: AKI 1 was characterized by an increase in serum creatinine of 0.5 mg/dL, while AKI 2 was associated with an increase of 1.0 mg/dL above the baseline within one week during the postoperative course. We investigated the risk factors for and the relevance of CKD and AKI on the prognosis. **[Results]** The rates of CKD were as follows: preoperatively, 30/95 (31.6%), POY1, 31/78 (39.7%), POY2, 30/72 (41.7%). The rates of AKI 1 and 2 were 60/95 (63.2%) and 24/95 (25.3%). CKD, AKI2, the donor age (>55) and diabetes (DM) were risk factors for patient death within one year after LDLT ($p = 0.043$, $p = 0.001$,

p=0.028 and p=0.011). AKI2 and the donor age (>55) were risk factors for death within two years after LDLT (p<0.001 and p=0.014). AKI1 was associated with intraoperative bleeding (>5000) (p=0.002) and AKI2 was associated with sepsis and hepatitis C infection (p=0.005, p=0.011). KDIGO grade 2 and DM were the risk factors for the development of CKD in POY2 (p=0.024 and p=0.002). No correlation was observed between CKD and AKI. [Conclusions] CKD is associated with the death of patients during POY1, and AKI2 is associated with death during POY1 and 2. Although no correlation was observed between CKD and AKI, recognizing the risk factors for both AKI and CKD may improve the prognosis of patients following LDLT.

Abstract # P-325

Donor Age Over Than 55 Years Old in Living Donor Liver Transplantation. SeungHwan Lee, Wontae Cho, JinYoung Choi, ByungGon Na, ShinSeok Yang, HyungHwan Moon, Jong Man Kim, Choon Hyuck David Kwon, Jae-Won Joh, Suk-Koo Lee. *Department of surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea*

Background

The significance of donor age in living donor liver transplantation (LDLT) has not been fully evaluated, present study was to evaluate the influence of old donor age on graft function and outcomes in recipients and donors

Patients and methods

We included 93 adult recipients who underwent LDLT from May 1996 to September 2013.

Recipients were divided into two groups according to the age of donor: older >55 years of age and younger ≤55 years of age.

For each patient with older donor graft (donor age >55), a patient with younger donor graft (donor age ≤55) matched by Graft to Recipient body weight ratio, Child-Pugh class, Model for end stage liver disease score and existing of hepatocellular carcinoma was selected.

We collected retrospectively patient characteristics, and posttransplant clinical outcomes and survival were compared between two groups.

Results

Baseline characteristics were not different between the two groups, except for more number of male donors in the younger group. The frequencies of allograft rejection, Biliary complication, vascular complication and laboratory results of recipients after transplantation were similar in the two groups.

Hospital stay and post operation complications of the older donor group were not significantly higher than those of the younger donor group (P=0.27 and P=1.00, respectively).

Macrosteatosis in the older age group of donor is significantly higher than in the younger age group (11.35%±9.91 vs. 7.35%±8.2, P=0.04). But both group had the macrosteatosis rate of less than 30. There was no significant differences in mortality within 60 days after LDLT between 2 groups (4.8% vs 6.5%, P=1.00).

The cumulative 2-year survival rates were 80.9% in younger age group and 75.4% in older group of donor without substantial difference (P=0.279).

Conclusion

The surgical outcomes of recipient using older donor livers were comparable to those using younger donor livers for LDLT and safety of the donor over the age of 55 is similar to the donor of 55 years old or less.

Abstract # P-326

NLRP3 Inflammasome Regulated by Telomere-independent Repressor Activator Protein1(RAP1) Induced Graft Injury after LDLT. Hui Liu, Kwan Man, Changxian Li, Kevin T.P. Ng, Xiaobing Liu, Wei Geng, Xiang Qi, Yuenyuen Ma, Waiho Oscar Yeung, Jiang Liu, Xin Li, Seeching Chan, Chungmao Lo. *Surgery, The University of Hong Kong, Hong Kong, China*

Background and objective:

Inflammasomes, a multi-molecular complex in the cytoplasm, can activate caspase-1 which subsequently processes the secretion of interleukin-1 (IL-1b) and IL-18. The role of inflammasomes and the regulation mechanism after liver transplantation remains unclear. Here, we aim to explore the role and mechanism of inflammasomes on liver graft injury after Living Donor Liver Transplantation (LDLT).

Materials and methods:

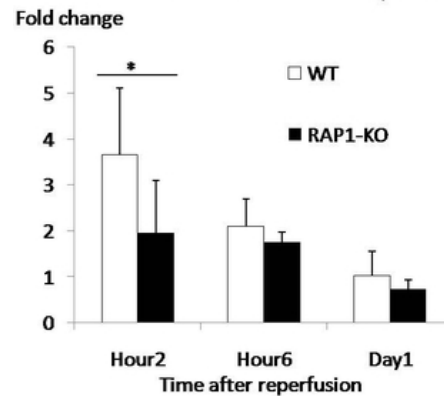
The expression pattern of inflammasomes and its association with RAP1, IL-1b was investigated in the patients after LDLT, rat orthotopic liver transplantation models and mouse hepatic ischemia/reperfusion model with major hepatectomy (50%). The regulating role of RAP1 on NLRP3

inflammasome was also validated in RAP1-/- mice. The underlying mechanism was further explored in the primary macrophages isolated from RAP1-/- mice.

Results:

The intra-graft expression of NLRP3 was significantly up-regulated at 2 hours after reperfusion accompanied by the increase of RAP1 and IL-1b (NLRP3: 5.96; RAP1:3.21; IL-1b:4.34 folds of normal liver) in human liver grafts. Consistently, the hepatic expression of NLRP3 was significantly higher at 2 hours after reperfusion in mice (3.66 folds of the normal liver), and correlated with macrophage infiltration, hepatic necrosis and increasing secretion of inflammatory chemokines and cytokines. In RAP1-/- mice, the expression of NLRP3 and IL-1b was significantly down-regulated compared to wild type controls (NLRP3: 3.66 vs 1.95, p=0.04; IL-1b: 5.71 vs 1.46 folds of the normal liver, p=0.01).

Hepatic NLRP3 expression in wild type and RAP1-/- mice after reperfusion



In vitro, knock-out of RAP1 could effectively decrease the expression level of NLRP3 in macrophages.

Conclusion:

NLRP3 inflammasomes, up-regulated by RAP1, play an important role in the initiation of inflammation in the early stage after liver transplantation. Targeting at the inflammasomes signaling may attenuate acute phase liver graft injury.

Abstract # P-327

Clinical Analysis of Lymphoproliferative Disorder Following Liver Transplantation at SNUH. Benjamin Navarro, Kwang-Woong Lee, Kyung-Suk Suh, Nam-Joon Yi, YoungRok Choi. *General Surgery, Seoul National University Hospital, Seoul, Korea*

Immunosuppression and EBV positive recipients increase the potential of post-transplant lymphoproliferative disorder (PTLD), which condition decreases the overall survival in liver transplanted patients. The objective of this study is to analyse the incidence and the relationship between the management and survival of adult orthotopic recipients (OLT) at the Seoul National University Hospital. This study retrospectively reviewed clinical and pathological features from four of the adult patients who have experienced liver PTLD. Among 978 (OLT) adult recipients at this institution, four patients developed PTLD. The median time of PTLD presentation following liver transplantation was 6 months. The indication for liver transplantation (LT) was hepatitis B virus (HBV) in 75% of the patients and the median age was 49 years old. Following the time of PTLD diagnosis, 50% of these cases died a median follow-up of 7.5 months. Three of them experienced DDLT and one LDLT. The presence of the malignant tumour took part in different organs such as cardiophrenic space and liver; adrenal gland; cerebellum and spinal cord, and hepatic hilum. Three of four cases showed a positive result for Epstein-Barr virus-encoded RNAs (EBER) with in situ hybridisation. Management was variable, ranging from patients who the only required reduction of the immunosuppressant therapy to those who have been treated with rituximab alone or in conjugation with the chemotherapy protocol. Only one case responded to the gradual decrease of tacrolimus, mycophenolate mofetil (MMF), without being necessary to add rituximab or chemotherapy. This case like others had undergone graft rejection during immunosuppressant reduction, however, this patient benefited from systemic steroid therapy, reverting to his normal hepatic function and partial remission. Although PTLD is not a frequent complication after liver transplantation; the recipients have the risk of developing this complication. Once patients are diagnosed with PTLD, the effect on mortality and morbidity are significant as well as

the treatment implications. Due to different responses to treat this condition, it is still elusive which the most appropriate management for these patients. This data might provide better insight of management and surveillance for patients who are susceptible.

Abstract # P-328

Kinetics of Liver Regeneration after Living Donor Liver Transplantation. Tushar T. Pawar¹, Ankur J. Shah¹, Sharad Maheshwari², Vibha Varma¹, Sorabh Kapoor¹, Barun Nath¹, Jayshri Shah³, Harshad Devarbhavi³, Vinay Kumaran¹. ¹Department of Hepatopancreaticobiliary Surgery and Liver Transplantation, Kokilaben Dhirubhai Ambani Hospital, Mumbai, Maharashtra, India; ²Department of Radiology and Imaging, Kokilaben Dhirubhai Ambani Hospital, Mumbai, Maharashtra, India; ³Department of Gastroenterology, Kokilaben Dhirubhai Ambani Hospital, Mumbai, Maharashtra, India

Background: Data on liver regeneration kinetics is scarce in recent literature. Living Donor Liver Transplantation (LDLT) gives us a unique opportunity to study the rate of regeneration of the normal liver of the donor and the transplanted liver exposed to high portal flow in the recipient. The aim of this study was to measure the regeneration of liver in LDLT donors and recipients. **Methods:** Twenty eight LDLTs were performed from March 2013 to November 2013. Eleven recipients and 6 donors had 21 and 7 Computed Tomography (CT) scans performed respectively for clinical indications after the operation. The liver volumes were assessed using Intravision's Myrian® software and compared to the known graft weight in the recipients and the estimated remnant volume and total liver volume (TLV) in the donors. **Results:**

In 6 donors, CT scans were performed 1, 9, 11, 12, 31, 41 and 120 days after surgery. Percentage increment in size as compared to the estimated remnant liver volume was 88%, 157%, 279%, 183%, 233%, 241% and 252% respectively. Volume of the remnant as compared to the TLV was 34%, 60%, 98%, 63%, 91%, 84% and 81%.

Eleven recipients had 21 CT scans on postoperative days 4 to 165. These were grouped into 3 categories as first 2 weeks, subsequent 3 weeks and later. Graft weight was compared to volume on CT scan and percentage growth determined. Average volume of each of the 3 groups was calculated as 174%, 203% and 200% respectively.

This suggests a rapid regeneration reaching close to the standard liver volume at 3 weeks after transplant. This is corroborated by CT scans between 1 to 3 weeks after transplant in seven other recipients showing similar kinetics of regeneration.

Conclusion: Liver regeneration takes place rapidly in both donors and recipients after living donor liver transplantation. Earlier estimates of regeneration kinetics may have been too conservative and remnant is close to final size in about 2 – 3 weeks after liver resection.

Abstract # P-329

Lower Recidivism Rate With Good Post-Transplant Outcome in Alcoholic Liver Disease: Experience from a Large Volume Living Donor Liver Transplant Center. Sanjiv Saigal, Sanjay Kumar Yadav, Narendra Singh Choudhary, Neeraj Saraf, Ravi Mohanka, Amit Rastogi, Sanjay Goja, P.B. Menon, Arvinder Singh Soin. *Institute of Liver Transplantation and Regenerative Medicine, Medanta, The Medicity, Gurgaon, Haryana, India*

Introduction: End-stage Alcoholic Liver Disease (ALD) is one of the leading indications of liver transplantation (LT). Post-transplant recidivism is a major factor influencing the long-term outcome in these patients.

Aims: To evaluate the recidivism rate following living donor liver transplantation (LDLT) in patients with ALD in the Indian context with strong family support.

Methods: Analysis was performed for 333 patients who underwent LDLT for ALD between January 2005 and August 2013. The mean abstinence period pre-transplant was 22.7 months (range, 1.5 to 180 months). The mean follow up post transplant was 30 months (range, 3-96 months). Post transplant recidivism was determined by information provided by the patient and/or family by means of outpatient, e-mail or telephonic questionnaire, supported by clinical and biochemical parameters, and liver histopathology.

Results: All except one patient were males with a mean age of 47 years (range, 27 – 73 years). In the pre-transplant evaluation, 64% were in child's class C, while 31% were in child's class B. The mean MELD score was 19.86 (range, 7-41) and mean DF was 39. Although the overall rate of recidivism

(10.8%) in this study from India was significantly lower than that reported in literature from the West, the recidivism rate was higher in patients with a shorter duration of pre-transplant abstinence (21.6%, 7.9% and 6.4% with pre-transplant abstinence of 3, 6 and 12 months respectively, $p < 0.05$). The overall survival was 85% at a mean follow up of 30 months, which was comparable to that for other etiologies. The main complications were: biliary 56 (16.8%), cellular rejection 45 (13.5%), sepsis 27 (8.1%), vascular 15 (4.5%) & CMV infection 14 (4.2 %). Of 36 patients with recidivism, 14 (38.8%) were occasional drinkers, 15 (41.6%) were moderate drinkers and 7 (19.4%) were heavy drinkers. All the heavy drinkers presented with features of graft dysfunction.

Conclusions: Excellent results can be obtained in patients undergoing LDLT for ALD, with significantly lower recidivism rate in our set up as compared to the western population. Heavy drinking does influence the graft function adversely.

Abstract # P-330

Effect of Side Biting Versus Caval Cross Clamping for Hepatic Outflow Reconstruction on Renal Function in the Immediate Post Operative Period in Living Donor Liver Transplantation. Vasudevan Ramaswamy¹, Subash Soni¹, Abhideep Chaudhary¹, Saumitra Rawat¹, Anil Arora². ¹Department of Surgical Gastroenterology and Liver Transplantation, Sir Ganga Ram Hospital, New Delhi, Delhi, India; ²Department of Gastroenterology and Hepatology, Sir Ganga Ram Hospital, New Delhi, Delhi, India

Background

Piggyback technique potentially has a protective effect on renal function in deceased donor liver transplantation when compared to caval cross clamping for venous reconstruction. We investigated if a similar protective effect could be demonstrated in the live related liver transplant (LRLT) scenario. To the best of our knowledge, such a comparison has not been reported before.

Methods

Retrospective analysis of prospectively collected data of LRLT done between Dec 2012 to Dec 2013 was performed. Venous reconstruction was performed with the cava crossclamped in group A. We shifted to using a side biting, partially occluding clamp in mid 2013 and included patients with pre-transplant renal dysfunction preferentially in this group: group B. Renal function was assessed by measurement of serum creatinine preoperatively, daily after transplant for the first 14 days and subsequently when indicated. Venous outflow was assessed by doppler ultrasound (US) postoperatively.

Results

31 LRLT were performed in this period. There were 16 patients in group A and 15 in group B. 14 (45%) patients had preoperative renal dysfunction, 8 in group A and 6 in group B. Patients in group B showed significantly greater renal dysfunction on days 2 and 3, (day 2: 1.55 vs 1.01, $p = 0.04$, day 3: 1.57 vs 0.95, $p = 0.49$) as compared to patients in group A. This was true for absolute creatinine values as well as increase from the base line. In the subgroup with preoperative renal dysfunction, patients in group B showed greater degree of renal dysfunction in the immediate post operative period. This was seen by a greater increase in absolute serum creatinine as well as an increase from baseline as compared to group A, even though it did not reach statistical significance (day 2: 1.48 vs 1.19, $p = 0.35$ day 3: 1.49 vs 1.18, $p = 0.89$). No patients required dialysis and serum creatinine returned to baseline in both groups by discharge. There was no outflow obstruction in either group.

Conclusion

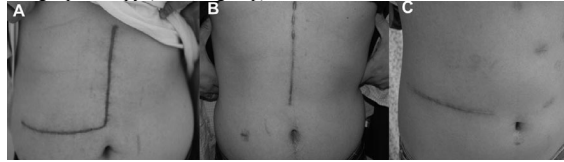
Contrary to expectations, our study shows that use of side biting clamps for outflow reconstruction in living donor liver transplantation has a detrimental effect, albeit transient on renal function.

Abstract # P-331

Comparison of Patient Satisfaction According To Different Incision Methods for Donor Hepatectomy in Living Donor Liver Transplantation. Suk-Won Suh, Kwang-Woong Lee, Jeong-Moo Lee, YoungRok Choi, Nam-Joon Yi, Kyung-Suk Suh. *Department of Surgery, College of Medicine, Seoul National University, Seoul, Korea*

The highest priority in living donor liver transplantation is donor safety. However living donors are typically healthy adults and quality of life for themselves should be also considered at the same time. As a donor age is becoming less and female ratio is becoming more, a large abdominal incision is a major concern of some live donors and surgeons especially in terms of cosmetic appearance. A total of 336 donors who underwent

donor hepatectomy for living donor liver transplantation from April 2010 to December 2012 were analyzed. Donors were divided into 3 groups by the type of their incisions as conventional incision as inverted L incision (n=214, C group), upper midline incision (n=110, M group) and transverse incision using laparoscopy (n=12, T group).



Demographics, clinical outcomes of donor and recipient and patient satisfaction of cosmetic appearance using a questionnaire were compared. In demographics, mean age was younger ($p = 0.000$), female ratio was higher ($p = 0.000$) and BMI was lower ($p = 0.025$) in M group and T group than C group. Mean operation time was shorter in M group (260.9 ± 43.5 min) and longer in T group (340.0 ± 65.1 min) than C group (275.1 ± 45.5 , min) ($p = 0.000$). There was no significant difference in postoperative morbidity and mortality of donor and recipient among three groups. Donor satisfaction using questionnaire showed more satisfactory of body image, cosmetic view and self-confidence in M group and T group than C group. Sense of dullness or numbness on scar was more prominent in C group (40.0%) and T group (100%) than M group (13%) ($p = 0.010$). In conclusion minimal incision is technically feasible and safe for donor hepatectomy and it also achieved higher patient satisfaction levels from improved cosmetic outcomes than conventional incision.

Abstract # P-332

Are Liver Grafts from Living Donors Older Than 50 Years As Good As Those from Younger Donors? Tseten Yonjen Tamang, Sanjay Goja, Sanjiv Saigal, Neeraj Saraf, Ravi Mohanka, Amit Nath Rastogi, Balachandran Menon, Sumana Kolar Ramachandran, Prashant Vilas Bhangui, Punit Singla, Arvinder Singh Soin. *Medanta Institute of Liver Transplantation and Regenerative Medicine, Medanta- The Medicity, Sector- 38, Gurgaon, Haryana, India*

INTRODUCTION

One way to expand the donor pool in living donor liver transplantation (LDLT) is to accept older donors. However, livers from them may be steatotic and may not have the same regenerative potential as younger donors. The aim of the present study was to analyze the effect of donor age on graft function, post transplant recipient and donor morbidity and mortality.

Methods

A retrospective analysis of 500 consecutive adult to adult LDLT, between June 2010 and November 2012 was performed. Healthy donors between 18-58 years were selected after four-phase evaluation (medical, legal, psychosocial fitness and determination of graft quality and volume). Study population was divided into two groups (Group1, donors < 50 years of age and Group 2, donors ≥ 50 years) which were comparable for recipient age, gender, CTP, MELD, etiology of liver disease and graft to recipient weight ratio. Graft/ remnant function in recipients and donors was assessed by bilirubin, transaminases and INR on days 3 and 7.

Results

There were 452 patients in Group 1 and 48 in Group 2. There was no difference in the recipient postoperative biliary complications (12.4% vs 11.3%, $p=0.57$), vascular complications (3.6% vs 6.4%, $p= 0.26$), sepsis (10.3% vs 6.4%, $p=0.29$), CMV infection (6.5% vs 10.6%, $p=0.21$), ICU stay (6.8 ± 4.8 vs 6.4 ± 2.7 , $p=0.59$), hospital stay (19.3 ± 11.5 vs 19.6 ± 9.9 , $p=0.88$) or graft function between the 2 groups. The 1-year survival was 84.8% and 85.1% respectively ($p=ns$).

Age of the donor did not affect the donor's liver function tests, hospital stay (7 (3-23) vs 7 (5-19), $p=0.9$), blood loss (569.7 ± 319 vs 573.9 ± 243.6 $p=0.92$) and blood transfusion (1.05 ± 1.06 vs 1.04 ± 1.6 , $p=0.94$). Postoperative donor complications: abdominal collections (2.9% vs 6.2%, $p=0.57$), pleural effusion (6% vs 6.2%, $p=0.85$), pneumonia (0.4% vs 0, $p=0.76$), re-exploration (1.8% vs 0, $p=0.52$) and biliary complications (0.4% vs 0, $p=0.76$) were not different between the groups. The only donor mortality in the series was in a previously healthy 40 year old male.

CONCLUSION

Appropriately selected donors older than 50 years are a safe method of expansion of the donor pool with as good recipient and donor outcomes as with younger donors.

Abstract # P-333

Living Donor Liver Transplantation Is the Optimal Treatment Strategy for Patients with Hepatocellular Carcinoma and with Low MELD. Giuliano Testa¹, James F. Trotter¹, Peter T.W. Kim¹, Tiffany Anthony¹, Richard Ruiz¹, Nicholas Onaca¹, Greg McKenna¹, Marlon F. Levy², Robert M. Goldstein¹, Goran B. Klintmalm¹.

¹Simmons Transplant Institute, Baylor University Medical Center, Dallas, TX, USA; ²Simmons Transplant Institute, Baylor All Saints Medical Center, Fort Worth, TX, USA

Introduction: Deceased organ donor supply is stagnant and mortality on the waiting list is greater than 23%. Calculated MELD score at transplantation (LT) is steadily increasing making post LT care more difficult and costly. The impact is real for all patients and HCC patients. Living Donor Liver Transplantation (LDLT) is the optimal solution to the present situation.

Materials and Methods: Waiting times and MELD in 3 eras: 2002-2009, 2010-2012, and 2013 and outcomes between recipients of deceased and LDLT since inception of the LDLT program were analyzed.

Overall 1-year survival remained stable at 90% whereby deceased donors LTX had 90% and LDLT 93% survival. Data expressed as median.

Results

	2002-2009	2010-2012	2013	P Value
All LTX pts	1302	355	88	
HCC pts	325	145	32	
LDLT pts	0	3	12	
MELD (all pts)	17	21	26	<0.001
WAITING (all pts)	73	129	187	<0.004
HCC WAITING	43	159	258	<0.001
LDLT WAITING		6 weeks	6 weeks	

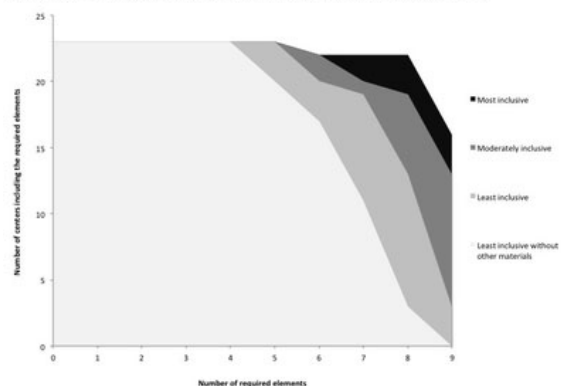
Conclusions: In view of the significant increasing waiting times and MELD score at transplantation Living Donor Liver Transplantation offers prompt and optimal treatment for patients with lower MELD and for patients with HCC. By allowing early transplantation LDLT decreases pretransplant cost, may impact mortality on the waiting list by indirectly increasing the number of deceased organs available, and assures similar or superior outcomes than deceased organ transplantation.

Abstract # P-334

Written Informed Consent for Living Liver Donation in the United States: Compliance with CMS & OPTN Guidelines and Alibi Offers. Carrie Thiessen, Yunsoo Kim, Peter S. Yoo, Manuel Rodriguez-Davalos, David Mulligan, Sanjay Kulkarni. *Department of Surgery, Section of Transplantation and Immunology, Yale School of Medicine, New Haven, CT, USA*

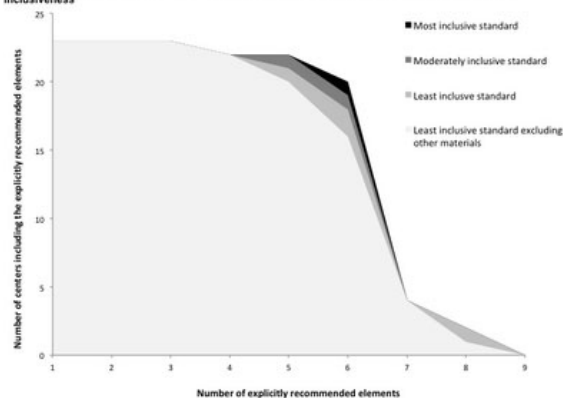
We examined the written informed consent forms for living liver donors to determine if they incorporated the elements required by the Centers for Medicare and Medicaid Services (CMS) and suggested by the Organ Procurement and Transplantation Network (OPTN). We contacted each of the 41 US centers that performed at least one living donor liver transplant in 2011. Twenty-six centers shared their consent form for living donor evaluation (response rate: 70%). Each document was double-coded for consent element content according to four standards of inclusion. Applying the moderately inclusive standard, 57% of the centers included the 9 mandated CMS elements.

Figure 1: Centers including CMS required elements according to four standards of inclusiveness



Although the OPTN guidelines are non-binding, 78% of the centers utilized consent forms that addressed at least two-thirds of the OPTN-recommended guidelines under the moderately inclusive standard.

Figure 1: Centers including OPTN explicitly recommended elements according to four standards of inclusiveness



Only 17% of centers provided written offers of an alibi to donors who withdrew from evaluation. Based on our findings, we offer suggestions that may be relevant to ongoing revisions to OPTN living liver donor consent policy and may help centers throughout the world improve the clarity of their written consent forms.

Abstract # P-335

Correlation between Portal Pressure and Outcome Post Liver Transplant. Vibha Varma¹, Barun Nath¹, Sorabh Kapoor¹, Ankur Shah¹, Shailendra Lalwani², Naimish Mehta², Samiran Nundy², Vinay Kumaran¹. ¹Liver Transplant & HPB Surgery, Kokilaben Dhirubhai Ambani Hospital, Mumbai, India; ²Surgical Gastroenterology & Liver Transplant, Sir Gangaram Hospital, New Delhi, India

Background:

Severity of portal hypertension is correlated with early outcome in patients following liver transplant (LT). The difference in portal pressure (PP) and the outcome post LT in patients with acute liver failure (ALF) and chronic liver disease (CLD) is not known.

Aim:

We studied the correlation of PP before explant in patients with ALF and CLD with their early outcome post LT.

Methods:

All these patients of ALF and CLD who had PP recorded during LT (omental collateral cannulated using 14G catheter) were included in the study group. The demographic profile, Childs and MELD score, etiology of liver disease, type of graft, graft recipient weight ratio (GRWR), peri-operative blood transfusion, recovery of platelets, liver functions, hospital stay and mortality was recorded. Patients were divided into those with ALF and CLD, each were further divided into group-A (<28mmHg-PP) and group-B (≥28mmHg-PP).

Results:

Between July 2010 and November 2013 there were 79 patients who had PP recorded during LT. There were 11 with ALF and 68 with CLD. Mean age was 45 years (8 months-66 years). Male to female ratio was 67:14. There were 4 adult:pediatric ratio was 4:75. There were 4-cryptogenic, 3-viral, 3-Wilsons, and 1-drug induced ALF. There were 8-cryptogenic, 23-ethanolic, 22-HCV, 12-HBV, 9-others, 12-HCC's with CLD. Mean PP before explant in ALF was 29.90mmHg (range-22-48) versus 27.66mmHg (range-13-44) in CLD. GRWR in ALF-Gr-A was mean-1 (range-0.78-1.42) versus 1.08 (range 1.00-1.28) in Gr-B. Blood transfusion requirement, hospital stay and mortality in Gr-A (ALF) was 4.8 (0-12), 20d (16-22d), and 0/5 versus 3.3 (0-8), 24d (14-34d), and 1/6 in Gr-B (ALF). In Gr-A (CLD) the MELD-score, blood transfusion requirement, hospital stay and mortality was 20.24 (12-40), 6.27 (0-25), 22d (11-60d), and 5/33 versus 23 (12-34), 5 (0-15), 19d (9-43d), and 2/35.

Conclusion:

The difference in PP in ALF and CLD was not significant and the high PP in ALF and CLD patients did not correlate with the outcome within the group as well.

Abstract # P-336

Brazilian Experience in Living Donor Liver Transplantation (LDLT) in a Single Center. Reinaldo F. Junior, Rafael D. Vasconcelos, Klaus Steinbruck, Elizabeth Balbi, Lucio P. Moreira.

Liver Department, State Transplant Center, Rio de Janeiro, Brazil
The rising demand for liver transplantation in the world has continued to outpace the availability of deceased donor organs leads to the need for other treatment options including, living donors.

A precise evaluation of surgical complications is therefore considered to be the most important issue in this setting. Publications are controversies, reporting of donor morbidity range from 13% to 78.3%, and the mortality cannot be considered a real value.

The aim of this study is to present a retrospective analysis of 172 living donors in a single Brazilian center, December 2002 to December 2013, stratifying the complications according to Clavien's score system.

None of the donors experienced died but only one had a grade IV of Clavien, the majority of donors (n=127) didn't suffer any complications. Fifty one complications were observed in 45 patients. Eighty three hepatectomies were performed for adult and eighty nine for pediatric transplantation. According to the Brisbane, were realized 80 right and 3 left hepatectomies and 89 left lateral segmentectomies.

According to Clavien, the complications were classified as: grade I – 20(40%), grade II – 12(24%), grade III – 17(34%), grade IV – 1(2%) and any patient presented V; and the most common, was biliary tract injury, like in others series.

In this Brazilian serie, hepatectomy for LDLT was a safe procedure with low morbidity, regardless of the type of liver resection undertaken and, probably, will continue to grow to alleviate the pressure of growing waiting lists, mostly at pediatric group.

Abstract # P-337

Lowering Donor Dropout Rate after Final Evaluation at a High Volume LDLT Centre-Learning With Experience. Amardeep

Yadav, Sanjay Goja, Ravi Mohanka, Amit N. Rastogi, Balachandran Menon, Sanjiv Sehgal, Neeraj Saraf, Arvinder S. Soin. *Medanta The Medicity, Delhi NCR, India*

Introduction: Efficient donor screening is the backbone of a living related liver transplant (LDLT) program. Donor drop outs after full evaluation adversely affects the patient and the family, leads to wastage of time and money, and frustrates the treating team. With experience, donor rejection rates and dropout rates can be lowered.

Aim: To analyze the impact of experience of the transplant team on the donor rejection and dropout rates after the final phase of donor evaluation.

Methods: Our donor assessment protocol consist of a 4-phase evaluation. This study is retrospective analysis of database maintained for all living related donor evaluation. Two time periods were analyzed. The initial period consisted of donors evaluated from February 2011 to May 2012 and the later period wherein donors were evaluated from June 2012 to September 2013. Donors who were rejected due to recipient causes were not included in the study.

Results: A total of 1044 pre-screened donors were evaluated for 614 LDLT including 6 dual lobe liver transplants and a domino transplant. Of these total 425 (40.7%) were rejected – 271 (63.76%) during phase 1, 94 (22.11%) during phase 2 and 60 (14.1%) during phases 3 and 4.

During the initial period 267 (44.8%) donors were rejected for 324 LRLT. Among them 63.6% during phase 1, 21.7% during phase 2 and 14.6% during phase 3+4. During the later period 159 (35.25%) donors were rejected for 290 LRLT. Of these 65.4% during phase 1, 22.6% during phase 2 and 11.94% during phase 3+4.

A total of 34 donors back out during the study period of 32 months after/during the final phase of screening. In initial period 25/39 phase 3+4 (64.10%) were due to donor backouts but in later period 9/19 phase 3+4 (47%) were due to donor backouts. From total backouts 22 were first degree relatives. The various reasons to back out were refusal by in-laws/family member (15), anxiety and fear of the donation (10), recipient became sick/poor prognosis (2), job related problems of the donor (5) and low body image after surgery (2). Inference: With experience of the transplant team, donor selection becomes more refined and geared towards donor safety. This is reflected by less overall donor rejection and less drop outs (in the second time period) due to psychological inability, and more confidence of the family in treating team. This results in an increase in the donor pool.

Abstract # P-338

Predictors of Hepatic Steatosis in Living Liver Donors. Raghavendra Babu Yalakanti, Neeraj Saraff, Tarun Piplani, Dheeraj Gautam, Sanjiv Saigal, Ravi Mohanka, Amit Rastogi, Sanjay Goja, Balachandran Menon, Prashant Bhargui, Arvinder Singh Soin. *Medanta Liver Institute, Gurgaon, Haryana, India*

Background: Pre-transplant detection of donor liver steatosis is vital since it can endanger graft survival due to reduced functional hepatocyte mass and ischaemia-reperfusion injury. It may put the donor at risk from a reduced effective remnant volume. Commonly used indices of steatosis - liver attenuation index (LAI) or liver/spleen ratio on non-contrast computed tomography of abdomen are not accurate in patients with high Body Mass Index (BMI) or hyperlipidemia, necessitating a *liver biopsy (LB)* in 35% cases. To reduce need for LB, we propose predictors for estimation of steatosis factoring in liver attenuation (LA), BMI and lipid levels

Methods: This ongoing prospective study included 356 consecutive living donors who had either pre- (148) or intraoperative (208) protocol LB for estimation of steatosis. Indications of preoperative LB were: LAI < 6, hyperlipidemia, BMI > 30, borderline GRWR or donor liver remnant. LB results were correlated with lipid profile, BMI and liver attenuation coefficient (LAC). The latter was expressed as a proportion of the normal standard of LA, which in our study was 60 (equating to a coefficient of 1 - the cut off for absence of steatosis)

Results: Overall, steatosis was present in 77 (21.6%) donors. In preop LB group, 90 (60.8%) had no steatosis, 31 (20.9%) had 5-10%, 22 (14.8%) had 11-20% and 5 (3.3%) had more than 20% steatosis. In intra-operative LB group, 189 (90.8%) had no steatosis, 12 (5.7%) had 5-10%, 6 (2.8%) had 11-20% and 1 (0.4%) had more than 20% steatosis. On univariate analysis, the factors predicting more than 10% steatosis were LAC (p=0.000), LAI (p=0.000), HDL (p=0.000), LDL (p=0.04), VLDL (p=0.008), triglycerides (p=0.000) and BMI (p=0.02). On multivariate analysis, the independent factors for >10% steatosis were LAC < 0.91 (p=0.000) and triglycerides (0.003). The LAC was a more sensitive indicator of steatosis compared to LAI. Of the 34 donors with more than 10% steatosis, 9 had a LAC < 0.91 even though the LAI was more than 6. As predictors of more than 10% steatosis, the area under the ROC curve was 0.88 (95% CI 0.83 to 0.93) for LAC and 0.82 (95% CI 0.75 to 0.90) for LAI

Conclusion: Low LAC, low HDL and high TG can increase the accuracy of predicting significant donor liver steatosis. Their use in the evaluation protocol may help in more precise selection of donors for liver biopsy.

Abstract # P-339

Efficacy of Sorafenib in Patients With Pulmonary Metastatic Hepatocellular Carcinoma after Liver Transplantation. Yinghua Chen¹, Wenhui Luo², Weiqiang Ju¹, Xiaoshun He¹, Xiaofeng Zhu¹. *¹Organ Transplantation Center, The 1st Affiliated Hospital, Sun Yet-san University, Guangzhou, Guangdong, China; ²Medical Record Management Department, The 1st Affiliated Hospital, Sun Yet-san University, Guangzhou, Guangdong, China*

Aim. We investigated the efficacy of sorafenib suppressing the growth of pulmonary metastatic hepatocellular carcinoma after liver transplantation. **Methods.** The size of lesions was measured in 18 patients found pulmonary metastatic after received liver transplantation for advanced HCC beyond Milan criteria and treated with sorafenib. The tumor growth rate of the pulmonary metastatic as well as survival were compared between the patients who took (n=18) and did not took (n=31) sorafenib after the pulmonary metastatic was found..

Results. The average growth rate of the sorafenib group was lower than the control group in the targeting lesions. (P = 0.020). Mean survival time of sorafenib group was (14.575 ± 1.163) m, longer than that of the control group (7.607 ± 0.389), (P = 0.000).

Conclusion: Sorafenib suppresses the growth of pulmonary metastatic hepatocellular carcinoma after liver transplantation, and has survival benefit.

Abstract # P-340

IMPDH2-targeted Constraint of Cell Growth in Hepatocellular Carcinoma by Mycophenolic Acid. Kan Chen^{1,2}, Kwan Man³, Herold J. Metselaar¹, Harry L.A. Janssen^{1,4}, Jaap Kwekkeboom¹, Dave Sprengers¹, Marco J. Bruno¹, Maikel P. Peppelenbosch¹, Qiuwei Pan¹. *¹Department of Gastroenterology & Hepatology, Erasmus MC-University Medical Center, Rotterdam, Netherlands; ²Bio-X Center, College of Life Sciences, Zhejiang Sci-Tech University, Hangzhou, China; ³Department of Surgery, Hong Kong University, Hong Kong, China; ⁴Division of Gastroenterology, University Health Network, Toronto, Canada*

BACKGROUND AND AIMS: Immunosuppressants have significant impact on hepatocellular carcinoma (HCC) recurrence after liver transplantation. This study evaluated the effects and mechanism-of-action of mycophenolic acid (MPA), an immunosuppressant commonly used after liver transplantation, in experimental HCC models.

METHODS: Five HCC cell lines and nude mice with partial immunodeficiency were used.

RESULTS: With clinically achievable concentrations, MPA potently inhibited cell proliferation in five HCC cell lines determined by the MTT assay. Flowcytometric analysis showed induction of apoptosis in 54% ± 2.8 (n=3) cells after treatment with 20 mg/ml MPA for 5 days. In colony formation assays, MPA profoundly suppressed the number and size of formed colonies by treatment with only 1 mg/ml MPA, whereas colony formation was completely prevented by higher concentrations. Cell cycle analysis demonstrated that MPA arrested a considerable portion (22% ± 3, at 5 mg/ml) of HCC cells in the G0/G1 phase. Ectopic over-expression of IMPDH2 that lacks the binding site of MPA but retains its enzyme activity resulted in complete resistance to MPA. In nude mice subcutaneously engrafted with a HCC cell line, MPA significantly delayed tumor formation. Low dose (60 mg/Kg) of MPA slightly promoted tumor growth (conceivably due to immunosuppression) but a high dose (250 mg/Kg) constrained tumor growth, compared with PBS treated mice.

CONCLUSIONS: MPA can specifically inhibit HCC cell growth by targeting IMPDH2. Besides immunosuppression-mediated tumor promotion which is observed with virtually all types of immunosuppressants, MPA can on the other hand specifically constrain HCC growth in mice. Clinical studies are encouraged to further validate in patients.

Abstract # P-341

IL28B Rs12979860 TT Genotype Is Overrepresented in Patients With Hepatitis C Virus Induced Hepatocellular Carcinoma. Sara de la Fuente^{1,2}, Maria J. Citores^{1,2}, Elisa Cisneros³, Ana B. Cuenca^{1,2}, Isolina Baños^{1,2}, Ana Duca^{1,2}, Noelia Escamilla^{1,2}, Valentín Cuervas-Mons^{1,2}. *¹Servicio de Medicina Interna, Hospital Universitario Puerta de Hierro Majadahonda, Majadahonda, Madrid, Spain; ²Departamento de Medicina, Universidad Autónoma de Madrid, Madrid, Spain; ³Servicio de Inmunología, Hospital Universitario Puerta de Hierro Majadahonda, Majadahonda, Madrid, Spain*

IL28B polymorphisms strongly predict spontaneous and treatment-induced clearance of hepatitis C virus (HCV) infection. The aim of this study was to examine the association between IL28B rs12979860 polymorphism and the incidence of hepatocellular carcinoma (HCC) in patients with HCV cirrhosis. We retrospectively analyzed 122 consecutive adult patients (89 males, mean age 55.2 ± 8.9 years old) with genotype 1 HCV cirrhosis who underwent liver transplantation in our institution. None of the patients were co infected with HBV or HIV. IL28B rs12979860 polymorphism was analyzed by real time PCR and melting curve analyses in a lightcycler 480.

Results. Fifty-one patients (41.8%) had HCC in liver explants. Prevalence of HCC was significantly higher in patients with the IL28B TT genotype (14/23; 60.9%) than in carriers of the C allele (CC+CT) (37/99; 37.4 %) (p=0.04, OR=2.61; 95%CI 1.03-6.61). Patients with HCC were older (57.7 ± 8.4 years) than patients without HCC (53.3 ± 8.8 years) (p=0.006). Gender, diabetes mellitus or history of alcohol abuse were similar in both groups. IL28B TT genotype (p=0.042; OR= 2.75, 95%CI 1.04-7.25) and age at transplantation (p=0.008; OR=1.06, 95% CI 1.02-1.11) were independently associated in the multivariate analysis with the presence of HCC.

Our results show that IL28B rs12979860 TT genotype is overrepresented in patients with HCV induced HCC. Further studies are necessary to determine the role of the IL28B TT genotype in the development of HCC.

Abstract # P-342

Tumor Downstaging and the Risk of HCC Recurrence after Liver Transplantation.

Paolo De Simone¹, Irene Bargellini², Quirino Lai¹, Giulia Lorenzoni², Davide Ghinolfi¹, Alessandro Silvestri¹, Laura Coletti¹, Daniela Campani³, Carlo Bartolozzi², Franco Filippini¹. ¹Hepatobiliary Surgery and Liver Transplantation, University of Pisa Medical School Hospital, Pisa, Italy; ²Radiology, University of Pisa Medical School Hospital, Pisa, Italy; ³Pathology, University of Pisa Medical School Hospital, Pisa, Italy

Background: We aimed to evaluate the risk of recurrence of hepatocellular carcinoma (HCC) after liver transplantation (LT) for patients undergoing pre-transplant tumor downstaging with trans-arterial chemo-embolization (TACE). Methods/Materials: This is a retrospective analysis of a prospectively collected single-center data base. Inclusion criteria called for: adult recipients (>18 years); primary LT from deceased donor; pre-transplant TACE with one post-TACE contrast-enhanced radiology, and availability of explant pathology and clinical data. Radiology was reviewed and response to TACE assessed as per mRECIST criteria. The variables associated with the risk of HCC recurrence were identified and patients were further stratified according to number of risk factors. Results: From August 1996 to December 2010, 216 patients underwent TACE before LT. Fifty-two patients were excluded due to lack of post-TACE control radiology and 164 entered the present analysis (M/F: 148/16; median age: 57 years). Median follow-up of the entire population was 5.5 years (range: 3.0-9.7). Exceeding Milan criteria (p=0.006), post-TACE AFP >200 ng/mL (p=0.09), and lack of a complete post-TACE radiological response (p=0.08) were associated with a higher risk of post-transplant HCC recurrence. The 5-year HCC recurrence rate was 0%, 5.0% and 22.6% for patients with no risk factor (n=36), 1 (n=86) or 2-3 risk factors (n=42), respectively (p<0.0001) (Fig. 1). Conclusions: Combination of tumor stage (Milan vs. beyond Milan), biology (AFP) and response to TACE allow for better patient stratification and might be used to guide liver graft allocation for patients with HCC.

Abstract # P-343

The Role of RAP1 in Graft Injury Induced Cisplatin Resistance after Liver Transplantation.

Wei Geng, Chungmau Lo, Xiang Qi, Changxian Li, Kevin T.P. Ng, Xiaobing Liu, Yuenyuen Ma, Kwan Man. *Surgery, The University of Hong Kong, Hong Kong, China*

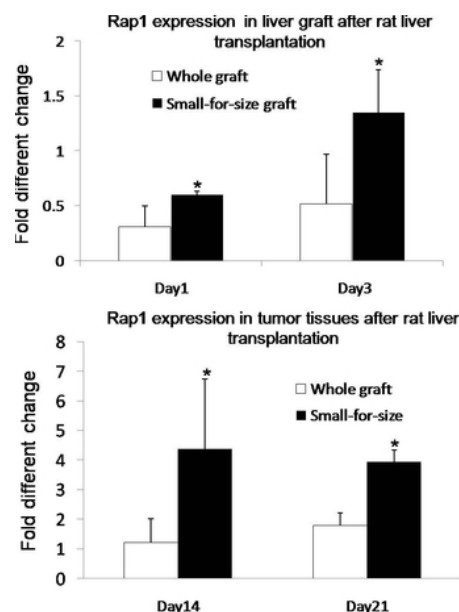
Background & aim: Liver transplantation dramatically improved the survival rate of HCC patients. However, tumor recurrence remains a huge threat without any promising curative treatment. We aim to clarify the mechanism of graft injury regulating chemoresistance after liver transplantation.

Materials and methods:

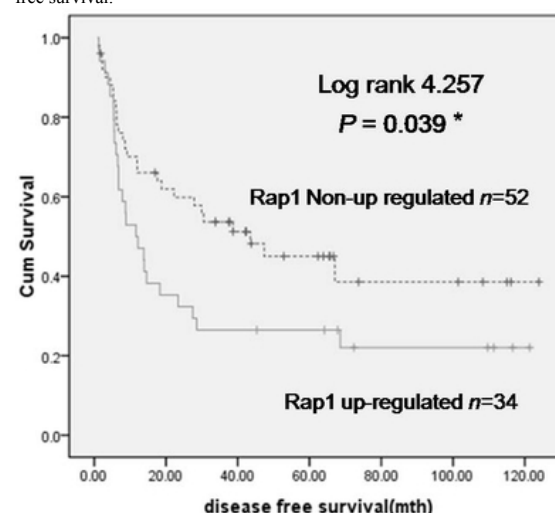
A rat orthotopic liver transplantation model with liver cancer development was established with applying whole or small-for-size (50%) graft. The expressions of multidrug resistant genes and RAP1 were compared between small and whole graft groups. RAP1 expression was also validated in clinical samples. The role of RAP1 was further explored in vitro and vivo.

Results:

The expression of RAP1 was constantly higher in liver and tumor in small-for-size group in rat liver transplantation model.



The expressions of multidrug resistant genes were significantly up-regulated in tumor from small-for-size group. RAP1 was overexpressed in around 40% HCC patients. Over expression of RAP1 showed significant correlations with TNM stages, venous infiltration, tumor recurrence and poorer disease free survival.



The expression of intragraft RAP1 was significantly higher in living donor transplantation at 2 hours after reperfusion. Overexpression of RAP1 significantly promoted HCC cell proliferation under cisplatin administration in vitro, and enhanced liver tumor growth with less apoptosis after cisplatin treatment in vivo. The role of RAP1 on cisplatin resistance was further validated in RAP1 knockout mice.

Conclusions:

Overexpression of intragraft RAP1, which upregulated by acute phase liver graft injury, may induce late phase cisplatin resistance after liver transplantation.

Abstract # P-344

Hepatocellular Carcinoma Developing in a Post-Transplant Patient With Hepatitis C.

Richard Gilroy¹, Marc Heronemus¹, Maura O'Neil², Muhammad Muneeb¹, Winston Dunn¹, Timothy Schmitt¹. ¹Transplantation, University of Kansas Medical Center, Kansas City, KS, USA; ²Pathology, University of Kansas Medical Center, Kansas City, KS, USA

Background: Developing of hepatocellular carcinoma (HCC) of donor liver origin has been described with hepatitis B and in a case where the recipient

had a prior history of hepatocellular carcinoma. These events are confined to case reports and occur very rarely. Here we describe a case where a donor derived HCC developed in a non-cirrhotic liver and review the literature on this subject.

Case Report: A 53 year old hispanic male underwent simultaneous liver and kidney transplantation for hepatitis C related cirrhosis and membranoproliferative glomerulonephritis (MPGN). Ex-plant pathology was negative for HCC. The donor has a medical history of 1 pack per day cigarettes for 3 years and smoked THC daily for 2 years. Post-transplant the patient received tacrolimus and mycophenolic acid for immunosuppression. Per protocol liver biopsies were performed at 6 month, at one year then annually. Histologic recurrence of HCV was identified at 6 months and progressing to mild portal fibrosis at 5 years (stage 1-2/6). 1 month following the 5 year biopsy the patient presented with an epigastric mass confirmed to be intrahepatic on computed tomography scan. Mass was biopsied and stained positive for hepar-1 and showed characteristic histology for a moderately differentiated HCC. FISH analysis match with the donor liver. 2 months following the diagnosis patient was placed on comfort care and passed away 4 months post HCC diagnosis.

Discussion: The development of de novo HCC in a non-cirrhotic patient with hepatitis C post liver transplant is very rare. In cirrhotic patients post-transplant the risk for allograft derived HCC is also unknown and there remains no ability to create evidence based screening guidelines. In an era where medical oversight will require that we have evidence to justify screening, the transplant community should develop an international registry to evaluate this area.

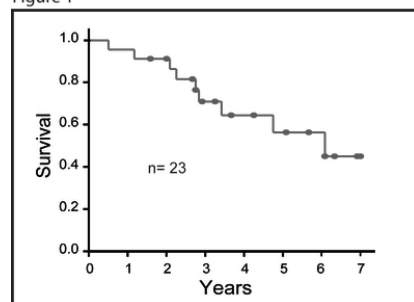
Abstract # P-345

An Update on Liver Transplantation for Non-resectable Colorectal Liver Metastases. Morten Hagness¹, Jon M. Solheim¹, Pål-Dag Line¹, Svein Dueland², Aksel Foss¹. ¹Section for Transplantation Surgery, Department of Transplantation Medicine, Oslo University Hospital, Oslo, Norway; ²Department of Oncology, Oslo University Hospital, Oslo, Norway

Background: In a prospective pilot study on liver transplantation (Lt) for non-resectable colorectal liver metastases (CLM), 5 years overall survival (OS) was 60% (the SECA study, Hagness et al. Ann Surg 2013) Diameter of largest metastasis at Lt, time from primary surgery to Lt, CEA levels and response to chemotherapy at time of Lt were identified as significant prognostic factors, and could potentially enhance outcome through improved patient selection. **Objective:** To reassess outcome and prognostic factors in the SECA study population after two more years of follow up.

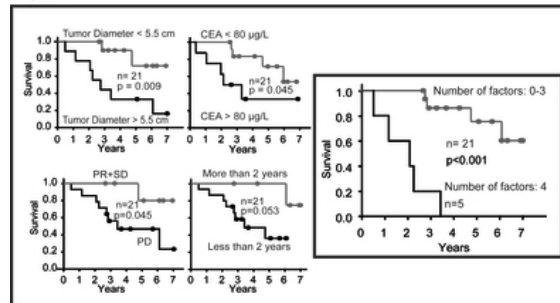
Results: Median follow-up was 65 months (range 19 – 84 months). Kaplan-Meier (KM) estimates of OS at 2- and 5 years are now 91 %, and 57 % (n=23). (Fig.1) 9 patients have deceased, all because of disseminated cancer. Time from primary surgery to Lt was border significant (p=0.53), while the other factors remained significantly associated with prognosis. 5 of the 9 patients dead had all these factors present. When excluding these patients, the 6 and 7 year overall survival is 60%. (Fig.2)

Conclusion: 5 year OS after Lt for CLM is 57%. The 4 factors identified in the first report are still prognostic. When excluding the patients that have all four factors present, the KM estimate for OS at 6 and 7 years post Lt is 60%. Figure 1



OS after Lt for CLM, KM estimate.

Figure 2



Preoperative factors affecting survival after Lt for CLM: Maximum hepatic tumor diameter, CEA levels, progressive disease (PD), stable disease (SD) or partial response (PR) at time of Lt. Time from primary surgery to Lt. Right panel: Patients with all four factors at time of Lt compared with the remaining patients. KM estimates, Log rank method.

Abstract # P-346

Living Donor Liver Transplantation for Locally Far Advanced Hepatocellular Carcinoma Patient Who Undertook Concurrent Hepatic Arterial Infusion Chemotherapy With External Beam Radiation. Dai Hoon Han¹, Dong Jin Ju^{1,2}, Jung Jun Lee^{1,2}, Ju Han Lee^{1,2}, Jae Geun Lee^{1,2}, Sung Hoon Kim³, Man Ki Ju^{1,2}, Gi Hong Choi^{1,2}, Myong Soo Kim^{1,2}, Jin Sub Choi^{1,2}, Soon Il Kim^{1,2}. ¹Department of Surgery, Yonsei University College of Medicine, Seoul, Korea; ²Research Institute for Transplantation, Yonsei University College of Medicine, Seoul, Korea; ³Department of Surgery, Yonsei University Wonju College of Medicine, Wonju, Korea

Background: Patients with advanced hepatocellular carcinoma (HCC) with portal vein thrombosis have an extremely poor prognosis with less than 10% of one year survival. Localized chemoradiotherapy (CCRT) followed by hepatic arterial infusion chemotherapy (HAIC) was recently introduced as an effective treatment for these patients. Herein we tried to evaluate our early experiences of living donor liver transplantation (LDLT) for the patients with locally advanced HCC who were objectively downstaged after CCRT followed by HAIC.

Patients and Methods: Between December 2011 and September 2012, LDLT was performed for 8 patients with locally advanced HCC after CCRT followed by HAIC at the Severance hospital, Seoul, Korea. CCRT was performed with a total of 45 gray over 5 weeks with HAIC using 5-fluorouracil(5-FU), then HAIC with 5-FU and cisplatin was administered every 4 weeks.

Results: All patients were initially diagnosed as locally advanced HCC with portal vein tumor thrombus. There were 3 cases of recurrence after LDLT during follow-up period without mortality. Median follow-up period was 17 months (10 ~22 months after LDLT). One year disease-free survival rate was 87.5%. The median survival duration from initial diagnosis was 33 months. There were four postoperative complications in three patients- two portal vein and two bile duct anastomosis site strictures, which were corrected by radiologic intervention.

Conclusion: LDLT after CCRT followed HAIC might be feasible treatment option for the patients with locally advanced HCC.

Abstract # P-347

Liver Transplantation Compared With Radical Resection for Hilar Cholangiocellular Carcinoma: A Long-Term Single-Center Experience and Relevant Meta-Analysis. Anbin Hu, Xiaofeng Zhu, Xiaoshun He. Organ Transplantation Center, The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, Guangdong, China

Background and aim: Radical resection (RR) is of utmost importance to improve survival for Hilar Cholangiocellular Carcinoma (Klatskin tumour, KT) for long. Liver transplantation (LT) is another suggested surgical modality for KT especially for patients whose tumor is unresectable without dissemination, although the patient outcomes remained controversial. Here, we compare the results of LT with those of RR in KT patients in our center and other studies.

Study design: A retrospective study of patients with the diagnosis of KT was conducted in our center. Overall survival (OS) and disease-free survival

(DFS) were analyzed between OLT group (n=10) and RR group (n=10). And besides, a meta-analysis of our data and other 8 relevant studies was performed. The pooled odds ratio (OR) was calculated using random-effects model to synthesize the results. Heterogeneity and publication bias were quantitatively evaluated.

Results: In our center, patients' mortality within 30 days was 0%. OS and DFS of OLT group were 85.7% and 85.7% at 1 year, 57.1% and 42.9% at 3 years, and 42.9% and 14.2% at 5 years after operation. OS and DFS in RR group at 1-, 3- and 5 years were 80% and 20%, 40% and 30%, 30% and 20%. After performing meta-analysis of 9 relevant studies including 729 patients, we found comparable patient survival between OLT group and RR group (1-year: OR, 0.79, 95% CI, 0.44–1.42, $p=0.43$; 3-year: OR, 1.19, 95% CI, 0.44–1.42, $p=0.43$; 5-year: OR, 2.18, 95% CI, 0.39–12.04, $p=0.37$, respectively). Although 1-year overall survivals were inferior in OLT, 3- and 5-year survivals were superior with the tendency of higher OS in long-term.

Conclusions: OLT was equivalent to RR for KT in terms of patient survival and disease-free survival, with potentially higher long-term patient survival and lower recurrence. OLT could be recommended into more clinical studies of KT treatment.

Abstract # P-348

Primary Malignant Hepatic Tumors As Indication for Liver Transplantation in Children – 20 Years Experience. Piotr J. Kalicinski¹, Hor Ismail¹, Dorota Broniszczak¹, Bożenna Dembowska-Baginska², Joanna Teisseyre¹, Przemysław Kluge¹, Andrzej Kosciuszka¹, Ewa Swieszkowska², Danuta Perek², Joanna Pawłowska³.

¹Department of Pediatric Surgery & Organ Transplantation, Children's Memorial Health Institute, Warszawa, Poland; ²Department of Oncology, Children's Memorial Health Institute, Warszawa, Poland; ³Department of Gastroenterology, Hepatology and Nutrition, Children's Memorial Health Institute, Warszawa, Poland

AIM: The aim of the study was to present our cumulative experience in the treatment of children with primary hepatic malignancy and the influence of introducing liver transplantation as treatment option on the outcome.

METHOD: Over last 20 years 101 children with primary malignant hepatic tumors were treated in our center (HBL – 65 pts, HCC – 26 pts, UESL – 10 pts). Surgery was performed in 98 children (97%), liver resection in 68, total hepatectomy and LTx in 30 patients (26 as primary LTx and 4 as rescue transplantation. LTx was done in 16 pts with HCC, 13 pts with HBL and 1 pt with UESL). Patients' data were analyzed for survival with respect to tumor extension, presence of metastases, histopathological type, surgical resection or LTx.

RESULTS: Survival of children with HBL treated with liver resection is 79.6% (mean follow-up 33.7 months) and 81.8% for primary LTx (mean follow-up 72.5 months). Survival of children with HCC treated with liver resection is 30% (mean follow-up 178 months) and 81.25% for LTx (mean follow-up 89.7 months) despite exceeding Milan criteria by most pts. One patient who was transplanted for UESL died of tumor recurrence 5 months after LTx. Survival was related to pretreatment tumor extension (PRETEXT category), however among patients with PRETEXT III and IV liver transplantation resulted in better survival. Prognostic factors for patients survival were: tumor's histology, presence of metastases and local recurrence after initial resection.

CONCLUSION: Liver transplantation is an important option for children with non resectable hepatic malignancy, resulting with comparable or even better (HCC) survival than after conventional treatment in children with resectable tumors. Early referral of children with potentially unresectable tumors to centers where combined treatment is available is crucial for the final outcome.

Abstract # P-349

Warm Ischemia Time Is an Independent Predictor of Tumor Recurrence in Liver Transplant Patients With HCC. Arno Kornberg¹, Ulrike Witt¹, Bernadette Küpper², Kathrin Kathenkamp³, Dietmar Gottschild⁴.

¹Department of Surgery, TU Munich, Munich, Germany; ²Department of Surgery, Klinikum bad Berka, Bad Berka, Germany; ³Institute of Pathology, FSU Jena, Jena, Germany; ⁴PET Center, FSU Jena, Jena, Germany

Background:

There is some experimental data that ischemia-reperfusion (I/R) injury promotes and accelerates tumor growth in the liver. Recently, it has been demonstrated that risk of tumor relapse after liver transplantation (LT)

for hepatocellular carcinoma (HCC) is significantly higher in donor allografts retrieved after cardiac death than after brain death. The aim of this prospective trial was, therefore, to analyze the impact of ischemia times (IT) on recurrence-free prognosis post-LT.

Patients and methods:

A total of 93 liver transplant patients with HCC were included in this study. Listing for LT was based on the Milan criteria (MC). Extrahepatic tumor spread, lymphovascular tumor invasion and macroscopic vascular invasion were absolute indications for patients' drop-out. All of them underwent pretransplant 18F-FDG-positron-emission-tomography (PET) for assessing metabolic tumor activities. Neoadjuvant locoregional tumor treatments, mainly TACE, were performed, if being applicable.

The impact of pretransplant evaluated clinical parameters, including cold (CIT), warm (WIT) and total (TIT) ischemia times on recurrence-free prognosis were analyzed by uni- and multivariate investigation.

Results:

Overall and recurrence-free survival at 5-years post LT were 79.2% and 76.3%, respectively. In univariate analysis, AFP level ≤ 400 IU/ml, number of tumor nodules ≤ 3 , size of the largest tumor ≤ 5 cm, total tumor diameter ≤ 8.5 cm, Milan In status, progression-free tumor status, CIT ≤ 400 min, WIT ≤ 60 min, TIT < 500 min and PET – status were predictive for recurrence-free survival ($P < 0.05$). Five-year recurrence-free survival rates at 5 years were 88.2% and 54% in CIT $\leq$ versus > 400 min, and 86.8% and 21.4% in WIT $\leq$ versus > 60 min., respectively.

In multivariate analysis, none of macromorphologic variables, but only WIT ≤ 50 min ($P < 0.001$) and negative PET scans ($P = 0.006$) remained the only pretransplant available independent clinical predictors of tumor-free long-term outcome.

Conclusions:

Ischemia times may negatively impact the risk of HCC recurrence after LT. Together with metabolic tumor activities on pretransplant PET scans, prolonged WIT emerged as independent predictor of tumor relapse. It should, therefore, be minimized in this setting.

Abstract # P-350

Up-To-Seven Criteria for Hepatocellular Carcinoma Liver Transplantation: A Single Center Analysis. Jianyong Lei, Lunan Yan, Wentao Wang. Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, Sichuan, China

Aim: The aim of our study was to detect whether the up-to-seven should be used as inclusion criteria for liver transplantation for hepatocellular carcinoma. **Patients and methods:** Between April 2002 and July 2008, 220 HCC patients who were diagnosed with HCC and underwent liver transplantation (LT) at our liver transplantation center were included. These patients were divided into three groups according to the characteristics of their tumors (tumor diameter, tumor number): the Milan criteria group (Group 1), the in up-to-seven group (Group 2) and the out up-to-seven group (Group 3). Then, we compared long-term survival and tumor recurrence of these three groups.

Results: The baseline characteristics of transplant recipients were comparable among these three groups, except for the type of liver graft (DDLT or LDLT). There were also no significant differences in the pre-operative AFP level. The 1-, 3-, and 5-year overall survival and tumor-free survival rate for the Milan criteria group were 94.8, 91.4, 89.7% and 91.4, 86.2, and 86.2% respectively; in the up-to-seven criteria group, these rates were 87.8, 77.8, and 76.6% and 85.6, 75.6, and 75.6% respectively ($P < 0.05$). However, the advanced HCC patients' (in the group out of Up-to-Seven criteria) overall and tumor-free survival rates were much lower, at 75, 53.3, and 50% and 65.8, 42.5, and 41.7%, respectively ($P < 0.01$).

Conclusion: Considering that patients in the up-to-seven criteria group exhibited a considerable but lower survival rate compared with the Milan criteria group, the up-to-seven criteria should be used carefully and selectively.

Abstract # P-351

Neutrophil-Lymphocyte Ratio and Serum C-Reactive Protein Can Predict Overall and Disease-Free Survival after Living Donor Liver Transplantation in Patients With Hepatocellular Carcinoma. Gun Hyung Na, Dong Goo Kim, Jae Hyun Han, Soo Ho Lee, Eun Young Kim, Tae Ho Hong, Young Kyoung You. *Department of Surgery, Seoul St. Mary's Hospital, The Catholic University of Korea, Seoul, Republic of Korea*

Background: Although the Milan criteria are accepted as the standard selection criteria for liver transplantation (LT) candidates with hepatocellular carcinoma (HCC), they are so strict. New selection criteria are needed to predict more accurately the prognosis of patients with HCC, especially beyond the Milan criteria.

Methods: From October 2000 to November 2011, 224 patients underwent living donor liver transplantation (LDLT) for HCC at our institution. We analyzed disease-free survival (DFS) and overall survival (OS) after LT in patients with HCC and designed a new score model using pretransplant NLR and CRP.

Results: The DFS and OS in patients with an NLR level ≥ 6.0 or CRP level ≥ 1.0 were significantly worse than those of patients with an NLR level < 6.0 or CRP level < 1.0 ($p=0.049$, $p=0.003$ for NLR and $p=0.010$, $p<0.001$ for CRP, respectively). Using a new score model using pretransplant NLR and CRP, we can differentiate HCC patients beyond the Milan criteria with a good prognosis from those with a poor prognosis.

Conclusions: Pretransplant NLR and CRP are useful biomarkers for predicting DFS and OS. Combined with the Milan criteria, a new score model using pretransplant NLR and CRP may represent new selection criteria for LDLT candidates with HCC, especially beyond the Milan criteria.

Abstract # P-352

Radiological Response in Patients Treated With Transarterial Chemoembolization before Liver Transplantation: Correlation With Histological Necrosis and Impact on Tumor Recurrence.

Daniele Nicolini¹, Andrea Agostini², Cinzia Mincarelli², Roberto Candelari², Roberto Montalti¹, Paolo Vincenzi¹, Alessandra Mandolesi³, Federico Mocchegiani¹, Andrea Vecchi¹, Andrea Giovagnoni², Marco Vivarelli¹. ¹*Department of Gastroenterology and Transplantation, Polytechnic University of Marche, Hepatobiliary and Transplant Surgery, Ancona, Marche, Italy;* ²*Department of Radiological Sciences, Polytechnic University of Marche, Division of Radiology, Ancona, Marche, Italy;* ³*Department of Biomedical Sciences and Public Health, Polytechnic University of Marche, Division of Pathology, Ancona, Marche, Italy*

Background. Histological examination of the explanted livers allows assessing the accuracy of modified Response Evaluation Criteria in Solid Tumors (mRECIST) or European Association for the Study of the Liver (EASL) guidelines after transarterial chemoembolization (TACE). The prognostic role of radiological response in predicting HCC recurrence after liver transplantation (LT) was investigated.

Methods. From 8/2005 to 11/2013, 59 patients treated by conventional (c-TACE, n=16) or Doxorubicin-Eluting Bead TACE (n=43) before LT were included. Patients' and tumors' characteristics were retrospectively reviewed and treatment responses were classified according to mRECIST and EASL as complete (CR), partial (PR), stable (SD) or progressive disease (PD). At pathology, necrosis was classified as complete (100% of the cumulative tumor area), partial (50-99%) or inadequate ($< 50\%$).

Results. We identified 128 nodules (2.2 ± 1.5 per patient). Complete and partial histological necrosis was achieved in 12/59 (20.3%) and 24/59 (40.7%) of patients, respectively. Twenty-one (35.6%) patients were beyond Milan Criteria at imaging before TACE. Agreement between radiological criteria and pathology was 76.3% (45/59) and 71.2% (42/59) for mRECIST and EASL, respectively. Inter-method agreement was rated very good for overall and target lesion response (k-value 0.98 and 0.94). Histological necrosis differed significantly between patients classified as CR, PR or SD/PD according with mRECIST (91.4%, 64.6% and 17.3%, $p<0.05$) and EASL criteria (91.4%, 60.2% and 24.5%, $p<0.05$). Among preoperative variables, radiological non-response (SD+PD) at imaging before LT (OR=13.6, $p=0.028$) and the use of c-TACE (OR=13.7 $p=0.029$) were independent predictors of tumor recurrence.

Conclusion. mRECIST and EASL criteria predict histological necrosis and can be useful in selecting HCC candidates for LT.

Abstract # P-353

Living Donor Liver Transplantation for Mixed Hepatocellular and Cholangiocarcinoma – Outcomes. Kumar Palaniappan, Anand Bharathan, Mukul Vij, Vivekandan Shanmugham, Mohamed Rela. *Institute of Liver Diseases & Transplantation, Global Hospitals, Chennai, Tamilnadu, India; Laboratory Medicine - Histopathology & Cytopathology, Global Hospitals, Chennai, Tamilnadu, India*

Introduction: Combined Hepatocellular Cholangiocarcinoma (cHCC-CC) are rare primary liver tumors accounting for $< 1\%$ of all liver cancers. Although transplantation has demonstrated survival benefit for patients with hepatocellular carcinoma (HCC), there is limited data to support or refute transplantation for combined hepatocellular-cholangiocarcinoma (cHCC-CC).

Methods: Total of 276 patients underwent transplantation from Jan 2010-Nov 2013. Of these about 184 was living related liver transplantation. Of the total patients, 33 underwent transplants for hepatocellular carcinoma. Three patients who were pre-operatively suspected to have HCC, had cHCC-CC in their explants.

Results: Of the three patients, two were females aged 46 & 54 years. Other patient was male aged 56. CECT was suggestive of hypervascular lesion. Alfa Fetoprotein levels were normal (40-95 iu). The size of the lesion varied from 3 to 7cm. One patient had a preoperative TACE & another had RFA of the lesion. Two patients had Allen-Lisa Type II tumors & other had Type III. All three patients had an uneventful LDLT. The mean GRWR was 0.92. The follow-up varied between 3 months – 22 months. Immunohistochemistry was performed in all the explants according to the WHO recommendation. At a Mean follow-up period of 18 months, one patient had a lymph nodal recurrence & other two are tumor free.

Conclusion: Transplantation for localized cHCC-CC confers a survival benefit similar to transplantation for HCC. But the number of patients who underwent transplantation are few for cHCC-CC. With survival data that mimics historic reports of transplant for intrahepatic cholangiocarcinoma, this study questions the benefit of transplantation for patients with cHCC-CC & recommends more follow up & studies for improving outcomes.

Abstract # P-354

Adapting Liver Transplantation for Hilar Non Resectable Stage I-II Cholangio Carcinomas According to Mayo Clinic's Protocol to a Single Center with Low Waiting List Time – The Oslo Experience. Jon M. Solheim¹, Aksel Foss¹, Pål-Dag Line¹, Svein Dueland², Morten Hagness¹. ¹*Section for Transplantation Surgery, Department of Transplantation Medicine, Oslo University Hospital, Oslo, Norway;* ²*Department of Oncology, Oslo University Hospital, Oslo, Norway*

Background: The Mayo Clinic's protocol (MCP) for treating unresectable hilar cholangio carcinomas (CCA) with aggressive neoadjuvant treatment, staging procedures and liver transplantation (Lt) yields 5 year overall survival (OS) rate of about 70%. Oslo directly adopted the protocol in 2009 as an institutional protocol. We here report the Norwegian experience.

Materials/Methods: Medical records were retrospectively reviewed. Requirements for inclusion were diagnosis based on intraluminal brush or CA19.9 > 100 U/ml, tumor diameter < 3 cm, and no extra hepatic tumor. Neoadjuvant therapy consisted of external beam radiation, brachytherapy and 5-FU or capecitabine. All patients underwent laparoscopic staging procedure.

Results: Since 2009, 6 patients underwent Lt for unresectable hilar CCA according to MCP. Four of these have died from cancer, one from graft dysfunction. Median OS was 26 months (95% CI 6 – 46 months). Five patients have experienced recurrence of cancer. Median disease free survival was 20 months (95% CI 13- 27 months). Median time on waiting list was 15 days (Range 4 – 29 days)

Conclusion/Discussion: The outcome in Oslo seems inferior to the published results from Mayo Clinic and US. Generally, Oslo has excellent survival rates after Lt, the 5 year patient survival for adults is currently 83%. This is mainly due to short time on waiting list. The time on waiting list here was 15 days, while in a current report from the Mayo Clinic the median wait time was 6.9 months and the dropout rate was 31%. This obviously provides a patient selection effect that is not present in Oslo and one could speculate on whether the short waiting time in Norway influence survival for this indication negatively.

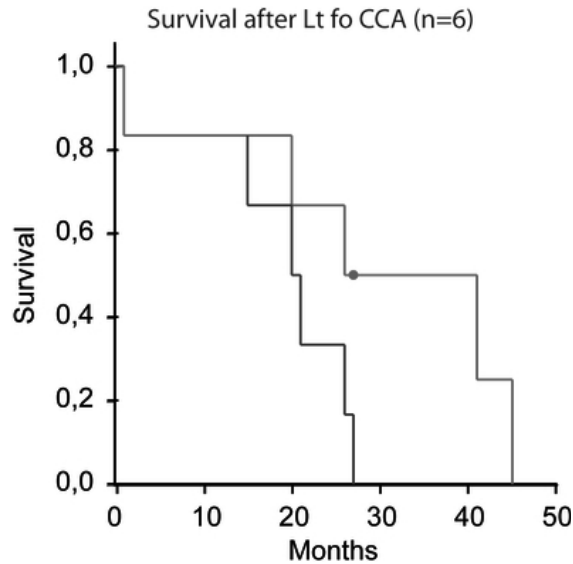


Figure 1. Survival after liver transplantation for hilar non resectable stage I-II cholangio carcinomas in Oslo. Blue line shows disease free survival, red line shows overall survival.

Abstract # P-355

Association between a Single Nucleotide Polymorphism in the 3'-UTR in CCNA2 and HBV-Related Hepatocellular Carcinoma in Chinese Han Patients. Haiyang Xie, Chunyang Xing, Bajin Wei, Lin Zhou, Xiao Xu, Jian Wu, Liming Wu, Shusen Zheng. *Key Laboratory of Combined Multi-Organ Transplantation, Ministry of Public Health, 1st Affiliated Hospital of ZJU, Hangzhou, Zhejiang Province, China; Key Laboratory of Combined Multi-Organ Transplantation, Ministry of Public Health, 1st Affiliated Hospital of ZJU, Hangzhou, Zhejiang Province, China; Division of Hepatobiliary and Pancreatic Surgery, 1st Affiliated Hospital of ZJU, Hangzhou, Zhejiang Province, China; Key Laboratory of Combined Multi-Organ Transplantation, Ministry of Public Health, 1st Affiliated Hospital of ZJU, Hangzhou, Zhejiang Province, China; Division of Hepatobiliary and Pancreatic Surgery, 1st Affiliated Hospital of ZJU, Hangzhou, Zhejiang Province, China; Division of Hepatobiliary and Pancreatic Surgery, 1st Affiliated Hospital of ZJU, Hangzhou, Zhejiang Province, China; Division of Hepatobiliary and Pancreatic Surgery, 1st Affiliated Hospital of ZJU, Hangzhou, Zhejiang Province, China; Division of Hepatobiliary and Pancreatic Surgery, 1st Affiliated Hospital of ZJU, Hangzhou, Zhejiang Province, China; Division of Hepatobiliary and Pancreatic Surgery, 1st Affiliated Hospital of ZJU, Hangzhou, Zhejiang Province, China*

Background: Hepatocellular carcinoma (HCC) was the most fatal disease for the patients with HBV-infected in China. Genetic diagnosis and treatment were highly required in clinic. CCNA2 was a protein-coding gene which promoted both cell cycle G1/S and G2/M transitions and found its strong expression in the low survival subclass in HCC patients. **Method:** Totally 498 subjects comprising 173 HBV related cirrhosis, 171 HBV related HCC cases, and 154 healthy controls were included in the study. Patients with HBV related HCC who received liver resection and patients with HBV related cirrhosis underwent liver transplantation in our center between 2004 and 2011 were enrolled in this study. The genotypes of CCNA2 were chosen by the criteria of $MAF \geq 0.1$, $r^2 \geq 0.8$ and checked by SnapShot as we previously reported. **Date analysis** was taken by Spss 16 and SnpStats. **Result:** We found that people with G/G genotype at rs1507987 have higher risk of HCC compared with those of A/A and G/A genotypes ($P=0.013$, $OR=5.22$, $95\%CI: 1.14-23.96$). The significant difference still existed after bonferroni correction ($p=0.039$). No other differences were found between gene variation and HBV related HCC or HBV related cirrhosis.

Conclusion: A single nucleotide polymorphism (rs1507987) in the 3'-UTR in CCNA2 was associated with HBV related HCC, but more patients should be included in the future studies.

Abstract # P-356

Survival Analysis of Resection of Metachronous Adrenal Metastasis after Hepatocellular Carcinoma Resection and Liver Transplantation. Shin Hwang, Tae-Yong Ha, Chul-Soo Ahn, Ki-Hun Kim, Deok-Bog Moon, Gi-Won Song, Dong-Hwan Jung, Gil-Chun Park, Sung-Hwa Kang, Bo-Hyun Jung, Sung-Gyu Lee, Young-In Yoon, Eol Chio, Jae-Hyun Kwon. *Division of Hepatobiliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center, Seoul, Korea*

BACKGROUND: Metachronous recurrence at the adrenal gland seldom occurs after curative HCC resection and liver transplantation (LT), but many of them have not been indicated for surgical resection due to concurrent other site recurrence. If other recurrence lesions are controlled or adrenal metastasis is the only lesion, this situation is regarded as indication of adrenalectomy. We herein present the survival outcome of 26 cases undergone adrenalectomy for metachronous adrenal metastasis after HCC resection ($n=19$) and LT ($n=7$). **METHODS:** A retrospective review was undertaken of clinical data for these 26 patients with huge HCC who underwent liver resection from January 2001 to December 2011. Adrenalectomy was performed between March 2002 and September 2012.

RESULTS: Patient age at the time of adrenalectomy was 55.3 ± 9.1 years and male gender was 23. HBV infection was associated in 24. Sites of adrenal recurrence were left in 13, right in 10 and bilateral in 3. The types of adrenalectomy were open surgery in 10 and laparoscopic surgery in 9 after resection and open surgery in 6 and laparoscopic surgery in 1 after LT. The interval between initial surgery and adrenal metastasectomy was 18.3 ± 14.4 months (range: 1-61 months). HCC recurrence rate after adrenalectomy was 72.2% at 1 year and 100% at 2 years after resection, in which all resection patients showed further recurrence. Patient survival rate after adrenalectomy in resection group was 94.1% at 1 year, 38.0% at 3 years and 20.3% at 5 years. Overall patient survival rate after initial HCC resection was 94.7% at 1 year, 77.3% at 3 years and 39.6% at 5 years. In contrast, 4 of 7 LT recipients showed further recurrence after adrenalectomy, but 3 of 4 recurrent LT recipients are alive to date.

CONCLUSION: Isolated metachronous adrenal metastasis appears to be the reasonable indication for adrenal metastasectomy although further recurrence usually happens within 1 year after HCC resection. Adrenal metastasectomy after LT appears to show more improved survival outcome probably due to more strict patient selection.

Abstract # P-357

FBW7 Increases Chemosensitivity in Hepatocellular Carcinoma Cells Through the Suppression of Epithelial-Mesenchymal Transition. Jun Yu, Wu Zhang, Feng Gao, Yuanxing Liu, Zhiyun Chen, Longyu Cheng, Shangfen Xie, Shusen Zheng. *Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Key Laboratory of Multi-Organ Transplantation of Ministry of Public Health, Hangzhou, China*

Background: The FBW7 tumor suppressor regulates a network of proteins with central roles in cell division, cell growth and differentiation. This study aimed to evaluate the role of FBW7 in chemoresistance and epithelial-mesenchymal transition (EMT) patterns in different hepatocellular carcinoma (HCC) cell lines and investigate the relevant underlying mechanisms.

Methods: We employed cell viability assays, western blotting, q-PCR and immunofluorescent staining, combined with plasmid or siRNA interference assays.

Results: FBW7 expression was found to be related with doxorubicin chemosensitivity in different HCC cell lines. FBW7hi (high FBW7 expression) Hep3B and Huh-7 cells were more sensitive to doxorubicin than FBW7lo (low FBW7 expression) SNU-449 cells. Silencing of FBW7 in Huh-7 and Hep3B with siRNA cells caused resistance to doxorubicin whereas overexpression of FBW7 in SNU449 cells with plasmids restored sensitivity to doxorubicin treatment. Furthermore, doxorubicin cytotoxicity in HCC cells was associated with EMT patterns. Downregulation of FBW7 in Huh-7 and Hep3B cells or upregulation of FBW7 in SNU-449 cells altered patterns of EMT by regulating mesenchymal biomarkers Vimentin and epithelial biomarkers E-cadherin expression.

Conclusion: FBW7 may be a potential target for the inhibition of doxorubicin resistance in HCC cells through the regulation of EMT.

Abstract # P-358

Salvage Liver Transplantation for Recurrent Hepatocellular Carcinoma after Liver Resection: Retrospective Study of the Milan and Hangzhou Criteria. Jie Zhou^{1,2,3}, Zhenhua Hu^{1,2,3}, Zhiwei Li^{1,2,3}, Jie Xiang^{1,2,3}, Ze Qian^{1,2,3}, Jian Wu^{1,2,3}, Min Zhang^{1,2,3}, Shusen Zheng^{1,2,3}. ¹Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang Province, China; ²Key Laboratory of Combined Multi-Organ Transplantation, Ministry of Public Health, Hangzhou, Zhejiang Province, China; ³Key Laboratory of Organ Transplantation, Hangzhou, Zhejiang Province, China

Background: Salvage liver transplantation (SLT) has recently been proposed for recurrent hepatocellular carcinoma after liver resection; however, criteria for candidate assessment in SLT have not been thoroughly evaluated.

Methods and Findings: We retrospectively analyzed outcomes and factors affecting survival of 53 recipients who received SLT in the Liver Transplantation Center, The First Affiliated Hospital of Zhejiang University between 2004 and 2012. Thirty recipients fulfilled the Hangzhou criteria, of which 16 also fulfilled the Milan criteria, while the remaining 23 exceeded both criteria. The 1-year, 3-year and 5-year overall survival rates and tumor-free survival rates were both superior in patients fulfilling Milan or Hangzhou criteria compared with those exceeding the criteria. For recipients outside Milan criteria but within Hangzhou criteria, the 1-year, 3-year overall survival rates were 70.1%, 70.1%, similar to recipients within Milan criteria, with the 1-year, 3-year and 5-year overall survival of 93.8%, 62.1% and 62.1% ($P = 0.586$). The tumor-free survival rates were also similar between these two subgroups, with 51.9% and 51.9% vs. 85.6%, 85.6% and 64.2% during the same time interval, respectively ($P = 0.054$). Cox regression analysis identified Hangzhou criteria (within vs. outside, hazard ratio (HR) 0.376) and diameter of the largest tumor (HR 3.523) to be independent predictors for overall survival. The only predictor for tumor-free survival was diameter of the largest tumor (HR 22.289).

Conclusions: Hangzhou criteria safely expanded the candidate pool and are feasible in assessment of candidates for SLT. This is helpful in donor liver allocation in transplant practice.

Abstract # P-359

Current Status and Outcome of Pediatric Liver Transplantation: A Saudi Perspective of Recently Established Organ Transplant Center. Talal T. AlGoufi, Mohammed A. Shagrani, Mohammed I. Alsebayel, Yasser M. Elsheik, Hamad M. Albahili, Jessica M. Murray, Asma I. Faiyad, Martin M. Burdelski, Deiter C. Broering. *Liver & Small Bowel Transplantation & Hepatobiliary-Pancreatic Surgery, Organ Transplant Center, King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia*

***PURPOSE:** To evaluate our recently established Organ Transplant Center experience in Pediatric Liver Transplantation and compare our results to internationally published figures.

***METHOD:** Charts of 107 patients who received liver transplants during the period of November 2010 – November 2013 were reviewed. Kaplan-Meier Survival Analysis was used for calculating and plotting patient and graft survival.

***RESULTS:** 107 patients (ages 4-192 months, Median age=16.8 months) underwent 111 transplant procedures. Weights at transplantation were between 4.4 – 32.5 Kg (Median wt= 8.86 Kg). There were 103 (92%) transplants performed from living donors, 12 were ABO incompatible. The main indications for transplant were biliary atresia and familial cholestatic syndromes (25 %, n = 28 and 24 %, n = 27 respectively). Metabolic liver diseases were the indication in 12% (n = 13) (UCD = 4, Tyrosinemia=2, Hyperoxaluria=3, BASD=1 and Wilson's disease = 1, Mitochondrial Cytopathy n=2). Other indications (29%): Cholelithiasis, n=3, Sclerosing cholangitis n= 5, Liver tumors, n= 3, Alagille syndrome, n= 4, CHF, n= 2, Biliary hypoplasia, n= 1, Langerhans Histocytosis, n= 1, Crigler-Najjar Syndrome, n= 7, GSD IV, n=1, Re-transplant, n= 4, Acute liver Failure, n=1). Cryptogenic cirrhosis/cholestasis were the indication for transplant for 10 % (n = 11). 22 % (n = 23) had biopsy proven acute cellular rejection, 4 patients developed chronic rejection and 1 developed De novo AIH. Vascular complications were noted in only 9% of patients (HAT n=3, HAS n=1, PVT n=5 and PV stenosis n=1). 4.5% of patients had biliary complications (leak n=2 and stricture n=3). 9% of patients suffered from other surgical complications such as Intestinal perforation n= 4, diaphragmatic hernia n=2 and compartment syndrome n=1, Incisional hernia n=2, Hematoma n=1). 8

of our patients died (4 at home) due to graft unrelated causes. Actual patient and graft survival were calculated to be 93.4% and 90.6%, respectively.

***CONCLUSION:** Despite the obstacles associated with establishing a new program in a developing country, we have overcome a steep learning curve with outcome results comparable to internationally published series.

Abstract # P-360

Does Autologous Blood Transfusion during Liver Transplantation for Hepatocellular Carcinoma Increase Risk of Recurrence? Raphael L.C. Araujo¹, Wellington Andraus¹, Carlos Andrés Pantanali¹, Luciana Haddad¹, Joel Avancini Rocha Filho², Luiz Augusto Carneiro D'Albuquerque¹. ¹Department of Gastroenterology, University of São Paulo School of Medicine, São Paulo, Brazil; ²Department of Anesthesiology, University of São Paulo School of Medicine, São Paulo, Brazil

Background: Autologous Intraoperative Blood Salvage (IBS) is usually used to minimize the effects of intraoperative bleeding in major surgeries, but it has been avoided in patients with hepatocellular carcinoma (HCC). We analyzed outcomes between patients undergone Liver Transplantation (LT) for HCC who received or not IBS.

Method: Consecutive HCC patients undergone LT were studied retrospectively. Univariate and Cox regression models were developed for recurrence and death.

Results: Between 2002 and 2012, 159 patients were studied, 122 (76.7%) in the IBS group. The Overall (OS) and Recurrence Free Survival (RFS) in 5 years were 58.9% and 83.4%, respectively. No differences in OS ($p=0.609$) and RFS (0.907) were detected between the IBS and non-IBS groups, respectively Figure 1.A and 1.B.

On multivariate analysis for OS, degree of tumor differentiation remained as the only independent predictor. Regarding the IBS volume, no differences were detected in OS and RFS ($p=0.055$ and $p=0.512$, respectively), even at 90-day and later period ($p=0.518$ for both outcomes).

Discussion: This study showed no differences in RFS or OS between patients who received IBS or not during LT for HCC. A trial comparing the use of IBS or not in LT for HCC is justified and should be designed to detect small differences in outcomes.

Abstract # P-361

Influence of Hepatitis D Virus Co-Infection on Graft Survival after Liver Transplantation for Hepatitis B Virus Cirrhosis. Florin Botea, Vladimir Brasoveanu, Mihnea Ioan Ionescu, Speranta Iacob, Gabriela Droc, Irinel Popescu. *Center of General Surgery and Liver Transplantation, "Fundeni" Clinical Institute, Bucharest, Romania*

BACKGROUND. The negative role of hepatitis D virus (HDV) co-infection in the progress of hepatitis B virus (HBV) cirrhosis in immunocompetent is common knowledge. However, limited data is available on the influence of HDV co-infection on graft survival after liver transplantation (LT) for HBV cirrhosis. The aim of this study was to assess the influence of HDV co-infection on graft survival after LT for HBV cirrhosis.

MATERIAL AND METHODS. Patients who underwent whole deceased LT in our center between 2000 and 2012 for decompensated HBV cirrhosis were enrolled in the study. Clinical and demographic data were collected at the time of LT and each follow-up. The recipients were divided into two groups in function of the presence (group 1) or absence (group 2) of HDV co-infection. In order to assess graft survival, Kaplan-Meier method compared by log-rank test was used, and factors found with $p \leq 0.1$ were introduced in the multivariate Cox regression.

RESULTS. A total of 150 subjects fulfilled the criteria and were included in the analysis. Graft survival different significantly between the two groups of patients in favor of recipients with HDV co-infection, with an estimated survival time of 101 months (group 1) vs 88 months (group 2) ($P = 0.012$). The difference remained significant after multivariate regression adjusted for recipient and donor variables ($P = 0.018$; HR = 2.5, CI = 1.2-5.6).

CONCLUSION. Recipients with HDV co-infection seem to have an improved outcome in terms of long-term graft survival after liver transplantation for HBV cirrhosis.

Abstract # P-362

Application of the BAR Score As Predictor of Short- and Long-Term Survival in Liver Transplantation Patients. Ivan Dias Campos Junior, Elisabete Yoko Udo, Raquel Silveira Bello Stucchi, Ilka Fátima Santana Ferreira Boin. *Unit of Liver Transplantation, University of Campinas, Campinas, São Paulo, Brazil*

The balance of risk (BAR) is a prediction system after liver transplantation. To assess the BAR system a retrospective observational study was performed for 300 patients who had transplant surgery between 1997 and 2012. BAR score was computed for each patient. Cutoff points were 13, midpoint of original BAR scale, and 8, the midpoint observed in our population. Statistical analysis: Kaplan-Meier, Mann-Whitney, and logistic regression. 12-month survival was 48% for BAR ≥ 13 and 67% for BAR < 13 ($p = 0.03$); and 59% for BAR ≥ 8 and 71% for BAR < 8 ($p = 0.04$). Factors of survival < 3 months were BAR ≥ 13 (OR = 3.62; IC95% = 1.48-9.09; $p = 0.005$), and intrasurgical use of packed red blood cells (RBC) above 6 units (OR = 7.00; IC95% = 3.80-13.26; $p = 0.0006$). For survival < 12 months, factors were BAR ≥ 13 (OR = 2.46; IC95% = 1.02-6.07; $p = 0.046$), RBC > 6 units (OR = 5.08; IC95% = 2.85-9.26; $p = 0.0005$), and donor age over 50 (OR = 3.08; IC95% = 1.43- 6.80; $p = 0.004$). Our study is a contribution to the incorporation of the BAR system into Brazilian transplantation centers.

Abstract # P-363

First Experience of ABO Incompatible Liver Transplantation in Local Transplant Center Using Plasma Exchange and Anti-CD20 Monoclonal Antibody. Nam-Kyu Choi. *Hepatobiliary and Transplantation, Chosun University Hospital, Gwangju, Korea*

Background: ABO incompatible liver transplantation (ABOi LT) has been recommended only for emergency case because of the risk of antibody-mediated rejection (AMR). However, various managements for prevention of AMR have improved the complication rate and survival outcomes. Herein, we introduce our first ABOi LT successful case although the patient has been into nadir.

Methods: At June 2013, one patient of ABOi LDLT was performed in our center. Our institution protocol for ABOi LDLT was planned using rituximab at preoperative 2 weeks, several plasma exchanges (PE, target level: isoagglutinin titer $\leq 1:2$), basiliximab during operation and postoperative 4 day, and routine intravenous immunoglobulin (IVIG) at postoperative 1 to 5 days with splenectomy.

Results: The Fifty-three year old male patient was admitted due to liver cirrhosis with viral hepatitis B (HBV). The image study shows hepatocellular carcinoma (HCC). ABO blood type of the recipient was Rh+ O (O+). He received the right lobe of liver from a related young male donor with Rh+ B (B+) blood type. Initial isoagglutinin titer were 1:32. Recipient received rituximab at 2 weeks before LDLT, followed by total 6 times of PE. The recipient received the modified Rt lobe (MRL) transplantation with the splenectomy. After operation we performed the postoperative PE to prevent AMR on postoperative day. And there was a postoperative bleeding complication with coagulopathy and bleeding related re-exploration on this patient.

Conclusions: The new ABOi-LDLT protocol using rituximab, PE, basiliximab, and IVIG is pivotal strategies. But PE could increase the bleeding tendency intraoperative and postoperative hospital days.

Abstract # P-364

Current Status of Liver Transplantation in Poland. Jaroslav Czerwinski, Piotr Malkowski, Roman Danielewicz. *Deaprtment of Surgical and Transplantation Nursing, Warsaw Medical University, Warsaw, Poland; Deaprtment of Surgical and Transplantation Nursing, Warsaw Medical University, Warsaw, Poland; Polish Transplant Coordinating Center Poltransplant, Warsaw, Poland*

Organ transplantation program started in Poland in 1966, but we had to wait until 1990 for first successful liver transplantation in our country. First cadaveric liver transplantation was performed in 1987 and so far over 3093 liver transplantation has been performed both in adult and pediatric recipients. Until now almost 500 pediatric liver transplantations were performed in Poland.

Although liver transplant program in Poland is in good progress it is still insufficient – the number of patients enrolled to waiting list is higher than the number of transplants performed, unless waiting time is relatively short. The number of liver transplants in Poland is still much lower than in some European countries. The problem of discrepancy of needs and demands is not only a polish problem, but in our country it may be related to small number

of liver transplant centers and small amount of liver donors to be accepted. There are only 6 active liver transplantation centers. Another reason is low utilization of livers from cadaveric donors –approximately 50% percent of all cadaveric donors became an utilized liver donors.

The most common indication for elective adult liver transplantation is cirrhosis (over 50%) and in this number HCV related cirrhosis dominates (20% of cases). Acute liver failure is an indication in 5% of transplantations, tumors in 7%. In pediatric recipients cholestatic diseases (usually congenital) are most common indicator. There are strict and transparent system of organ allocation and distribution based on urgency, immunological compatibilities, anatomical measures, age donor-recipient matching, prediction of outcome and waiting time.

Despite described difficulties there is in Warsaw one of the most active liver transplant center performing large number of liver transplant (169 in 2012) and the results of transplantation is very good. Overall 5 years graft survival in urgent and elective cases was respectively 68% and 74%, while recipient survival was respectively 70% and 79% in 2012. Detailed data and statistics will be presented in details by authors.

Abstract # P-365

Living Donor Liver Transplantation in Pakistan: A First Report.

Faisal S. Dar¹, Abdul W. Dogar, Haseeb H. Zia, Amna Liaquat, Minhal Pervaiz, Nasir A. Khan, Mohammad Salih, Muhammad O. Querishi, Najam Ul Hassan Shah, Mohamed Rela². ¹*Department of Liver Transplantation/ Hepatobiliary & Pancreatic Surgery, Shifa International Hospital, Islamabad, Pakistan;* ²*Department of Liver Transplantation/ Hepatobiliary & Pancreatic Surgery, Global Hospital, Chennai, Tamil Nadu, India*

Introduction: Living donor liver transplant (LDLT) is the standard treatment for liver failure in Asia, where the liver disease burden is immense. Here we report the first experience of LDLT from a single center in Pakistan.

Methods: all patients who underwent LDLT from May 2012 to November 2013 were included. Demographic, clinical, operative details and postoperative events were recorded. Recipient's data was prospectively collected and analyzed retrospectively on SPSS v 19.

Results: A total of 56 recipients were included. Median age was 44.8 (12-72) years, 42 (75%) were males and 14 (25%) were females. Commonest indication was HCV in 42 (75%), cryptogenic cirrhosis in 7 (12.5%), HBV in 2 (3.5%) and 5 (8.9%) others. Child-Pugh grading was C in 36 (64.2%), B in 14 (25%) and A in 1 (1.7%). The median MELD was 17 (7-37). Right lobe graft was done in 53 (94%), left lobe in 2 (3.5%) and 1 (1.7%) patient had whole liver (as domino graft). Nineteen (33.9%) right lobe grafts required hepatic vein branch reconstruction (PTFE/recipient portal vein graft). Five (8.9%) right lobe grafts had complete MHV. Thirty four (59.6%) patients had single, 22 (39.2%) had 2 bile ducts reconstructions. Median cold ischemia time was 64 minutes (4-215); median warm ischemia time was 48 minutes (18-90). Median duration of surgery was 9.5 hours (5.5-15). Median hospital stay was 17 day (8-27). Three (5.3%) patients were re-explored during postoperative period. Pleural tap was required in 16 (28.5%) patients, CRRT in 4 (7.1%) and acute cellular rejection in 22 (38%) and all of these responded well to steroid pulse (methylprednisolone; 1gm for three days). Thirty days mortality was 14.2% (8), two (3.5%) patients died in follow up period and 46 (82.14%) are alive with good graft function.

Conclusion: This is the beginning of a new era for Pakistan which is overburdened with liver disease. LDLT remains the only realistic option for these patients. Being a new center, this was a sizeable number of patients with decent results.

Abstract # P-366

Association of Acute Rejection Episodes With Hepatitis B Virus Recurrence after Liver Transplantation for Hepatitis B Virus-Related End-Stage Liver Diseases.

Junfang Deng, Lei Geng, Xiaofeng Tang, Sheng Yan, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Key Laboratory of Key Combined Multi-Organ Transplantation, Hangzhou, Zhejiang, China*

Background: In immunity environment of patents with liver transplantation for HBV-related end-stage liver diseases, the association between acute rejection episodes and hepatitis B virus recurrence remains unclear today.

Methods: a total of 1118 consecutive patients with HBV-related end-stage liver diseases who underwent liver transplantation (LT) at our Center, the first affiliated Hospital, zhejiang University from January 2001 to September

2013 were studied retrospectively. The incidence of post-transplant acute rejection, and HBV recurrence were recorded. The end of the follow-up period was November 2013.

Results: In this study, 1118 patients with HBV recurrence were found, patients with acute rejection episodes were 119 (10.6%), patients with HBV recurrence and acute rejection were 73 (6.5%), patients with HBV recurrence were 12 (1.0%), this study showed that the probability of the occurrence of acute rejection episodes and HBV recurrence on the same patient was very little. Among these patients (12) with HBV recurrence and acute rejection, the time of occurrence of HBV (9/12) was later than that of acute rejection, and these patients with acute rejection underwent corticosteroid therapy. The time of occurrence of HBV was earlier than that of acute rejection in 2 patients, but the time interval was more than eight years, and when acute rejection happened, the HBV status was inverse. **CONCLUSIONS:** It is less likely that acute rejection episodes and HBV recurrence occurred on the same patient with HBV-related end-stage liver diseases after liver transplantation, but Corticosteroid therapy would change this situation which may be ascribed to immunity environment change.

Abstract # P-367

Cardiovascular Risk Prediction in Liver Transplantation (LT). Tommaso Di Maira¹, Lorena Puchades¹, Victoria Aguilera^{1,2}, Angel Rubin^{1,2}, Fernando Sanjuan¹, Rafael Lopez Andujar¹, Martin Prieto^{1,2}, Marina Berenguer^{1,2}. ¹Hepatology, Hospital Universitario y Politecnico La Fe, Valencia, Spain; ²CIBERehd, Instituto de Salud Carlos III, Valencia, Spain

Introduction: Cardiovascular events together with *de novo* neoplasia represent major medium and long-term LT complications resulting in impaired survival.

Aims: To assess whether the Framingham score at transplantation can predict the development of post-LT cardiovascular events.

Patients and methods: Patients transplanted between January 2007 and December 2008 were included. Baseline features (age, gender, LT indication, induction immunosuppression, donor-related factors), history of risk factors for cardiovascular events (tobacco use, arterial hypertension-AHT, diabetes, dyslipidemia, renal insufficiency, obesity) and cardiovascular (CV) events occurring post-LT (ischemic heart disease, stroke, peripheral arterial disease) were recorded.

Results: 187 patients, 64% men, mean age 55 ± 10 years, mostly transplanted for viral or alcoholic cirrhosis (42% and 24%, respectively) were included. Induction immunosuppression was equally based on ciclosporin or tacrolimus (57% and 42%, respectively). Mycophenolate mofetil was used in 34%. Mean donor age was 56 ± 18 yrs. PreLT cardiovascular risk factors were: history of tobacco use 51%, diabetes 24%, hypercholesterolemia 10%, hypertriglyceridemia 10%, AHT 20%, estimated filtration rate < 60 ml/min 16%. At transplantation, 32%, 34% and 34% of patients respectively had a low, moderate and high Framingham risk score. Five percent of LT recipients developed at least one CV event. No association was found between preLT CV risk factors, age, gender or Framingham score and the development of CV events postLT. However, an association was found between the Framingham score at LT and overall survival (p=0.018 by Kaplan-Mayer) with a 1,3 and 5 yrs survival rates of 89%, 87% and 79% in the low-risk group, 86%, 80% and 78% in the moderate risk group, and 79%, 67% and 60% in the high-risk group. **Conclusions:** In our series, the Framingham score at LT did not predict the development of post-LT CV events but was highly associated with overall survival. Studies with higher number of CV events are needed to confirm these findings.

Abstract # P-368

Survival after Liver Transplantation for Hepatocellular Carcinoma: Analysis of Risk Factors in a Single Center.

Aranzazu Varona¹, Carmen Diaz¹, Armando Aguirre-Jaime⁵, Dacil Diaz², Julian Portero³, Victoria Castro⁴, Carmen Maeso⁴, Soledad Garrido³, Manuel Barrera¹, Arturo Soriano¹. ¹HBP Surgery and Transplantation, Hospital Universitario N S Candelaria, Santa Cruz de Tenerife, Spain; ²Hepatology, Hospital Universitario N S Candelaria, Santa Cruz de Tenerife, Spain; ³Radiology, Hospital Universitario N S Candelaria, Santa Cruz de Tenerife, Spain; ⁴Pathology, Hospital Universitario N S Candelaria, Santa Cruz de Tenerife, Spain; ⁵Research Unit, Hospital Universitario N S Candelaria, Santa Cruz de Tenerife, Spain

OBJECTIVE: to analyse survival of cadaveric liver transplantation for hepatocellular carcinoma in a Spanish transplantation programme

METHODS: From 1996 to 2012, we studied 82 transplant survival factors for related cirrhosis-HCC retrospectively on prospectively collected data base, covering preoperative, intraoperative donor and candidate variables as well as short and long term recipient variables

RESULTS: We performed 126 transplants in 115 patients. The outcomes were mortality in 32%, tumor relapse in 6% and retransplantation in 9% (with high mortality). The mortality causes were underlying disease (40%) and extrahepatic complications (16%). The Kaplan-Meier survival : 89, 72 and 68 % at 1, 3, and 5 years respectively, with worse results in retransplantation. The univariate analysis (p ≤ 0.05) showed lower survival in pretransplant renal impairment candidate, higher modified Charlson comorbidity index, preoperative AFP ≥ 100ng/ml, donor macrosteatosis ≥ 30%, higher graft cold and warm ischemia, greater transfusion of fresh frozen plasma and blood intraoperatively, veno-venous bypass, higher pTNM, postoperative infection, rejection, graft dysfunction, tumor recurrence and retransplantation. According to Cox regression for mortality (p ≤ 0.05) three risk factors were found: macrosteatotic donor ≥ 30% (odds ratio 18.8, 4.1-85.6), preoperative AFP ≥ 100 ng/ml (odds ratio 2.4, 1.1 to 5.4 %) and the need of retransplantation (odds ratio 2.5, 1.0-6.0)

CONCLUSIONS: Survival after liver transplant for HCC was acceptable and a low relapse rate was found with poor results after retransplantation. The strongest risk factor for mortality was a macrosteatotic donor, and preoperative AFP ≥ 100ng/ml and retransplantation were also independent risk factor for mortality.

Abstract # P-369

Predicting Survival after Orthoptic Liver Transplant (OLT): An Independent Assessment of the BAR Score. Jayne L. Dillon¹, Artur Jakabowski, Alicia Healey¹, Nazia Selzner¹, Eberhard Renner¹. ¹Multi-organ Transplant Programme, University Health Network, Toronto General Hospital, Toronto, ON, Canada; ²Clinical Sciences, University of Toronto, Toronto, ON, Canada

Optimizing post-OLT survival by improving recipient and donor matching is an unmet need in MELD based allocation systems. Among the many scores proposed, the BAR score (consisting of 6 donor and recipient parameters readily available at the time of organ allocation) has been recently reported to best predict 3 month post-OLT survival (Are There Better Guidelines for allocation in Liver Transplantation? Dutkowski et al Annals of Surg 2011). We aimed to independently validate the BAR score in a large patient population from a single Canadian liver transplant center.

Electronic records of all adult patients receiving a liver transplant at our center between January 2000 and December 2011 were retrospectively reviewed. Patients receiving a split liver, live donor liver or donation after cardiac death liver transplant were excluded, as were patients in whom a BAR score could not be calculated due to missing data.

There were 1357 adult transplants in the study period, 100 were excluded due to incomplete records and 415 were either split, live donor or DCD organs. 842 datasets were used in the final analysis. 72% of these OLT recipients were male, median age was 52 years, average BMI was 28.7kg/m2, average MELD at time of transplant was 20, with an average waiting time to transplant of 233 days. 9% of patients were on life support and 7% were re-transplants. The average D-MELD at transplantation was 899 and the mean BAR score 8. The BAR score correlated with length of ICU and total hospital stay (LOS; Rs 0.44, P<0.001), but not mortality.

In this large single center adult liver transplant cohort, the BAR score predicted resource utilization (LOS), but not 3 month post-OLT mortality. The latter may be attributable to the limited number of recipient/donor pairs with high BAR scores in our series.

Abstract # P-370

Analyses of 20-Year Survivors after Liver Transplantation in Adults. Cristina Dopazo¹, Itxarone Bilbao¹, Lluís Castells², Gonzalo Sapisochin¹, Cristian Moreiras¹, Isabel Campos², Juan Echeverri¹, Mireia Caralt¹, Jose Luis Lazaro¹, Ramon Charco¹. ¹Department of HPB Surgery and Transplants, Hospital Vall d'Hebron, Barcelona, Spain; ²Hepatology Unit, Department of Internal Medicine, Hospital Vall d'Hebron, Barcelona, Spain

Background. Liver transplantation (LT) is the treatment of choice for chronic and acute liver failure, however the status of long-term survivors and allograft function is still not well known.

Aim. To evaluate the clinical outcome and allograft function of survivors after 20 years post-LT, the cause of death during the same period and risk factors of mortality.

Methods. We performed a retrospective study from prospective collected data, longitudinal and single institution, of adult LT recipients surviving 20 years or more. A comparative sub-analysis was performed with those patients whom are not alive 20 years after transplantation to identify causes of death and risk factors of mortality.

Results. Between 1988-1994, 132 patients received 151 orthotopic LT and 28 (21%) survived for more than 20 years. Regarding liver function in this group, median of AST, ALT and Total Bilirubin at 20 years post-LT were 33IU/L (13-135IU/L), 27 (11-152IU/L) and 0.6mg/dL (0.3-1.1mg/dL) and 40% of the patients presented renal dysfunction [median eGFR=64 mL/min/1.73m²(6-144 mL/min/1.73m²)]. Among 20-year survivors, 61% had arterial hypertension, 21% had diabetes mellitus and 43% had dyslipidemia. Five patients (18%) developed a cardiovascular event during the follow-up and seven patients (25%) developed *de novo* tumors. Infections were the most cause of death along 1st year post-transplant (32%) and between 1st and 5th year post-transplant (25%). After 5 years of transplant, hepatitis C recurrence (22%) became the first cause of death. Factors having an impact in long-term patient survival were HCC indication (p=0.049), pretransplant renal dysfunction (p=0.043) and long warm ischemia time (p=0.016), moreover the post-transplant factors were diabetes mellitus (p=0.001) and liver dysfunction (p=0.05) at 1 year.

Conclusions. Our results show a powerful effect of the high immunosuppression used during the first decades in long-term outcome of our LT patients. For this reason, minimization of immunosuppression therapies should be considered to prolong long-term survival.

Abstract # P-371

A Positive Complement Dependent Cytotoxic (CDC) Crossmatch Does Not Impact on Patient Survival or Increase the Risk of Acute Cellular Rejection, or Biliary Strictures after Liver Transplantation. Jessica K. Dyson¹, Vaughan Carter³, Mark Hudson^{1,2}, Derek M. Manas^{1,2}, Steven Masson^{1,2}. ¹Liver Unit, Freeman Hospital, Newcastle upon Tyne, United Kingdom; ²Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne, United Kingdom; ³NHS Blood and Transplant, Newcastle, United Kingdom

Aim: The impact of donor specific antibodies on outcomes after liver transplantation(LT) remains controversial. We evaluated the impact of a positive lymphocyte complement dependent cytotoxic(CDC) crossmatch on patient survival and the incidence of complications following LT.

Methods: We analysed the outcomes for all patients undergoing LT in our centre over a 6 year period (2007-2012). All patients transplanted at our centre receive a retrospective CDC crossmatch. We examined the indication for LT, patient survival, complications (acute cellular rejection[ACR], biliary strictures, chronic ductopenic rejection) and whether the complications correlated to the presence of a positive crossmatch pre- and post-treatment with dithiothreitol(DTT) for IgM/IgG or IgG antibodies.

Results: There were 194 liver transplants performed in this period(60% male). A crossmatch was available for 186 patients. The median age of recipients was 55 years(range 19-71 years). The primary indications for LT were alcoholic liver disease 31%, autoimmune liver disease 18%, hepatocellular carcinoma 11%, viral hepatitis 9%, vascular 7.5%, paracetamol toxicity 7.5%, NAFLD 5% and other 11%. There were 12 deaths(6.5%) in the period studied. 76 patients had a positive crossmatch and of these 13 were IgG positive (i.e. positive post-DTT treatment). Patient survival did not correlate with the presence of an IgM or IgG positive crossmatch (Fisher's exact test, p=1.000 for both).

ACR requiring augmentation of immunosuppression occurred in 38 patients(20%). Neither a positive IgM crossmatch (Chi-square test, p=0.094) or a positive IgG crossmatch (Fisher's exact test, p=1.000) correlated with the incidence of ACR. Clinically significant biliary strictures occurred in 14 patients(7.5%). The presence of a positive crossmatch did not correlate with the incidence of strictures (Chi square test, p=0.124 for IgM antibodies and Fisher's exact test, p=1.000 for IgG antibodies). Only 1 patient developed chronic ductopenic rejection.

Conclusion: The presence of antibodies to donor lymphocytes (detectable by CDC crossmatch) does not affect patient survival or the incidence of ACR or biliary anastomotic strictures.

Abstract # P-372

Impact of HLA Mismatch on Clinical Outcome after Living Donor Liver Transplantation for PBC: Japanese Multicenter Study. Hiroto Egawa¹, Shotaro Sakisaka², Yasuaki Takeyama², Masakazu Yamamoto¹. ¹Surgery, Tokyo Women's Medical University, Tokyo, Japan; ²Gastroenterology, Fukuoka University, Fukuoka, Japan

Significance of HLA mismatch (HLA MM) in clinical outcome after liver transplantation for primary biliary cirrhosis (PBC) is still controversy. We hypothesized that the impact of HLA MM could be elucidated in living donor liver transplantation (LDLT) in which frequency of HLA matching is greater than in deceased donor liver transplantation (DDLT). We collected retrospectively data of 451 patients undergoing primary liver transplantation for PBC in 28 centers by December 2010 in the Registry of the Japanese Liver Transplantation Society. Recipient age ranged from 28-70 years (median, 51 years) and donor age ranged from 18-66 years (median, 35 years). Graft type was left in 232 patients, right in 216 patients, and whole in 3 patients. 461 patients underwent LDLT, 4 patients underwent DDLT, and 1 patient had domino LT. The length of the follow-up period ranged from 1 to 6864 days (median, 2668 days). The relationship of donors were the first grade relative donors (1st RD) in 247, the 2nd RD in 77, the 3rd RD in 5, the 4th RD in 2, the 5th RD in 1 and unrelated donor including spouses in 116. Overall patient survival was 76.2 %, 80 %, and 52.5% in 5, 10, 15 years after LT, respectively. The optimal cut-off values for analysis were determined by ROC curves. Significant risks for patient survival were recipient age older than 61 (risk ratio [RR]; 2.359), donor age older than 50 (RR; 1.704), graft recipient weight ratio smaller than 0.8 (RR; 1.611), and greater HLA-A/B/DR-MM (RR; 4.919 in 4-6 vs 0-2, RR; 3.093 in 4-6 vs 3). Recurrent PBC (rPBC) was diagnosed by histological findings in patients with abnormal liver functions. Median value of date of diagnosis of rPBC was 1693 days after LT. The analysis regarding rPBC was performed in 361 patients surviving longer than 1 year after LT. A significant risk for rPBC was recipient age younger than 52 (RR; 3.559). HLA-A/B/DR-MM was another significant risk by univariate analysis but not by multivariate analysis. rPBC had no significant effect on patient survival. In 9 patients died due to liver failure later than 10 years after LT, rPBC was diagnosed 1641-3018 days after LT. In conclusions, HLA mismatch had a significant impact on patient survival but not in recurrence. Recurrence had no significant impact on patient survival but might contribute to graft failure later than 10 years.

Abstract # P-373

Simplifying Cardiopulmonary Exercise Testing in End Stage Liver Disease Patients: A Pilot Study. Timothy J. Gunneson, Bruce Johnson, James Findlay, Michael Joyner, Watt D. Kymberly. Mayo Clinic, Rochester, MN, USA

Optimizing patient survival and organ utility is a challenge. Poor cardiopulmonary fitness and respiratory gas exchange abnormalities have been associated with worse outcomes in liver transplant candidates. Purpose: We seek to determine if a modified 3 minute step test (potentially office based) is feasible and equivalent to standard cardiopulmonary exercise testing in liver transplant candidates with severe decompensation. Methods: 5 patients with Childs C end-stage liver disease and severe debility awaiting liver transplantation performed both standard CPET and the modified 3 minute step test (Shape medical systems). Results: All 5 patients had clinical evidence of substantial sarcopenia and debility and/or large volume ascites. All 5 patients were able to complete both tests. Mean age was 59.8 ±9 years, mean MELD score 20 (range13-26), mean BMI 27.6 kg/m² (range 16.4-37.2). Peak VO₂ was similar with a mean of 901 mL/min (step test) compared to 856 mL/min (cycle test), p=0.64. VO₂ at a respiratory exchange ratio (RER) of 1.0 was similar with both tests (681 mL/min (step) vs 646 mL/min (cycle), p=0.69). VE/VCO₂ slope (ventilatory efficiency) was similar (40 vs 39, p=0.94). The ventilatory compensation point (i.e., anaerobic threshold) was also similar (~80% of peak VO₂) for both studies. Conclusion: The modified 3 minute step test provides similar assessment of cardiopulmonary exercise capacity and gas exchange measures as standard testing in patients with decompensated end-stage liver disease, with similar tolerability. The 3 minute step test provides a simplified, potentially office based, cardiopulmonary exercise test to administer to potential liver transplant recipients.

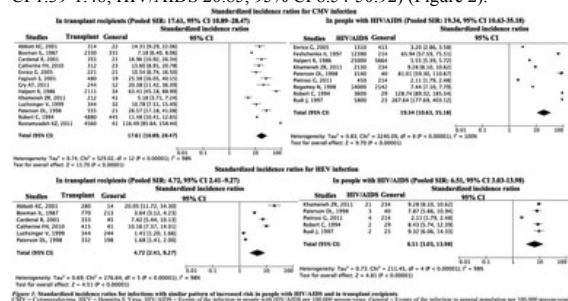
Abstract # P-374

Incidence of Infections in People with HIV Infection Compared With Immunosuppressed Transplant Recipients: A Meta-Analysis. Zhiyong Guo, Weiqiang Ju, Mengyao Qiu, Dongping Wang, Xiaoshun He. *Organ Transplant Center, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

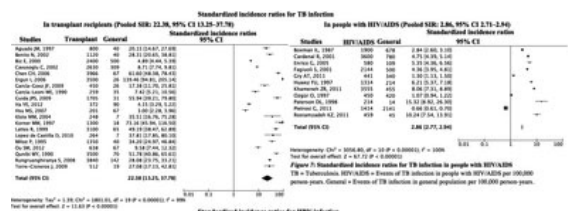
Background Large population-based studies have shown that a wide range of infections could be associated with immune deficiency. We aim to compare infection incidence in population-based cohort studies of people with HIV/AIDS and people immunosuppressed after solid organ transplantation.

Methods We identified eligible population-based studies through searches of PubMed and reference lists. We calculated log standardized incidence ratios (SIRs). Random-effects meta-analyses of SIRs were pooled by type of infection for both immune deficient populations.

Results 44 studies of people with HIV/AIDS and 51 of transplant recipients were included. For all the types of infections examined, there was a significantly increased incidence in both populations. The pattern of increased risk was much the same in both populations for Cytomegalovirus (transplant 17.6, 95% CI 10.89–28.47; HIV/AIDS 19.34, 95% CI 10.63–35.18) and Hepatitis E Virus (transplant 4.72, 95% CI 2.41–9.27; HIV/AIDS 6.51, 95% CI 3.03–13.98) (Figure 1), while significantly differed for Tuberculosis (transplant 22.38, 95% CI 13.25–37.78; HIV/AIDS 2.86, 95% CI 2.71–2.94), Hepatitis B Virus (transplant 20.73, 95% CI 13.73–31.30; HIV/AIDS 1.96, 95% CI 1.28–3.0) and *Pneumocystis carinii* pneumonia (transplant 1.43, 95% CI 1.39–1.48; HIV/AIDS 20.85, 95% CI 8.54–50.92) (Figure 2).



Test for overall effect: $Z = 4.31$ ($P < 0.0001$)



Standardized incidence ratios for HBV infection



Heterogeneity: $\chi^2 = 872.74$, $df = 6$, $P < 0.00001$, $I^2 = 99\%$
 Test for overall effect: $Z = 6.67$, $P < 0.00001$

Test for overall effect: $Z = 20.50$ ($P < 0.00001$)

Conclusions Although a higher incidence of infections in both transplan-

Conclusions Although a higher incidence of infections in our transplant recipients and patients with HIV/AIDS, the infection pattern is still different from each other, suggesting distinct pathogenesis mechanism of infections in the two groups of patients.

Abstract # P-375

Predictors of Intraoperative Blood Loss in Living Donor Liver Transplant Recipients and Its Correlation With Postoperative Outcome. Manoj Gupta, Tejal Bhoj, Shailendra Lalwani, Vivek Mangla, Vinay Kumar, Samiran Nundy, Naimish Mehta. *Surgical Gastroenterology and Liver Transplantation, Sir Gangaram Hospital, New Delhi, Delhi, India*

Introduction

Liver transplantation can lead to massive blood loss; resulting in transfusion of large volume of blood products. This study was done to assess the pre-operative predictive factors for intraoperative blood loss among adult living donor liver recipients and to establish whether intraoperative transfusion is a prognostic factor affecting postoperative outcome.

Methods

Out of 148 liver transplant procedures (145 Living Donor Liver Transplant [LDLT] and 3 Deceased Donor Liver Transplant) performed between June 2010 and November 2013, 118 LDLT were included in the study. Exclusion criteria were paediatric and fulminant liver failure patients. They were grouped according to their transfusion requirement- Group 1 (n=8) required no PRBC transfusion, Group 2 (n= 51) 1-5 units PRBCs and Group 3 (n= 59) >5 units PRBCs. The preoperative variables examined were age, primary diagnosis, previous abdominal surgery, CTP score, MELD, and pre-op haemoglobin (Hb), platelets, PT-INR, aPTT, fibrinogen, D-dimer and presence of portal vein thrombosis. Intraoperative variables studied were use of portacaval shunt, warm ischaemia and cold ischaemia time, anhepatic duration, fresh frozen plasma and platelet transfusion, use of inotrope and tranexamic acid. Outcome variables studied were intensive care unit (ICU) and hospital stay, post-operative blood transfusion and complications e.g. bleeding, re-exploration, sepsis, graft dysfunction and mortality.

Results

On logistic regression, preoperative Hb ($p=0.030$, Odds Ratio [OR] 3.324, 95% Confidence Interval [CI] 1.12 to 9.83), intra operative use of tranexamic acid ($p=0.023$, OR 30.08, 95% CI 1.61 to 561.26) and inotrope ($p=0.007$, OR 87.87, 95% CI 3.486 to 2214.86) were found to be statistically significant. On evaluating the outcome, recipients who received >5 units of PRBCs had prolonged ICU stay, post-operative haemorrhage requiring re-exploration, infection and mortality.

Summary

Patients with pre-operative coagulopathy are prone to increased incidence of intra operative blood loss; however in our study we found preoperative Hb, intraoperative tranexamic acid and ionotrope administration as significant factors in predicting intra-operative blood loss.

Abstract # P-376

Liver Retransplantation at a Major Living Donor Liver Transplantation Center: the Asan Medical Center Experience.

Tae Yong Ha, Shin Hwang, Gi Won Song, Chul Soo Ahn, Ki Hun Kim, Deok Bog Moon, Dong Hwan Jung, Gil Chun Park, Sung Gyu Lee. *Department of Surgery, Asan Medical Center, Seoul, Korea*

The volume of liver transplantation (LT) at the Asan Medical Center is 3289 LT cases including 461 cases of adult deceased donor LT, 2603 cases of adult living donor LT and 225 cases of pediatric LT. Of them, 99 cases (3.0%) in 95 patients underwent liver retransplantation. The proportion of retransplantation according to the primary diseases was 1.8% in hepatitis B virus infection, 13.7% in hepatitis C virus infection, 19.7% in hepatitis A virus infection, 7.8% in acute liver failure, and 5.1% in biliary atresia. Causes of graft failure were immunologic reason in 30.3%, disease recurrence in 22.2%, technical causes in 16.2%, and primary non-function in 13.1%. Preoperative model for end-stage liver disease score for retransplantation was 28.2 ± 7.8 . Operation types of retransplantation included living-to-deceased donor LT in 58.6%, deceased-to-deceased LT in 24.2%, living-to-living donor LT in 14.1% and deceased -to-deceased donor LT in 3%. In retransplantation patients, in-hospital mortality was 22.1% and patient survival rates were 68.3% at 1 year and 58.5% at 5 years. Survival analysis revealed that preoperative patient condition was the most important factor for survival, but combination of donor, recipient and surgical factors may affect the overall outcomes. It is strongly suggested to prepare a reliable survival prediction model for retransplantation in order to avoid futile retransplantation.

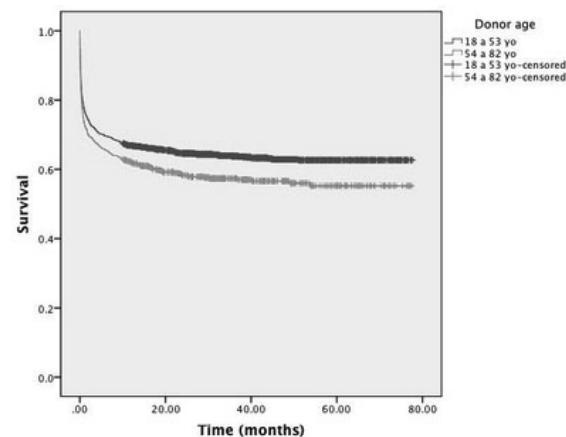
Abstract # P-377

Impact of Donor Age and Time on Mechanical Ventilation on Outcomes of Liver Transplantation in Brazil. Luciana Haddad¹, Alex Cassenote², Cristina C. Oliveira³, Wellington Andraus¹, Luiz Augusto Carneiro D'Albuquerque¹. ¹Gastroenterology, São Paulo University, São Paulo, Brazil; ²Epidemiology, São Paulo University, São Paulo, Brazil; ³FATEC, São Paulo, Brazil

Introduction: Several factors related to the donor have been related to outcomes of liver transplantation. There is, however, no Brazilian study that validates such evidence in a large national sample. The aim of this study was to relate liver donor data with results of liver transplantation in the MELD era.

Methods: We analyzed retrospectively an electronic database collected prospectively including transplant records since the beginning of the MELD allocation in June 2006 until February 2012. These data are from the Transplant Center of São Paulo State - Brazil. The variables are described as mean and standard error. Survival was compared by log rank test. Multivariate analysis was performed using generalized linear model.

Results: Database included 2666 adult liver transplant patients. The median survival of patients transplanted with donor between 18-53 years was 50.3 ± 0.8 months and between 54 and 84 years of 45.3 ± 1.52 , $p = 0.005$. Donor age was independently associated with both deaths as graft loss, with relative risk 1.43 (CI95% 1.09-1.87). Donors with mechanical ventilation time exceeding 5 days were also related to negative outcome (RR 1.45, 95% CI 1.11-1.89). Both donor age and length of intubation were a risk factor for poor outcome even after controlled by MELD.



Conclusion: Donor age greater than 54 years and donor on mechanical ventilation over five days are predictors of graft loss and death after liver transplantation in Brazil.

Abstract # P-378

Early Occurrence of New-Onset Diabetes after Transplantation Is Related to the Type of Liver Graft and Warm Ischaemic Injury. Hermien Hartog¹, Christine May², Chris Corbett², Jeremy Tomlinson², Simon Bramhall¹, Hynek Mergental¹, John Isaac¹, Darius Mirza¹, Paolo Muiesan¹, Tamara Perera¹. ¹Liver Unit, Queen Elizabeth Hospital, Birmingham, United Kingdom; ²Biomedical Research, Queen Elizabeth Hospital, Birmingham, United Kingdom

New-onset diabetes after transplantation (NODAT) occurs in 20-40% of liver transplant (LT) recipients. Cold ischaemia and other aetiologies have been attributed; however its association with grafts exposed to warm ischaemia (WI) has not been documented. We studied NODAT in LT recipients including grafts donated after circulatory death (DCD).

430 non-diabetic primary LT recipients [DCD, n=90(21%)] were followed up for 929 (142-2058) days. NODAT was defined as the composite endpoint of one of following (1) Two non-fasting plasma glucose levels ≥ 11.1 mmol/L ≥ 30 days apart, (2) oral hypoglycaemics ≥ 30 days consecutively (3) insulin therapy ≥ 30 days and (4) HbA1c ≥ 48 mmol/l. Resolution of NODAT was defined as cessation of treatment/hyperglycaemia. Temporal association of NODAT with patient and graft characteristics was analysed.

Cumulatively 81/430 (19%) developed NODAT after median of 152 days. NODAT was associated with HCV infection (29% vs. 18%; $p=0.03$), but not with age, sex, ethnicity and BMI. DCD recipients developed NODAT earlier in the postoperative course than DBD grafts (15 vs. 32 days; $p=0.037$) with

cumulative peak incidence at 60-90 days of 20% vs. 12% ($p=0.048$) (Fig 1). Early NODAT (within 30 days) was associated with shorter overall survival in DCD recipients (Log rank test $p=0.02$; numbers at risk 90, number of events 7).

Early NODAT in DCD graft recipients is a novel finding in this study. Donor WI and the impact on insulin sensitivity should be further studied and this could perhaps be associated with graft function.

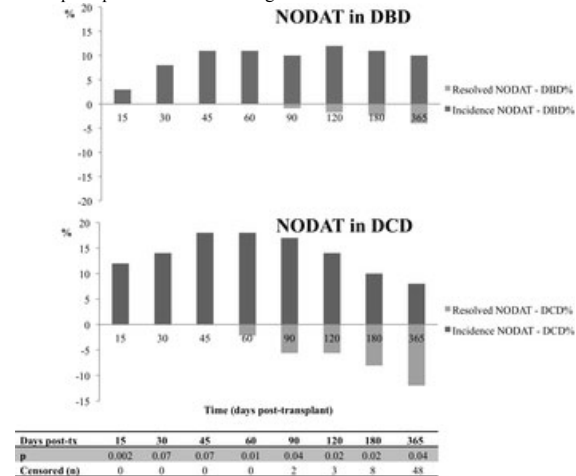


Figure 1 Graph showing temporal distribution of occurrence and resolution of NODAT at 15-365 days post-transplant in DBD and DCD graft recipients. Comparisons were done by Fisher's exact and Chi-square, as appropriate, for time-points 15-45 days, and Linear-by-Linear Association for day 60-365, including resolved cases as an ordinal variable. P-value<0.05= significant.

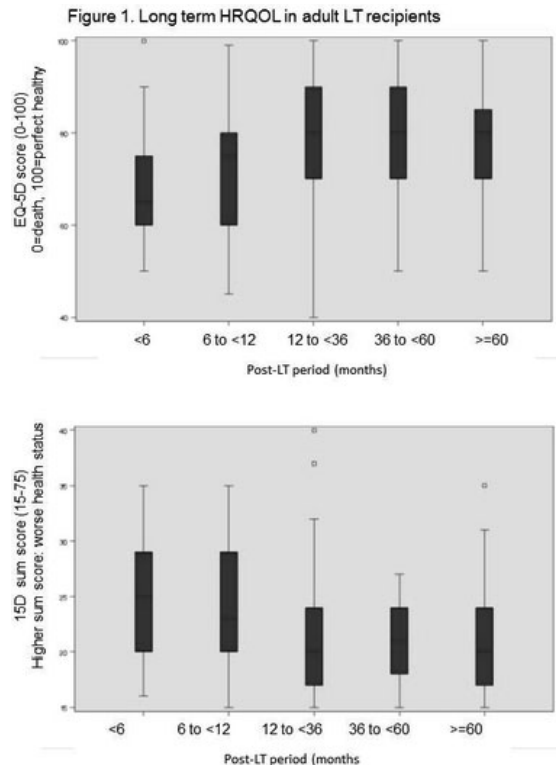
Abstract # P-379

Long Term Health-Related of Quality of Life of Adults With Liver Transplantation in Taiwan. Chien-Ning Hsu¹, Su-Fen Liu², Chao-Long Chen³. ¹Department of Pharmacy, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan; ²Department of Nursing, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan; ³Department of Surgery, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

Objectives: The study is to evaluate patient health-related quality of life (HRQOL) after liver transplantation (LT) and identify relevant influential factors.

Methods: A stratified random sampling method was used in the prospective, cross-sectional study of adult LT recipients. HRQOL was measured by using the Taiwan version of EQ-5D and 15D. Social demographics, self-reporting medication adherence, drug adverse reaction were collected through questionnaires among patients at pre-LT and those who were at post-LT follow-up period over 20 years.

Results: The interim analysis of 210 patients (75% sampled number), 28 (13%) at pre-LT stage, 161 (77%) receiving LDLT and 21 (10%) undergoing DDLT. Compared with patients at pre-LT, LT recipients had higher a total score.



Long-term HRQOL on pain/discomfort, sleep, elimination (bladder/bowel function), sexual activity revealed slightly worsened HRQOL among LT recipients with post-LT greater than 5 years than those who with a shorter follow-up. Of approximately 50% of recipients reported no-adherence experience, more patients with a greater than 5 years of post-LT period experienced recent (within 1 month) missing immunosuppression dosing and reported subjective health concerns other than liver disease than those who had a shorter post-LT period.

Conclusions: Although HRQOL improved among adults with liver transplantation from pre- to post-LT, not all dimensions of HRQOL remain stable through the years in our study population. Special attention should be paid to the level of perceived symptoms, including hepatitis recurrence, concomitant disease status and their impacts on a worsened HRQOL.

Abstract # P-380

Effects of Graft-Recipient Weight Ratio in Living Donor Liver Transplantation for Hepatocellular Carcinoma. Zhenhua Hu, Qijun Zhang, Jie Zhou, Lin Zhou, Shusen Zheng. *Department of Hepatobiliary and Pancreatic Surgery, First Affiliated Hospital, Zhejiang University, Hangzhou, Zhejiang, China*

Background: Living donor liver transplantation (LDLT), which is originally used in children with left lateral segment grafts, has been applied in adult for solving the shortage of organ donor pool. Clinical studies have showed that patients who receive LDLT, compared with deceased donor liver transplantation (DDLT), are more likely to have recurrence in hepatocellular carcinoma (HCC). Graft-recipient weight ratio (GRWR) is one of the measurement criteria for LT and whether the GRWR would have any impacts on recurrence of HCC after LDLT, however, have not been known yet. This study is focus on the relationship between these.

Methods and Results: A retrospective study examined data from the China Liver Transplant Registry (CLTR) for 6,935 transplants performed from January 1999 to December 2009. A total number of 338 patients who were received LDLT is selected finally. Thus, overall survival (OS) and disease-free survival (DFS) are compared after the patients categorized according to GRWR. The 1-year, 3-year, and 5-year overall survival rate of group A (GRWR of recipients ≤ 0.8%, Number = 63) has significant difference with group B (GRWR of recipients > 0.8%, Number = 275): 77.22%, 53.77%, and absent vs. 87.92%, 73.27%, and 71.75%, respectively (P = 0.007). While,

the 1-year, 3-year and 5-year disease-free survival of group A was similar to that of group B: 67.54%, 53.16%, and absent vs. 79.05%, 65.09%, and 65.09%, respectively (P = 0.061).

Conclusion: The study indicates that GRWR does have some significant impacts on the recurrence of patients with HCC that is, the smaller GRWR (< 0.8%) has more possibility in resulting in the recurrence of HCC after liver transplantation, distinctly shortening the overall survival and disease-free survival. Given some evidences for clinic that proper GRWR should be fully considered for the quality of life of patients.

Abstract # P-381

Living Donor Liver Transplantation for Obese and Underweight Patients: Outcomes. Siddharth Jain, Balachandran Menon, Prashant Bhangui, Sumana Ramachandran, Punit Singla, Sanjay Goja, Amit Rastogi, Ravi Mohanka, Neeraj Saraf, Sanjeev Saigal, Arvinder Singh Sooin. *Liver Transplant and Regenerative Medicine, Medanta The Medicity, Gurgaon, Haryana, India*

Background: Living donor liver transplantation (LDLT) is an accepted option for end-stage liver disease, particularly in countries in which there are organ shortages. However, little is known regarding LDLT for patients across different weight groups. We sought to determine the effects of weight on postoperative outcome.

Methods: Prospective analysis of retrospective single-centre analysis of 1203 patients between Jan2007 to August 2013. Paediatric cases (n=112), combined liver kidney (n=14) and dual lobe transplants (n=7) were excluded. Based on available BMI values, patients were classified as underweight (UW) (BMI<18) (n=43), average group (N) (BMI 18 - <35) (n=874) and obese (O) (BMI>35) (n=25). Between the groups various recipient parameters - model of end-stage liver disease score (MELD), renal compromise in last 2 weeks prior to surgery, sepsis - (Sepsis (fever>38°F, TLC>12,000 and positive culture in last 2 weeks), etiology, cold and warm ischaemia times, preoperative - TLC, creatinine, bilirubin, liver enzymes and postoperative morbidity, early graft dysfunction and mortality outcomes were analyzed. Multivariate Linear regression analysis was done to evaluate the effect of recipient weight on survival.

Results: Overall 1, 3 and 5-year survival was 89, 86 and 83% respectively. On univariate analysis between UW and N. UW group had higher no of females (p<0.00), more HCV (p<0.00), lesser biliary complications (p<0.00) but poor survival (p<0.00). Between N and O groups - significantly higher biliary complication (p<0.00) and postoperative intra-abdominal bleed (p<0.2) was seen in O group. On multivariate analysis analysis for survival between UW and O groups - preoperative BMI (p<0.00, OR3.5, CI2.1-5.8), sepsis (p<0.0 OR0.7, CI0.4-1.2) and PRBC transfusion (p<0.01, OR0.9, CI0.8-0.9) were significant. Between O and N groups preoperative BMI (p<0.00, OR3, CI1.8-3.5), sepsis (p<0.0 OR0.06, CI0.03-0.1) and PRBC transfusion (p<0.01, OR0.9, CI0.8-0.9) were significant.

Conclusion: Both higher and lower BMI groups are more likely to be females and higher BMI is associated with more postoperative bleeds and biliary complication. Obesity is associated with higher morbidity and underweight with poor survival.

Abstract # P-382

Use of Dexmedetomidine in Liver Transplant Recipients with Postoperative Agitated Delirium. Choi JinYong, Lee Kyo Won, Rhu Jinsoo, Gil Eunmi, Na Byunggon, Oh Dong Kyu, Cho Won Tae, Kim Jong Man, Kwon David Choon Hyuck, Joh Jae-Won, Park Jae Berm. *Department of Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea*

Agitated delirium has frequently occurred after liver transplantation (LT) in the intensive care unit (ICU) and sedative agents are used to treat. Recently, dexmedetomidine has been considered to be a promising agent for agitated delirium. To compare dexmedetomidine and haloperidol, the total ICU length of stay (ICU LOS), the ICU LOS after drug administration, and the supplemental doses of sedative agents used were assessed. This study took place between January 2010 and October 2012, when our institution performed 380 LT procedures. Of these, 42 recipients were retrospectively enrolled. Sixteen recipients were enrolled in the dexmedetomidine group and 26 recipients were placed in the haloperidol group. The end-point was discharge from the ICU. There were no significant drug-related complications in either group. Dexmedetomidine significantly decreased the ICU LOS and ICU LOS after the occurrence of delirium compared to haloperidol (13.7 days vs. 8.3 days, p=0.039, 10.1 days vs. 3.1 days, p=0.009). In the dexmedetomidine group, the dose of supplemental midazolam needed

was lower than in the haloperidol group (1.5 mg vs. 6.85 mg, $p < 0.001$). In conclusion, dexmedetomidine is a promising agent for the treatment of ICU associated agitated delirium in LT recipients.

Efficacy comparisons for ICU LOS and intubation in the haloperidol and dexmedetomidine groups

Variable	Haloperidol (n=26)	Dexmedetomidine (n=16)	p-value
ICU LOS from the occurrence of delirium, [mean days $\pm$ SD, (range)]	10.12 $\pm$ 12.31 (1 - 52)	3.125 $\pm$ 2.06 (1 - 8)	0.009
Total ICU LOS, [mean days $\pm$ SD, (range)]	13.69 $\pm$ 12.28 (7 - 56)	8.31 $\pm$ 2.47 (5 - 13)	0.039
Patients requiring additional intubation period: n (%)	5 (19.2)	2 (12.5)	N/A
Time to extubation in patients have additional intubation periods, [mean days, (range)]	5.8 (2 - 18)	4.5 (3 - 6)	N/A
Supplemental midazolam before RT [mean dose (mg), (range)]	6.85 (0 - 18)	1.5 (0 - 8)	< 0.001
Supplemental lorazepam before RT [mean dose (mg), (range)]	0.31 (0 - 4)	3.06 (0 - 9)	< 0.001

Additional intubation means patients kept intubated status for more than 24 hours in ICU. Abbreviations: ICU LOS, ICU length of stay; SD, standard deviation; N/A, Not available.; RT, rapid tranquilization.

Abstract # P-383

Radiotherapy As Down Staging Treatment To Living Donor Liver Transplantation for Hepatocellular Carcinoma. Choi JinYong, Moon Hyung Hwan, Lee Seung Hwan, Yang Shin-Seok, Lee Kyo Won, Rhu Jinsoo, Gil Eunmi, Na Byunggon, Oh Dong Kyu, Kim Jong Man, Kwon David Choon Hyuck, Joh Jae-Won, Lee Sanghoon, Park Jae Berm, Kim Sung Joo, Lee Suk-Koo, Choi Kyu-Sung. *Department of Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea*

Introductions

Curative surgical resection cannot be an option for most patients with hepatocellular carcinoma (HCC) because of underlying liver disease or extent of tumor. Radiotherapy (RT) for HCC is not generally considered a treatment of choice but RT has been used in advanced HCC patients such as portal venous tumor thrombosis (PVTT) and multiple large tumors. Recently, some studies showed that RT may be bridge to living donor liver transplant (LDLT). We report our experience with RT as pretransplant therapy.

Methods

Between May 1996 and March 2013, total 1360 patients treated by LT in our institution. Thirteen patients had history of RT and we analyze these patients retrospectively. Objective tumor response is evaluated with CT and/or MRI according to modified RECIST criteria and outcomes is estimated by disease free survival (DFS) and overall survival (OS).

Results

Before RT, seven patients exceed Milan criteria, and four patients have PVTT (Table 2). All patients are LDLT and interval between RT and LDLT is 719.7 days (Table 3). 3, 6 months and 1 year DFS is 82.5%, 73.3%, 55.0%, respectively. And as shown in Table 4, 5, low AFP group (<20ng/mL) and good objective tumor response after RT group have good prognosis compare with the other group.

Conclusions

LDLT is feasible in advanced HCC patients who have low AFP levels and good tumor response after RT.

Relationships between objective tumor response after radiation therapy and prognosis.

Variables	PD (n=2)	SD (n=8)	PR (n=0)	CR (n=3)
Disease-Free Survival day, Mean (range)	86 (84 - 87)	592 (31 - 1565)	N/A	1013 (21 - 2911)
Overall survival day, Mean (range)	208.5 (108 - 309)	819.1 (367 - 1397)	N/A	1157.3 (82 - 2962)

Abbreviations: PD, Progressive disease; SD, Stable disease; PR, Partial response; CR, Complete response; N/A, Not available

Relationships between AFP and prognosis.

Variables	Level of AFP, 0 - 20 ng/ml (n = 6)	Level of AFP, 20 - 100 ng/ml (n=4)	Level of AFP, 100 - 400 ng/ml (n = 1)	Level of AFP, > 400 ng/ml (n=2)
Disease-Free Survival day, Mean (range)	861 (21 - 2911)	269 (84 - 659)	106	798 (31 - 1565)
Overall survival day, Mean (range)	1058.3 (82 - 2952)	383 (108 - 661)	428	1066 (367 - 1765)

Abstract # P-384

Short-Term Outcome of Liver Transplantation in Patients With Preoperative Pulmonary Infection: A Single-Center Experience. Weiqiang Ju, Zhiyong Guo, Ming Han, Jianwei Lin, Xiaoshun He. *The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Objective The aim of this study was to examine the efficacy of short-term perioperative treatment in liver transplant (OLT) patients suffering preoperative pulmonary infection.

Methods We reviewed the medical records of 5 preoperative pulmonary infected patients who underwent OLT between 2011 and 2013. We analyzed demographic data, laboratory values, number and primary liver disease, diagnostic methods, and postoperative outcomes, including complications, recurrences, and their treatment.

Results Patient follow-up to November 2013 or to death ranging from 1 to 28 months. None of the patients were lost of follow-up. The gender bias was 4:1 (male: female) and the median age was 43.2 (26-52) years. The causes of liver transplantation were hepatocellular carcinoma and cirrhosis (n=2), acute hepatic failure with HBV infection (n=2), and HCV cirrhosis (n=1). The median MELD score of admission was 24 (8-29). All the patients had the symptoms of cough, sputum, fever and leucocytosis pre-transplant. Isolated pathogens from sputum smear and culture were Aspergillus (n=1), Candida albicans (n=4) and Gram positive bacilli (n=1). Four patients received their grafts from deceased donors and one patient received living donor from her son. Pulmonary infection was treated by sensitive antibiotics according to the culture results after operation. Perioperative immunosuppression was adjusted with basiliximab, and free steroid. All the patients would not receive immunosuppression maintenance therapy of tacrolimus (Tac) and mycophenolate mofetil (MMF) unless their blood alanine aminotransferase (ALT) increased by 20 U with exclusion of the blood supply problem of the allografts. The patients were free of immunosuppressants (Tac and MMF) after surgery for 8-68 days (median, 22; mean, 23.4). Tacrolimus trough levels were maintained at a low level (range, 3ug/L-8ug/L). The use of MMF was 500mg, twice daily. One patient died of MODS in ICU on day 23 post-transplantation, the other four patients recovered well and the average postoperative hospitalizations were 59.6 (31-98) days.

Conclusion Patients with preoperative pulmonary infection could be cautiously considered for liver transplantation if the patients would die without transplants. Delayed and rational use of immunosuppressive drugs, and treatment using sensitive antibiotics according to the culture results are crucial to improve the patient outcome.

Abstract # P-385

Combined Simultaneous Heart and Liver Transplantation: Case Report. Bo-Hyun Jung, Shin Hwang, Chul-Soo Ahn, Ki-Hun Kim, Deok-Bog Moon, Tae-Yong Ha, Gi-Won Song, Dong-Hwan Jung, Sung-Hwa Kang, Eol Choi, Jae-Hyun Kwon, Sung-Gyu Lee. *Division of Hepatobiliary Surgery and Liver Transplantation, Asan Medical Center, Seoul, Korea*

Simultaneous combined orthotopic heart and liver transplantation (CHLT) is a lifesaving procedure for patients suffering from end-stage heart and liver diseases or several metabolic disorders.

We report a 45-year-old male who suffered from HBV LC with hepatic encephalopathy (HEP), spontaneous bacterial peritonitis (SBP) and presented with biventricular heart failure under extracorporeal membrane oxygenation (ECMO).

He developed hypotension and aggravation of liver failure, and then evaluated pre-transplantation work-up. His echocardiogram showed biventricular heart failure with a left ventricular ejection fraction (LVEF) of 17%. So, he required combined orthotopic heart and liver transplantation.

The operation was performed simultaneous implantation supported by cardiopulmonary bypass (CPB) rather than staged operation. After the surgery, he took ICU care requiring temporary hemodialysis and ventilator care during a month.

The patient had discharged on postoperative 11 weeks and had an uneventful postoperative course more than 1 year.

Abstract # P-386

Transplanting the Team Helps To Minimize the Startup Pains in Living Donor Liver Transplantation. Early Outcomes from a New Center in Western India. Sorabh Kapoor, Barun Nath, Vibha Varma, Ankur J. Shah, Vinay Kumar. *Liver Transplantation and HPB Surgery, Kokilaben Dhirubhai Ambani Hospital and Medical Research Institute, Mumbai, Maharashtra, India*

Background: Living donor liver transplantation (LDLT) is the only option for patients with Decompensated cirrhosis or acute liver failure (ALF) in large parts of the world. Established Centers in Asia and India have gradually improved their outcomes having gone through their early teething troubles. However, the accessibility of patients needing transplants is limited by the waiting periods as well as geographic distance necessitating newer centers to come up. The luxury of the learning curve is not available to a new center. The way out is to possibly get together transplant surgeons with LDLT experience and develop a program around them. **Methods:** A new program was initiated by a center in Western India using a core group of surgeons with extensive experience in LDLTs. The team had experience of working together with clearly defined roles and responsibilities. The other components of a successful LDLT program; imaging, anesthesiology, critical care, operating room services and hepatology were then organized from the existing staff around this core group. The protocols of the surgical team were uniformly applied with local modifications so as to minimize the effect of the learning curve. **Result:** It took less than 3 months from appointing the surgical team and performing the first LDLT. The center performed 30 Liver transplants within 9 month of its start. Like most program In India, the cadaveric donation rates were dismal; only 2 deceased donor transplants were done - both from extended criteria donors. The median age of recipients was 55 years (9mths to 65 yrs; M/F=21/9). Out of 28 LDLTs there were 2 left lobe grafts and 1 left lateral segment graft. The indications for transplantation were ALF in 3 patient, HCC with cirrhosis in 2 and cirrhosis with decompensation in 24 patients. 30 day patient and graft survival was 84%. The median age of the living donors (n=28) was 43.5 years (20 to 58 years; M/F=9/21). There was no donor mortality. One donor required re-exploration for bleeding from divided hilar plate and 1 donor had post op bile leak that was managed by ERCP and percutaneous drainage. **Conclusion:** A cohesive team built around transplant surgeons trained in performing LDLTs in local condition can minimize the learning curve in a new Living donor liver transplant center.

Abstract # P-387

Early Enteral Feeding Enhances Nutritional Status in Recipients after Living Donor Liver Transplantation: Interim Results. Jong Man Kim, Wontae Cho, Seunghwan Lee, Choon Hyuck D. Kwon, Jae-Won Joh, Suk-Koo Lee. *Department of Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea*

Backgrounds: Malnutrition is common in patients with end-stage liver disease and is a risk factor for post-transplant morbidity. Additionally, liver transplantation itself induces poor general condition in recipients. The goal of this study was to assess the safety of an enteral feeding diet in patients undergoing living donor liver transplantation (LDLT) and to investigate its effects on nutritional status.

Methods: Between January 2013 and May 2013, Seventeen patients were performed LDLT and enrolled in the randomized controlled study. Early enteral feeding group (EN group, n=8) was defined as patients with enteral feeding diet through Levin tube which was started 12 hours after transplantation. Control group (n=9) was defined as patients received oral diet after gas out. We identified the clinical characteristics and nutritional status before and after LDLT in each group.

Results: Median age and the model for end-stage liver disease (MELD) score were 52 years (range, 36-65 years) and 11 points (range, 6-22 points), respectively. All patients in the EN group tolerated and did not show ileus, nausea, and vomiting. There was no statistical difference in clinical characteristics in pre- and peri-transplant period between EN group and control group. The time between transplantation and oral intake in the EN group was shorter than in the control group (3 days vs. 5 days; $P=0.014$). The mid-arm circumference and mid-arm muscle circumference in the EN group were higher than in the control group at 1 week and 1 month after LDLT ($P<0.05$). The subjective global assessment in EN group was lower than in the control group at 1 week and 1 month after LDLT ($P<0.05$). However, the change of triceps skin fold, body mass index, and ratio body weight to ideal body weight in each group were not reach significant level.

Conclusions: Our results suggest that early enteral feeding may improve postoperative nutritional status and hastening recovery after LDLT.

Abstract # P-388

Evolution of Liver Transplantation Outcomes in a Large European Transplant Centre. Marek Krawczyk¹, Michal Grat¹, Zbigniew Lewandowski², Karolina Grat¹, Karolina M. Wronka¹, Wacław Holówko¹, Oskar Kornasiewicz¹, Waldemar Patkowski¹, Krzysztof Zieniewicz¹, Paweł Nyckowski¹, Tadeusz Wróblewski¹, Rafał Paluszkiwicz¹, Ireneusz Grzelak¹, Krzysztof Dudek¹, Piotr Remiszewski¹, Bogusław Najnięgiel¹. ¹Department of General, Transplant and Liver Surgery, Medical University of Warsaw, Warsaw, Poland; ²Department of Epidemiology, Medical University of Warsaw, Warsaw, Poland

BACKGROUND

Field of liver transplantation has been subject to major improvements over the recent years. The aim of this study was to evaluate the evolution of outcomes following liver transplantation over the last 2 decades in a large European transplant centre.

METHODS

This retrospective exploratory analysis was based on a data of 1235 primary liver transplantations out of a total of 1314 procedures performed in a single centre in the period between December 1994 and August 2013. Recipients were divided into three groups basing on year of primary transplantation: 1994-2001 (1st period), 2002-2007 (2nd period), and 2008-2013 (3rd period). Overall and graft survival at 5 years and mortality at 90 days were set as outcome measures.

RESULTS

There were 114, 473, and 648 primary liver transplantations performed in the first, second and third period, respectively. In general, increasing experience of the transplant team had a significant positive impact on both 5-year overall (hazard ratio [HR] = 0.91 per 100 transplantations increase; 95% confidence interval [95% CI] 0.88 – 0.95; $p<0.0001$) and graft survival (HR = 0.93 per 100 transplantations increase; 95% CI 0.89 – 0.96; $p<0.0001$), as well as on 90-day mortality rates (odds ratio = 0.90 per 100 transplantations increase; 95% CI 0.85 – 0.95; $p<0.001$). Overall survival at 5 years after liver transplantations performed in the first, second, and third period were 65.5%, 75.5%, and 80.5% respectively ($p<0.0001$). The corresponding 5-year graft survival rates were 57.5%, 73.8%, and 76.1% ($p<0.0001$). Postoperative mortality at 90 days was 25.4% in the first period, 8.5% in the second period, and 8.2% in the last period ($p<0.0001$).

CONCLUSIONS

Experience of the transplant team has a major impact on patient outcomes following primary liver transplantations. First several years are of basic importance in the development of a liver transplant program and achievement of short- and long-term outcomes comparable to the largest transplant centres worldwide.

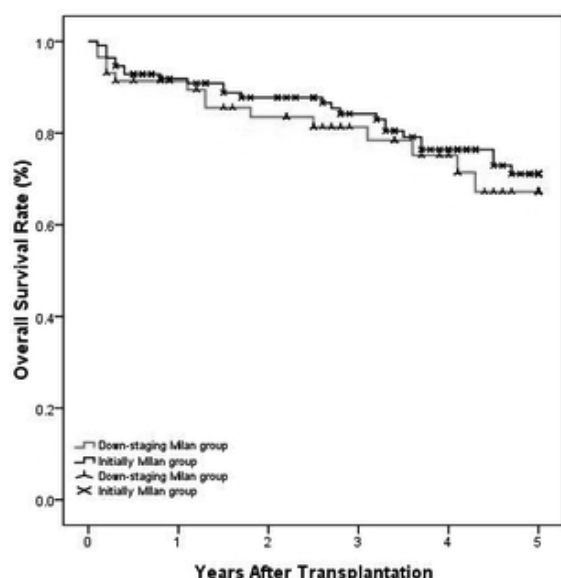
Abstract # P-389

Down-Staging Advanced Hepatocellular Carcinoma To the Milan Criteria May Provide a Comparable Outcome To Conventional Milan Criteria. Jianyong Lei, Lunan Yan, Wentao Wang. *Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, Sichuan, China*

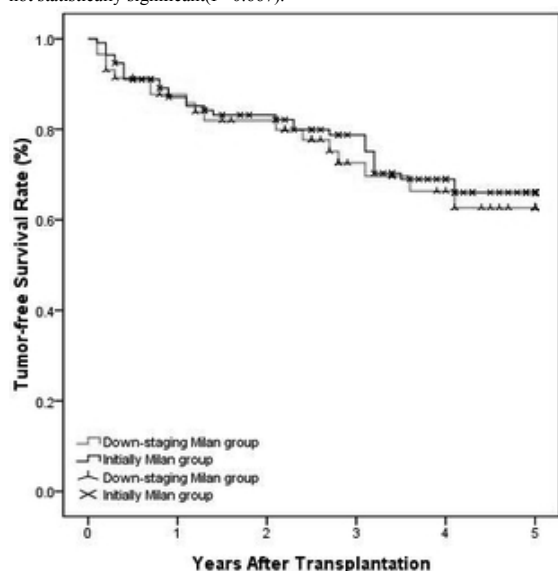
Background and Aims: Many hepatocellular carcinoma (HCC) patients met the appropriate criteria and accepted liver transplantation after successful down-staging therapies; however, the outcome in these patients is unclear. We aim to compare the outcome of patients meeting the Milan criteria at the beginning and after successful down-staging therapies.

Patients and Methods: Between July 2001 and January 2013, 112 patients were diagnosed with early stage HCC that met the Milan criteria. Of these patients, 58 patients did not meet the Milan criteria initially but did after successful down-staging therapies. We retrospectively collected and then compared the baseline characteristics, postoperative complications, survival rate, and tumor recurrence rate of these two groups. Kaplan-Meier analyses were used to estimate the long-term overall survival and tumor-free survival in these patients.

Results: No significant differences were observed between the two groups with respect to baseline donor and recipient characteristics. The down-staging Milan group showed similar tumor characteristics compared to the conventional Milan group, except the down-staging group had better tumor histopathologic grading ($P=0.027$). The 1-, 3- and 5-year overall survival rates were comparable at 91.4%, 82.8%, and 70.7%, respectively, in the down-staging Milan criteria and 92.0%, 85.7%, and 74.1%, respectively, according to the initial Milan criteria ($P=0.540$).



The 1-, 3- and 5-year tumor-free survival rates between the two groups were not statistically significant ($P=0.667$).



Conclusion: Successful down-staging therapies can provide a comparable post-transplantation overall survival and tumor-free survival rates after LT.

Abstract # P-390

Liver Retransplantation for End-Stage Autoimmune Hepatitis: An Analysis of Trends and Risk Factors. Zhiwei Li^{1,2,3}, Zhenhua Hu^{1,2,3}, Jie Xiang^{1,2,3}, Jie Zhou^{1,2,3}, Jian Wu^{1,2,3}, Sheng Yan^{1,2,3}, Lin Zhou^{1,2,3}, Shusen Zheng^{1,2,3}. ¹Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang, China; ²Key Laboratory of Combined Multi-Organ Transplantation, Hangzhou, Zhejiang, China; ³Ministry of Public Health Key Laboratory of Organ Transplantation, Hangzhou, Zhejiang, China

Background: End-stage autoimmune hepatitis is the main indication for primary liver transplantation, however, retransplantation (RT) for autoimmune hepatitis remains controversial. We want to evaluate the impact of autoimmune hepatitis in the context of a comprehensive recipient and donor risk assessment.

Methods: The Scientific Registry of Transplant Recipients database between 1998 and January 2010 was utilized to analyze 62373 LT and RT. Graft and patient survival along with patient and donor characteristics were compared for 4209 RT performed in patients with autoimmune liver disease and non-autoimmune liver disease during 1998–2001, 2002–2005 and 2006–January 2010.

Results: Overall autoimmune hepatitis prevalence at RT increased from 8.9% in the initial period to 7.3% after 2006. In our study group, 1-year patient and graft survival post-RT improved over the same time intervals from 66% to 72% and 63% to 69%, respectively. Autoimmune hepatitis was only associated with decreased patient and graft survival with a retransplant (LT-RT) interval (RI) ≥ 90 days. Independent predictors of mortality for RT were patient age, MELD score >25 and donor age ≥ 60 .

Conclusion: Outcomes of RT are improving, and liver retransplant for autoimmune hepatitis also have good results, but can be optimized by weighing recipient factors, anticipation of operative factors and donor selection.

Abstract # P-391

Effect of Donor Hepatic PPAR α Gene Polymorphisms on Glucose and Lipid Disorders after Liver Transplantation. Qi Ling, Xiao Xu, Kai Wang, Penghui Xiang, Xuanyu Zhang, Zhuoyi Wang, Li Zhuang, Shusen Zheng. Department of Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, China

Background: Metabolic disorder is a common and severe complication after liver transplantation. PPAR α is an important regulator of lipid and glucose metabolism, and predominantly expressed in the liver. Genetic variants in hepatic PPAR α gene is associated with altered serum lipid and glucose concentrations. In addition, PPAR α gene polymorphisms were recently reported to be associated with the expression of hepatic cytochrome P450 3A4 (CYP3A4), which is a major enzyme in the calcineurin inhibitors metabolism. Aim: We aim to evaluate the effect of donor graft PPAR α gene polymorphisms on glucose and lipid disorders after liver transplantation. The secondary purpose was to assess whether genetic variants in PPAR α gene could change hepatic CYP3A4 expression, and subsequently correlate with the tacrolimus response.

Method: A total of 176 patients undergoing primary liver transplantation were included. Eight single nucleotide polymorphisms (SNPs) in PPAR α gene were chosen from either HapMap CHB database or previous reports. Results: Two SNPs (rs1800206 and rs4253728) were excluded because of extremely low minor allele frequency (< 0.02). Rs5767700 and rs5767743 polymorphisms were significantly associated with metabolic disorder after liver transplantation ($P < 0.05$). After adjustment of other influencing factors (body mass index and tacrolimus concentration), rs5767743 genetic variant was found to be an independent protective factor ($P = 0.005$, odds ratio = 0.416). Furthermore, the expression of PPAR α and CYP3A4 mRNAs significantly increased in variant genotypes of rs5767700 or rs5767743 (C/C and T/C) in an allele dependent manner compared with the wild genotype (T/T). Consequently, both the tacrolimus trough concentration/dose ratio and blood concentration were lower in variant genotypes of rs5767700 or rs5767743 compared with the wild genotype at 1-week, 1-month and 3-month after liver transplantation.

Conclusion: Donor graft PPAR α gene polymorphisms are strongly associated with metabolic disorder after liver transplantation. Genetic variants in two loci (rs5767700 and rs5767743), leading to an elevated hepatic CYP3A4 expression, may indicate an increased tacrolimus response and reduced trough concentration/dose ratio.

Abstract # P-392

Nursing Care of Orthotopic Liver Transplantation Patients Which Characterized By Hypoxemia As the First Symptom of Hepatopulmonary Syndrome. Yingcui Liu, Qiaoling Zeng, Lihan Rui. The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China

Objective : To explore the character of nursing care and the efficacy of treatment in orthotopic liver transplantation patients which characterized by hypoxemia as the first symptom of Hepatopulmonary syndrome.

Methods : A retrospective analysis of the character of nursing care and the efficacy of treatment in two patients underwent orthotopic liver transplantation with hypoxemia as main complaint .

Results: Cyanosis after oxygen therapy could be relieved, but reappear soon after the cessation of oxygen therapy. orthotopic liver transplantation

was carried out after overall preparation, and many kinds of preventive and nursing care interventions were used to treat the stubborn hypoxemia and other complications, such as pulmonary infection, Massive hemorrhage, brain hemorrhage and MODS with satisfactory outcome, the liver function recovered soon accompanied by the slow and gradual alleviation of hypoxemia three months later, the dependence on oxygen decreased significantly. Cardiac contrast-enhanced ultrasound showed a significant decreasing of intrapulmonary shunt. Cyanosis disappeared in six months after operation, hypoxia symptoms alleviated completely. The patients were able to work and live normally.

Conclusion: liver transplantation in patients with hepatopulmonary Syndrome as the first symptom is secure, satisfactory and practicable. The key point for these patients with hepatopulmonary syndrome underwent liver transplantation is closely monitor of vital signs, careful observation of the local and overall changes.

Abstract # P-393

Nursing in Liver Transplantation Patients With Adverse Reactions of Amphotericin B. Yingcui Liu, Qiaoling Zeng, Lihan Rui. *The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China*

Aim: Investigate nursing management of the adverse reaction of Amphotericin B, which was used to treat lung fungi infection of liver transplantation patients. **Methods:** During Jan 2004 to Jan 2011, the clinical data of 10 liver transplant recipients with fungal infections who were treated with Amphotericin B in our transplant Center was retrospectively studied.

Results: 10 patients have varying degrees of phlebitis, fever, chills, rash, renal dysfunction, and digestive reactions. After symptomatic treatment and nursing, all patients can be cured.

Conclusion: well performed prevention and nursing in patients treated with Amphotericin B can reduce the incidence of adverse reactions, therefore to improve the efficacy of drugs and alleviate the suffering of patients.

Abstract # P-394

Survival, Immunosuppression and Mortality Risk Factors in 207 Liver Transplantation Chilean Patients. Juan Pablo Miranda, Jaime Poniachik, Danny Oksenberg, Jose Ibarra, Jaime Castillo, Juan Carlos Diaz. *Unidad de Trasplante, Hospital Clínico Universidad de Chile, Santiago de Chile, Chile*

Introduction: Orthotopic liver transplantation (OLT) has become an effective procedure for patients with advanced liver disease. In our country there are not publications in relation the risk factors involved in graft survival in OLT. **Aim:** To evaluate the immunosuppression risk factor involved in graft survival in OLT at the Hospital Clinic, University of Chile.

Methods: From 2002 to nov-2013, 207 liver transplantation from cadaveric donors were performed at the Hospital Clínico Universidad de Chile. 178 (85.9%) received CsA-me or generic tacrolimus as primary immunosuppression. We evaluated clinical variables, risk factors and the survival of these patients.

Results: 43.9% received CsA-me and 50.3 received Tac. Median age was 53.4±10.9 (21-69) years, not differences for sex. Causes for transplantation in CsA-me group was HCV 34.2%; NASH 16.3%; alcoholic cirrhosis 15.2%; cryptogenic cirrhosis 11.5%; other 22.8% and in the Tac group: NASH 29.9%; alcoholic cirrhosis 19.4%; autoimmune hepatitis 15.2%, cryptogenic cirrhosis 12.4%; and other 23.1% (p=ns). Graft Survival analysis of group CsA-me were 85%, 74% and 63% at 1,3 and 5 year, respectively, on group Tac were 92%, 83% and 71% respectively (log rank p<0.0001). The risk factor associated to mortality was hematocrit and hemoglobin difference between the time of registration on the waiting list and pre-OLT of 2 % points and 0.5 g/dl, HR 4.2 (1.6 – 6.4) and 3.1 (1.2 – 4.0) respectively. The infections (43.7% v/s 27.6%) and moderate and severe graft rejections (22.4% v/s 11.8%), were more frequent at CsA-me group (p<0.0001). No Differences in acute kidney failure and de-novo insulin-requiring diabetes mellitus were seen. **Conclusion:** The hematocrit and hemoglobin difference between the time of registration on the waiting list and pre-OLT was a risk factor associated to mortality. Tac has superior to CsA-me in improving survival (patient and graft) and preventing acute rejection in OLT.

Abstract # P-395

Factors Affecting the Families a Donate Organs for Transplant. Marli Elisa Nascimento Fernandes, Zélia Zilda Lourenço de Camargo Bittencourt, Luiz Antonio da Costa Sardinha, Ilka de Fátima Santana Ferreira Boin. *Hospital de Clínicas, Faculdade de Ciências Médicas- Universidade Estadual de Campinas UNICAMP, Campinas, Sao Paulo, Brazil*

This was a qualitative study, which evaluated the factors that interfere with the decision of families to donate multiple organs for transplants by using the purposive sample until saturation of data, 12 families were selected to participate in the study, there were five family refusal. Data collection was conducted from March 2012 to June 2013 in the household with 7 families aged 26 to 64 years, most were male, and kinship parents in most of the donors, who declared the white and married marital status, all reported to be practicing a religious belief. Donor families were interviewed in their homes in the municipality of the region near Campinas/ SP, BRAZIL. The interviews were recorded with the consent of the participants, transcribed and analyzed using content analysis method Laurence Bardin. The study was approved by the Ethics Committee of the Faculty of Medical Sciences, UNICAMP. The 3 general themes were: Understanding the explanation of the diagnosis of brain death. Healthcare professional informed about the possibility of donation. The motivation of the family for donation for transplantation. The results revealed that families demonstrated understand the information on the diagnosis and brain death. The social worker and nurse practitioners who were offered more opportunity for family donation, donor families indicate that beyond the gesture of altruism other motivating factors for the donation were the media and religious belief. **Conclusion:** The investment of the Brazilian Transplantation System and the Church has an important role in society to raise awareness in support of organ donation and to minimize the shortage of organs for transplantation.

Abstract # P-396

Pulmonary Complications Following Liver Transplantation: Assessment of Risk Factors and Outcome. Emrah Otan¹, Serdar Karakas¹, Ozkan Yetkin², Cemalettin Aydin¹, Bulent Unal¹, Sezai Yilmaz¹. ¹*Institute for Liver Transplantation, Inonu University, Malatya, Turkey;* ²*Pulmonary Diseases, Inonu University School of Medicine, Malatya, Turkey*

Introduction: Pulmonary complications are frequent following liver transplantation and may result in mortality. Our study analysis pulmonary complications and mortality of liver transplantation patients.

Patients and Methods: Between january 2010 and january 2012, 407 patients had liver transplantation. Among these, data of 153 patients with a pulmonary complication was analysed retrospectively.

Results: Among the patients there was a male dominance (103 male 50 female) and there was not a significant difference for mortality between these groups (p = 0,9). Transplantation type was living donor liver transplantation in 135 patients, deceased donor liver transplantation in 15 patients and retransplantation in 3 patients. Pulmonary complications and mortality details are given in Table 1.

Pulmonary Complications and Mortality

Complication Type	Number of patients	Patients resulting in mortality	P value
Pneumonia	20	13	0,01
COPD (Chronic Obstructive Pulmonary Disease)	9	5	0,01
Right pleural effusion	90	32	0,7
Left pleural effusion	51	23	0,005
Bilateral pleural effusion	42	20	0,03
Atelectasia	27	9	0,8
Positive Culture Result	31	18	0,07

Age, sex, white blood count was not statistically significant for mortality. Mean duration of mechanical ventilation was 3,6 in surviving patients and 10,6 days in patients resulting with mortality (p=0,01).

Conclusion: Prolonged postoperative mechanical ventilation is associated with mortality in liver transplantation. Therefore, weaning should be performed as early as possible. Presence of pneumonia, left pleural effusion, bilateral effusion, positive culture results and acinetobacter infection contribute to mortality. Patients with these clinical features should be in close follow up.

Abstract # P-397

HBV Recurrence in Patients Undergone Liver Transplantation for HBV and HDV. Adil Baskiran, Fatih Ozdemir, Volkan Ince, Burak Isik, Sezai Yilmaz. *Liver Transplantation Section, Inonu University School of Medicine, Malatya, Turkey*

Introduction:

The aim of this study was to evaluate HBV and HDV recurrence in patients who undergone liver transplantation for HBV and HDV between March 2003 and June 2013 at Liver Transplantation Institute of Inonu University.

Materials and Methods :

Data from medical records of 312 patients, undergone transplantation due to HBV infection and HBV+HDV coinfection, between March 2003 and June 2013 at Liver Transplantation Institute of Inonu University, were retrospectively analyzed. In our study, hepatocellular carcinoma (n = 40), alcoholic cirrhosis (n = 2), hepatitis C (n = 1) and irregular follow up control patients (n = 14) were excluded. The remaining 255 patients were included in the study. Patients were divided into two groups. The first group was consisted of 127 patients who were operated due to HBV. The second group was consisted of 128 patients who undergone liver transplantation due to HBV + HDV. Patients with HDV Ab positive viral serology before transplantation were determined as HBV+HDV co- infection.

Results:

255 patients were received liver transplantation and included in the study, 127 HBV (Group 1); 128 HDV (Group 2). The mean age of the patients were 47.31 ± 10.97 years. Group 1 was 47.67 ± 11.63 and group 2 was 46.96 ± 10.34 . The mean follow-up time was 30.25 ± 22.76 months. 30.25 ± 24.27 for group 1 and 30.26 ± 21.26 months for group 2.

Among 255 patients included this study, HBs Ag was positive in 13 patients (5.1%). HBs Ag was positive in 9 patients in group 1 (7.1%). HBs Ag was positive in 4 patients in group 2 (3.1%). No statistically significant difference was found between the two groups (p = 0.150).

Conclusion:

HBV recurrence after liver transplantation is still a major problem. We determined a lower HBV recurrence rate than the other series in the literature with the prophylaxis protocol of our center. In the presence of HDV coinfection, although HBV recurrence was not statistically significant, post transplantation HBV recurrence was seen lower. Furthermore, no HDV recurrence was seen after liver transplantation.

Abstract # P-398

Early Hepatic Artery Thrombosis after Orthotopic Liver Transplantation – Graft Salvage Against All Odds. Marina Premuzic, Matea Majerovic, Ivana Knezevic, Radic Davor. *Division of Gastroenterology and Hepatology, University Hospital Centre Zagreb, Zagreb, Croatia*

Early hepatic artery thrombosis (HAT) is a serious complication of orthotopic liver transplantation (OLT), in many instances leading to graft loss. Endovascular revascularisation is advocated as first choice therapy once thrombosis is detected but, in cases of treatment failure, retransplantation is required. The latter is not always feasible and is limited by restricted donor pool.

We will present a case of graft survival after early HAT when attainable therapeutic strategies went astray.

A 65-year old woman, with alcoholic liver cirrhosis, underwent cadaveric OLT with arterial anastomosis formed at the level of proper hepatic artery. During fourth postoperative week, elevated liver enzymes were noted and computed tomography detected thrombus extending from common hepatic artery into right and left branch, with total obstruction of arterial flow. Urgent transfemoral catheter-directed thrombolysis, with alteplase in continuous infusion, was undertaken. Prior to the procedure, platelet count as well as PT and aPTT were normal. Albeit initial success, control arteriogram demonstrated rethrombosis and enoxaparin in therapeutic doses was started. Procedure was further complicated by hemorrhagic shock due to massive bleeding from catheter insertion site requiring surgical intervention and resulting in hypotension-induced ischemic lesion of the left liver lobe. Even though the graft was endangered, she did not meet criteria for urgent retransplantation (MELD 9) and was therefore managed conservatively—over the following week numerous small arterial vessels were newly identified, suggestive of collateral vessel formation and graft function ameliorated. Before mentioned ischemic lesion progressed over following three months, resulting in left lobe necrosis and lobectomy. During 13-month follow up, partial recanalisation of main hepatic artery and its right branch was achieved, and along with abundant collateral circulation, right lobe function is satisfying. In the setting when complete vessel recanalisation after thrombolytic therapy

is not achieved, and retransplantation is not feasible, acute collateral arterial vessel formation is indicative of a plausible graft survival but we must be aware of adverse consequences even minor hemodynamic instability may carry.

Abstract # P-399

Hepatic Venous Compression By Hypertrophied Liver May Occur after Liver Transplantation and Cause Persistent Ascites. Mohamed Said, Mostafa Alshazly, Gamal Esmat, Noaman El-Garem, Sherif Mogawer, Mona Elamir, Amany AbdelMaksoud, Ayman Salah, Ez Alkorashy, Omar Abdel-Aziz, Adel Hosny. *Endemic Medicine and Hepatology, Cairo University, Cairo, Egypt; General Surgery and Liver Transplantation, Cairo University, Cairo, Egypt; Endemic Medicine and Hepatology, Cairo University, Cairo, Egypt; Internal Medicine, Cairo University, Cairo, Egypt; Internal Medicine, Cairo University, Cairo, Egypt; Internal Medicine, Cairo University, Cairo, Egypt; Internal Medicine, Cairo University, Cairo, Egypt; General Surgery and Liver Transplantation, Cairo University, Cairo, Egypt; General Surgery and Liver Transplantation, Cairo University, Cairo, Egypt; Radiology, Cairo University, Cairo, Egypt; General Surgery and Liver Transplantation, Cairo University, Cairo, Egypt*

Introduction: Vascular complications are a relatively common occurrence following liver transplantation. Ultrasonography is critical for early detection. Radiological intervention used to confirm diagnosis, treat underlying lesions and contribute to graft survival.

Case presentation: 58 years old Egyptian Diabetic patient with diabetic nephropathy and MELD score of 18 underwent Living Donor Liver transplantation for post HCV ESLD. He received renal sparing protocol of immunosuppression (induction therapy with basiliximab) followed by small dose of cyclosporine and MMF. Transient post operative deterioration in renal function occurred with persistent ascites. CMV reactivation occurred that required Valgancyclovir treatment. Repeated ascetic fluid analysis done for infection (PCR for TB, cytology, cultures) with negative results, repeated Doppler examination for hepatic vasculature was free. For next 3 months post transplantation intractable massive ascites required weekly paracentesis. CT angiography for hepatic veins was free. Liver biopsy was done after large volume paracentesis and revealed hepatic congestion. MRV was done and showed stenosis at hepatic vein anastomosis by hypertrophied liver, angiographic balloon dilatation was done and pressure gradient decreased from 22 to 16 mmHg. Marked improvement in ascetic fluid volume and reduction in diuretic dose and after 2 months ascites disappeared.

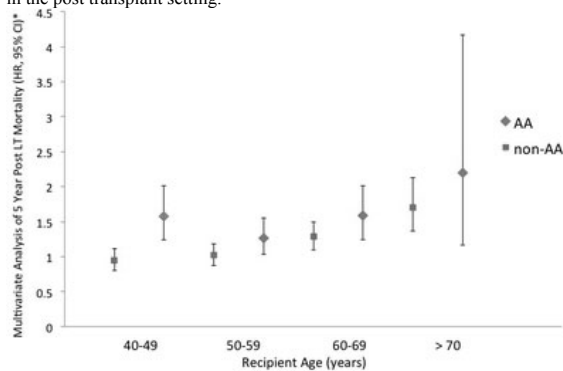
Conclusion: Hepatic venous compression by hypertrophied liver may occur after liver transplantation and cause persistent ascites. Early diagnosis and angiographic balloon dilatation with or without stenting improves patients chances of recovery.

Abstract # P-400

Increased Mortality Among African American Women after Liver Transplant (LT). Monika Sarkar, Jennifer Dodge, Norah Terrault. *University of California, San Francisco, San Francisco, USA*

Data are limited on post LT outcomes in women, including whether known racial/ethnic differences in overall post LT mortality persist in women. We investigated racial/ethnic differences in post LT survival and further assessed predictors of 5-year post LT mortality among racial/ethnic groups of transplanted women. Using the U.S. based Scientific Registry of Transplant Recipients (SRTR), we assessed racial/ethnic differences in post LT survival among women undergoing primary LT between 2002-2012. Women with re-transplantation, or multi-organ transplants, other than simultaneous liver-kidney, were excluded. Survival analyses were performed using Cox proportional hazards models. The eligible cohort of women (n=15,860) included 11051 Caucasians, 2171 Hispanics, 1876 African Americans, and 762 Asians, with a median follow-up of 3.1 years. Mean age at transplant was 46 years. The most common causes of liver disease were hepatitis C (32%), alcohol (9%), cryptogenic (9%), primary biliary cirrhosis (9%) and fatty liver disease (8%). Survival at 1, 3, 5, and 7 years was lower among African American women (86%, 74%, 66%, 59%) compared to Hispanics (88%, 80%, 74%, 68%), Caucasians (88%, 81%, 75%, 68%), and Asians (89%, 81%, 77%, 71%) respectively (log-rank p< 0.001). A significant interaction between older recipient age and African American race was observed (p=0.03), with the lowest survival observed in older African Americans (Figure). These

age/race interactions were not present among other racial/ethnic groups. Additional predictors of 5-year post LT mortality included hepatitis C (HR 1.7, 95% CI, 1.6-1.9), severe functional impairment at LT (HR 1.2, 95% CI, 1.1-1.4), gender mismatch (HR 1.1, 95% CI, 1.1-1.2), and a composite history of diabetes, hypertension, and/or dialysis (HR 1.2, 95% CI, 1.1-1.3). Conclusions: African American women had lower post LT survival compared to other racial/ethnic groups, independent of disease etiology. Older African American recipients were at highest risk of death, reflecting a group of women that may warrant more aggressive co-morbid management and monitoring in the post transplant setting.



Reference group for all comparisons was non-African American women < 40 years old
* Adjusted for etiology of liver disease, recipient history of diabetes, hypertension, or dialysis, MELD at LT, functional status at LT, donor age, donor gender, HCC exception points, and post transplant length of stay

Abstract # P-401

Liver Transplantation: Gazi University/Ankara-Turkey Experience. Hakan Sozen¹, Gokhan Yagci², Osman Yuksek³, Sinan Sari⁴, Odul Egritas⁴, Billur Demirogullari⁵, Mehmet Ibis⁶, Buket Dalgic⁴, Aydin Dalgic³. ¹Transplantation, Gazi University, Ankara, Turkey; ²General Surgery, GATA Medical School, Ankara, Turkey; ³General Surgery, Gazi University, Ankara, Turkey; ⁴Pediatric Gastroenterology, Gazi University, Ankara, Turkey; ⁵Pediatric Surgery, Gazi University, Ankara, Turkey; ⁶Gastroenterology, Gazi University, Ankara, Turkey

Liver transplantation(LT) has been very successful in treating with end-stage liver disease(ESLD).**Material and Methods:**Totally 53 liver transplantations were performed to 51 recipients, since 2006 at Gazi University Transplantation Center,Ankara,Turkey. Data retrospectively collected from patient charts and hospital files.**Results:** Among 53 LTs, 26 were pediatric and 27 were adult recipients. There were 34 male and 19 female. Nineteen out of 53 LTs were done from deceased donor, 34 LTs were done from living donor(LD). Median age of the recipients' and donors' are 37.5 years and 30.5 years old(between 0.5-57 and 3-61 years) respectively. Twenty eight of 34 living donor LTs were done from 1st degree, 4 were from second relatives, 2 were spouses respectively. Etiology for LTs were hepatitis b(n= 11), fulminant liver (n=10), cryptogenic(n=8), hepatitis c(n=6), PFIC(n=4), trisomenia(n=4), biliary atresia(n=3), Wilson(n=2), neonatal hepatitis(n=1), α 1anti-trypsin deficiency(n=1), neuroendocrine tumor(n=1), alcohol consumption(n=1), primer sclerosan cholangitis(n=1) respectively. Also re-transplantation required to 2 patients due to HAT and HVT.Totally 14(26%) surgical complications encountered during follow-up:vascular(n= 3),biliary(n=9;17%) and other(n=2).As vascular complications: HAT(n=2), HVT(n=1).Biliary complications: biliary stenosis(n=7),biliary leak(n=2) and as others; post-surgical bleeding(n=1), spontaneous small bowel perforation(n=1). HAT and HVT cases were required re-transplantation,HAT patient died due to sepsis on PO10, patient with HVT is doing well after re-transplantations . Other HAT case successfully been solved by conventional radiology using stents without any problem. Post-surgical bleeding case was occurred from Rouxen-Y anastomosis and was required anastomoses revision;Totally 14(26%) patients died during median 782 days(66-2475days);sepsis(n=4),hepatic artery thrombosis(n=1),DIC(n=1), small for size syndrome(n=1) and unknown(n=3) respectively.**Conclusion:**LT is now considered a safe and standardized procedure with a substantially improved graft and patient survival and acceptable morbidity rates.

Abstract # P-402

Efficacy of Longitudinal Prophylaxis Vaccination in Recipients after Adult Liver Transplantation. Junichi Togashi¹, Yasuhiko Sugawara², Nobuhisa Akamatsu², Sumihito Tamura², Junichi Kaneko², Taku Aoki², Yoshihiro Sakamoto², Kiyoshi Hasegawa², Norihiro Kokudo². ¹Department of Surgery, Tokyo Rosai Hospital, Tokyo, Japan; ²Artificial Organ and Transplantation Surgery Division, The University of Tokyo, Tokyo, Japan

Background: Although vaccination after hepatitis B (HB) related liver transplantation(LT) has been investigated as an alternative strategy to re-infection prophylaxis with hepatitis B immunoglobulin (HBIG), immunizations using the vaccines are often not enough to perform in adult undergoing LT. **Methods:** Aim of the current study was the investigation of efficacy, safety and feasibility of HB vaccination after continuous monthly subcutaneous application in LT patients. Recipients who developed to no recurrence state over 1 year after LT at Tokyo University Hospital were assigned. Eligible 39 patients were vaccinated with conventional single doserecombinant vaccine (Biemgen®) monthly during one year. Using the same timing and interval, all patients received constant same HBIG dosage every 4 weeks (12 times intravenously) defined before vaccination strictly. During a period of total 21 months, anti-HBs levels, signs of re-infection, adverse events and feasibility of vaccination were studied. **Results:** Our protocol was well tolerated without almost adverse effects. At the end of 3 months after vaccination, 4 patients developed good responder (median 815 IU/l, range 295-894 IU/l), showed an anti-HBs titer gain greater than 100 IU/l. The mean HB surface antibody (HBsAb) gain was 49 ± 176 IU/l (range: 0-861) at end of study, with 7 (18%) patients showing titers greater than 100 IU/l (range 137 - 861 IU/l) and one (3%) greater than 500 IU/l. While 35 patients (90%) completed the treatment protocol, four failures was noted, two re-infection occurred among them. Relative factors for the good response were identified. On univariate analysis, factors affecting good response were time of vaccination (months after LT) ($p = 0.03$) Donor HBsAb ($p = 0.05$). Multivariate analysis identified that time of vaccination (months after LT) and Donor HBsAb were independent factors for good response after LT ($P = 0.03$ and $P = 0.05$, respectively) as same. **Conclusion:** Our protocol could induce a significant immune response in selected patients, and showed a safe, feasible option despite immunosuppression state like LT. However, accelerated immunization may evoke recurring exacerbation with occult HBV to some recipients.

Abstract # P-403

The Clinical Course of Preoperative Anti-HLA Antibody-Positive Recipients after Liver Transplantation. Taiji Tohyama, Jota Watanabe, Masahide Hatano, Eitaro Ito, Hitoshi Inoue, Shoichi Kageyama, Akihiro Takai, Tetsuya Mizumoto, Fumiki Kushiha, Yasutsugu Takada. *Hepatobiliary Pancreatic Surgery and Transplantation, Ehime University, Toon, Japan*

Recently, high-sensitivity anti-human leukocyte antigen (HLA) antibody testing became possible, the significance of anti-HLA antibodies in solid organ transplantation has been re-evaluated in recent years. In this study, we measured the preoperative anti-HLA antibodies in liver transplantation recipients and investigated the clinical postoperative course.

Objective: 26 patients who have received living donor liver transplants since September 2001: 11 men and 15 women. Primary disease: eleven cases of hepatitis C virus-related liver cirrhosis, six with primary biliary cirrhosis, four with hepatitis B virus-related liver cirrhosis, and one case each of alcoholic cirrhosis, bile stasis cirrhosis, fulminant hepatitis, nonalcoholic steatohepatitis (NASH), and graft failure after transplantation. **Method:** Anti-HLA antibodies were measured retrospectively in preoperative blood samples using high-sensitivity FlowPRA evaluation. In the anti-HLA-antibody-positive patients, we examined the presence of anti-donor-specific antibody using a LAB screen single antigen beads test on a Luminex assay. **Result:** Ten of the 26 patients (38.4%) were positive for class I or II antibodies: eight women and two men. In patients with a high % PRA of anti-HLA-class I antibodies, who had antibodies reactive to a wide variety of anti-HLA class I antigens, postoperative hemorrhage associated with platelet transfusion refractoriness was a problem. Seven out of ten anti-HLA-antibody-positive patients were positive for anti-donor HLA-specific antibody (DSA; two were positive for anti-donor HLA classes I and II antibodies, five were positive only for anti-donor HLA class II antibodies). Three of seven DSA-positive patients had liver dysfunction characterized by increased jaundice and biliary enzyme abnormalities after surgery, and all three patients died of brain hemorrhage, sepsis, or graft failure. The liver biopsies were C4d negative, but suggested humoral rejection. **Conclusion:** In anti-HLA class I antibody-positive patients,

it is necessary to pay attention to postoperative hemorrhage associated with platelet transfusion refractoriness. Further investigations should study the relationship between the prognosis and anti-donor HLA antibodies in more cases.

Abstract # P-404

Active Immunoprophylaxis With Hepatitis B Virus (HBV) Vaccination Is Not an Effective Strategy for Prevention of HBV Recurrence after Liver Transplantation. Ilker Turan¹, Deniz Mut², Murat Sozbilen³, Selda Erensoy⁴, Fulya Gunsar¹, Galip Ersoz¹, Ulus S. Akarca¹, Zeki Karasu¹. ¹Gastroenterology, Ege University Faculty of Medicine, Izmir, Turkey; ²Internal Medicine, Ege University Faculty of Medicine, Izmir, Turkey; ³General Surgery, Ege University Faculty of Medicine, Izmir, Turkey; ⁴Medical Microbiology, Ege University Faculty of Medicine, Izmir, Turkey

Background and Aim: Prevention of recurrent HBV is the key to improving the long-term survival of patients undergoing liver transplantation (LT) for HBV-related cirrhosis. The strategy of active immunoprophylaxis with HBV vaccination as an alternative to hepatitis B immune globulin (HBIG) in the post-transplant setting has produced conflicting results. The purpose of this study was to investigate the efficacy of HBV vaccination after HBIG discontinuation in a large cohort of patients transplanted for HBV-related cirrhosis.

Methods: Ninety-one patients who had been vaccinated after HBIG discontinuation were included in the study. We administered three intramuscular double dose of recombinant HBV vaccine (Genhevac B Pasteur®; containing HBV pre-S1, pre-S2, and S gene products) at 0, 1, and 6 months, starting 1 month after the last dose of HBIG. Nucleos(t)ide analogue(s) were continued throughout the study. Seroconversion was defined as the positivity of anti-HBs at levels considered protective (>10 IU/L) 3 months after the administration of the last dose of vaccine.

Results: The patients consisted of 71 males and 20 females with a mean age of 51.6±9.5 years. Mean time from transplantation to vaccination was 83.4±35.2 months. One third of patients (n=33) had hepatitis D virus coinfection. Pretransplant HBeAg status was positive in 7 pts, negative in 66 pts, and unknown in 18 pts. Pretransplant HBV DNA status was positive in 25 pts, negative in 45 pts, and unknown in 21 pts. Seventeen of 91 patients (19%) developed an anti-HBs titer above 10 IU/L (median, 25; range, 11-1000 IU/L) during a mean follow-up of 28.9±20 months. HBsAg positivity was detected in one patient.

Conclusion: After discontinuation of HBIG, HBV vaccination in the post-transplant setting does not seem like an effective strategy in the prophylaxis of HBV recurrence. Protective anti-HBs titer can be achieved in only a limited number of patients.

Abstract # P-405

Excellent Liver Transplant Outcomes in Intensive Care Unit Vs. Non Intensive Care Unit Patients: A Single Center Experience. David W. Victor, Maha R. Bektour, Howard P. Monsour, Robert S. McFadden, Sherilyn Gordon Burroughs, Ashish Saharia, Emad H. Asham, R. Mark Ghobrial. *JC Walter, Jr Transplant Center, Houston Methodist Hospital, Houston, TX, USA*

Background/Aim: Prior Orthotopic Liver Transplant (OLT) experiences with patients in the intensive care unit (ICU) have not been promising due to poor historic outcomes. With ever rising MELD scores required for transplantation; patients are more likely to need ICU level care prior to transplant. We compared OLT outcomes between patients who were in the ICU pretransplant and those who were not.

Methods: 223 consecutive adult patients had first single liver transplant between April 2008 and June 2013. Patient demographics, clinical characteristics, and post-OLT outcomes were compared for those who were in the ICU pretransplant (n=71) and those who were non-ICU at the time of transplant (n=152). Patients listed as status one were included in the analysis all 12 of these patients were in the ICU at the time of transplantation. Statistical analysis included Kaplan-Meier survival, log rank, chi square, and Student's t-test.

Results: Median age was 56 years (range 21-77), 68% were male, and 69% were Caucasian. Recipients in the ICU were more likely to have a higher biological MELD Score (37.6 vs. 17.4/-8), to require vasopressor support within two weeks of transplant 29 (41) vs. 2 (1), and they were more often on dialysis 44 (62) vs. 6 (3). Median follow up was 26-months, one, two, and three year survival in ICU group were 90%, 86% and 80% while in non-ICU group were 97%, 90%, and 86% respectively (p=NS) ICU

recipients had longer post-OLT stay in ICU 7 vs. 4 days, (p<0.001). They were also more likely to need post OLT dialysis 40 (66) vs. 23(15). Non-ICU recipients were more likely to be older 57 vs. 54, have HCV 97 (63) vs. 23 (40) and much more likely to have HCC 100 (65) vs. 6 (10), p<0.001. Both groups of patients were maintained on primarily tacrolimus based therapy for immunosuppression after transplant. Complication rates were similar in both groups. Hepatic artery thrombosis rates 1 vs. 1, primary nonfunction 2 vs. 1, and bile leak 2 vs. 2, were all not significantly different in ICU vs. non-ICU patients respectively.

Conclusion: Liver transplantation for patients with high MELD in the ICU is feasible with excellent outcomes. However, these patients require greater resources in the immediate perioperative period and longer postoperative ICU stay.

Abstract # P-406

Living Donor Liver Transplant (LDLT) Alone in a Candidate for Simultaneous Liver-Kidney Transplant (SLKT) – Concept of Sequential Kidney after Liver Transplant. Manav Wadhawan¹, Subash Gupta², Neerav Goyal². ¹Hepatology and Liver Transplant, Indraprastha Apollo Hospital, Delhi, India; ²Surgical Gastroenterology and Liver Transplant, Indraprastha Apollo Hospital, Delhi, India

Background: SLKT is indicated in a patient with ESKD along with chronic kidney disease (CKD). In LDLT setting, SLKT is easy to organize as both liver & kidney can be harvested from same donor. However, it becomes logistically difficult in LDLT as two different donors are required and three family members undergo the operation at the same time. Also it is well recognized that some recipients with conventional indication for SLKT actually have good renal reserve to undergo liver transplant alone. This study was planned to analyze the results of LDLT alone in a candidate for SLKT, with an idea to do a sequential kidney transplant later if required. **Patients & Methods:** Eight patients who were a candidate for SLKT underwent LDLT between April 2009 to September 2013. The median bilirubin was 2.8 (range 0.6 - 28). The median creatinine was 2.3 (range 2.2 – 5.9). All the patients had ESRD or CKD either proven on biopsy or had or eGFR < 30 ml/min for 3 months or more. **Results:** Four of eight patients required preoperative dialysis. Six of these patients required dialysis in the immediate postoperative period. Two patients did not require postoperative dialysis and creatinine improved after transplant to < 2 mg% at discharge. However, both these patients required dialysis after 3 and 6 months. The median creatinine at discharge was 1.7 (1.3 – 2.2). Postoperatively, these patients had high ascitic drainage for long period (3 months in 1 patient, 30-50 days in others). The hospital stay also was significantly higher in this group compared to group with normal kidneys pretransplant {28 days (19-53) vs 15 days (10-59)}. Two patients died in the early post-operative period. The median follow-up for surviving patients is 16 months (9-48 months). Two patients underwent a successful kidney transplant after 6 months and one after 17 months. Three patients are awaiting kidney transplant on maintenance hemodialysis. All the surviving patients have normal liver function tests. None of the patients had episodes of acute rejection. **Conclusions:** LDLT alone in patients with conventional indication for SLKT can be done with good results. The concept of sequential kidney after liver transplant is appealing especially in the LDLT programs where cadaveric option is not available.

Abstract # P-407

Preliminary Observation on Liver Transplantation from Cerebral Hemorrhage's and Brain Trauma's DCD Donor. Xiaoping Wang, Dongping Wang, Min Han, Zhiyong Guo, Linwei Wu, Weiqiang Ju, Xiaofeng Zhu, Xiaoshun He, Xingyuan Jiao. *Organ Transplant Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, Guangdong, China*

Objective: Retrospective analysis of liver transplantation from cerebral hemorrhage DCD donors and traumatic brain DCD donors in this study. **Patients and methods:** This was a retrospective review of liver transplants utilizing grafts from DCD donors, which were performed between July 2011 and December 2012. 47 cases of liver transplantation from DCD in accordance with the brain hemorrhage or brain trauma: 18 cases grouped into cerebral hemorrhage group and 29 cases grouped into brain trauma group by the etiology of donor sources. The data collection via donors' clinical data, and collection from recipients' clinical and follow-up data respectively. Patients' follow up was ranging from 11 to 30 months.

Results: 1. Donor: Between the cerebral hemorrhage group donors (CHGd) and the brain trauma group donors (BTGd), there just the age (CHGd 43.1±11.0(10-

56); BTGd 28.3±15.1(3-59)year P<0.001) and the WIT(CHGd 13.9±2.7(10-19); BTGd 17.1±3.9(10-27)min P<0.01) has significant differences by comparative analysis. Gender, Blood type, BMI, Total hospital days, ICU days, Cr, AST, Alt, ALB, TBIL, UWET, and CIT were no statistically significant difference between CHGd and BTGd.

2.Recipient: Only significant difference in BMI(CHGr 25.4±2.9; BTGr 21.6±4.2 P<0.001) comparative analysis of the cerebral hemorrhage group's recipients (CHGr) and the brain trauma group's recipients(BTGr). The recipients' age, Gender, BMI, Etiology, ICU days, Cr, ALB, TBIL, PT, INR, Child-Pugh score, MELD score, Anhepatic phase (min), Operation time, Intraoperative bleeding, Intraoperative blood transfusion, PNF, EAD between the two groups were not statistically significant. Liver function of posttransplant recipients: AST, ALT, TBIL, during the first postoperative month(1st day, 3rd day, 7th day, 15th day, 30th day, 60th day), the two groups showed no statistically significant. Between the two groups, the short term postoperative complications analysis was not statistically significant too. There occurs one ischemic cholangiopathy patient need to retransplant.

Conclusions: Our preliminary study showed that liver transplantation using DCD grafts from cerebral hemorrhage's and brain trauma's DCD donors is safe in the short term, and that superior long-term patient survival with liver transplantation using DCD organs needs further research.

Abstract # P-408

Comparison of IGL-1 with HTK Preservation Solution in Liver Transplantation - A Controlled Single-Center Series.

Julio C. Wiederkehr^{1,2}, Mauro R. Igreja¹, Marcelo S. Nogara¹, Nelson Gonçalves¹, Maira Godoy¹, Camila Drago¹, Rogerio R. Vilas¹, Henrique A. Wiederkehr¹, Caroline A. de Carvalho¹. ¹Liver Transplantation, Hospital Santa Isabel, Blumenau, Santa Catarina, Brazil; ²Surgery, Universidade Federal do Parana, Curitiba, Parana, Brazil

University of Wisconsin solution has been known as the standard solution for liver graft preservation. Alternative preservation solutions have been used in liver transplantation, such as histidine-tryptophan-ketoglutarate (HTK, CustodiolTM) and Celsior solution. Institut Georges Lopez-1 (IGL-1) is a new preservation solution with lower potassium and lower viscosity than UW solution that has recently been used in liver transplant. Data from 150 consecutive liver transplants performed from January 2010 through 2013 at Hospital Santa Isabel, Blumenau, Brazil, were collected. Grafts were preserved with IGL-1 or HTK solution. All patients were adults and received whole grafts from brain death donors. 76 patients received grafts preserved with IGL-1 solution while 74 patients received grafts preserved with HTK solution. The mean donor age in the IGL-1 group was 38.0±16.3 years and in the HTK group the mean donor age was 41.9±13.3 years, p=0.107. Cold ischemia time in the IGL-1 group was 361±151 minutes and in the HTK group 393±156 minutes, p=0.204. The mean recipient age in the IGL-1 group was 52.3±11.6 years and in the HTK group 52.9±11.3 years, p=0.775. The MELD score in the IGL-1 group was 19.19±8.87 and in the HTK group was 16.85±7.16, p=0.08. First day post-transplant liver enzymes, ALT and AST, levels were lower in the IGL-1 group, 593.5±66 U/L and 665.5±64.2 U/L, than in the HTK group, 664.5±80.8 U/L and 938.5±82.6 U/L respectively, with a p value of 0.03 and 0.009. Two patients in HTK group presented primary non-function (PNF), while none in the IGL-1 group presented this complication, p<0.05. In our experience IGL-1 has been shown to be safe and superior to HTK as preservation solution for liver transplantation.

Abstract # P-409

Etiology of Liver Disease Affects Post-Liver Transplantation Survival Among Hepatocellular Carcinoma Patients. Robert J. Wong¹, Aijaz Ahmed¹, Waldo Concepcion², Carlos Esquivel².

¹Gastroenterology and Hepatology, Stanford University School of Medicine, Stanford, CA, USA; ²Surgery, Stanford University School of Medicine, Stanford, CA, USA

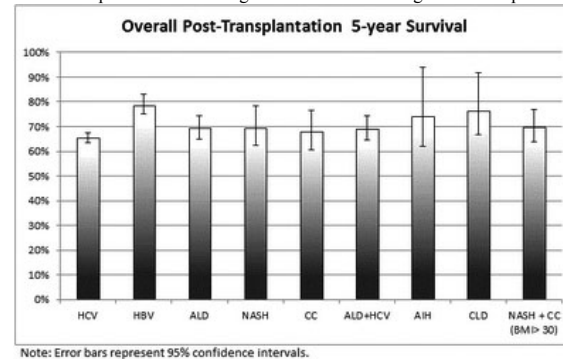
Background: The implementation of the MELD scoring system has resulted in higher rates of hepatocellular carcinoma (HCC) patients receiving liver transplantation (LT) in the U.S. However, it is not clear if post-LT survival among HCC patients is affected by the etiology of underlying liver disease. Aim: To evaluate etiology-specific differences in post-LT survival among HCC patients in the U.S.

Methods: Using data from the United Network for Organ Sharing registry, we evaluated adult HCC patients undergoing LT from 2003-2012. The etiology of HCC was determined based on UNOS coding (HCV, hepatitis B (HBV), alcoholic liver disease (ALD), NASH, cryptogenic cirrhosis (CC), concurrent

HCV and ALD, autoimmune hepatitis (AIH), and cholestatic liver diseases (CLD), which includes primary biliary cirrhosis and primary sclerosing cholangitis). Overall 5-year etiology-specific post-LT survival was calculated using Kaplan Meier methods. Multivariate Cox proportional hazards models (adjusted for sex, age, year of LT, MELD score, and race/ethnicity) evaluated the effect of liver disease etiology on survival.

Results: Overall, 11,760 HCC patients underwent LT from 2003 to 2012. The leading etiology of HCC was HCV (61.0%, n=7,171), followed by ALD (9.8%, n=1,154) and HBV (9.7%, n=1,144). Overall 5-year post-LT survival was highest among HBV-HCC (78.6%; 95% CI, 74.2-82.3) and lowest among HCV-HCC (65.4%; 95% CI, 63.4-67.3). Compared to patients with HCV-HCC, longer survival was seen among patients with HBV-HCC (HR, 0.66; 95% CI, 0.52-0.83; p<0.001), ALD-HCC (HR, 0.79; 95% CI, 0.66-0.94; p<0.01), NASH-HCC (HR, 0.76; 95% CI, 0.59-0.98, p<0.04), and CLD-HCC (HR, 0.53; 95% CI, 0.32-0.89; p<0.02).

Conclusions: Among HCC patients undergoing LT in the U.S., HCV, ALD, and HBV are the leading etiologies of liver disease. However, etiology-specific disparities in post-LT survival exist, with the shortest survival seen among HCV-HCC patients and the longest survival seen among HBV-HCC patients.



Abstract # P-410

Postoperative Atrial Fibrillation Is Associated With Increased Morbidity and Mortality in Liver Transplantation. Apinyachon Worapot¹, Randolph H. Steadman¹, Ronald W. Busuttil², Victor W. Xia¹.

¹Anesthesiology, University of California, Los Angeles, Los Angeles, CA, USA; ²Surgery, University of California, Los Angeles, Los Angeles, CA, USA

Postoperative atrial fibrillation (AF) is a common dysrhythmia and is associated with increased morbidity and mortality in patients undergoing major surgeries. The incidence and impact of postoperative AF on patients undergoing liver transplantation (LT) are not known. This study was undertaken to investigate the incidence, characteristic, and impact of postoperative AF in LT patients. After IRB approval, medical records of adult patients who underwent primary LT between January 2006 and December 2011 were retrospectively reviewed. Baseline characteristic of patients, intraoperative managements, and postoperative outcomes were collected. Patients were divided into two groups postoperative AF and non-AF. The two groups were compared using a student T-test, Pearson's chi-square or Fisher exact test. In 1010 adults who underwent LTs during the study period, 59 patients (5.8%) developed postoperative AF. Postoperative AF frequently occurred in patients more than 50 year old (81.4%) and within 2 weeks after LT (98%). Eleven patients (11/59, 18.6%) had history of paroxysmal AF prior LT, but presented no AF at the time of LT surgery. In addition, patients in the AF group had higher incidence of preoperative encephalopathy and preoperative hemodialysis compared with those in the non-AF group. Postoperatively, patients in the AF group had significantly longer ventilation (>7 days) (36.4% vs. 19.3%), higher retransplantation rate (11.1% vs. 4.8%), graft failure rate (15.3% vs. 5.9%) and mortality (28.8% vs. 14.9%) (all Ps <0.005) compared with patients in the non-AF group. Several risk factors for postoperative AF were found by multivariate analysis. In conclusion, postoperative AF occurred at a rate of 6% and was associated with increasing morbidity and mortality in adult patients following LT. Further study to confirm our findings and to develop prophylactic and therapeutic strategy for this complication is warranted.

Abstract # P-411

Liver Transplant for Crigler-Najjar Syndrome: A Registry-Based Case-Control Study. Jie Xiang, Jie Zhou, Zhiwei Li, Zhenhua Hu, Sheng Yan, Jian Wu, Lin Zhou, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, China*

Background: Crigler-Najjar syndrome (CNS) is a rare, but severe genetic disease, thus far only documented by case reports and short series. There is limited national outcomes data on which to base recommendations about liver transplant for CNS.

Methods: The present study was based on the SRTR registry, and included all listed patients for liver transplantation from 1985 to 2010 with a diagnosis of CNS. We assessed demographics and outcome of all listed patients, and further conducted a case-control study, matching each transplanted patient with 10 controls by urgent status, recipient age at transplant, transplant date, Model for End-Stage Liver Disease score, and cold ischemia time. During the study period, 47 patients were listed for CNS. Of the 47 listed patients, 42 patients were transplanted.

Results: In adult, patient survival was similar between CNS patients and the matched controls (5-year survival: 82% vs.83%, $p=0.89$). Conversely, patient survival was poor in children CNS (5-year survival: 78% vs.89%, $p=0.006$). Of these children, 30.9% were transplanted at ≤ 2 years of age. Graft survival improved as age at transplant increased ($p=0.04$). By 5 years post-transplant, graft survival was 78% for children ≤ 2 years at transplant and 88% for those >2 years ($p=0.06$). Patient survival also improved as age at transplant increased; 5-year patient survival was 83% in CNS children ≤ 2 years at transplant and 95% in those >2 years ($p=0.006$).

Conclusions: Most liver transplants for CNS occur in early childhood. Further research is warranted on the benefits of early transplant for CNS, as younger age may increase post-transplant morbidity.

Abstract # P-412

Preoperative Prophylaxis With Itraconazole Can Prevent Fungal Infection after Liver Transplantation. Takuya Yano, Masahiro Ohira, Seiichi Shimizu, Hideki Ohdan. *Hiroshima University, Hiroshima, Japan*

Background: Invasive fungal infections are associated with high mortality in liver transplant (LT) recipients. In our center, 46.8% of patients had some fungal colonization prior to LT and were susceptible to fungal infection after LT. The use of antifungal drugs after LT might deteriorate allograft liver function or influence calcineurin inhibitor trough levels. Hence, we proposed a concept that eliminating fungal colonization through preoperative prophylaxis with itraconazole possibly prevents fungal infection after LT.

Methods: In this study, 5 dosing regimens were followed, with itraconazole capsules 50, 100, or 200 mg/day or itraconazole oral solution 50 or 100 mg/day for 7 days prior to LT. The adverse events and therapeutic drug monitoring were investigated. In a subsequent study, 94 recipients transplanted between October 2007 and October 2013 were enrolled. These patients underwent prophylaxis with 100 mg itraconazole oral solution for 7 days prior to LT. Fungal colonization, fungal infection required antifungal drugs, and drug-related side effects were investigated.

Results: After a week, patients taking 200 mg/day in capsule form or 100 mg/day in solution form achieved significantly higher trough concentrations than patients in other groups ($p<0.05$). Of these patients, 100% had concentration > 250 ng/mL, the reported minimum effective concentration. Itraconazole capsules induced diarrhea or constipation in 16.6% of patients. Itraconazole solution was not associated with hepatotoxicity prior to LT. We concluded that 100 mg/day itraconazole oral solution for 7 days resulted in sufficient trough concentrations the first week onwards; this appears to be suitable for antifungal prophylaxis in LT patients. In a subsequent study, fungal colonization in 9 cases (16.3% of 55 cases with preoperative fungal colonization) disappeared when the patients consumed 100 mg/day itraconazole solution for 7 days prior to LT. These 9 patients did not need treatment for fungal infection. The overall incidence of fungal infection requiring antifungal treatment was 12/94 (12.7%) in this series, which was significantly lower than that in the historical controls (13/47, 27.6%) ($p=0.03$). Further randomized control trials are needed to rule out possible bias between the groups.

Conclusions: Preoperative prophylaxis with itraconazole reduces the incidence of fungal colonization after LT without appreciable hepatotoxicity.

Abstract # P-413

Early Postoperative Elevated Serum Creatinine Predicts Delayed Liver Graft Function from Donation after Cardiac Death. Tian Shen, Shen Yan, Lin Zhang, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China; Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China; Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China; Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China*

Objectives: In this study, we examined whether the serum creatinine level can predict graft function in the early stage post liver transplantation with DCD donation.

Methods: This was a single-center, prospective observational study. Patients who underwent OLT using DCD organs between November, 2012, and November, 2013 were enrolled. According to the graft function, recipients were divided into early graft function (EGF) and delayed graft function (DGF) groups. Serum creatinine before transplant, at day1, day2, day3 and day7 post transplant were measured.

Results: Of the 64 LT recipients enrolled, 14 developed DGF, and the remaining 50 patients were finally enrolled as EGF recipients. The level of serum creatinine before transplant was not different between the two groups (69 ± 25 umol/L in EGF and 82 ± 18 umol/L in DGF, respectively, $p=0.09$). Serum creatinine level on day 1, day 2, day 3 and day 7 after transplant in EGF and DGF groups were 90 ± 36 umol/L vs 261 ± 98 umol/L ($p<0.001$), 91 ± 43 umol/L vs 306 ± 84 umol/L ($p<0.001$), 83 ± 43 umol/L vs 213 ± 54 umol/L ($p<0.001$), and 56 ± 20 umol/L vs 149 ± 50 umol/L ($p<0.001$), respectively. In the DGF group, 7 recipients received CRRT therapy.

Conclusions: This study demonstrates the possibility that elevated serum creatinine level might be useful in predicting delayed graft function in the early postoperative stage of liver transplant recipients receiving DCD donation. Compared to graft function itself, change of serum creatinine is more forward-looking.

Abstract # P-414

Western Australian Experience in Liver Transplantation for Low MELD Patients. Monika Zwierchonska, Dhruv Patel, Kang Fong, Lingjun Mou, Gary Jeffrey, Luc Delriviere. *WA Liver Kidney Transplant Surgery, Sir Charles Gairdner, Perth, WA, Australia*

INTRODUCTION: Prioritization for liver transplantation has evolved over the last 20 years. Australia utilizes an interstate urgency-based allocation system. The MELD score is used, along with other parameters, for local organ allocation. Our Liver Transplant Centre is part of this allocation system, however over the years sufficient number of organ donations allowed allocation of livers to patients listed with MELD ≤ 15 .

PURPOSE OF THE STUDY: evaluation of 1- and 5-year survival of liver transplant patients with MELD ≤ 15 .

PATIENTS and METHODS: We have investigated two groups of patients. Group 1: patients with MELD ≤ 15 at the time of transplantation and group 2 with: MELD > 15 . There were 71 liver transplants performed in our centre in years 2004 to 2008. Patients with HCC were excluded from the study.

RESULTS: Group 1: 42 patients (29 males, 13 females, average age 49.9, SD 11.48) with average MELD score of 10.66 (SD 3.28), and group 2: 29 patients (21 males, 8 females, average age 41.41 (SD 15.05) with average MELD score of 25.20 (SD 7.18). The 1-year survival in group 1 was 97.61%, while in the group 2 was 86.66%. 5-year survival in the group 1 and 2 was 95.23% and 79.31% respectively. Average surgical times were similar: group 1: 7 hrs 54 min (SD 01:32); group 2: 8 hrs 22 min (SD 01:55). Intraoperative transfusion requirement of RBC were: median 1 unit (0-23) in group 1 and 2 units (0-22) in group 2. Hospitalization times varied considerably between group 1: median 15 days (8-54); group 2: median 23.5 days (9-90). Postoperative stay in ICU in group 1 was median 2 days (1-28), and group 2 – median 4 days (1-67). Donor characteristics: age 40.6 yrs (SD 18.27) for group 1; 42.2 yrs (SD 14.5) for group 2. No DCD donors were used. CMV, EBV status was not statistically different between the groups, as well as the average CIT. CIT in group 1 - 7 hours (SD 2 hrs 28min) and group 2 - 7 hours 20 min (SD 2hrs 50 min).

CONCLUSIONS: Patients after liver transplantation with MELD ≤ 15 have excellent 1- and 5-year survival in our center. They have significantly shorter ICU and total hospital stay. Therefore, we believe that survival benefit in cadaveric liver transplantation can be accomplished in patients with MELD ≤ 15 . Liver transplantation can be safely offered early in the process of liver disease, providing cost effective healthcare and good balance between urgency and utility of organ allocation.

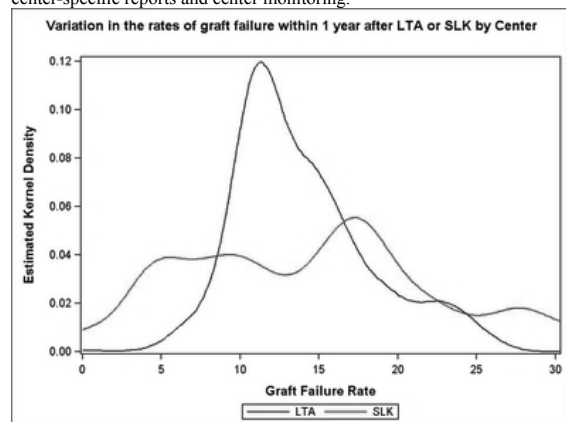
Abstract # P-415

Center Variation in Graft Failure Rates Is Larger for Simultaneous Liver Kidney Transplantation Than Liver Transplantation Alone. Sumeet K. Asrani¹, Giovanna Saracino¹, James Trotter¹, Mitra Nadim², W. Ray Kim³, Linda Jennings¹, Goran Klintmalm¹. ¹Baylor Univ, Dallas, USA; ²USC, Los Angeles, USA; ³Stanford, Stanford, USA

Center of transplant predicts graft loss after LT. Given center variation in SLKT patterns in US, we hypothesized that (1) center effect for SLKT is greater than LT and (2) dynamic changes occur in centers' reported liver graft loss after inclusion of SLKT outcomes.

Using de-identified center data from SRTR, we examined adult primary deceased-donor LT and SLKT (2005-2011). Using mixed effects model, we quantified the center effect and association with liver graft loss within 1 year after SLKT. SLKT ranged from 10 to 106 in 70 unique centers with 1,831 SLKT and 31,628 LT. Center-specific liver graft loss after SLKT (range 0-40%, 1st -4th quartile 4.1-26.7%) was compared to LT (range 6-26%, 1st -4th quartile 9.7-18.9%). Distribution of donor, transplant, recipient, geography related factors were similar between SLKT centers within lowest and highest quartile liver graft loss. After adjusting for MELD score, recipient age, diagnosis, albumin, and DRI, transplant center was an independent predictor of liver graft loss after SLKT ($p < 0.001$). Variation between centers was larger for SLKT ($SD = 0.36$) as compared to LT ($SD = 0.28$). (Figure) Center effect was not explained by center LT/SLKT volume and was uniform across quartiles of MELD score, DRI and after stratification by donor service area. Ratio of liver graft loss after SLKT versus LT varied by center, 0.1 -2.8; SLKT related liver graft loss was ≥ 1.5 times LT related graft loss at 21 centers. 78% of centers had "expected" SLKT and LT graft loss relative to average center, 20% of centers had discrepancy between SLKT and LT outcomes and 7% of centers had substantial diminution when SLKT outcomes were included in reported center specific liver graft loss rates.

Center is an independent predictor of liver graft failure after SLKT. Recognition of center effect and consideration of SLKT related liver graft loss as a liver related death has implications for derivation of transplant center-specific reports and center monitoring.



Abstract # P-416

The Influence of Body Mass Index on Survival of Liver Transplant Patients. Félix Cambra, Iago Justo, Naim Fakih, Oscar Caso, Rebeca Sanabria, Alberto Marcauzco, Alejandro Manrique, Jorge Calvo, Carmelo Loinaz, Alvaro Garcia-Sesma, Paula Rioja, Cristina Cobo, Carlos Bermello, Manuel Abradelo, Erique Moreno, Carlos Jiménez. *General Surgery, Abdominal Transplantation, "12 de Octubre" University Hospital, Madrid, Spain*

INTRODUCTION: A very fine selection of recipients is necessary to guarantee a good patient and graft survival. An increased body mass index

(BMI) is a well-known cardiovascular risk factor, but its real implication in liver transplantation is controversial. This study was conducted to evaluate the effect of BMI on patient and graft survival in LT.

PATIENTS AND METHODS: Between May 1998 and June 2013, 938 LT were performed in our center. The weight of 750 patients was documented at inclusion in waiting list. We divided these patients with respect to the WHO groups for diagnosing obesity. The number of patients in each group was: Extremely thin (ET) 17 patients; Normal (N) 299; Overweight I (OWI) 193; Overweight II (OWII) 100; Obesity I (OI) 111; Obesity II (OII) 27; and Obesity III (OIII) 4.

RESULTS:

The mean age of recipients was, in the different groups, as follows: 51.8 $\pm$ 13.4 for ET; 51.67 $\pm$ 11.6 for N; 55.36 $\pm$ 9.7 for OWI; 55 $\pm$ 10 for OWII; 55.78 $\pm$ 8.9 for OI; 55.2 $\pm$ 7.6 for OII and 53.5 $\pm$ 8.1 for OIII ($p = 0.001$); whereas the mean MELD score was respectively 17.12 for ET; 16.0 for N; 15.9 for OWI; 10.4 for OWII; 14.27 for OI; 16.0 for OII and 14 for OIII ($p = 0.25$). The percentage of VHC patients was: 47.1% for ET; 44.1% for N; 54.4% for OWI; 49% for OWII; 40.9% for OI; 42.3% for OII and 50% for OIII ($p = 0.297$).

Actuarial recipient survival rates at 1, 3 and 5 years were 62.4%, 55.5% and 39.6% respectively for ET; 81.2%, 73.8% and 68.3% for N; 82.3%, 73.4% and 67% for OWI; 87.9%, 76.8% and 71.5% for OWII; 85.3%, 76.9% and 65.6% for OI; 88.6%, 79.5% and 69.2% for OII and 75%, 75% and 75% respectively for OIII ($p = 0.559$).

Actuarial graft survival rates at 1, 3 and 5 years were 62.4%, 55.5% and 39.6% respectively for ET; 78.4%, 70.1% and 65% for N; 81.2%, 72.2% and 64.5% for OWI; 85.9%, 73.5% and 66.1% for OWII; 82.5%, 73.1% and 63% for OI; 88.6%, 79.5% and 69.2% for OII and 50%, 50% and 25% respectively for OIII ($p = 0.331$).

CONCLUSION: With the data presented in this study, although not statistically significant, we should reconsider LT in patients with BMI greater than 40 and under 18.5, bearing in mind that more studies should be done with larger number of patients in order to confirm these results.

Abstract # P-417

Hepatocellular Carcinoma and Liver Transplantation: Size Matters but Volume Matters More. Alice Graham¹, Anya Adair², Ewan M. Harrison², James Gordon-Smith², Hamish Ireland², Dilip Patel², Stephen J. Wigmore². ¹University of Edinburgh, Edinburgh, United Kingdom; ²SLTU, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom

Introduction

Eligibility for liver transplantation in the treatment of hepatocellular carcinoma (HCC), is currently based on single-dimension measurements on cross-sectional imaging as specified by the extended Milan Criteria. Most tumours are not perfectly spherical in shape. A single measurement does not account for the significant difference in shape, and therefore tumour volume, that exist may between patients. This study investigated whether the current HCC liver transplantation selection criteria disadvantage patients by only taking single-dimensional diameter, rather than also considering volume.

Methods

Patient data were collected retrospectively from a prospectively maintained database. Tumour volume was measured using two methods; semi-automated planimetry and 3 perpendicular diameter measurements, a, b & c, using the standard formula for the volume of an ellipsoid ($4/3\pi(a/2 * b/2 * c/2)$). Statistical analysis was performed using R.

Results

311 patients with HCC were assessed for liver transplantation between 1995 and 2013. 168 patients were listed for transplantation and 143 were not listed. For the purposes of this study, 91 patients who underwent transplantation and 25 who were excluded on the basis of tumours size, and who had MRI and CT images, were included. In these patients, 182 tumours were measured using a single diameter and comparison of CT and MRI measurements showed excellent correlation ($R^2 = 0.83$). Mathematical models were created of ellipsoids of differing diameters based on limits of the extended Milan criteria. Volumetry measurements of 68 tumours that were outwith criteria on single-dimension measurement confirmed that 76% would have been within transplant criteria using theoretical volume allowance.

Discussion

This study shows that, by using volumetry rather than single-diameter measurement, a significant number of patients deemed outwith criteria have the same, or smaller, tumour volume as those found to be within criteria. Although it is uncertain if tumour volume correlated with post-transplant survival, it appears that those with ellipsoid rather than spherical tumours may be disadvantaged by current size-based selection criteria.

Abstract # P-418

“Metroticket” Predictor for Assessing Liver Transplantation To Treat Hepatocellular Carcinoma: A Single-Center Analysis in Mainland China. Jianyong Lei, Lunan Yan, Wentao Wang. *Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, Sichuan, China*

AIM: The aim of our study was to validate the “Metroticket” predictor using a large cohort of liver transplantation (LT) patients with hepatocellular carcinoma (HCC) in China.

METHODS: In total, 230 cases of LT for HCC treatment at our center, from July 2000 to August 2008, were included in the present study. The predictive 1-, 3- and 5-year post-LT survival rates were calculated using the Metroticket model (<http://89.96.76.14/metroticket/calculator/>). The predicted and observed long-term survival rates were then compared and analyzed.

RESULTS: The predicted survival for all 230 cases, as calculated by the Metroticket model, was 64.7% and 56.2% at 3 and 5 years, respectively, and the observed survival rate for these patients was 71.3% and 57.8%, respectively. For the 23 cases with macrovascular invasion, the predicted 5-year survival rate was 43.5%, whereas the observed 5-year survival rate was only 8.7%. For the 42 cases with microvascular invasion but an absence of macrovascular invasion, the predicted 5-year survival rate was 44.9%, and the observed 5-year survival rate was 50%. For the remaining 165 patients without any vascular invasion, the predicted 5-year survival rate was 65.8%, and the observed 5-year survival rate was 66.7%.

CONCLUSION: The Metroticket model can be used to accurately predict survival in HCC-related LT cases with an absence of macrovascular invasion.

Abstract # P-419

Comparison of Five MELD-Based Scores in Predicting Patient Survival after Liver Transplantation. Yucheng Ma, Lunan Yan, Jiayin Yang. *Liver Transplantation Center, West China Hospital, Sichuan University, Chengdu, Sichuan, China*

Background The shortage of donors in liver transplantation makes it difficult to balance optimal utility with limited supply. A drastic scoring system designed to accurately predict patient outcome after transplantation is needed. In the past years, the model for end-stage liver disease (MELD) score has been used for organ allocation. Recently, some MELD-based scores were proposed. **Methods** We retrospectively analyzed 583 adult liver transplants performed at our center between 9/1999 and 12/2008. The median follow up of the patients was 22 months. Different scores were calculated according to the formula: MELD[1], MELD-Na1[2], MELD-Na2[3], D-MELD[4] and iMELD[5]. The area under the receiver operating characteristic curves (AUCs) were calculated at 1 month, 3 months, 6 months, 1 year, 3 years and 5 years.

Results Among the 583 patients, 273(46.8%) patients had malignant tumors. We list the results with $p < 0.05$. The AUCs for standard MELD were evaluated at 1 months (AUC=0.627, $p=0.002$), 3 years (AUC=0.585, $p<0.001$) and 5 years (AUC=0.607, $p<0.001$). The AUCs for MELD-Na1 were evaluated at 1 months (AUC=0.64, $p=0.001$), 3 months (AUC=0.568, $p=0.02$), 3 years (AUC=0.571, $p=0.03$) and 5 years (AUC=0.597, $p<0.001$). The AUCs for MELD-Na2 were evaluated at 1 months (AUC=0.632, $p=0.01$), 3 months (AUC=0.57, $p=0.017$), 3 years (AUC=0.566, $p=0.07$) and 5 years (AUC=0.597, $p<0.001$). The AUCs for D-MELD were evaluated at 1 months (AUC=0.628, $p=0.002$), 3 months (AUC=0.564, $p=0.028$), 3 years (AUC=0.583, $p=0.01$) and 5 years (AUC=0.569, $p=0.01$). The AUCs for iMELD were evaluated at 1 months (AUC=0.654, $p<0.001$), 3 months (AUC=0.564, $p=0.028$), 3 years (AUC=0.563, $p=0.01$) and 5 years (AUC=0.589, $p=0.01$).

Conclusions According to these data, the iMELD showed the best performance in predicting the short-term outcome of liver transplantation. However, the MELD-based scores showed poor performance in long-term survival prediction. We found that none of these scores showed an AUC > 0.7. Further studies are needed to test these scores.

Abstract # P-420

Usefulness of Prothrombotic Screening of Potential Donors in Living Donor Liver Transplantation. Kumar Palaniappan, Gomathy Narashiman, Joy Varghese, Vivekandan Shanmugham, J. Olithselvan, Dinesh Jothamani, Mohamed Rela. *Institute of Liver Diseases & Transplantation, Global Hospitals, Chennai, Tamilnadu, India*

Introduction: Bleeding and thrombosis are major complications following LDLT. Donor selection and evaluation has become specialised, because donor health and safety are most important factor in LDLT. To improve outcomes, we systematically screen our donors for prothrombotic & hemostatic factors. The aim of this paper was to describe the results of a screening for coagulation disorders, including thrombophilic factors, in potential living liver graft donors and to evaluate thrombotic and bleeding events in donors and recipients, during and after the procedure.

Methods: From Jan 2010 till Nov 2013, 184 LDLT were performed at our centre. Total of 326 potential donors were screened using a standard protocol for assessment. 184 were found suitable for donation. Screening was done for Prothrombotic factors (Factor V Leiden, Protein C, Protein S, Anti-thrombin III, Anti-cardiolipin Antibody) in 184 potential donors, 29 donors (15.7%) were detected to have at least one abnormality.

Results: Protein S deficiency was commonest in 13 donors (44.8%), followed by Anti-thrombin III in 8(27.5%), Protein C 6 donors (19.2%), Factor V Leiden mutation in 2 donors (7.6%). All the potential donors are administered Low molecular weight heparin, the previous evening & also are started on mechanical compression devices & stockings to prevent venous stasis. Early mobilization is encouraged. One donor (0.06%) developed deep vein thrombosis in postoperative period (Negative for thrombotic screening). None of the donors who were positive had a re-exploration for bleeding related issues. The mean blood transfusion rate in donors is 1.04 units. Among recipients, the vascular complications were HAT in 2 patients, PVT in 1 patient & no patient had HVT. Of these only one recipient had a graft from a prothrombotic donor.

Conclusion: Systematic screening for prothrombotic factors is recommended in all potential donors to prevent more morbidity in a procedure which already has more chances of bleeding and thrombosis.

Abstract # P-421

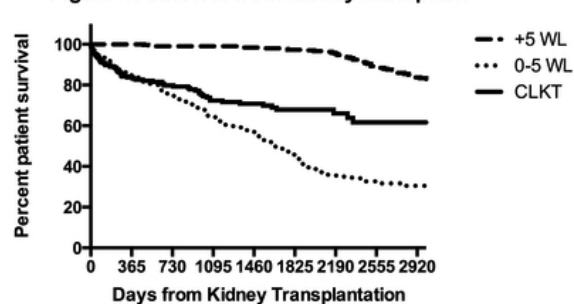
Outcomes after Combined Liver Kidney Transplant Versus Kidney Transplant Followed By Liver Transplant. Edie Y. Chan¹, Renuka Bhattacharya², James D. Perkins². ¹Rush University Medical Center, Chicago, USA; ²University of Washington, Seattle, USA

Introduction: The decision for isolated kidney transplant (KT) versus combined liver-kidney transplant (CLKT) in patients with end stage renal disease (ESRD) with compensated cirrhosis remains controversial. We sought to determine outcomes of patients requiring listing for a liver transplant (LT) following either a cadaveric or living donor kidney transplant.

Methods: Our dataset included the UNOS/SRTR kidney database from 1987-2012 after being joined with the liver database from 2002-2012. Outcomes of patients who received a CLKT with an INR ≤ 1 and Total Bilirubin ≤ 1 were compared to patients who received a primary KT and subsequently required listing for LT between 0-5 years or after 5 years.

Results: For the three groups, 244 patients had a CLKT, 216 patients required listing for LT between 0-5 years after KT (0-5WL), and another 320 patients required listing for LT 5 years after KT (+5WL). From the time after KT, the 0-5WL group had the worse survival of all groups. The +5WL had the best survival of all groups.

Figure 1. Survival from kidney transplant



For the 0-5WL group, 45% underwent LT and 40% died while waiting, compared to the +5WL group with 53% having LT and 26% died while

waiting. At the time of LT, the 0-5WL group had a higher MELD score, higher grade of encephalopathy, and higher incidence of requiring assistance to live than the other two groups. From the time of liver transplant, the CLKLT was trending to have better survival ($p=0.0549$) than both the 0-5WL and +5WL groups, which had equivalent survival.

Conclusion: The 0-5 WL group is a higher risk group with poorer survival due to a higher incidence of dying on the waitlist. Better identifying the factors that contribute to patients requiring listing for LT following KT within 5 years may improve utilization of organs and better survival for those patients.

Abstract # P-422

Hepatocellular Carcinoma Meld Exception in Brazil. Rafael S. Pinheiro, Lucas S. Nacif, Wellington Andraus, Liliana D. Lopes, Rafael A. Pecora, Vinicius Rocha-Santos, Andre D. Ibrahim, Luciana B. Haddad, Igor L. Calil, Ruy J. Cruz Jr, Luiz A. C. D'Albuquerque. *Gastroenterology, Liver Transplant Division, University of Sao Paulo, Sao Paulo, SP, Brazil*

Introduction: Liver transplantation is a curative treatment to hepatocellular carcinoma (HCC). Although, several patients with unresectable HCC have preserved liver function and consequently low MELD scores. Therefore, MELD exceptions were proposed to balance this equation. We aimed to evaluate time to transplantation and drop out due tumor progression in patients waiting for liver transplantation with HCC MELD exception.

Methods: We evaluated all patients included in liver transplantation's waiting list, from August 2007 to August 2013, with MELD exception due HCC at a single high-volume Brazilian center. Our national allocation system confers an artificial MELD score to patients within Milan Criteria, starting with MELD 20 that increases automatically after 3 months to 24 and finally to 29 after others 3months. Calculated MELD is employed when it's higher than the artificial MELD score.

Results: During the whole period 274 HCC patients were included in liver transplantation's waiting list with MELD exception. Liver transplantation was performed in 150 (54.7%) patients, excluding 10 patients with calculated MELD higher than the artificial MELD score, mean time to transplantation was 285 days (median 223 days). Tumor progression beyond Milan criteria (drop out) removed 38 (13.9%) patients from the waiting list and 36 (13.1%) patients died before transplantation due clinical deterioration. Mean time between MELD exception inclusion to drop out or death was 234 days (median 195 days). Thirteen (4.7%) patients had complete response to radiofrequency therapy and denied further transplantation. Seven (2.6%) patients were removed due clinical deterioration. 30 (11%) patients are still in waiting list.

Conclusion: A high rate of HCC patients can't achieve liver transplantation due death or drop out during waiting in the liver transplantation's list. Modifications in HCC MELD exception could improve this situation.

Abstract # P-423

Impact of Recipient Obesity on Outcomes after Liver Transplantation. Ashish Singhal¹, Gregory C. Wilson¹, Koffi Wima¹, Ralph C. Quillin¹, Madison Cuffy¹, Nadeem Anwar², Tiffany E. Kaiser², E. Steve Woodle¹, Flavio Paterno¹, Daniel E. Abbott¹, Tayyab S. Diwan¹, Shimul A. Shah¹. ¹Cincinnati Clinical Research Group in Surgery, Department of Surgery, University of Cincinnati Medical Center, Cincinnati, OH, USA; ²Division of Gastroenterology and Hepatology, Department of Medicine, University of Cincinnati Medical Center, Cincinnati, OH, USA

Introduction: The prevalence of obesity in liver transplant (LT) candidates is increasing, requiring many centers to employ a body mass index (BMI) restriction.

Materials and Methods: Using a linkage between the University HealthSystem Consortium, US Census, and Scientific Registry of Transplant Recipients databases, we identified 12,445 patients who underwent LT between January 1, 2007 and December 31, 2011 and divided them into two cohorts based on BMI (< 40 vs. ≥ 40) Kg/m².

Results: Recipients with BMI ≥ 40 comprised 3.3% ($n=416$) of all LTs performed during the study period. There were no differences for donor characteristics including age and donor risk index. Recipients with BMI ≥ 40 were significant for being female, diabetic (38.2% vs. 23.4%), with NASH cirrhosis (32% vs. 12.1%), and a higher median MELD score (22 vs. 19). A significantly higher proportion of them had limited physical capacity, and was in-hospital at LT. They had significantly higher post-LT length of stay (LOS); however, subset analyses revealed no difference in LOS for patients with MELD score ≥ 20 . A significantly lower proportion of BMI ≥ 40 recipients

were discharged to home. There was no difference for perioperative mortality, direct cost, and 30-day readmission rates. With a median follow-up of 2 years, there was no difference for patient ($p=0.372$) and graft ($p=0.513$) survivals.

Comparison of outcome characteristics based on recipient BMI

Outcome	Recipient BMI				p value
	BMI≥40 (n=416)		BMI<40 (n=12029)		
	N/median	%/IQR	N/median	%/IQR	
Length of stay (days)					
total (LT to discharge)	11	10	9	8	<0.0001
ICU	3	6	3	4	0.0002
Mortality	20	4.8	488	4.06	0.4467
Routine discharge home	305	77.02	9911	85.9	<0.0001
Direct Cost (\$)	98541	60976	100469	60721	0.7338
Readmission (30 day)	156	39.4	4367	37.8	0.5305

Conclusions: Despite potential bias in this patient population, morbidly obese recipients appear to have similar in-hospital and short-term outcomes after LT without a profound increase in resource utilization. This suggests that the generally assumed BMI cutoff employed by many centers may be unnecessary and restricts access to acceptable candidates.

Abstract # P-424

Three Year Follow-Up of Seroconversion Rate To Hepatitis- A Immunization in Living Donor Liver Transplant Children.

Chih-Cheng Chen, Allan Concejero, Chih-Chi Wang, Chih-Che Lin, Chao-Long Chen. *Liver Transplantation Program, Chang-Gung Memorial Hospital-Kaohsiung, Kaohsiung, Taiwan*

Background:

Liver transplant recipients should be considered for hepatitis a vaccination. Hepatitis a vaccine is safe and achieves good seroconversion rates in liver and renal transplant recipients. However, whether pediatric living donor liver transplant (LDLT) recipient has a long-term positive seroconversion rate to hepatitis a vaccine is not known. The aim of this study was to evaluate the long-term immunogenicity of hepatitis-A vaccine in children received LDLT.

Patients and Methods:

Children received LDLT with initially negative anti-HAV IgG and had subsequently received two doses of inactivated hepatitis a vaccination 6 month apart were included in the study. Regular f/u of anti-HAV antibody was done yearly for 3 years. Clinical data and immunogenicity of hepatitis a vaccine of those who had persistent positive seroconversion to hepatitis a vaccines were summarized and compared.

Results:

A total of 36 children with LDLT were included in this longitudinal follow up study. Only nine children (25%) had persistent seroconversion to hepatitis a vaccines. There was no difference of sex prevalence in this group of children. The mean age when receiving LDLT was 5 ± 2.9 year age (1-9 years of age). The mean Child score was 9.8 ± 2.7 . The etiology for receiving LDLT was biliary atresia. When compare to the first year (61%) and second year (50%) conversion rate, the rate dropped steeply. The LDLT children not only had lowered potency of immunogenic response to hepatitis a vaccination, they also had a poor ability to maintain positive in seroconversion to hepatitis a vaccination; and the anti-HAV antibody is vanishing in a rapid rate!!

Conclusion:

LDLT children had significant poor response to HAV vaccination as compared to healthy children. Anti-HAV antibody should be monitored regularly, and booster HAV vaccination should also be considered in order to maintain a protective serum level.

Abstract # P-425

Portal Vein Thrombosis after Liver Transplant for Biliary

Atresia and Rex Shunt: Case Report. Miriam Cortes, Mansoor

Madanur, Anuja Athale, Shirin Khorsandi, Anthony Stafford, Hector Vilca-Melendez, Nigel Heaton. *Liver Transplantation, Institute of Liver Studies, King's College Hospital, London, United Kingdom*

Background:

Extrahepatic biliary atresia (EHBA) is the most common indication for liver transplantation in children, coexisting in 25% of the patients with congenital anomalies. Portal vein thrombosis (PVT) after liver transplantation (LT) is not rare in these patients as the native portal vein is usually hypoplastic. Early portal vein thrombosis can compromise liver graft viability with subsequent portal hypertension affecting patient and graft survival.

Methods:

We report a case of a 3 year old girl with EHBA type 3 who had a liver transplant after failed Kasai portoenterostomy at the age of 13 weeks. Prior to transplant she presented with jaundice, ascending cholangitis, portal hypertension with gastrointestinal bleeding and failure to thrive.

She developed acute portal vein thrombosis on day one after transplant when she was brought back to theatre and an interpositional iliac graft from a cadaveric donor was placed between the donor portal vein and the confluence of the superior mesenteric vein and splenic vein. The patient was formally anticoagulated after the procedure. On day 2 after LT, the US revealed thrombosis of the interpositional graft, therefore, the patient was surgically reviewed again and the interpositional graft was refashioned and a thrombectomy of the SMV was performed. Despite all these measures, the portal vein thrombosed again so a superior mesenteric vein to intrahepatic left portal vein shunt (Rex shunt) was performed with a cadaveric iliac graft simultaneously with the closure of a significant spontaneous splenorenal shunt which was discovered during this procedure.

Results:

The 6-month follow-up has confirmed shunt patency by postoperative Doppler ultrasound. There have been no other complications to date.

Conclusions:

Children with EHBA usually have hypoplastic portal vein and this is not a contraindication for liver transplantation although an increased post-operative morbidity, including (PVT) may be expected. Early surgical review of the portal vein anastomosis after PVT is necessary but it might be very difficult and unsuccessful. The Rex shunt using a cadaveric vein graft should be considered as a surgical option in selected cases of acute PVT after paediatric OLT.

Abstract # P-426

Hepatic Hemodynamic Disturbances in Cirrhotic Children: Correlation to PELD and Portal Vein Complications after Liver Transplantation. Catherine de Magnée¹, Renaud Menten², Dana Dumitriu³, Karlien Carbonez³, Thierry Pirote⁴, Francis Veyckemans⁴, Philippe Clapuyt², Francis Zech⁵, Raymond Reding¹. ¹Pediatric Surgery and Transplantation, St Luc University Clinics, Université Catholique de Louvain, Brussels, Belgium; ²Pediatric Radiology, St Luc University Clinics, Université Catholique de Louvain, Brussels, Belgium; ³Pediatric Cardiology, St Luc University Clinics, Université Catholique de Louvain, Brussels, Belgium; ⁴Pediatric Anesthesiology, St Luc University Clinics, Université Catholique de Louvain, Brussels, Belgium; ⁵Institute of Experimental and Clinical Research, St Luc University Clinics, Université Catholique de Louvain, Brussels, Belgium

Background

Liver hemodynamic disturbances and portal vein (PV) complications are frequently observed in pediatric liver transplantation (LT). We hypothesized that cirrhosis in children is associated with liver hemodynamic features which could lead to vascular complications after LT.

Methods

We retrospectively analyzed 198 LT recipients (median age: 1.6 year), including 130 biliary atresia (BA). Pre-LT hemodynamics were studied using Doppler ultrasound, and correlated with the incidence of post-LT vascular complications. In children with BA-related PV hypoplasia, the technique used for PV reconstruction was correlated with the incidence of post-LT PV complications.

Moreover, intraoperative flowmetry of liver hemodynamics was studied prospectively at LT in 31 cirrhotic children (median age: 0.9 year), including 23 BA.

Results

At retrospective analysis, hepatic arterial resistance index ≥ 1 at pre-LT ultrasound was associated with a higher rate of PV complications ($p=0.041$). In children with BA-related PV hypoplasia, the portoplasty technique alleviated the extra risk of PV complications (6.2% with portoplasty versus 19.3% without portoplasty).

The prospective hemodynamic studies showed that: (1) pediatric cirrhosis was associated with a reduction of pre-LT total liver flow of more than 60% (median: 35 ml/min/100gr of liver), compared to expected values (100 ml/min/100gr); (2) this reduction of total liver flow was correlated with PELD ($\tau=-0.259$; $p=0.041$).

Conclusions

Pediatric cirrhosis is associated to severe liver hemodynamic disturbances, which are correlated with PELD. Pre-LT hemodynamic assessment may help to predict, and efficiently manage liver vascular anomalies in pediatric LT, including BA-related PV hypoplasia.

Abstract # P-427

Split Liver Transplantation: A Single Center Experience at KFSH & RC in Saudi Arabia. Yasser M. Elsheikh, Hamad Albahili, Mohammed R. Abdelfattah, Bassem Hegab, Ahmed Algohary, Yehia Saleh, Bander Alqahtani, Mohammed Alshagrani, Talal AlGoufi, Martin Burdelski, Mohammed I. Alsebayel, Dieter C. Broering. *Liver & Small Bowel Transplantation and HBP Surgery, King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia*

BACKGROUND:

Organ shortage resulting in mortality on the waiting list due to deterioration of patients condition remains a challenge; more exaggerated in pediatric patients. The option of living donor liver transplantation, size reduction of an adult cadaveric liver was implemented to overcome the size mismatch in pediatric recipients. However, the remaining liver was discarded, which led to donor organ shift from adults to children. Split liver transplantation allowed the whole liver to be divided into two allografts; hence, the total number of grafts was increased.

PATIENTS/METHODS:

We report 4 ex situ & 3 in situ split liver transplantation performed in at KFSH & RC in Riyadh, Saudi Arabia. Between May 2011 till December 2013, 7 livers harvested from heart beating hemodynamically stable brain dead donors. 4 ex situ & 3 in situ splits were performed. 6 adult patients received an extended right grafts and 5 children received 6 left lateral lobes (one child required a re transplant for hepatic artery thrombosis) 1 child received right lobe with segment one and 1 child received a full left lobe without segment one from a pediatric brain dead donor. The demographic data and diagnoses for both recipients and donors were described including: the donor liver graft condition, cold, warm and total ischemia time, the operative technique, the aetiology of the liver disease in the recipients, ICU and hospital stay, morbidity and complications, patient and graft survival.

RESULTS:

5 adult females & 1 male with ESLD received an extended right lobe graft. 3 female & 2 male children received 6 left lateral lobe grafts, 1 female received 1 right lobe graft & 1 female received full left lobe graft without segment one. We report 67% graft & patient survival in the adult population & 100% patient survival with 87% graft survival in the pediatric age group. No major events were encountered during their hospital stay; apart from 2 adult mortalities 1 due to pulmonary embolism and the second due to sepsis & ?? Hemorrhage.

CONCLUSION:

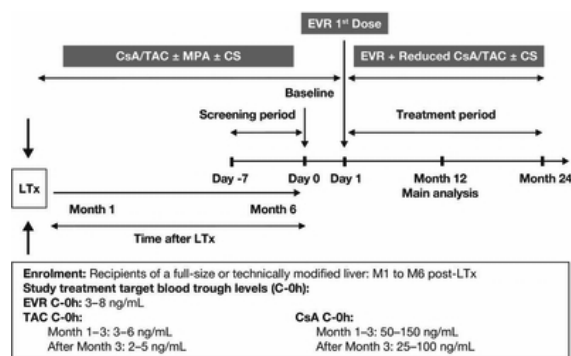
Split liver transplantation can be performed for non-urgent recipients with ESLD with good results. Increasing the organ pool for pediatric recipients, without affecting the adult recipient outcome.

Abstract # P-428

Everolimus in Combination With Reduced Calcineurin Inhibitor in Paediatric Liver Transplant Recipients: Baseline Data from the H2305 Study. R. Ganschow, L. Fischer, B.-G. Ericzon, A. Dhawan, A. D'Alessandro, J. Goss, C. Sips, A. Balfour, G. Junge. *For the H2305 Study Group, Hamburg, Germany*

Background: Immunosuppression with everolimus (EVR) and reduced exposure to tacrolimus (TAC) provides superior renal function with comparable efficacy and safety to standard tacrolimus in adult liver transplant recipients (LTxR). The H2305 study is designed to evaluate the efficacy, safety and tolerability, and renal function of EVR with reduced calcineurin inhibitor (CNI; cyclosporine [CsA] or TAC) in paediatric (p) LTxR. Here, we present the baseline data.

Methods: H2305 (NCT01598987) is a 24-month (M), prospective, multicentre study to enrol 75 pLTxR (≥ 1 M to <18 years [y]) receiving a full-size or technically modified liver allograft from deceased or living donor. Eligible patients, between 1M and 6M post-LTx, receive EVR (C0 3-8ng/mL) with reduced CNI (either CsA or TAC) $\pm$ steroids for 24M (Figure). Evolution of renal function (eGFR by Chronic Kidney Disease in Children Schwartz formula), incidence of composite efficacy failure (treated biopsy-proven acute rejection, graft loss or death), safety and tolerability, and the assessment of overall growth and development are included in the primary analysis at M12. The pharmacokinetics of EVR in combination with reduced CNI will be characterised in a subset of pLTxR.



CS, corticosteroids; CsA, cyclosporine; EVR, everolimus; LTx, liver transplantation; M, month; MPA, mycophenolic acid; TAC, tacrolimus

Results: Study recruitment is ongoing at 45 study sites across 13 countries. As of 19 November 2013 data extraction, including 26 pLTxRs enrolled and treated with EVR, mean baseline age was 5.01y (42.3% of patients were <2y, 34.6% were within 2-7y, and 11.5% each were within 7-12y and ≥12y), and 65.4% were male. Biliary atresia (50.0%) and metabolic disease (23.1%) were the main reasons for LTx. At baseline mean eGFR was 91.6±25.16mL/min/1.73m², mean MELD score was 17.1±6.24 and mean PELD score was 20.1±14.16.

Conclusions: This is the first prospective study in pLTx to provide data on the evolution of renal function, efficacy, safety and tolerability of a regimen of EVR with reduced CNL.

DISCLOSURE: Ganschow, R.: Grant/Research Support, Novartis., Fischer, L.: Grant/Research Support, Novartis and Astellas; Speaker's Bureau, Gilead Sciences; Other, Novartis, Advisory Committee., Ericson, B.-G.: Grant/Research Support, Novartis and Astellas., Sips, C.: Employee, Novartis., Balfour, A.: Employee, Novartis., Junge, G.: Employee, Novartis.

Abstract # P-429

Prevalence and Treatment of New-Onset Diabetes Mellitus after Liver Transplantation in Korean Children: A Single Center Study. Hyun Jin Kim¹, Seak Hee Oh¹, Kyung Mo Kim¹, Jung Man Namgung², Dae Yeon Kim², Gi Won Song³. ¹Department of Pediatrics, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Republic of Korea; ²Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Republic of Korea; ³Hepato-Biliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Republic of Korea

The aim of this study was to investigate the prevalence, clinical characteristics and management of new-onset diabetes mellitus (NODM) in Korean children with liver transplantation (LT). We retrospectively analyzed the medical records of 200 pediatric patients (5 months-17 years old) who underwent LT at Asan Medical Center between January 1994 and December 2010. 26 pediatric patients who died at the maximal follow-up after LT or who were lost to follow-up were excluded from the study. Among these 174 children, eighteen patients developed NODM after LT. The median interval time at the presentation of NODM after LT was 15 days (range, 1day-16.0 years), while the median patient age of NODM diagnosis was 10 years (range, 1.1-17.0 years). Insulin treatment with reduction in tacrolimus dosage, steroid tapering, and conversion from tacrolimus to cyclosporine with or without mycophenolate acid is highly effective in NODM after LT. In conclusion, the careful DM monitoring and modification of immunosuppressive regimen should be required in pediatric patient after LT.

Abstract # P-430

Analysis of Risk Factors for Biliary Complications in Pediatric Liver Transplantation. Jerome M. Laurence¹, John B. Seal¹, Vicky Ng², Yaron Avitzur², Simon Ling², Nicola Jones², Maria DeAngelis², Annie Fecteau², Grant David¹, Kamath Binita², Anand Ghanekar¹.

¹Transplant Surgery, University of Toronto, Toronto, ON, Canada;

²Transplant Surgery and Hepatology, Hospital for Sick Children, Toronto, ON, Canada

Purpose of study: This study was designed to determine the way in which features of a liver graft (whole, partial, deceased or live donor) and technique

of biliary reconstruction interact to affect the rate of complications after pediatric liver transplantation.

Methods: A retrospective review of pediatric liver transplants performed at a high volume North American centre from 2001 to 2011 was performed.

Results: The study cohort included 75 living donor (15 right lobe, 55 left lateral segment (LLS) and 5 full left lobe) and 99 deceased donor liver transplants (50 whole liver, 18 full left lobe, 4 right lobe, 27 LLS). The median follow-up was 70 months. There was no significant difference in the rate of biliary complications in living donor partial and whole grafts (15.7 vs. 15.5%, respectively). Although not statistically significant, there was a higher rate of biliary complications observed with deceased donor partial grafts (22.9%) when compared to whole grafts (p=0.28). The highest rate of biliary complications was associated with LLS deceased donor grafts (29.6%). Roux-en-y reconstruction was associated with a significantly lower rate of biliary complications compared to duct-to-duct reconstruction (14.3 vs. 29.8, respectively, P=0.05). Although not statistically significant, patients with biliary complications had inferior survival (83% vs. 92%, P=0.19). Graft survival was inferior in patients suffering biliary complications compared to those without (73.3 vs. 88.2 respectively, P=0.05). This difference remained significant even when biliary complications associated with a vascular complication were excluded.

Conclusion: In pediatric liver transplantation, the rate of biliary complications is similarly low for living donor partial grafts and deceased donor whole grafts, while higher rates of complications are associated with partial grafts from deceased donors and duct to duct biliary reconstruction. It should be noted that deceased donor LLS grafts have a high rate of biliary complications, exceeding that of live donor left lateral segment grafts. Biliary complications are associated with inferior graft survival independent of concomitant vascular complications.

Abstract # P-431

Living Donor Liver Transplantation in Citrullinemia Type-1: Report of Two Cases. Neelam Mohan, Deepak Goyal, Sakshi Karkra. Medanta Liver Institute, Medanta The Medicity Hospital, Gurgaon, Haryana, India

Introduction: Citrullinemia is a rare genetic (AR) metabolic liver disease caused by lack of the enzyme argininosuccinate synthetase (ASS) with an incidence of 1 in 50,000 to 60,000 births. There is no definite drug therapy for this disorder and patients are to be given diets low in specific protein throughout their life. Despite such cumbersome dietary restrictions, they are at high risk of CNS damage. In those who fail to respond to medical treatment, liver transplantation (LT) is a hope. Limited reports of LT are available with such type of patients. We report two patients who were diagnosed as Citrullinemia-Type1 and were referred to our centre for liver transplantation. **Case Report:** Two children (4 ½ yrs boy and 8 months female) diagnosed cases of citrullinemia Type-1 on the basis of high blood citrulline with high ammonia levels and deficient (ASS-1) were referred for further management. They had high ammonia levels (>200µmol/Lt) despite restricted protein diet, sodium benzoate and essential amino acid formula. They were diagnosed at 2 yr and day 5th of life respectively. The second child was screened early in view of first sibling dying at 4th day of life. CNS examination of both was normal. Both underwent left lateral lobe liver transplantation at 4 ½ yr and 8 m of age respectively and are 6 months and 3 months post transplant presently. Both had an uneventful post-op period and recovered well. Their serum ammonia normalized within 24 hrs and transaminases normalized on day 14th and 5th respectively. Protein was gradually introduced in their diet and they were on normal diet (2 gm/kg/day of protein) by 2nd week post LT.

Conclusion: Liver transplantation for citrullinemia results in excellent clinical and biochemical outcome with abolition of hyper-ammonemia on a normal diet thus leading to improved quality of life with no ammonia lowering drugs necessary. Liver transplant is a good option before neurological sequelae sets in such patients.

Abstract # P-432

Large for Size Graft in Pediatric Transplantation-Do We Need To Reduce? Gomathy Narasimhan, Anand Bharathan, Naresh Shanmugam, Rajesh Rajalingam, Manoj Srivatsav, Kumar Palaniappan, Vivekanandan Shanmugam, Srinivas Reddy, Sanjay Govil, Mohamed Rela. Institute of Liver Disease and Transplantation, Global Hospital, Chennai, India

Aim: Large for size graft in pediatric transplantation has been defined as GRWR > 3 and has been associated with morbidity such as difficult abdominal closure, respiratory compromise, graft hypoperfusion. GRWR > 4 has been

used as the cut off for reduction of the graft. We reviewed our experience with use of large for size liver grafts with a GRWR >3 and analyzed the outcome . Methods: Retrospective analysis of prospectively collected data of all pediatric liver transplants performed from August 2010 to November 2013 at our hospital and the outcome of children who received a graft with GRWR > 3 (Group 1) was analyzed and compared with children whose GRWR was < 3 (Group 2)

Results: 77 pediatric transplants were done from August 2010 to November 2013, 11 underwent DDLT (4 split and 2 reduced grafts) and 66 LDLT. Twentyone recipients had GRWR >3, of which 11 had GRWR between 3 and 4 and 10 had GRWR >4. Maximum GRWR was 5.37. There was only one patient in our entire series where we performed reduction of the left lateral segment graft. This was done in the smallest child in our series whose body weight was 4.5kg and GRWR was 4.2 after reduction. Recipient age ranged from 10 months to 48 months and weight ranged from 4.5kg to 11kg . Graft weight was 170g to 383g. Need for prolonged mechanical ventilation (Group 1 & 2, n= 3 & 7, p=0.84), portal vein thrombosis (Group 1 & 2, n= 2&1 p=0.14), hepatic artery thrombosis (Group 1 & 2, n= 0&1 p=0.51), bile leak (Group 1 & 2, n= 2 & 7, p=0.78), reinterventions (Group 1 & 2, n= 5 & 7, p=0.27), reoperation (Group 1 & 2, n= 5 & 6, p=0.19) and mean hospital stay (Group 1 & 2, n= 24.7 & 23.3 days) were not significantly different between two groups. Full abdominal closure was done in 13, primary skin closure in 5, closure with prosthetic mesh in 3 patients. Mesh was removed and primary closure done between 7 and 14 days. Clavien grade 3 and 4 complications occurred in 9 in GRWR>3 and 14 patients in GRWR<3 and was not significantly different.

Conclusion: Hyper reduction of graft with GRWR >4 is not required . Outcome of pediatric recipients with GRWR > 3 was not different from patients with GRWR<3 even if reduction of the graft was not performed. Staged abdominal closure was the only significant morbidity and was done in 2 stages in 30% of children with GRWR >3.

Abstract # P-433

Melatonin in the Regulation of Epigenetic Programming of Liver Steatosis Through the Prenatal Glucocorticoid Exposure.

Mao-Meng Tiao¹, Chao-Long Chen², Yu-Fan Cheng², Chih-Chi Wang², Tsung-Hui Hu². ¹Pediatrics, Kaohsiung Chang Gung Memorial Hospital, Chang Gung University College of Medicine, Kaohsiung, Taiwan; ²Liver Transplant Program, Kaohsiung Chang Gung Memorial Hospital, College of Medicine, Chang Gung University, Kaohsiung, Taiwan

Background: The majority of patients with nonalcoholic fatty liver disease (NAFLD) which is defined by hepatic steatosis. The cause(s) of progression from NAFLD to fibrosing steatohepatitis are unclear.

Aims: We aimed to determine whether prenatal glucocorticoid overexposure in rats may increases susceptibility to fatty liver. Melatonin can reduce serum total cholesterol and triglycerides in NAFLD and confers capability of epigenetic modifications.

Study design: Longitudinal study.

Subjects: Pregnant Sprague-Dawley rats at gestational day were administered by dexamethasone. Acute effects of prenatal programming liver were assessed. The expression of proteins involved in the apoptotic and methylation pathways were analyzed by RT-PCR and western blotting. Apoptosis and steatosis were examined by histology staining.

Outcome measures: postnatal 7 days.

Results: The liver steatosis, apoptosis was over expression in prenatal steroids group than control and down expression in melatonin group. The expressions of PEPCK, IGF1, leptin decreased in prenatal steroids and recovered in melatonin group by liver Real time PCR, and recovered leptin in melatonin by Western blot study. The liver HDAC and DNMT activity were increased in prenatal steroids and decreased in melatonin group. The DNA methylation was increased in the prenatal steroids groups and decreased in melatonin group.

Conclusions: The present study showed that the prenatal steroids induced programming liver steatosis in 7 days after delivery, and may be via leptin expression. Melatonin can reverse the methylation and recovered the liver steatosis.

Abstract # P-434

Acoustic Radiation Force Impulse as Auxiliary Diagnostic Method for the Indication of Liver Transplantation in Patients with Biliary Atresia.

Hajime Uchida¹, Seisuke Sakamoto¹, Kengo Sasaki¹, Takanobu Shigeta¹, Mikiko Miyasaka², Shunsuke Nosaka², Mureo Kasahara¹. ¹Division of Transplant Surgery, National Center for Child Health and Development, Tokyo, Japan; ²Radiology, National Center for Child Health and Development, Tokyo, Japan

Purpose: To evaluate liver stiffness (LS) and spleen stiffness (SS) in patients with biliary atresia (BA) after Kasai portoenterostomy (KP) by acoustic radiation force impulse (ARFI).

Methods: From September 2010 to November 2013, 83 values of LS and SS from ARFI, as supplementary diagnostic tool to indicate liver transplantation (LT), were collected in 43 patients with BA after KP, ranging from 0.12 to 12.8 years. We analyzed the correlation between those ARFI values and the following variables: liver function tests, the Child-Pugh score, the Pediatric End-stage Liver Disease (PELD) score and the presence of portal hypertension. LS and SS were expressed as a standard deviation score relative to previously established normal values for age (z-score).

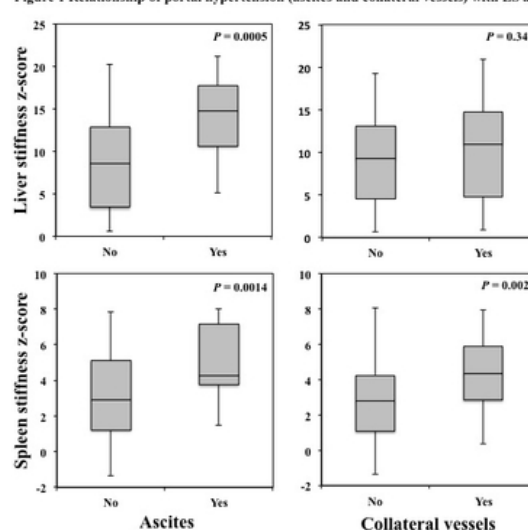
Results: The mean LS and SS values were 9.83 ± 5.81 and 3.70 ± 2.35, respectively. The LS and SS were significantly associated with liver function tests.

Table 1 The Correlation of Other Parameters with LS and SS in Patients after KP

Parameter	Range	LS		SS	
		r Value	P Value	r Value	P Value
Total bilirubin	0.29-37.8 mg/dL	0.546	<0.0001	-0.319	0.004
Aspartate aminotransferase	20-586 IU/L	0.347	0.002	0.132	0.232
Alanine transaminase	13-324 IU/L	0.213	0.054	0.088	0.426
Albumin	2.3-4.8 g/dL	-0.572	<0.0001	-0.456	<0.0001
Cholinesterase	104-474 IU/L	-0.371	<0.0001	-0.306	0.005
PELD score	-13-37	0.699	<0.0001	0.326	0.006
Child-Pugh score	5-12	0.661	<0.0001	0.402	<0.0001

The SS values were more significantly associated with portal hypertension (ascites and collateral vessels) compared with LS.

Figure 1 Relationship of portal hypertension (ascites and collateral vessels) with LS and SS



Thirty patients (69.8%) finally required LT. LS (P < 0.0001) and SS (P < 0.0001) in the patients requiring LT were significantly higher than those in the patients without LT.

Conclusion: LS and SS measured by ARFI can be used as a noninvasive technique for the assessment of liver function and portal hypertension in patients after KP. Moreover, SS may be more informative index to indicate LT from the standpoints of portal hypertension.

Abstract # P-435

Establishing a Diagnostic Algorithm for Biliary Strictures Following Liver Transplantation. Richard Gilroy¹, Maura O'Neil², Marc Heronemus¹, Timothy Schmitt¹, Motjiba Olyaei¹, Sean Kumer¹, Adam Alli¹, Stephen Waller¹, Philip Johnson¹. ¹Transplantation, University of Kansas Medical Center, Kansas City, KS, USA; ²Pathology, University of Kansas Medical Center, Kansas City, KS, USA; ³Radiology, University of Kansas Medical Center, Kansas City, KS, USA

Introduction: Biliary strictures have been described as the Achilles' heel of liver transplantation. It is unclear how to identify when a stricture might be present. This study evaluates all tests performed in those identified by PTC or ERCP to have a stricture with a view to establishing a clinical approach to diagnostic testings.

Methods: In a 5 year period (2008-2012) 45 patients were diagnosed with biliary strictures on ERCP or PTC in 488 transplants. A stricture was defined as a narrowing on cholangiography associated with delay in contrast emptying that resolved with stenting. All imaging, laboratory testing and protocol biopsies performed prior to the diagnosis were evaluated. On liver biopsies, specific histology (ductal proliferation, periductal edema, cholestasis, portal edema, pericholangitis, and lobular acute inflammation) were characterized. Biopsies and other characteristics of patients diagnosed with biliary stricture were compared to a population of matched recipients with normal liver enzymes (LFTs), negative imaging studies and patients matched for type of anastomosis (duct-to-duct versus choledochocholedochostomy).

Results: Of the 45 patients who had biliary stricture, 44 patients (98%) had sufficient data to match them to a control population that underwent a liver biopsy with normal LFTs. In all, 75% of patients having biliary stricture lacked biliary dilation on ultrasound. Table 1 outlines differences between populations.

Table 1- Biliary Stricture

	Biliary Stricture	Control	p-value	PPV	NPV
Portal Edema	29.5%	0%	.001	100%	53.7%
Pericholangitis	79.5%	16.7%	<.001	85.4%	76.9%
Lobular Acute Inflammation	75.0%	13.9%	<.001	86.8%	73.8%

PPV, positive predictive value; NPV, negative predictive value

Conclusion: Ultrasound is very insensitive for biliary stricture disease, although, when positive, it is a strong predictor of stricture being present. Liver biopsies showing portal edema, pericholangitis and lobular acute inflammation are strong predictors of biliary stricture. A diagnostic approach in patients with no biliary dilation on ultrasound would be to do a biopsy before considering ERCP.

Abstract # P-436

Post-Biopsy Intrahepatic Arterial Venous Malformation Leading To Bleeding Esophageal Varicose and the Importance of N-Butyl Cyanoacrylate in the Management of This Complication. Muhammad Muneeb¹, Richard Gilroy¹, Steven Lemons², Thomas Fahrback³, Philip Johnson². ¹Transplantation, University of Kansas Medical Center, Kansas City, KS, USA; ²Radiology, University of Kansas Medical Center, Kansas City, KS, USA

Background: Liver biopsy can occasionally cause arterial venous malformations (AVM). These usually occurs within weeks of the biopsy. These AVMs can lead to portal hypertension and variceal bleeding.

Case Report: A 62 year old man, 10 years post-transplant for HCV, is identified to have grade 3 esophageal varices when evaluated for epigastric pain and iron deficiency anemia. The pain was evaluated 1 month after a protocol liver biopsy and he described no other symptoms of gastrointestinal bleeding after the biopsy. An ultrasound showed focal dilation of the common hepatic artery and marked dilation of the portal vein. A CT-abdomen confirmed a fistulous connection between the right hepatic artery, right hepatic vein and right portal vein and an associated 2 cm portal vein aneurysm at the site of a prior biopsy bleed. Initially selective microcatheterization and embolization was performed using microcoils (Azur hydrocoils, Interlock coils and Nester coils). This led to significant reduction in flow through the AVM and preserved patency of the right hepatic artery, portal vein and hepatic vein. 20 months later the patient presented with bleeding esophageal varicose and repeat arteriography showed moderate dilatation of the portal vein and arteriovenous filling from a complex network of vessels derived from the right and left hepatic arteries and this was significant larger than prior arteriograms. A different approach was employed and embolization of segmental branches of the right hepatic artery and segmental branch of the left hepatic artery was

performed using N-butyl Cyanoacrylate. This resulted in ablation of the AVM. CT imaging and subsequent EGD showed only trace esophageal varices. Conclusions: Multiple biopsies increase risk for AVMs. Post liver biopsy screening with complete ultrasound can prevent catastrophic AVM complications. Nausea, vomiting or new esophageal varices post liver biopsy need ultrasound examination to rule out AVMs. Endovascular therapy using glue (cyanoacrylate and onyx) appears superior than other mechanical agents (coils, balloons, gelfoam and polyvinyl alcohol). Surgical ligation of intrahepatic artery, transplant segmentectomy, and retransplantation has been used previously.

Abstract # P-437

The Acoustic Radiation Force Impulse Elastography in Post Transplant Recurrent Hepatitis C of Living Donor Liver Transplantation. Tung-Liang Huang, Tai-Yi Chen, Leung-Chit Tsang, Shin-You Ou, Chun-Yen Yu, Hsien-Wen Hsu, Yu-Fan Cheng, Chao-Long Chen. *Diagnostic Radiology and Liver Transplantation Program, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan*

Purpose: The aim of this study is to evaluate the efficacy of acoustic radiation force impulse (ARFI) elastography in post-transplant HCV recurrence for liver fibrosis change and the disease progression.

Method and Material: From Aug. 2009 to Aug. 2013, 105 patients of chronic HCV for adult living donor liver transplantation enrolled and received ARFI elastography (ACUSON S2000, Siemens) for post liver transplant (PLT) liver stiffness measurement (LSM). The LSM was calculated as median shear wave velocity (SWV) (m/s) from 5-10 measurements at same site. The SWV was analyzed using receive-operating characteristic curve (ROC) for cut-off values of fibrosis stages by Metavir scores (F0-F4). Clinical states after treatment also evaluated. Paired sample t-test was performed for evaluating significance of the disease prognosis.

Results: 69 patients received LDLT with underline HCV were completely evaluated in the study. Patients were divided into G(1) (n=34), with PLT normal LFT and G(2) (n=35) with PLT abnormal LFT. In G(1) the ARFI was 1.13±0.32m/s and G(2) was 1.70±0.55m/s. In G(2) after medical treatment, improvement was found in 10 patients LFT and the ARFI was improved to 1.21±0.55m/s. The other 25 patients with deterioration of LFT and increase of ARFI SWV to 2.03±0.76m/s. The sensitivity and specificity were analyzed using ROC curve with well correlation between ARFI and LB histological fibrosis grading (p<0.0001). ARFI SWV >1.88m/s is the critical point for irreversible fibrotic change.

Conclusion: For the PLT HCV recurrence, the sensitivity of liver fibrosis is highly reflection to ARFI and it is essential for future follow up and instead of sequential biopsy.

Abstract # P-438

Successful Surgical Correction of Complete Portal Vein Occlusion By Thrombosis and Concomitantly Developed A-P Shunt Without Hepatocellular Dysfunction Complicated By Orthotopic Liver Transplantation. Koo Jeong Kang¹, Keun Soo Ahn¹, Yong Hoon Kim¹, Hyung Tae Kim¹, Won Hyun Cho¹, Jae Seok Hwang², Jung Hyeok Kwon³. ¹Surgery, Keimyung University School of Medicine, Dongsan Medical Center, Daegu, Korea; ²Internal Medicine, Keimyung University School of Medicine, Dongsan Medical Center, Daegu, Korea; ³Radiology, Keimyung University School of Medicine, Daegu, Korea

Complete occlusion of portal venous inflow caused by intraluminal thrombus complication by orthotopic liver transplantation occurring in the immediate post-transplant period, is to be corrected surgically by thrombectomy. Retransplantation is inevitable if the liver is not viable. Portal vein thrombosis developed in the immediate postoperative period was one of the leading causes of primary nonfunction(PNF) or primary dysfunction(PDF).

A 41 year old male underwent orthotopic liver transplantation for chronic hepatitis B with cirrhosis. The initial perfusion of portal flow detected by color Doppler ultrasound(CDU) was good and the hepatic arterial perfusion as well. The reconstruction of hepatic artery using the inferior mesenteric artery of the donor was larger in diameter than the hepatic artery proper that was anastomosed. Therefore the hepatic arterial blood flow might be too strong to match the hepatic arterial diameter in the hilar area. The sequential image of the CDU taken at the 7th postoperative day showed good perfusion until the 4th postoperative day. The CDU taken at the 7th postoperative day showed arterio-portal shunt in the hilum with complete obstruction of the portal flow

above the confluence of superior mesenteric and splenic vein. There was no evidence of hepatic dysfunction with normal serum level of AST, ALT, prothrombin time(PT), activated partial thromboplastin time(aPTT), INR and bilirubin during the remarkable change of vascular inflow, complete obstruction of portal vein and marked A-P shunt. The obstructed portal vein was revised after removal of the organized thrombus at the postoperative 11th day. The thrombosis was caused by redundant portal vein. The patient was recovered without any vascular complication after the revision. This hemodynamic change of a big A-P shunt with portal vein thrombosis without hepatic dysfunction was not reported in the literature.

Abstract # P-439

The Preoperative Radiological Evaluation in Living Donor Liver Transplantation. Mecit Kantarci¹, Berhan Pirimoglu¹, Yesim Kizrak¹, Akin Levent¹, Bulent Aydinli². ¹Radiology, Ataturk University School of Medicine, Erzurum, Turkey; ²General Surgery, Ataturk University School of Medicine, Erzurum, Turkey
In this video show, our aim is to demonstrate preoperative radiological evaluation in living donor liver transplantation (LDLT) process. We attached video abstract agreement form.

The 2014 Joint International Congress of ILTS, ELITA & LICAGE
June 4 - 7, 2014
London, United Kingdom

Video Abstract Submission Agreement
You must include a 1-page hard copy description of your video.
Videos must be postmarked by December 17, 2013.

Video Title: The Preoperative Radiological Evaluation in Living Donor
First Name, Last Name: Mecit Kantarci Degree: M.D., Ph.D.
Institution: Ataturk University School of Medicine
Address 1: Ataturk University School of Medicine
Address 2: Department of Radiology
City, State/Province, Zip: Erzurum Country: Turkey
Phone: +90 533 5686625 Fax: +90 442 236 1301
Email Address: okantarci@hotmail.com Assistant's Email:
By submitting this abstract and signing this Video Abstract form, I hereby understand and agree to the following conditions:
1. I warrant and represent that, to the best of my knowledge, nothing in my presentation violates any proprietary or personal rights of others (including with limitation copyright or privacy rights); is factually accurate, and contains nothing libelous or otherwise unlawful.
2. I agree to fully disclose any and all potential conflicts of interest. I acknowledge that if I do not disclose, I may be ineligible to present at the Congress.
3. I authorize the Congress to use my name, likeness, photograph and/or biographic data in connection with the use and promotion of the conference and my presentation.
4. I authorize the Congress to capture my presentation to be used as a proposed web cast on the Congress website following the meeting.

Signature: [Signature] Date: 12/17/2013
Please send off videos to: ILTS, Attn: Mousien Saffar, 15000 Commerce Parkway, Suite C, Mt. Laurel, NJ 08054 USA

We usually evaluate recipient via computed tomography (CT) images in portal phase; donors via non-contrast enhancement and three-phasic CT images and magnetic resonance cholangiopancreatography (MRCP).

The evaluation of the recipient

If the patient has a lesion in liver; localization, size and vascular invasion should be evaluated. In particular, assessment of luminal patency in portal vein is very important.

The evaluation of the donor

During imaging procedures, situations that prevent operation occur in the fifty percent of liver donor candidates. Preoperative donor evaluation is performed in following steps:

- Liver parenchymal evaluation: Non-contrast enhancement CT is performed for the assessment of hepatic steatosis. On contrast enhancement CT images, the incidental lesions can be detected.

- Vascular anatomy: On arterial phase CT images, arterial architecture and variations are evaluated according to Michels classification. This evaluation has an important role with regard to selection of appropriate surgical method. Portal vein anatomy and variations that require additional anastomosis also are evaluated according to Nakamura classification on the portal phase CT images. On the venous phase CT images, detection of the hepatic venous

variations play important role for determining of cantlie's line, venous drainage of the donor and preventing the presence of venous congestion in the recipient.

- Biliary tract: The biliary system and variations are evaluated according to Huang classification on MRCP images.

- Volumetric assessment: As a result of the above evaluations, selected appropriate surgical method is virtually generated on volume calculation program (Myrian® Intrastense, France). Whether volume remaining in the recipient and donor is sufficient are usually evaluated by this program.

Abstract # P-440

Depiction of Parenchymal Perfusion Changes in Patients with Ischemic Biliary Lesions after Living Donor Liver Transplantation. Mecit Kantarci¹, Berhan Pirimoglu¹, Yesim Kizrak¹, Hayri Ogul¹, Bulent Aydinli². ¹Radiology, Ataturk University School of Medicine, Erzurum, Turkey; ²General Surgery, Ataturk University School of Medicine, Erzurum, Turkey

Objective: To determine the value of 256-slice CT perfusion (CTP) imaging in the study of hepatic hemodynamic characteristics in ischemic biliary lesions (IBL) after living donor liver transplantation (LDLT).

Materials and methods: A total of 18 liver recipients with suspected IBL according to the clinical and laboratory findings received 256-slice CT angiography (CTA) and CTP within the first week after LDLT. 12 healthy LDLT recipients composed the control group. Blood volume (BV), blood flow (BF), arterial liver perfusion (ALP), portal venous perfusion (PVP), and the hepatic perfusion index (HPI) were calculated for the affected regions and the normal liver parenchyma in the control group.

Results: In 18 patients, 11 with arterial complications (thrombosis n=4, 36.4%; stenosis n=7, 63.6%) and 7 with portal vein complications (thrombosis n=3, 42.8%; stenosis n=4, 57.2%) were detected on CTA images. Compared with the normal liver parenchyma, BV, BF, ALP and HPI were significantly lower in the hepatic arterial complication group. Although PVP and BV were significantly lower, ALP, HPI and BF were higher in the affected region than in the normal liver parenchyma in the portal vein complication group (p<0.05). Conclusion: Various liver perfusion abnormalities of IBL may be evaluated objectively by CTP. CTP imaging is a non-invasive technique that enables the quantitative evaluation of IBL in the graft parenchyma after LDLT.

Keywords: Bile duct, hepatic artery, liver transplantation, liver.

Abstract # P-441

Feasibility of Automated MR Volumetry Using Hepatobiliary Phase Images of Gadoteric Acid-Enhanced MR: Comparison with CT Volumetry. Kyoung Won Kim¹, Woo Kyoung Jeong², Jeongjin Lee³, So Yeon Kim¹, So Jung Lee¹, Hyoung Jung Kim¹, Jong Seok Lee¹, Gi-Won Song⁴, Shin Hwang⁴, Sung-Gyu Lee⁴.

¹Radiology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea; ²Radiology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea; ³School of Computer Science & Engineering, Soongsil University, Seoul, Korea; ⁴Hepatobiliary and Liver Transplantation Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

In this study, we assessed the feasibility of automated MR volumetry using hepatobiliary phase images of gadoteric acid-enhanced MR in comparison with manual and automated CT volumetry. Automated MR volumetry was performed with hepatobiliary phase images of gadoteric acid-enhanced MR. Manual and automated CT volumetries were also performed. 40 potential live liver donor candidates (18 men, 22 women; mean age, 36.0 years) who underwent MR and CT on a same day were included in this study. The average volume measurement errors of the automated CT and MR volumetry were $2.07 \pm 1.47\%$ and $2.35 \pm 1.22\%$, respectively, which did not differ significantly ($P = 0.224$). Numbers of editing, operation times of manual editing, edited volumes, and total processing time in automated MR volumetry were significantly lower than those in automated CT volumetry ($P < 0.001$). In conclusion, automated liver MR volumetry using hepatobiliary phase images of gadoteric acid-enhanced MR, can be used as a reliable, easy and fast tool to measure liver volume in potential living liver donors.

Abstract # P-442

AST Platelet Ratio (APRI Scores) As a Non-Invasive Tool in a Diverse Patient Population and It Correlates With the Severity of Hepatoportal Pressure Gradients. Abimbola Aderinto¹, Dima Darwish¹, Wei-Chung Chen¹, Maha Boktour², Howard P. Monsour, Jr.¹. ¹Department of Medicine, Houston Methodist Hospital, Houston, TX, USA; ²Department of Surgery, Houston Methodist Hospital, Houston, TX, USA

Background: The presence of fibrosis on liver biopsy is a prognostic tool for management of liver disease. AST/PLT ratio index (APRI) has been shown to be a useful tool to non-invasively predict fibrosis, particularly in patients with hepatitis C. Hepatoportal pressure gradient (HPPG) measurements have been used as an instrument to predict complications from cirrhosis. Our goal was to compare APRI scores in diverse patient populations with liver disease to fibrosis scores on liver biopsy and to elucidate the relationship between APRI scores and HPPG measurements.

Methods: Liver biopsy results of 125 patients were retrospectively reviewed from 2009 to 2011. 32 were excluded for not having corresponding liver function tests, n = 93. Two fibrosis groups were compared - Group 1 had no or minimal fibrosis (Stage 0-2), n = 44 and was compared to group 2 with advanced fibrosis (Stage 3-4), n = 49. An ROC curve was constructed to best determine the cutoff for the prediction of fibrosis, and a Pearson's correlation was calculated. In addition, 58 patients were further excluded for not having coinciding measurements of hepatic venous pressures, n = 67. The AST/platelet ratios (APRI) were obtained and compared to HPPG < 10 (n=54) or > 10 (n=13) mmHg.

Results: 24% had non-alcoholic steatohepatitis, 3% had auto-immune hepatitis, and 57% had hepatitis C - 16% of whom had undergone orthotopic liver transplantation with recurrence of hepatitis C. We found significant difference in APRI between groups one and two (0.44 +/- 0.57 vs 1.11 +/- 1.66, p = 0.009). AUC was 0.72, a cutoff of 0.26 had a sensitivity of 79% and a specificity of 50%. The mean APRI score was 0.52 +/- 0.51 in patients who had HPPG < 10 vs 0.89 +/- 0.79 in those who had HPPG >= 10, p = 0.04. Pearson's correlation between APRI score and HPPG measurement was 0.27, p = 0.03.

Conclusions: AST/PLT ratio index (APRI) can be a useful tool to predict fibrosis not only in patients with hepatitis C but in other patient populations including hepatitis C post liver transplantation, non-alcoholic steatohepatitis and autoimmune hepatitis. There is a significant relationship between APRI scores and the severity of hepatoportal pressure gradients.

Abstract # P-443

Risk and Outcome of Occult HBV Reactivation in Liver Transplantation With Hepatitis B Surface Antigen-Negative but Positive for Core Antibody. Kun-Ming Chan, Ting-Jung Wu, Tsung-Han Wu, Chih-Hsien Cheng, Yu-Chao Wang, Hong-Shiue Chou, Wei-Chen Lee. *Organs Transplantation Institute, Chang Gung Memorial Hospital at Linkou, Taoyuan County, Taiwan*

Background:

The growing volume of liver transplantation (LT) worldwide has led to the increased number of liver transplantation related to occult HBV infection that presents with serologic negative of hepatitis B surface antigen (HBsAg) but positive for antibodies against the HBV core antigen (HBcAb). Therefore, the study aims to investigate factors leading to reactivation of occult HBV infection and to evaluate its outcome after serologic evidence of HBsAg-positive following LT.

Material and Methods:

A total of 510 LTs were performed at our institution from June 2004 to September 2013. Among them, 153 LTs (recipients: 89 males and 64 females; median age, 55.9 years old) based on the presence of occult HBV infection defined by HBsAg(-)/HBcAb(+) in recipients and/or donors were retrospectively reviewed.

Results:

Of these 153 LTs, 77 recipients (50.3%) who were HBsAg(-)/HBcAb(+) received allografts from donor with HBsAg(-)/HBcAb(-), and 76 donors who were HBsAg(-)/HBcAb(+) had liver grafts been transplanted into 63 recipients (41.2%) with HBsAg(-)/HBcAb(+) and 13 recipients (8.5%) with HBsAg(-)/HBcAb(-). Overall, 8 recipients (5.2%) became HBsAg(+) at 8.7 months to 72.4 months after LT. Statistic analysis of clinical and virological features had identified two potential risk factors for reactivation of occult HBV infection after LT: whole liver allograft (p=0.0428, Fig. 1) and donor with HBcAb(+) (p=0.0415, Fig. 2). Despite of reactivation of occult HBV infection, none of the recipients suffered or died from viral hepatitis of HBV flared up by the end of this study.

Fig. 1

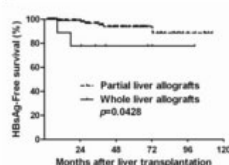
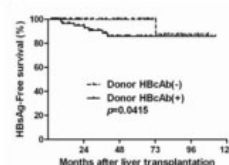


Fig. 2



Conclusion:

Although the use of liver allografts from HBsAg(-)/HBcAb(+) donor is reasonable safe in current practice, reactivation of occult HBV infection in the recipient might be encountered after LT and should be kept in mind as well. However, antiviral prophylaxis for prevention of HBV reactivation after LT in terms of effective regimen and period remains uncertain and needs to be further clarified.

Abstract # P-444

Management of Recurrent Hepatocellular Carcinoma after Liver Transplantation: A Single Center Experience. S.H. Kenneth Chok¹, S.C. Chan^{1,2}, T.T. Cheung¹, C.Y. Albert Chan¹, Y.Y. James Fung³, W. William Sharr¹, C.M. Lo^{1,2}. ¹Surgery, The University of Hong Kong, Hong Kong SAR, Hong Kong; ²State Key Laboratory for Liver Research, The University of Hong Kong, Hong Kong SAR, Hong Kong; ³Medicine, The University of Hong Kong, Hong Kong SAR, Hong Kong

Background: Hepatocellular carcinoma (HCC) recurs in 10–60% of patients after liver transplantation. The prognosis of recurrent HCC is dismal, while its optimal management has yet to be defined.

Patients and Methods: All adult patients with HCCs within the UCSF (University of California, San Francisco) criteria who underwent liver transplantation at Queen Mary Hospital during the period from July 1995 to September 2013 were reviewed. A total of 252 patients were included in the analysis and were divided into three groups (intrahepatic recurrence: IR; multiple recurrence: MR; no recurrence: NR) for comparison.

Results: HCC recurrence occurred in 35 (13.9%) patients; 3 developed IR only and 32 developed MR. Compared with the NR group, the IR and MR groups had a younger age (51 vs. 51 vs. 56 years; p=0.007), a higher pretransplant alpha-fetoprotein level (27 vs. 97.5 vs. 18 ng/mL; p=0.005), more tumour nodules (4 vs. 2 vs. 1; p=0.003), and a higher incidence of lymphovascular permeation (33% vs. 59% vs. 27%; p=0.001). Patients in these two groups were more likely to have HCCs beyond the UCSF criteria on explant pathology (67% vs. 56% vs. 17%; p<0.001). The 3 patients with IR underwent liver resection, radiofrequency ablation and transarterial chemoembolization respectively. One of them remained alive 2 years after last treatment.

Conclusions: Recurrence of HCC after liver transplantation was not uncommon. Aggressive surgical treatment may prolong the survival of patients with IR only.

Abstract # P-445

Severe Common Variable Immunodeficiency and Aggressive Recurrence of Nodular Regenerative Hyperplasia Post Liver Transplant Resulting in Bone Marrow Transplant: A Case Study. Maura O'Neil², Sean Kumer¹, Timothy Schmitt¹, Marc Heronemus¹, Richard Gilroy¹. ¹Transplantation, University of Kansas Medical Center, Kansas City, KS, USA; ²Pathology, University of Kansas Medical Center, Kansas City, KS, USA

Background: Common variable immunodeficiency (CVID) is a primary immunodeficiency disorder characterized by impaired B cell differentiation with defective immunoglobulin production. CVID Patient (Pt) has a propensity for developing nodular regenerative hyperplasia (NRH); a condition characterized by small regenerative nodules within the liver that may lead to portal hypertension in the absence of significant fibrosis.

Case Report: 41 yo male underwent OLT (donor histology normal) for NRH and CVID with a history of spontaneous bacterial peritonitis, bleeding esophageal varicose, encephalopathy and had been receiving Intravenous immunoglobulin (IVIg) infusions every 3 weeks. Histopathologic changes of his ex-plant biopsy were consistent with NRH. 1 week post OLT, pt presented with fever, porta hepatis fluid/gas collection and hepatic artery thrombosis. This was a consequence of unsuccessfully repairing arterial injury occurring during organ procurement. 10 days later the pt was retransplanted and discharged after an uneventful repeat post-operative course. Discharge immunosuppression/modulation was tacrolimus (target 5-8 ng/ml) and IVIg

1 gm/kg every 3 weeks. A liver biopsy 2 months post-transplant, significant for prominent centrilobular sinusoidal dilation and congestion with no inflammation. Special stains highlighted focal mild ductular dilation on CK7 but no pericholangitis. Repeat biopsy 3 months post-transplant in preparation for bone marrow transplantation again showed prominent centrilobular sinusoidal dilation and congestion with intra sinusoidal lymphocytic infiltration and epithelioid granuloma consistent with NRH recurrence. Pt will undergo allogeneic stem cell transplant from a matched unrelated donor with a nonmyeloablative condition regimen of single fraction total body irradiation and fludarabine.

Discussion: Biopsy-proven aggressive recurrence of NRH is seen in patients undergoing transplantation for NRH and if this injury is left unchecked will likely lead to recurrent portal hypertension and will also present a barrier to bone marrow transplantation in the future. It remains unclear if bone marrow transplantation will provide survival benefit here and what liver allograft rejection risk will be following.

Abstract # P-446

Nonalcoholic Fatty Liver Disease after Liver Transplantation for Cryptogenic Cirrhosis or Non-Alcoholic Steatohepatitis.

Julietta Pecoraro¹, Ocampo Silvana¹, Maria G. Videla¹, Silvina Yantorno¹, Pablo Barros Schelotto¹, Gabriel Gondolesi¹, Carlos Vigliano², Pedro Gonzalez², Ruben Laghens², Valeria Descalzi¹. ¹Liver Transplantation Unit, Fundacion Favaloro Hospital Universitario, Buenos Aires, Argentina; ²Department of Anatomic Pathology, Fundacion Favaloro Hospital Universitario, Buenos Aires, Argentina

Nonalcoholic steatohepatitis (NASH) is one of the main causes of cryptogenic cirrhosis. Risk factors for its development can persist or even worsen after liver transplantation (LT). Aim: Evaluate the prevalence of alcoholic fatty liver disease (NAFLD) after LT for cryptogenic cirrhosis or NASH. Patients and Methods: Adult patients (pts) who underwent LT for cryptogenic cirrhosis or NASH between 1/06 and 12/12 were included. Pathological review of explanted livers and post-transplant liver biopsy samples performed either by clinical indication or protocol were assessed. Pts with less than 6 months of follow up, alcohol intake > 10 g/day, hepatotoxic medications or no biopsy available were excluded. Steatosis or NASH were evaluated following the NAFLD activity score and fibrosis separately. Biochemical, metabolic and transplant variables, among others, were evaluated as possible risk factors of post-transplant steatosis development. Statistical analysis was performed by Chi-square and t tests: $p < 0.05$ was considered statistically significant. Results: 19 pts were included in the study with a mean follow up after LT of 46±18 months. Mean age of the pts was 59±7 years, 59% were male, mean BMI was 29±5, and 52% had type II diabetes before LT. 57 biopsies were reviewed, 2 (1-4) per patient. 9 pts (47%) developed post-transplant steatosis, 3 (16%) had only steatosis (score 1-2) after 28±26 months of follow up and 6 (31%) had NASH with a NAFLD activity score of 4 (2-6) after 14±6 months. Fibrosis stage was mild: few cases with perisinusoidal or zone 3 fibrosis. Fasting glucose, triglycerides level and BMI in pts with and without steatosis or NASH, 1 year after LT, was 145±52 vs. 98±17 mg/dl ($p < 0.01$), 212±73 vs. 140±50 ($p < 0.03$) and 33±3 vs. 27±3 ($p < 0.002$), respectively. None of other variables analyzed proved to be significant. At the end of the study all pts were alive with normal graft function. Conclusions: 1) Nonalcoholic fatty liver is a common finding after LT for cryptogenic cirrhosis or NASH. 2) Fibrosis and steatohepatitis rates are low and do not seem to impact on mid-term pts and graft survival.

Abstract # P-447

Impact of Degree of Atherosclerosis of Cryopreserved Arterial Grafts in Outflow Reconstruction in Living Donor Liver Transplantation. Mahmoud Ali^{1,2}, Chih-Chi Wang¹,

Hock-Liew Eng¹, Ting-Lung Lin¹, Wei-Feng Lee¹, Yu-Hung Lin¹, Yueh-Wei Liu¹, Chee-Chien Yong¹, Chih-Che Lin¹, Shih-Ho Wang¹, Chao-Long Chen¹. ¹Liver Transplantation Program, Chang Gung Memorial Hospital-Kaohsiung Medical Center and Chang Gung University College of Medicine, Kaohsiung, Taiwan; ²Gastroenterology Surgical Center, Mansoura University, Mansoura, Dakahly, Egypt

Introduction

As donor safety is the cornerstone in living donor liver transplantation (LDLT), right lobe graft procurement without middle hepatic vein became widely accepted. Middle hepatic vein tributary reconstruction is crucial

for better graft function. Using cryopreserved vein grafts is a good choice owing to their good patency rate (PR) and absent donor site morbidity. Few reports concerning cryopreserved arterial grafts (CAGs) are available and impact of atherosclerosis on PR is not well studied. In this study, we report our experience with CAG for outflow reconstruction in right lobe LDLT and impact of atherosclerosis on its patency.

Patients and methods

During 2010 and 2011, 243 patients underwent LDLT in Kaohsiung Chang Gung Memorial Hospital, Taiwan. Outflow reconstruction with CAGs for right lobe grafts was used in 62 patients. Atherosclerosis in CAGs was classified into early, intermediate and advanced lesions according to the classification adopted by American Heart Association. Graft patency was followed up using Doppler ultrasonography daily for 2 weeks, weekly till discharge and then monthly till 6 months. When suspected, graft obstruction was confirmed using CT angiography.

Results

Number of veins for which CAGs were used was single vein in 33 cases (53.2%), 2 veins in 28 cases (45.2%) and 3 veins in 1 case (1.6%). For multiple veins they were managed by single CAG in 26 (89.7%) cases and by double CAGs in 3 (10.3%) cases, so the total number of CAGs used was 65. The 1, 3 and 6 months PR of the CAGs were 86.2%, 84.6% and 75.2% respectively. CAGs were classified into 2 groups according to the degree of atherosclerosis; group 1 with grafts having no atherosclerosis or early lesions and group 2 with grafts having intermediate and advanced lesions. The 1, 3 and 6 months PR of group 1 were 86%, 83.7% and 76.7% respectively, while for group 2 they were 90%. However, no significant difference was present between the 2 groups ($p = 0.384$).

Conclusion

Cryopreserved arterial grafts can be used for outflow reconstruction in right lobe LDLT with a good PR, regardless the degree of atherosclerosis.

Abstract # P-448

Anterior Sector Drainage: Which Graft Is the Best? Bulent

Aydinli¹, Gurkan Ozturk¹, Sukru Arslan¹, Ercan Korkut¹, Aysenur Dostbil², Ali Ahislakioglu², Kemalettin Ozden³, Mecit Kantarci⁴.

¹Ataturk University, Department of General Surgery and Organ Transplantation Center, Erzurum, Turkey; ²Ataturk University, Department of Anesthesiology, Erzurum, Turkey; ³Ataturk University, Department of Infectious Diseases, Erzurum, Turkey; ⁴Ataturk University, Department of Radiology, Erzurum, Turkey

Introduction

One of the serious technical challenges of this procedure is drainage of the anterior sector or the segment 5 and 8. In donors with limited size of the right lobe that includes also V5 and V8 drainage of these veins is crucial. It is important to ensure an optimal drainage with appropriate graft material. We presented here our experience with anterior sector drainage using different vascular grafts in different cases.

Patients and Method

We performed 48 living donor liver transplants (LDLT) between November 2009 and December 2013. We collected the data of these 48 transplants. All V5 and V8 veins causing congestion when clamped during donor operation were drained. All cadaveric grafts were stored at -220 C in 50 cc Ringer's solution after samples were taken for bacterial and fungal cultures. This storage was no longer than 3 months. Polytetrafluor ethylene (PTFE) grafts were used also. All grafts were anastomosed with 6-0 running sutures. All V5 veins were drained directly to the Vena Cava inferior and all V8 veins were drained to native middle hepatic vein orifice at the recipient inferior vena cava.

Results

In 21 patients among 48 received anterior sectoral drainage. Eleven patients underwent a drainage by using cadaveric graft (Group A), and remaining 10 PTFE (Group B). In Group A 5 V5 drainages, 3 V8 drainages and 3 V5+V8 drainages were performed. In Group B 3 V5 drainages, 2 V8 drainages and 3 V5+V8 drainages were performed. All patients underwent Doppler evaluation at postoperative days 1,3 and 7 for V5 and V8 drainage patency. In group A 7 day and 30 patencies were 83% and 75%, respectively. In group B 7 day and 30 patencies were 71% and 62%, respectively. Bile duct problem was seen in 1 patient in Group A, and in 2 patients in group B. Hepatic artery thrombosis was seen in 1 patient in group B. Four patients died (Group A 1 patient, Group B 3 patients)

Conclusion

Anterior sector drainage remains a challenging problem in living donor right lobe liver transplantation. Use of cadaveric allografts seems to be more efficacious. If not available ringed PTFE grafts can be alternative.

Abstract # P-449

Postoperative Intrahepatic Arterial Pseudoaneurysm in Segment VIII Treated With Right Hemihepatectomy after Liver Transplantation. Andreas Brandl¹, Robert Oellinger¹, Wolfgang Jaschke², Natalie Vallant¹, Johann Pratschke¹, Stefan Schneeberger¹. ¹Visceral, Thorax and Transplant Surgery, Medical University of Innsbruck, Innsbruck, Austria; ²Radiology, Medical University of Innsbruck, Innsbruck, Austria

Introduction:

Leakage of the bile duct anastomosis after liver transplantation is a frequent complication after liver transplantation, but can often be treated with endoscopic stent implantation. Rarely, a bilioma causes an arrosion of the hepatic artery which makes immediate surgery with replacement of the artery necessary. It is known that ischemic damage of liver grafts can generate pseudoaneurysm of intrahepatic arteries. Recurrent hemorrhage of an intrahepatic pseudoaneurysm is typically treated by coiling. In case of ineffectiveness surgical resection is necessary though only few cases are reported.

Case presentation:

We report of a 69 year old patient who received a liver transplantation for a Child-Pugh B liver cirrhosis because of alcoholic liver disease. The patient developed a postoperative bilioma caused by necrosis of the bile duct anastomosis. Two days after laparotomy and diversion to a hepaticojejunostomy, the patient developed a bleeding caused by an arrosion of the hepatic artery which made an interposition of an iliacal vascular graft necessary. Two weeks later the patient suffered of recurrent gastrointestinal bleeding caused by an intrahepatic pseudoaneurysm in segment VIII which was repeatedly treated with angiographic coiling and fibrin glue instillation. As episodes of spontaneous and life threatening bleedings reoccurred, the right hepatic artery was finally occluded by coiling. Bleeding from the aneurysm started again two weeks later and finally, a hemihepatectomy was performed. The surgical procedure was uneventful and the patient initially recovered well from the intervention, but suboptimal liver function together with recurrent infections finally caused a sepsis and death from haemodynamic and heart failure five months after liver transplantation.

Conclusion:

Ischemic lesions of the liver can lead in pseudoaneurysm of intrahepatic arteries, which are usually treated by angiographic coiling. Rarely surgical treatment is necessary and should be evaluated cautiously and early to prevent graft damage and infectious complications.

Abstract # P-450

Lung Machine Preservation Allows Liver Prior To Lung Transplant in a COPD Patient With Tuberculostatics-Induced Liver Failure. Laurens J. Ceulemans¹, Diethard Monbaliu¹, Geert Verleden², Frederik Nevens³, Jacques Pirenne¹, Dirk Van Raemdonck⁴. ¹Abdominal Transplant Surgery, University Hospitals Leuven, Leuven, Belgium; ²Pneumology, University Hospitals Leuven, Leuven, Belgium; ³Hepatology, University Hospitals Leuven, Leuven, Belgium; ⁴Thoracic Surgery, University Hospitals Leuven, Leuven, Belgium

Aim We report a simultaneous liver/lung transplant (LiLuTx) in which the liver was transplanted first in order to correct the poor coagulation and allow sequential LuTx. In anticipation of the longer preservation time, the lungs were normothermally oxygenated/perfused.

Case report a 62-year-old female (COPD IV) had been listed for LuTx. Because of latent tuberculosis infection, she received Isoniazid. To prevent infectious COPD exacerbations, she was also given Roxithromycin. Four months later, diagnosis of Isoniazid (and possibly Roxithromycin)-induced ALF was made. Although tuberculostatics are a well-known, but rare, cause of ALF, the therapeutic options for ALF in a LuTx candidate are virtually unknown. It was felt that this COPD patient would not survive LiTx without simultaneous LuTx. The only therapeutic option was Hyper-Urgent (HU) combined LiLuTx, a procedure not described before in a patient with ALF and extremely poor coagulation. Liver and lungs from a 40-year-old male donor became available. The liver was transplanted first, to correct the extremely poor coagulation, facilitating sequential LuTx. In anticipation of the longer lung preservation time, the lungs were normothermally oxygenated/perfused ex vivo (OCS lung device, Transmedics). Cold ischemia time of the liver was 5hrs20' and preservation time of the lung was 11hrs15'. Four months postTx, the patient is doing well, rejection-free, with normal liver/lung function under immunosuppression with tacrolimus, Imuran, steroids.

Conclusion This case makes 4 points: 1) Isoniazid is a rare cause of ALF and indication for HU LiTx; 2) a particularity of this case is that ALF in a LuTx candidate renders isolated LiTx probably futile and leaves HU LiLuTx as the only life-saving option; 3) To correct the extremely poor coagulation, LiTx was performed first (which has not been described before); 4) To better tolerate a necessarily longer preservation period, the lungs were kept oxygenated at warm temperature ex vivo. In summary, this case suggests that HU LiLuTx can be performed with success and that -with improved lung preservation technologies- the liver can be transplanted first.

DISCLOSURE: Van Raemdonck, D.: Grant/Research Support, Transmedics Consultancy.

Abstract # P-451

The Morbidity and Survival of 196 Consecutive Cases Undergoing Liver Transplantation in a Single Center from Mainland China: Ten-Year Experience. Peixian Chen, Wentao Wang, Lunan Yan. Department of Liver and Vascular Surgery, West China Hospital of Sichuan University, Chengdu, Sichuan Province, China

Right lobar living donor living transplantation (LDLT) has been controversial because of widely diverse reports of recipient morbidity. Herein, we presented our nearly 10-year experience and identified factors that potentially could be modified to improve the recipient outcome. The Clavien 5-tier grading system was applied retrospectively in 196 consecutive adult right lobar recipients. The incidence was determined of potentially life threatening (Grade III), actually life threatening (Grade IV) or lethal (Grade V) complications during the first post-transplant year. The most serious and seminal complication was considered if simultaneous or multiple complications appeared. One year recipient/graft survival was 82%/82%. Within the year, 68 (34.69%) of the 196 recipients had Grade III (n=31), Grade IV (n=7) or Grade V (n=30) complications. The complications involved graft-related (19.90%) and non-graft-related (15.82%).

Number of recipients with first year complications (Grade I-V)

Complication categories	I	II	III	IV	V
Graft-related					
Biliary leakage			5		1
Biliary stricture	1	2	7		1
Hepatic artery thrombosis		1	1		1
Hepatic aneurysm/pseudoaneurysm			2		
Hepatic vein stenosis					1
Portal vein stenosis			1		
SFSS		2	1		2
Non-graft related					
Pneumonia		5			8
Virus infected		2			
Fever for unknown reasons		4			
Intraabdominal abscess			3		2
Renal failure					1
Pleural effusion or ascites	12		6		
Intracranial hemorrhage					2
Intraabdominal hemorrhage					1
Intestinal complications	2				

Complications during the first half did not decline with increased team experience over time and adversely affected recipients' long-term survival, albeit not significantly. According to univariate analysis, high Child-Pugh scores before transplantation (P=0.016), prolonged ICU-stay (P=0.003) and hospitalization time (P=0.032) after transplantation were found to be risk factors for the appearance of ≥Clavien III complications while duct-to-duct biliary reconstruction (P=0.02) had a beneficial role in reducing serious complications after LDLTs. In conclusion, serious complications during the first post-transplant year compromised recipient survival, and which is more frequent in recipients with higher Child-Pugh scores, prolonged primary inhospitalization duration and postoperative ICU-stay and in those with hepaticojejunostomy.

Abstract # P-452

Hepatocellular Carcinoma Invading Duodenum Treated With Hepatectomy-Whipple En Bloc and Orthotopic Liver Transplantation. Yinghua Chen¹, Wenhui Luo², Anbin Hu¹, Xiaofeng Zhu¹, Xiaoshun He¹. ¹Organ Transplantation Center, The 1st Affiliated Hospital, Sun Yet-san University, Guangzhou, Guangdong, China; ²Medical Record Management Department, The 1st Affiliated Hospital, Sun Yet-san University, Guangzhou, Guangdong, China

Aim. To report a case of hepatocellular carcinoma invading duodenum treated with hepatectomy-Whipple en bloc and orthotopic liver transplantation.

Methods. The patient received hepatectomy-Whipple en bloc and orthotopic piggyback liver transplantation for hepatocellular carcinoma invading duodenum. The pedunculated hepatocellular carcinoma invading deeply the descending and bulb part of the duodenum was found in the operation course, which induced continuous obstructive jaundice with duodenal obstruction before the operation. The operation proceeded successfully as planned before and the time of anhepatic phase is 90 min.

Results. The patient recovered from operation in 22 days without surgical complication, despite the severe edema of the intestinal wall caused by the longtime of anhepatic phase without venous bypass. As the follow-up went on, he had been recurrence-free survived for 6 months.

Conclusion. The hepatectomy-Whipple en bloc and orthotopic liver transplantation is a mode of surgical treatment for the pedunculated hepatocellular carcinoma invading the descending and bulb part of the duodenum. Venous bypass may relieve the edema.

Abstract # P-453

Simultaneous Pancreas-Kidney Transplantation after Liver Transplantation. Young Seok Han¹, Dong Lak Choi¹, Ghil Suk Yoon². ¹Abdominal Organ Transplantation, Catholic University of Daegu School of Medicine, Daegu, Republic of Korea; ²Pathology, Kyungpook National University School of Medicine, Daegu, Republic of Korea

The aggravation of diabetes mellitus (DM) after liver transplantation facilitates the progress of end-stage renal disease, and the quality of life in the liver transplant patient deteriorates because of consequent hemodialysis and visual disturbance by retinopathy, etc. Also, the use of calcineurin inhibitors (CNI) is the significant independent risk factor for the development of chronic renal failure. We present 52-years old man who was successfully treated with simultaneous pancreas-kidney transplantation (SPKT) 5 years after liver transplantation. In January 2007, he underwent deceased donor liver transplantation for hepatitis B related liver cirrhosis. In spite of lower trough level of tacrolimus, his renal dysfunction was exacerbated, and hemodialysis was required from June 2007. The failure of blood glucose control, visual disturbance due to diabetic retinopathy, and hemodialysis made quality of his life worse. In December 2012, SPKT was performed from deceased donor. His post-transplant course was uneventful. Blood glucose level was well controlled and both renal and liver function was normalized. After discharge, the patient's level of satisfaction increased over time.

In conclusion, SPKT after liver transplantation is the feasible and best optimal treatment in patients with renal failure aggravated by diabetes mellitus and CNI-nephrotoxicity.

Abstract # P-454

Anastomosis of Type 2 Portal Vein Variation and Low-Lying Right Posterior Duct Anomaly in Living Donor Liver Transplantation. Kwangsik Chun, Insang Song. *General Surgery, Chungnam National University Hospital, Daejeon, Korea*

Introduction

We report our experiences of type 2 portal vein and bile duct anastomosis during living donor liver transplantation

Case

Forty-four years old man was admitted for generalized weakness. He suffered from chronic viral hepatitis for 20 years (hepatitis B) and 2years ago diagnosed liver cirrhosis with hepatocellular carcinoma. Primary HCC was treated by percutaneous RFA and recurred HCC was by TACE twice. After recent TACE generalized weakness, ascites were progressed. Hepatic encephalopathy was developed. Living donor liver transplantation was decided. Donor was 27-year-old his younger son. GRWR was 1.48. Preoperative donor abdomen CT scan was revealed trifurcation of portal vein and low-lying right posterior hepatic duct. Middle hepatic vein branches were double in S5 and single in S8 level. Donor hepatectomy was performed as modified extended right hepatectomy (weight = 850gm). During bench operation neo-middle hepatic vein was reconstructed by use of iliac vein allograft. Lumens of graft portal vein were double. So left saphenous vein autograft patch was fenced to the graft portal veins for making single lumen. Graft was transplanted to recipient from right hepatic vein, portal vein, neo-middle hepatic vein and then right hepatic artery. Bile ducts were make common cannal in manner of V-shaped plasty then anastomosed to recipient bile duct. Total operation time was 632 minutes cold ischemic time was 40 minutes for bench operation. Maximal AST/ALT was 230/207IU/ml at POD #1 then normalized at POD #5 and #15 each. Postoperative abdomen CT revealed patent portal vein, neo-middle hepatic vein and hepatic artery.

There was no congestion area in the transplanted liver. Patient was discharged at POD #34. There was no stricture or stenosis in anastomosis site in veins, artery and bile duct.

Conclusion

In the living donor liver transplantation, there were many anatomical difficulties in anastomosis due to anatomical variation especially in portal vein and bile duct. Portal vein fencing and bile-ductoplasty can be a good choice of anastomotic manners.

Abstract # P-455

Nursing of Hyperosmolar Non-Ketotic Hyperglycemic Coma Induced By Methylprednisolone Pulse Therapy for Acute Rejection after Liver Transplantation. Qiujiang Dou, Gongyun Chen, Lu Chen, Haidan Ye. *Organ Transplantation Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China*

Objective: To summarize nursing of hyperosmolar non-ketotic hyperglycemic coma (HNKHC) induced by methylprednisolone pulse therapy for acute rejection after liver transplantation.

Methods: A retrospective analysis of the clinical data of 913 cases performed liver transplantation in our hospital, only one patient had HNKHC, and the clinical data and nursing of this patient was summarized.

Results: After the timely treatment and nursing care for 24h, the blood glucose, osmotic pressure, urine sugar, electrolyte and blood gas analysis decreased to normal, and consciousness turned clear, and signs of life was normal. The patient had normal eating, and finally discharged, with follow-up of 6 months without recurrence of HNKHC.

Conclusion: HNKHC is a rare, critically clinical disease. Early discovering the changes in condition, early and accurate diagnosis, and rational treatment and nursing is the key to cure HNKHC. It should be alert to this disease with methylprednisolone pulse therapy after liver transplantation.

Abstract # P-456

Factors Related With Gastrointestinal Perforation Post Liver Transplantation. Cheng Fang, Shusen Zheng. *Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital, Zhejiang University School of Medicine, Hang Zhou, Zhejiang Province, China; Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital, Zhejiang University School of Medicine, Hang Zhou, Zhejiang Province, China*

Background: Gastrointestinal perforation after liver transplantation leads to high rate of morbidity and mortality. We try to find out the risk factors of this complication in the recipients.

Methods: Six patients with gastrointestinal perforation and thirty-six patients without were reviewed. All recipients received their first liver transplantation in our centre during June 2009 to August 2013. One patient with gastrointestinal perforation were matched with six patients without in age(± 10 years), primary disease, gender. Variables such as cold and warm ischemia time, operation time, blood loss volume, abdominal operation times were compared between the two groups.

Results: Patients with gastrointestinal perforation(group A) and patients without (group B) has no difference in age(46.83 ± 8.25 VS 48.47 ± 8.87 , $p=0.34$). Cold and warm ischemia time has no difference between the two groups($p=0.1$, $p=0.27$, respectively). There were also no difference between the two groups in BMI index, MELD score, operation time, blood loss volume, portal occlusion time, steroid hormone aplyment and ABO blood type incompatibility. However, abdominal operation times in group A(0.83 ± 0.98 times) and group B(0.28 ± 0.51 times) has statistical difference($p=0.02$). One year survival rate is lower in group a than group B($p=0.004$).

Conclusion: Gastrointestinal perforation post operation causes a high rate of morbidity and mortality in the recipients. It significantly affects graft and patient survival. Abdominal operation times is the risk factor of gastrointestinal perforation post liver transplantation. We should take more care during the operation for patient with abdominal surgery history.

Abstract # P-457

Live Donor Liver Transplantation for Budd-Chiari Syndrome. Rasim Farajov, Zafer Onen, Cahit Yilmaz, Onur Duygu, Gulay Aksu, Latife Doganay, Cigdem Arikian, Mehmet Alper, Murat Zeytinlu, Murat Kilic. *Liver Transplantation, Kent Hospital, Izmir, Turkey*

AIM: To evaluate the results of live donor liver transplantations (LDLT) performed for Budd-Chiari syndrome (BCS) at a single institution.

PATIENTS AND METHODS: 520 live donor liver transplantation were performed between July 2009 and October 2013 at Kent Hospital, Izmir. 15 of these transplants were performed due to BCS. The median age, meld score and child scores were 35 (range:6-63 years), 17 (range:11-45) and 11 (range:8-15), respectively.

RESULTS: Only one patient (6%) was lost in the postoperative period while the remaining 14 patients are alive and well with a median follow-up of 31 months. 2 patients (13%) developed vascular complications namely hepatic artery thrombosis (HAT). One of them was diagnosed early after transplantation and successful revascularisation was accomplished. The other patient developing HAT was not diagnosed promptly and the patient was complicated with subsequent biliary problems. Biliary stricture without vascular problems (13%) developed in 2 other patients which they were managed by percutaneous methods. Patients demographics and survival are summarised in table 1.

CONCLUSION: Although the rate of HAT is higher, live donor liver transplantation is a safe and feasible option for patients suffering from BCS with acceptable survival and complications rates when compared to other diseases.

Abstract # P-458

No Need of Extracorporeal Venovenous Bypass for Liver Transplantation. Ignacio M. Gonzalez-Pinto¹, Jose-Carlos Fernandez¹, Pedro Picatto², Carmen Garcia-Bernardo¹, Alberto Miyar¹, Rocio Cueva¹, Belen Porrero¹, Madalina Frunza¹, Esther Fernando¹, Paul Ugalde¹. ¹*Surgery, Hospital Universitario Centro de Asturias, Oviedo, Asturias, Spain;* ²*Anesthesiology, Hospital Universitario Centro de Asturias, Oviedo, Asturias, Spain*

Introduction

Since popularization of preservation of the inferior vena cava, the use of extracorporeal venovenous bypass pump (VVBP) has been minimized. The adjunct of a temporary portocaval shunt has further decreased its use. With just one caval anastomosis, warm ischemia time is reduced. In case of splachnic edema—which is relatively uncommon in cirrhotics due to venous collaterals—portocaval shunt prevents venous congestion.

In the experience of our group VVBP has never been used, and we believe that it is not necessary at all.

Patients and methods

A series of 61 adult liver transplantation cases, with cadaveric donor whole graft, were reviewed. After recipient hepatectomy, preparation of the suprahepatic veins was made to have a minimal occlusion of the caval flow and a wide and easy cuff for anastomosis. In case of ongoing splachnic edema a temporary portosystemic shunt was performed.

This preparation allows for a short warm ischemia time, from the placement of the preserved liver graft on the operative field, to the venous reperfusion. Results

Warm ischemia time ranged from 30 to 90 min, median 48 min. There were 8 cases (13%) over 60 minutes due to technical difficulties unrelated to venous congestion.

In 9 cases (15%) a temporary portosystemic shunt was performed, as deemed necessary. Two patients died in the postoperative period (3.3%). Some kind of reperfusion syndrome presented in 25 patients (41%). Median packed red cell transfusion was 8 units. Median operative time was 500 minutes.

Conclusions

- Preservation of the inferior vena cava and optional temporary portosystemic shunt result in hemodynamical stability, and produce a clean operative field
- Under such circumstances, extracorporeal venovenous bypass becomes unnecessary.
- This reduces operative time, warm graft ischemia, equipment and personnel, which can decrease costs and improve results in liver transplantation.

Abstract # P-459

Combined 'En Bloc' Liver and Pancreas Transplantation in Patient With Hepatocellular Carcinoma and Type 2 Diabetes Mellitus. Weiqiang Ju, Zhiyong Guo, Jianwei Lin, Dongping Wang, Xiaoshun He. *The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Objective To investigate the clinical efficacy of liver-duodeno-pancreatic organ cluster transplantation in patients with hepatocellular carcinoma and type 2 diabetes.

Methods The clinical data of four cases of liver-duodeno-pancreatic organ cluster transplantation in patients with hepatocellular carcinoma and type 2 diabetes were retrospectively analyzed. The pancreas and the whole digestive tract of the recipients were reserved. The liver and pancreas duodenal organ cluster grafts were implanted after the resection of the lesion liver.

Results From one to seven days after operations, no insulin was used in all the patients, the blood glucose levels returned to almost normal. Alanine aminotransferase (ALT) and total bilirubin became normal after one week. C-peptide increased post-transplantation. The HbA1C levels decreased significantly 3 months post-transplantation and remained low. One patient died of acute monocytic leukemia. one suffered from pulmonary infection, and one suffered from intestinal fistula which was result from pancreatic leakage. No obvious complications were observed in the remaining patients. Up to the last follow-up, the longest survival time was more than 14 months, with normal liver and pancreatic grafts function.

Conclusion Liver-duodeno-pancreatic organ cluster transplantation is technically feasible and is an effective method for the treatment of hepatocellular carcinoma with type 2 diabetes.

Abstract # P-460

Warm Dissection in Organ Harvest from Deceased Donor. DongHwan Jung, SungGyu Lee, Shin Hwang, ChulSoo Ahn, KiHun Kim, DeokBog Moon, BoHyun Jung, SungHwa Kang. *Division of Hepatobiliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea*

In the early days of organ procurement, exposure and complete dissection of each organ was preferred while the heart was still beating. The in situ flush and cold dissection technique was then introduced as a means of rapid procurement of all abdominal organs.

Our center performed 262 cases of deceased donor liver transplantation from January 2010 to October 2013. In this study, we excluded cold dissection, split liver transplantation and pediatric liver transplantation. We included warm dissection in adult by one experienced surgeon.

Total enrolled cases of warm dissection in organ harvest from deceased donor were 146. Parenchymal injuries were detected in 7 cases (6 capsular tear, 1 subcapsular hematoma). Vascular injuries were detected in 6 cases. There were 6 cases of arterial injury (5 Celiac axis, 1 Common hepatic artery). There was no right hepatic artery or left hepatic artery injury, venous and portal injury. Also, there was no bile duct injury.

Warm dissection is safe and also has advantage in donors whose liver are of a questionable quality by decreasing cold ischemic time.

Abstract # P-461

Clinical Outcome of Internal Stent for Biliary Anastomosis in Liver Transplantation. Sung Won Jung, Dong-Sik Kim, Young Dong Yu, Sung Ock Suh. *Department of Surgery, Korea University College of Medicine, Seoul, Korea*

Introduction.

This study analyzed the incidence and management of biliary complications after liver transplantation (LT) with internal stent or without stent.

Method.

The medical record of all patients who underwent LT and were hospitalized between December, 2009 and March, 2013 were reviewed. All patients were grouped into two groups (internal stent group vs no stent group).

Result.

There were 29 deceased donor liver transplantation (58%) and 21 living donor liver transplantation (42%). There were 2 perioperative mortalities, and these 2 patients were excluded for this study. The overall biliary complication rate was 6.45% in the internal stent group and 17.65% in the no stent group. The rate of anastomotic stricture was 3.23% (n=1) in the stent group and 11.76% (n=2) in the no stent group. The rate of bile leak in the stent group

was 3.23% (n=1), in contrast, bile leak never occurred in the no stent group. The rate of biliary obstruction was 0% in the stent group and 5.88% (n=1) in the no stent group.

Conclusion.

The overall rate of biliary complication in the internal stent group was lower than in the no stent group and most of the biliary complications can be treated successfully with endoscopic or radiologic intervention.

Abstract # P-462

Optimizing Protocol for Adult ABO-Incompatible Living Donor Liver Transplantation. Bong-Wan Kim, Hee Jung Wang, Jun-Bae Bang, Yong Keun Park, Weiguang Xu. *Surgery, Ajou University School of Medicine, Suwon, Korea*

INTRODUCTION

The ABO-incompatible living donor liver transplantation (ABO-I LDLT) is getting popular as a therapeutic option for end-stage liver disease patients especially in Eastern countries including Korea and Japan. However, perioperative managements or protocols of the ABO-I LDLT are various among centers by their preference. The aim of this study is to determine an optimal protocol for ABO-I LDLT by comparing immunological and clinical outcomes of patients who underwent ABO-I LDLT in our institute using 3 different procedures.

METHOD

From August 2008 to June 2013, 15 cases of ABO-I LDLT were performed using 3 different protocols according to usage of hepatic artery infusion (HAI) therapy and splenectomy. All 15 recipients were commonly addressed preoperative prophylaxis of Rituximab (170 mg/m²), plasma exchange (PE) to decrease anti-ABO antibody and postoperative administration of IV globulin (1.5 gm/Kg). Group I (n=6) patients received HAI therapy and splenectomy. Group II (n=7) patients included only splenectomy without HAI. Group III (n=2) patients had no HAI or splenectomy. Other procedures and immune suppression therapies were applied to 15 patients in the same way. The clinical, immunological and surgical data were analyzed and compared between groups

RESULT

The follow-up period was mean 17 ± 17.11 (2 ~ 56) months. Two patients (13.3 %) had in-hospital mortality (1 due to pneumonia and 1 by multi-organ failure) and remaining 13 (86.7 %) were recovered and discharged with favorable liver function after ABO-I LDLT. The biopsy proven antibody-mediated rejection (AMR) occurred in 4 cases [1 (17 %) in group I, 1 (14 %) in group II, and 2 (100 %) in group III], and two of 4 patients with AMR developed ischemic type biliary complication (1 in group I, 1 in group III). Cytomegalovirus infection occurred in three (2 in group I, and 1 in group II), and 1 bacterial infection occurred in group I.

CONCLUSION

According to our experience of ABO-I LDLT using Rituximab prophylaxis, PE and IV globulin, the splenectomy may have important role to reduce AMR without increasing infectious complication. And the role of HAI is uncertain in our series. In conclusion, the protocol for ABO-I LDLT could be optimized with preoperative prophylaxis of Rituximab and PE, and intra-operative splenectomy, and post-operative administration of IV globulin.

Abstract # P-463

Risk Factors for Number and Severity of Complications Following Deceased Donor Liver Transplantation. A. Parikh¹, K. Washburn², L. Matsuoka³, U. Pandit⁴, Y. Genyk³, J. Almeda², C. Mora-Esteves¹, G. Half², J. Kim³, B. Holland⁴, D. Wilson¹, L. Sher³, B. Koneru¹. ¹*Surgery, New Jersey Medical School-Rutgers University, Newark, USA;* ²*Surgery, University of Texas Health Sciences Center, San Antonio, USA;* ³*Surgery, University of Southern California, Los Angeles, USA;* ⁴*Preventive Medicine, New Jersey Medical School-Rutgers University, Newark, USA*

Introduction: a multicenter study was conducted to identify and classify the 30 day post- liver transplantation (LT) complications according to the Clavien-Dindo system and to identify risk factors for 30 day complications and mortality.

Methods: 3 LT programs from 3 different geographic regions contributed data for a total of 450 LT recipients from 1/1/05 – 12/31/09. Donor organ data included demographics, preservation solution, BMI, type of donor, cardiac arrest, warm/cold ischemia times, local or imported and split vs whole liver. Recipient data included demographics, BMI, liver disease, pre-operative medical status, operative details, 30 day complications and graft and patient survival. Primary outcome variables were number and severity of individual

complications, proportion with Clavien-Dindo complication Grades 3-5 and death within 30 days. Effects of risk factors on outcomes was calculated in both linear and logistic regression models using complications as both continuous and dichotomous outcome variables and Cox proportionate hazard models.

Results: One or more complication occurred in 79.3 % of recipients. Grades 3-5 complications occurred in 62.9 % of recipients. Univariate analysis revealed significant risk factors for Grades 3-5 complication: MELD, hospitalized status, cold ischemia time, RBC transfusion at LT, and pre-LT dialysis. Table 1 reveals significant risk factors identified in multivariate analyses of complication Grades 3-5 and other outcomes.

Table1: Significant Risk Factors for 30 day Complications (Cx) by Multivariate Analysis

Outcomes	Any Cx	# Cx	Grades 3-5 Cx	Death
Variable	RBCs at LT	RBCs at LT	RBCs at LT	RBCs at LT
	Duration LT	CIT	CIT	Donor risk index
	ICU pre-LT	ICU pre- LT	ICU pre-LT	Intra op cardiac arrest
		Dialysis pre- LT	Dialysis pre- LT	African American recipient
		Intubated pre- LT		# Cx

Conclusions: The identification of significant factors can be utilized to assure proper donor and recipient matching to decrease post-operative complication rates as well as provide metrics for centers to gauge their complication rates.

Abstract # P-464

Treatment of Bile Stricture after Liver Transplantation With Application of Full-Covered Metallic Stents. Maxim Kornilov, Yan Moysyuk. *Liver and Kidney Transplantation, Federal Research Center of Transplantology and Artificial Organs, Moscow, Russian Federation*

Despite improved surgical techniques, biliary complications are still the most frequent cause of morbidity after liver transplantation (8%–35%). In fact, they can be considered the Achilles' heel of liver transplantation (OLT). The most common complication is an anastomotic stricture, followed by a biliary leakage. Endoscopic management of biliary complications after OLT has a success rate of 70% to 80%. These biliary complications can be treated by endoscopic retrograde cholangiopancreatography in cases of a duct-to-duct anastomosis, allowing their evaluation and management. If endoscopic therapy fails, surgical treatment is the current alternative solution. Patients successfully responding to endoscopic therapy still bear the risk of a recurrent biliary stricture. Recently, satisfactory results have been achieved with fully covered self-expandable biliary stent, encouraging their use to treat post-OLT biliary complications. From December 2004 to November 2012 we performed 136 cadaveric liver transplantation adult recipient. Advantageous embodiment of biliary reconstruction was choledoch-choledochostomy without external drainage (69.6%). T-tube has been placed in 20 cases. Choledochointerostomy has been in 20 recipients, accounting for 15.2%. Our data show that the incidence of early and late biliary structure is 5.4%. 7 patient was treated by placing of FCSEMS. 4 have been installed by retrograde cholangiopancreatography, 2 by antegrad, 1-12 month after liver transplantation. Mean follow up time 12 month. No severe complications were observed after the treatments; two patients developed mild cholangitis. Stenosis leads to serious clinical problems, including peritonitis and sepsis. This is a life-threatening situation in transplanted patients due to the immunosuppressive regimen. FCSEMS, with their large diameter and long-term patency, and possible removability, offer an attractive option for the treatment of this group of patients.

Abstract # P-465

Are We Able To Avoid Bile Leaks after Liver Transplantation? Robert Krol, Jacek Pawlicki, Jacek Ziaja, Lech Cierpka. *Department of General, Vascular and Transplant Surgery, Medical University of Silesia, Katowice, Poland*

Bile complications are considered to be Achilles' heel of liver transplantation and appear in 10-30% of patients. In early postoperative period the most common are bile leaks, which result from technical failures during bile duct anastomosis as well as from bile duct ischaemia and necrosis.

The aim of the study was to analyse results of liver transplantation in patients treated at our centre as regards postoperative bile leaks.

Material and method. One hundred seventy three livers retrieved from DBD donors were transplanted in 166 recipients from 2005 till November 2013 (including 19 PSC recipients).

In 170 cases (98,3%) end-to-end bile duct anastomosis was performed, and in 3 cases (1,7%) – anastomosis between common bile duct and Roux-en-Y loop. During liver retrieval bile duct was not dissected from surrounding tissues,

and only cut off close to duodenum. During transplantation both donors' and recipients' bile ducts were maximally shortened. The anastomosis was performed with running suture 7-0 using surgical loupes. Particular attention was paid on sufficient blood supply to both ends of the anastomosed ducts. Kehr drain was not applied in any case. The analysis of bile complications with particular concern of bile leaks was performed retrospectively based on medical documentation of the recipients.

Results. Bile leak was not observed in any liver recipient. The only bile complications after OLTx were bile duct strictures, which were observed in 19 cases (11,0%) and late necrosis of intrahepatic biliary tree due to hepatic artery stenosis or occlusion in 3 cases (1,7%).

Conclusion: Avoidance of bile duct dissection during liver retrieval as well as meticulous anastomosing of bile duct with 7-0 running suture allow to reduce the risk of bile leaks after OLTx.

Abstract # P-466

Choledochoduodenostomy in Liver Transplantation. Bjørn Lien¹, Aksel E. Foss¹, Tom H. Karlsen², Tim Scholz¹. ¹Department of Transplantation Surgery, Oslo University Hospital, Oslo, Norway; ²Department of Gastroenterology Rikshospitalet, Oslo University Hospital, Oslo, Norway

Biliary complications are frequent after liver transplantation and the method of biliary reconstruction is an important factor in this context. When duct-to-duct biliary anastomosis is not applicable, traditionally choledochojunostomy (CJS) has been the method of choice. Choledochoduodenostomy (CDS) has emerged as an alternative technique with several potential benefits.

We performed a retrospective cohort-study of all CDS-procedures (n=63) performed in our hospital from 2009 to 2013, comparing them to a cohort of CJS-procedures (n=63) from 2006 to 2009. Demographical data, patient and graft survival, and biliary complications were recorded. One-year patient and graft survival was similar in the two groups. The rate of biliary leaks (10/10, p=0,94) and anastomotic stenosis (2/3, p=0,68) were equal. 12 patients in the CDS group were subject to endoscopic retrograde cholangiography whereas 6 patients in the CJS group had double-balloon enteroscopy performed. Biliary anastomotic complications tended to be resolved endoscopically more often in the CDS-group compared to CJS, but this was not statistically significant (8/4, p=0,20).

A trend towards increased risk of cholangitis was observed with CDS, although statistical significance was not reached (14/7, p=0,07).

We conclude that CDS is an attractive alternative to CJS in liver transplantation. CDS is easily performed and favors endoscopic access to the biliary tree for diagnostic and therapeutic interventions. This can potentially reduce the rate of reoperations and patient morbidity, although CDS may increase the risk of cholangitis.

Abstract # P-467

Right-Sided Diaphragmatic Hernia after Living Donor Right Hepatectomy: A Rare Complication after Living Donor. Gyu-Seong Choi¹, Ju Ik Moon². ¹Surgery, Samsung Medical Center, Seoul, Republic of Korea; ²Surgery, Konyang University Hospital, Daejeon, Republic of Korea

Background : Right-sided diaphragmatic hernia after living donor Right hepatectomy has been rare complication. we report a Right-sided diaphragmatic hernia in a living donor

METHODS: A 26-year-old man underwent donor right hepatectomy for living donor liver transplantation. Three months after liver donation, he presented with upper abdominal pain and vomiting. Computed Tomography revealed a diaphragmatic hernia of the right thorax with stragulation.

RESULTS: He underwent laparotomy and a 3cm defect in the right diaphragm was identified and repaired with interrupted polypropylene suture, after operation, the patient remains well.

CONCLUSIONS : Throughout the expansion of living donor liver transplantation, the safety of the donor is most important thing. Diaphragmatic hernia is a rare complication of right donor hepatectomy but may occur. And early diagnosis and prompt management is needed for donor safety.

Abstract # P-468

Carbapenem Resistant Klebsiella Pneumoniae Infection in Liver Transplant Recipients. Kemalettin Ozden¹, Gurkan Ozturk², Bulent Aydinli², Muhammet Hamidullah Uyanik³, Ayse Albayrak¹, Sukru Arslan². ¹Infectious Diseases, Ataturk University, Erzurum, Turkey; ²General Surgery, Ataturk University, Erzurum, Turkey; ³Microbiology and Clinical Microbiology, Ataturk University, Erzurum, Turkey

Introduction: In liver transplant recipients (LTRs), gram-negative bacilli have re-emerged as important pathogens over the last decade. There is an increasing trend for Carbapenem-resistant Klebsiella pneumoniae (CR-KP) infections among LTRs.

Method: We performed a retrospective analysis of prospectively collected data on LTR infected by CRKP from January 2012 to November 2013.

Results: The study population consisted of 80% male patients with a mean age 39 ± 12. We identified 13 episodes of bloodstream infection (BSI) caused by CR-KP in 67 LTRs. It was determined in 5 cases out of 67 LTRs. All episodes were observed in the 60 days period following transplantation. Mean in-hospital length of stay was 63 day. Treatment options for CR-KP isolates are very limited. The isolates were sensitive to colistin (76.9%), tigecycline (53.8%) and aminoglycosides (76.9%). According to the sensitivity results, 9 cases (69.2%) were given combination therapy and the remaining ones mono-therapy. Out of 5 cases, 2 were died and 30-day all-cause mortality was 40%. Although Acinetobacter baumannii and Pseudomonas aeruginosa were the most common isolated multi-drug resistant pathogens in our centre, Klebsiella pneumoniae has become prominent since 2012.

Conclusion: The number of LTRs with CR-KP isolation in our centre has markedly increased over the last few years. Because the cases with CR-KP isolation have high mortality rate and prolonged length of stay, it is extremely important to monitor this type of infection in order to implement appropriate infection control measures and treatment strategies.

Abstract # P-469

Hepatic Artery Thrombosis after Liver Transplantation : 2 Case Reports. Young Mok Park¹, Kwang Ho Yang¹, Ki Myung Moon¹,

Je Ho Ryu¹, Sang Ho Bae², Chong Woo Chu¹. ¹Surgery, National University Yangsan Hospital, Yangsan, Republic of Korea; ²Surgery, Soonchunhyang University Hospital, Chunan, Republic of Korea

(Introduction) Hepatic artery thrombosis(HAT) is a devastating complication after liver transplantation, occurs in 3% to 9% of adult transplantation recipients and it's the most frequent arterial complication in liver transplantation. There are numerous nonsurgical and surgical factors including multiple rejection episodes, a long cold ischemic time, cytomegalovirus infection, excessive transfusion of fresh frozen plasma, cigarette smoking, immunologic factors, coagulation abnormalities, and ABO incompatibility. Treatment of HAT could be performed by radiological intervention. But in some cases, may consider thrombectomy and angioplasty, retransplantation. Between May 2010 and April 2013, we performed 105 cases of liver transplantation. HAT occurred in 2 cases performed LDLT in our institution. CASE 1) 52-year-old man presented with hepatocellular carcinoma(HCC) and biliary cirrhosis. The patient underwent LDLT at February 2013. On the postoperative day(POD) 4, total bilirubin and liver enzyme elevated continuously. Checked CT showed stenosis of hepatic artery anastomotic site and liver ischemia. Serial angiography showed hepatic artery thrombosis and occlusion. Stent insertion and urokinase thrombolysis was done, but no blood flow was checked. On the next day, the patient underwent retransplantation (DDLTL). Thereafter, the patient's condition was improved well, but after 1 month, diagnosed acute cellular rejection. The patient is in the hospital since then, we think that the third transplantation may be required. CASE 2) 57-year-old man presented with HCC and hepatitis B related liver cirrhosis. He underwent liver resection once and 7 times transarterial chemoembolization(TACE) previously due to recurrent HCC. The patient underwent LDLT at March 2013. But the routine checked CT showed nonocclusive thrombosis in the common hepatic artery on Pod 6. On the next day performed stent insertion. We found out partial thrombosis in the celiac artery after 5 days. And angiography and stent insertion were done. Since then, the patient was improved without other complications and discharged on Pod 22.

Abstract # P-470

Results of Anterior Sector Reconstruction of 'neo MHV' Using Portal Vein Graft Alone from Explanted Liver. Ramdip Ray^{1,2}, Sandeep Vohra¹, Giriraj Bora¹, Neerav Goyal¹, Subash Gupta¹.

¹CLBS, Indraprastha Apollo Hospital, Delhi, India; ²CLBS, Artemis Hospitals, Gurgaon, Delhi NCR, India

Background: In modified right lobe graft segments 5 and 8 veins are joined together usually to a cadaveric vein graft or to a prosthetic graft. In our centre where cadaveric vessel grafts are rare and prosthetic grafts are prone to thrombosis and infection. Therefore graft was reconstruction in our centre is harvested from the portal vein of the explanted liver. The patency rates of these grafts are not well established.

Aim: The study the vascular thrombosis rate of this novel MHV reconstruction graft.

Methods: The Right and Left portal veins above the confluence were harvested in continuity from the explant liver unless there was extensive portal vein thrombosis. The right portal vein was dissected out of the liver till the branching of anterior and posterior branches. The left portal vein branch was dissected till the umbilical vein. A short length of this graft was used to extend the MHV in cases of Extended Right Lobe grafts (Group A) as an interposition graft to the IVC. A longer length (with / without side branch extensions) was used to reconstruct the outflow to the divided Segment 5 or 8 vein(s) in cases of Modified Right Lobe grafts (Group B).

Results: Between November 2002 and October 2013, 1206 adult Right lobe LDLTs were performed at our centre. There were 251 patients in Group a and 955 in Group B. All recipients underwent twice daily Doppler study for the first 5 days, once daily for the next 2 days and a CT Liver angiogram between 16 – 22 days after surgery.

The reconstructed MHV was blocked (either partly or completely) in 15% of Group a patients and 28% of Group B patients. Overall, anterior sector congestion was seen in only 16% of recipients, suggesting that rapid collateralization happened in some of the patients with blocked Vein.

Conclusion: The patency rates were higher and anterior sector congestion significantly less in the short segment interposition graft in Group a as compared to the longer graft of Group B, the overall patency rate of this graft was 74.8%.

Abstract # P-471

Risk Factors of Early Arterial Complications in Liver Transplantation. Andres Valdivieso^{1,2}, Lorea Martinez-Indart³, Mikel Prieto¹, Mikel Gastaca^{1,2}, Patricia Ruiz¹, Alberto Ventoso¹, Amaya Mataranz¹, Javier Bustamante^{2,4}, Ibone Palomares¹, Jose Ramon Fernandez², Milagros Testillano⁴, Maria Jesus Suarez², Miguel Montejo², Jorge Ortiz-de-Urbina¹. ¹HPB and Liver Transplant Unit, Cruces University Hospital, Bilbao, Spain;

²Medicine School, University of Basque Country, Leioa-Bilbao, Spain; ³Clinic Epidemiology Unit, Cruces University Hospital, Bilbao, Spain; ⁴Hepatology Unit, Cruces University Hospital, Bilbao, Spain

Knowing the risk factors of early arterial complications (EAC) in liver transplantation (LT) in order to avoid them or to improve the related conditions. From February 96 to February 2013 we have performed 1000 LT on 952 patients. EAC were considered when they appeared in the first 30 days after LT. In order to perform univariate and multivariate analysis we retrospectively studied the following parameters: donor age>60, stroke as cause of donor death, steatosis >30%, necrosis of the liver after reperfusion >20%, receptor age >60, underlying disease, preoperative TACE, red cell >4 units, plasma >10 units, platelet transfusion, cold ischemia time>360 min, warm ischemia time>60 min, arterial ischemia time>50 min, 2 or more arterial anastomosis, high risk anastomosis according to the surgeon opinion, intraoperative severe cardiac complications, hepaticojunostomy, acute cellular rejection treated with bolus of steroids and hemoperitoneum requiring reoperation. 32 EAC were diagnosed in the first 30 postoperative days (3.2%), being 7 thrombosis and 25 stenosis. In the univariate analysis the risk factors were TACE, arterial ischemic time > 50 min, hepaticojunostomy, severe intraoperative cardiac problems, high risk anastomosis according to the surgeon, and hemoperitoneum that required a reoperation. In the multivariate analysis, TACE, steatosis >30%, arterial ischemia time >50 min, hepaticojunostomy, and reoperation due to hemoperitoneum were the risk factors implicated.

Multivariate Analysis

	β	p-value	OR	I.C. 95% OR	
				Lower	Higher
Hepaticojunostomy	1.569	0.004	4.804	1.658	13.919
Arterial ischemic time >50'	1.432	<0.001	4.185	1.987	8.816
Hemoperitoneum	1.544	0.022	4.683	1.250	17.545
TACE	1.056	0.013	2.874	1.250	6.612
Steatosis >30%	1.355	0.041	3.875	1.054	14.245

Table 1: Multivariate logistic regression

Conclusion: TACE, steatosis >30%, arterial ischemia time >50 min, hepaticojunostomy and hemoperitoneum requiring reoperation were the risk factors involved in the development of early arterial complications after LT.

Abstract # P-472

Inferior Vena Cava Syndrome Secondary to Disseminated Histoplasmosis after Liver Transplant – A Diagnostic Challenge. Julio C. Wiederkehr^{1,2}, Marcelo S. Nogara¹, Mauro R. Igreja¹, Maira Godoy¹, Camila Drago¹, Henrique A. Wiederkehr¹, Nelson Gonçalves¹. ¹Liver Transplantation, Hospital Santa Isabel, Blumenau, Santa Catarina, Brazil; ²Surgery, Universidade Federal do Parana, Curitiba, Parana, Brazil

Disseminated histoplasmosis is a rare fungal infection and most documented cases are in immune-compromised individuals. We present a case of an 18-year-old female submitted to OLT from deceased donor due to acute liver failure from Wilson's disease with severe histoplasmosis. Her immunosuppression included tacrolimus and mycophenolate mofetil. On the ninth post-transplant month she presented with a series of episodes of tonsillitis and oral ulceration, fever, weight loss, and nocturnal sudoresis. She abruptly presented lower limb edema, hepatomegaly, splenomegaly, and ascites. Screening test for EBV, CMV infection, as well as tuberculosis, were negative. A CT scan revealed enlargement of the liver and spleen as well as ascites. Prominent lymph nodes were observed on the retroperitoneal space, and several hypodense nodules within the splenic parenchyma. An echocardiogram showed severe narrowing of the inferior vena cava, adjacent to the liver. An inferior vena cava venogram showed compression of the intra hepatic inferior vena cava, leading to an inferior vena cava syndrome. A laparotomy was performed and biopsy from lymph nodes, liver, and spleen, were obtained. Histology revealed disseminated histoplasmosis. The periodic acid-Schiff staining technique showed viable yeast cells suggestive of histoplasmosis. She underwent treatment with liposomal amphotericin followed by oral itraconazole. The resolution of the inferior vena cava syndrome was obtained after antifungal treatment. Due to parenchymal necrosis on the left lateral segment of the liver, she developed a liver abscess on segments II and III, which was surgically drained. She is now fully recovered and doing well. This is a case of an unusual presentation of this rare fungal infection after liver transplant.

Abstract # P-473

Necrotic Dermal Lesions in a Liver-Transplanted Patient: Report of a Case. Fahrettin Yildiz¹, Sacit Coban¹, Murat Taner Gulsen², Vahap Saricicek², Cuma Ali Emir³. ¹Solid Organ Transplantation, Gaziantep University Medical Faculty, Gaziantep, Turkey; ²Anesthesiology and Reanimation, Gaziantep University Medical Faculty, Gaziantep, Turkey; ³General Surgery, Gaziantep University Medical Faculty, Gaziantep, Turkey; ⁴General Surgery, Harran University Medical Faculty, Sanliurfa, Turkey; ⁵Gastroenterology and Hepatology, Gaziantep University Medical Faculty, Gaziantep, Turkey; ⁶Biochemistry, Harran University Medical Faculty, Sanliurfa, Turkey; ⁷Pathology, Harran University Medical Faculty, Sanliurfa, Turkey

Introduction: We report a case of a 45-year-old man with necrotic dermal lesions (Figure 1) who underwent orthotopic liver transplantation 5 months ago for cirrhosis of liver secondary to HBV and HCC. (figure1)

Method: His chronic immunosuppressive regimen consisted of prednisone and tacrolimus at dosage of 3.5 mg orally twice daily. Consequently, the patient developed a skin lesion. Biopsy demonstrated dermal inflammation with foci of necrosis and lymphohistiocytic infiltrate. On laboratory findings liver enzymes were in normal ranges. The evaluation of CMV, tbc and other infectious causes were revealed negative.

Results: Then we reduce the dose of tacrolimus to 2 mg orally twice a day. Then the dermal lesions regressed without any additional therapy.

Conclusion: Dermal necrosis maybe one of the very rare side effects of long-term immunosuppressive therapy with calcineurin inhibitors.

Abstract # P-474

Diagnosis and Treatment of Diabetic Ketoacidosis after Liver Transplantation. Jian Zhou, Zhiyong Guo, Xiaopeng Yuan, Chuanbao Chen, Xiaoping Wang, Ming Han, Xingyuan Jiao, Xiaoshun He. *Organ Transplantation Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China*

Objective: To investigate the experience of diagnosis and treatment of diabetic ketoacidosis (DKA) after liver transplantation.

Methods: A retrospective analysis of 603 cases performed liver transplantation at organ transplantation center, the First Affiliated Hospital, Sun Yat-Sen University, from July 2006 to November 2013, only 1 case with postoperative DKA, the clinical data was summarized.

Results: The incidence of DKA after liver transplantation is about 1.6% in this study. The patient with no history of diabetes, maintenance immunosuppression consisted of tacrolimus and rapamycin, and 1 month prior to admission outpatient review has showed blood glucose was 26 mmol/L, no treatment. The onset of DKA showed non-specific symptoms, only with weakness in the limbs, chest tightness, chest pain, shortness of breath, palpitation and dry mouth. Laboratory examination showed blood glucose was 23.6 mmol/L, and plasma osmotic pressure was 283 mOsm/L, and urine sugar was positive (4+), urine ketone body 4+ and urine protein 1+. Blood gas analysis showed PH was 7.12, and HCO₃ was 6.2 mmol/L. After active rehydration, small dose of insulin, correcting water electrolyte and acid-base disorders, the symptoms were corrected, and the blood sugar decreased to normal. The patient discharged after 14 days.

Conclusion: The incidence rate of DKA after transplantation liver is very low, but severely. Early diagnosis and reasonable treatment is the key to cure. The complication of liver transplantation should be alert to this disease.

Abstract # LB-25

Mapping of Hepatic Expression Quantitative Trait Loci (eQTLs) in a Han Chinese Population. Xiaoliang Wang¹, Huamei Tang¹, Mujian Teng², Zhiqiang Li³, Jianguo Li⁴, Junwei Fan¹, Lin Zhong¹, Xing Sun¹, Junming Xu¹, Guoqing Chen¹, Dawei Chen¹, Zhaowen Wang¹, Tonghai Xing¹, Jinyan Zhang¹, Li Huang¹, Shuyun Wang¹, Xiao Peng¹, Shengying Qin³, Yongyong Shi³, Zhihai Peng¹.

¹Shanghai First People's Hospital, Medical College, Shanghai Jiaotong University, Shanghai, China; ²Shandong University Affiliated Qianfoshan Hospital, Jinan, Shandong, China; ³Key Laboratory for the Genetics of Developmental and Neuropsychiatric Disorders, Bio-X Institutes, Ministry of Education, Shanghai Jiao Tong University, Shanghai, China; ⁴Zhangzhou Hospital Affiliated to Fujian Medical University, Zhangzhou, Fujian, China

Background

Elucidating the genetic basis underlying hepatic gene expression variability is of importance to understand disease etiology and drug metabolism variation. To date, no genome-wide eQTL analysis has been conducted in the Han Chinese population, the largest ethnic group in the world.

Methods

We performed a genome-wide eQTL mapping in a set of Han Chinese liver tissue samples (n=64). The data were then compared with published eQTL data from Caucasian population. We then performed correlations between these eQTLs with important pharmacogenes, and genome-wide association study (GWAS)-identified single nucleotide polymorphisms (SNPs), in particular those identified in Asian population.

Results

Our analyses identified 1,669 significant eQTLs (FDR<0.05). We found that 41% of Asian eQTLs were also eQTLs in Caucasian at the genome-wide significance level (p=10⁻⁶). Both *cis*- and *trans*-eQTLs in the Asian population were also more likely to be eQTLs in Caucasians (p<10⁻⁴). Enrichment analyses revealed that trait-associated GWAS-SNPs were enriched within the eQTLs identified in our data, so as the GWAS-SNPs specifically identified in Asian population in a separate analysis (p<0.001 for both). We also found that hepatic expression of Very Important Pharmacogenetic genes (VIP, n=44) and a manually curated list of major genes involved in pharmacokinetics (n=341) were both more likely to be controlled by eQTLs (p<0.002 for both).

Conclusion

Our study for the first time provided a comprehensive hepatic eQTL analysis in a non-European population, further generating valuable data for

characterizing genetic basis of human diseases and pharmacogenetic traits. Our findings will be helpful to understand the individual differences in drug metabolism in human body including liver transplantation patients.

Abstract # LB-26

The Edinburgh Liver Function Score Accurately and Objectively Identifies Primary Non-Function After Liver Transplantation. Ian S. Currie^{1,2}, Jen H. Ong², Weiguang Ho², Alistair Lee¹, Amanda J. Lee³. ¹Scottish Liver Transplant Unit, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom; ²Department of Clinical Surgery, University of Edinburgh, Edinburgh, United Kingdom; ³Institute of Applied Health Sciences, University of Aberdeen, Aberdeen, United Kingdom

Introduction: Primary graft non-function (PNF) in liver transplantation is rare, but invariably fatal without urgent re-transplantation. There are no reliable scoring systems for the early diagnosis of PNF based on routinely available clinical data.

Aim: To derive a statistical model describing the normal distribution of liver function in the first 48 hours after liver transplantation.

Materials and Methods: Routine clinical data were recorded prospectively and analysed retrospectively in 169 control patients and 10 patients with PNF in the Scottish Liver Transplant Unit. Regression techniques were used to construct a predictive model describing post-operative liver function, derived from indices identified from correlational analyses. As the model was developed retrospectively, scores were not available to clinical teams.

Results: Post-operative trends in bilirubin, lactate and prothrombin time comprised the model. Z scores for these analytes at different time points were combined to give the Edinburgh Liver Function (ELF) Score. ROC curves every 6 hours at 0 - 48 hours post-transplant showed an Area Under the Curve (AUC) of 0.5 and 0.88 at zero and six hours respectively; AUC from 12 hours was 0.95 or greater. 11/179 patients developed an ELF score >1.96 at 12 hours or later post-transplant. Of these, 1 died after rapid deterioration, and 9 were listed for super-urgent re-transplantation. One subsequently improved and was de-listed with a falling ELF score (ELF <1.96 at 48 hours). The remaining 8 were re-transplanted. The 11th patient had undergone split liver transplantation and had severe graft dysfunction (ELF >4.5). Re-listing was considered, however, the patient fortunately improved after 48 hours. No PNF cases were missed by the ELF score. An ELF score >1.96 had a positive predictive value for PNF of 90.9% and a negative predictive value of 99.4%. Conclusions: The ELF score is a simple and rapid technique which appears to give an accurate index of graft dysfunction after liver transplantation. Statistical refinement is in progress, however, the ELF score may identify severe liver dysfunction objectively, allowing targeted intervention and the earliest possible re-transplantation.

Abstract # LB-27

Association between Donor and Recipient IL-18 Gene Polymorphisms and the Risk of Bacterial Infection and Mortality after Liver Transplantation in a Han Chinese Population. Lin Zhong, Hao Li, Qiang Zhi Li. *Liver Transplantation, Affiliated 1st People Hospital of Shanghai Jiaotong University, Shanghai, China; Liver Transplantation, Affiliated 1st People Hospital of Shanghai Jiaotong University, Shanghai, China; Liver Transplantation, Affiliated 1st People Hospital of Shanghai Jiaotong University, Shanghai, China*

Backgrounds: Bacterial infection is the most common complication and a leading cause of death after liver transplantation (LT). Donor and recipient gene polymorphisms may also be risk factors for bacterial infection. Although IL-18 (Interleukin-18) polymorphisms have been reported to associate with HCV infection and HBV infection, the association with bacterial infection is still no clear. In our study, we aim at evaluating the association between donor and recipient IL-18 gene polymorphisms with bacterial infection.

Methods: A total of 113 patients undergoing primary LT in our hospital between July 2007 and January 2011 were included. 44 LT patients from another hospital were validated experimentally. Five single nucleotide polymorphisms (rs7106524, rs5744247, rs1946518, rs549908, rs187238), closely associated with infection, were genotyped and analyzed.

Results: Donor rs1946518 polymorphisms (AA vs. CC genotype) were found to be significantly associated with bacterial infection. Recipient rs1946518 polymorphisms were found to be significantly associated with long-term survival of patients. However, donor rs1946518 polymorphisms are related to short-term survival of patients. In multivariate analysis, donor rs1946518

genetic variation (OR=3.321 pre each A allele, $p=0.039$), and recipient Biliary complications (OR=7.184, $p=0.024$) were identified as independent risk factors of bacterial infection. Furthermore, predictive model containing donor rs1946518 polymorphism showed a significantly higher prognostic ability on bacterial infection than the model with only clinical parameters (<0.001). Conclusions: Donor IL-18 rs1946518 polymorphism is associated with an increased risk of bacterial infection and short-term mortality after LT and also has a potential clinical value for the prediction of bacterial infection. Recipient rs1946518 polymorphism is relation with long-term survival.

Abstract # LB-28

The Volumes of Segment 4 and Necrosis Are Not Risk factors for Graft Complications and Graft Survival in Extended Right Split Liver Transplantation. Shohei Komatsu¹, Fernando Pompeu Piza Vicentine¹, Sanaa El Mouhadi², Fabiano Perdigao¹, Ailton Sepulveda¹, Olivier Soubrane¹, Olivier Scatton¹. ¹Department of Hepatobiliary Surgery and Liver Transplantation, Hôpital Saint Antoine, Assistance Publique Hôpitaux de Paris, Université Pierre et Marie Curie, Paris, France; ²Department of Radiology, Hôpital Saint Antoine, Assistance Publique Hôpitaux de Paris, Université Pierre et Marie Curie, Paris, France

Purpose/Objective: To evaluate if the volume of segment 4 (S4) and necrosis has an impact in the occurrence of postoperative complications and graft survival following split liver transplantation (SLT).

Materials/Methods: From May 2000 to February 2014, 53 patients (M/F: 35/18) were transplanted using SLT. We analyzed a prospectively collected database, and volumetry was performed in 44 cases after surgery (CT/MRI: 35/9, postoperative day (POD): 1-21).

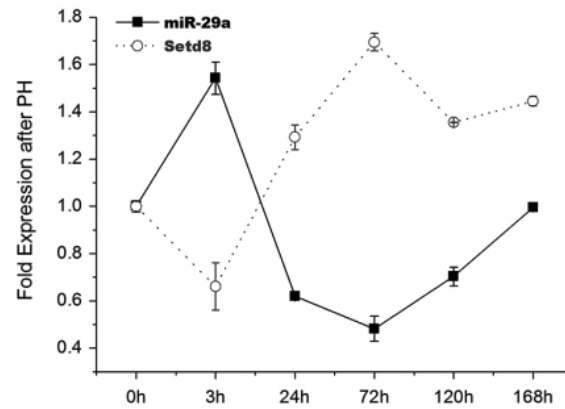
Results: The overall survival rates at 1, 3, and 5 years were 83.8%, 83.8%, and 80.7%, respectively. The graft survival rates at 1, 3, and 5 years were 76.0%, 76.0%, and 72.7%, respectively. Complications occurred in 28 of 53 patients (53%): Collection requiring drainage (n=15), Arterial complication (n=14), Biliary complication (n=14). Body mass index score of the recipient had significant influence on these complications. Patients developing collection requiring drainage had significantly elevated serum levels of aspartate aminotransferase (POD 1, 3), and gamma-glutamyl transpeptidase (POD 5, 7, 15). The mean volume of total liver, S4, and necrosis were 1760 ml (1223-3009), 224 ml (55-502), and 95 ml (0-408), respectively. Although the volume of total liver was significantly larger in the patients developing collection requiring drainage, the volumes of S4 and necrosis did not have an impact on the occurrence of this complication. The overall patient and graft survival rates were not significantly related to the complication of collection requiring drainage.

Conclusion: Complications requiring drainage can be anticipated by the early identification of a specific biological profile. Our results suggest that the volumes of S4 and necrosis had no influence on the occurrence of complications requiring drainage, overall patient survival, and graft survival rates.

Abstract # LB-29

Down-Regulation of MicroRNA-29A Accelerates Hepatocyte Proliferation During Rat Liver Regeneration. Li-Xi Luo, Zhao-Yan Yu, Zhen Liu, Yong Zeng. Department of Liver Surgery & Liver Transplantation Centre, West China Hospital of Sichuan University, Chengdu, Sichuan Province, China

Liver regeneration (LR) is closely associated with the occurrence of small-for-size syndrome in living donor liver transplantation, and miR-29a is one of the microRNAs that have been found differentially expressed during LR after partial hepatectomy (PH). This study aims to explore the potential role of miR-29a in hepatocyte proliferation during LR. We established rat 2/3 PH models and testified the expression patterns of miR-29a and its potential target gene Setd8 by qRT-PCR at 0h, 3h, 24h, 72h, 120h 168h after PH. MiR-29a was found down-regulated from 24 hours after PH and negatively correlated with the expression levels of Setd8.



BRL-3A rat liver cells were transfected with miR-29a mimics, inhibitor, mimics control and inhibitor control respectively. Cell proliferation was examined by CCK8 assay, and the expression of relate genes was tested by qPCR and Western blot. We discovered that down-regulation of miR-29a in cultured BRL-3A cells could facilitate cell proliferation and increased the level of Setd8 and its downstream product H4K20me1.

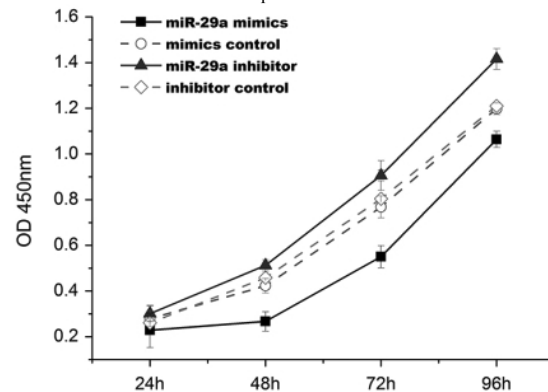


Figure 2A. Down-regulation of miR-29a could accelerate proliferation of BRL-3A cells.

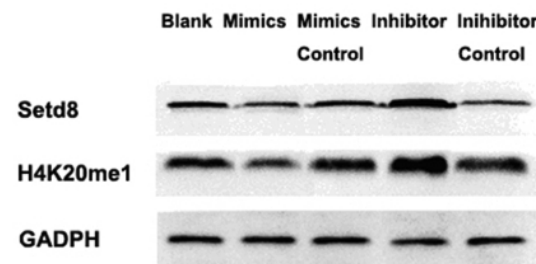


Figure 2B. Expression of Setd8 and H4K20me1 was up-regulated in BRL-3A cells transfected with miR-29a inhibitor.

Furthermore, Setd8 was confirmed as a direct target gene of miR-29a by luciferase reporter assay. These findings indicate that down-regulation of miR-29a after PH may accelerate hepatocyte proliferation by up-regulating Setd8, which is thought to be a new regulator of cell cycle. Research was funded in part by Science and Technology Department of Sichuan Province Pillar Program, Chengdu, China.

Abstract # LB-30

Quantitative Proteomics of Hypertrophic Chondrocytes in Osteoarthritis. Konstantinos Tsolis¹, Ioanna Papatheanasiou², Fotini Kostopoulou², Vassiliki Gkretsi², Ekaterini S. Mpei³, Kalliopi Kalatzaki³, Michalis Zerbakis³, Konstantinos Malizos⁴, Aspasia Tsezou², Anastassios Economou¹. ¹Institute of Molecular Biology and Biotechnology – FoRTH, Iraklio, Greece; ²Dpt of Cytogenetics and Molecular Genetics, University of Thessaly School of Medicine, Larissa, Greece; ³Dpt of Electronic and Computer Engineering, Technical University of Crete, Chania, Greece; ⁴Dpt of Orthopedics, University of Thessaly, Faculty of Medicine, Larissa, Greece

Background:

Osteoarthritis (OA) is a multifactorial disease leading progressively to loss of articular cartilage and subsequently to loss of joint function. While chondrocyte's hypertrophy is a physiological process implicated in the longitudinal growth of long bones, hypertrophy-like alterations in chondrocytes play a major role in OA. We performed a quantitative proteomic analysis in osteoarthritic and normal chondrocytes followed by functional analyses to investigate proteome changes and molecular pathways involved in OA pathogenesis.

Methods:

Chondrocytes were isolated from articular cartilage of ten patients with primary OA undergoing knee replacement surgery and six normal donors undergoing fracture repair surgery without history of joint disease and no OA clinical manifestations. We identified the chondrocytes' proteomes using high resolution mass spectrometry. Also, we used the WbsGestalt, a web-based enrichment tool for the functional annotation of the differentially expressed proteins.

Results and Conclusion:

The proteomic analysis led to the identification of a total of ~2400 different proteins. A total of number of 720 proteins were over-expressed or expressed only in patients group. Using functional annotation analysis, we found significantly enriched ($p < 10^{-5}$) KEGG pathways associated with protein processing in the endoplasmic reticulum, regulation of actin cytoskeleton, MAPK signaling pathway, chemokine signaling pathway, focal adhesion and integrin-mediated cell adhesion. We also observed that in OA chondrocytes TG2, a protein associated with enhanced articular chondrocyte hypertrophy, is over-expressed.

In conclusion, this study provides evidence for quantitative changes in OA compared to normal chondrocytes and lends support to the significance of proteins associated with the cytoskeleton, adhesion molecules and integrin-related proteins as important factors in chondrocytes differentiation, which is characteristic of the osteoarthritic phenotype.

Abstract # LB-31

A Case Report of Takotsubo (Stress) Cardiomyopathy After Living Donor Liver Transplantation Presenting As Postoperative Dyspnea. Navneethan Subramanian, Raman Raina, Subash Gupta. Indraprastha Apollo Hospitals, New Delhi, India
Stress induced cardiomyopathy or apical ballooning (Takotsubo) syndrome is a rare but a cause of profound and reversible left ventricular dysfunction in the absence of atherosclerotic coronary artery disease.

We describe a case report of development of reversible left ventricular apical ballooning syndrome following orthotopic liver transplantation.

Our patient, 71 year old male, diagnosed case of chronic liver disease due to primary biliary sclerosis with hepatocellular carcinoma, and post transarterial chemo-embolisation (TACE). He was a known COPD, well controlled on inhaled bronchodilators. He was evaluated for liver transplantation. He was Child Turcotte Pugh grade C (score 11), with a MELD of 25. His ECG showed ventricular premature complexes. A cardiologist opinion was taken. Two dimensional echocardiography was essentially normal with an ejection fraction of 65%, dobutamine stress echocardiography was negative for inducible ischemia and an angiography of heart done was also normal. It was decided to proceed with the surgery.

His intraoperative period was uneventful except occasional ventricular ectopics. In the immediate Postoperative period he developed frequent multifocal ectopics, which was managed with antiarrhythmics. The patient was finally extubated 16 hours post operatively. After extubation he developed breathlessness with pulmonary edema and mild hypotension. The cause of the pulmonary edema became clear after an echocardiography was done, revealing apical ballooning of the left ventricle, drop in ejection fraction to 35% and grade I diastolic dysfunction. There were no fresh changes observed in his ECG. Troponin T levels were normal. He was managed with diuretics,

noninvasive respiratory support, vasopressors, and antiarrhythmics. The patient gradually improved and by 8th post operative day and was off inotropes and did not require respiratory support. He recovered to his preoperative echocardiographic status by postoperative day 25.

Abstract # LB-32

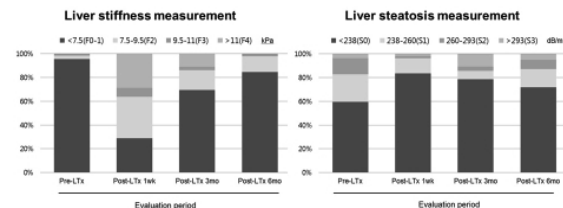
Measurement of Stiffness and Fatty Change of Graft by Transient Elastography after Living Donor Liver Transplantation. Jae Geun Lee^{1,2}, Jung Jun Lee⁴, Sung Hoon Kim³, Gi Hong Choi¹, Myoung Soo Kim^{1,2}, Jin Sub Choi¹, Soon Il Kim^{1,2}, Dong Jin Joo^{1,2}. ¹Department of Surgery, Yonsei University College of Medicine, Seoul, Korea; ²Research Institute for Transplantation, Yonsei University College of Medicine, Seoul, Korea; ³Department of Surgery, Ajou University College of Medicine, Seoul, Korea; ⁴Department of Surgery, CHA Bundang Medical Center, CHA University, Bundang, Korea; ⁵Department of Surgery, Yonsei University Wonju College of Medicine, Wonju, Korea

Liver stiffness measurement (LSM) using transient elastography (TE) is a non-invasive method to assess liver fibrosis, cholestasis and etc. The aim of this study was to observe the change of graft elasticity and steatosis measured by TE and to analyze the correlation of liver function in patients after LDLT. A total of 66 LDLTs were prospectively enrolled. LSM, steatosis level (SL) and blood tests for pre-transplant donor and post-transplant recipient at 1, 3, and 6 months. LSM was divided into F0-1, F2, F3, and F4. SL was divided into S0, S2, S2 and S3.

The mean age of the patients was 52.0±8.5. LSM at postoperative 1 week was correlated with INR. There was negative correlation between LSM at post-transplant 1 week and GRWR. LSM was 4.9±1.3 kPa in donor before transplantation, 10.0±5.4 kPa at 1 week, 6.6±2.9 kPa at 3 months, and 5.6±1.59 at 6 months after transplantation, showing significant difference chronologically. SL was 228.2±33.93 dB/m in donor before transplantation, 205.2±36.3 dB/m at 1 week, 214.9±43.6 dB/m at 3 months, and 215.3±43.9 dB/m at 6 months after transplantation, and only SL before transplantation and post-transplantation 1 week showed significant difference. The proportion of LSM F0-1 rapidly decreased after transplantation but gradually increased at 3 and 6 months after transplantation. In contrast, S0 was increased immediately after transplantation but decreased chronologically. (Fig. 1).

TE in LDLT might be considered useful method to assess transplanted LSM and SL. However investigation to compare pathologic finding and TE finding and prospective study is needed to confirm diagnostic value.

Figure 1. Serial change of stiffness and steatosis in transient elastography



Abstract # LB-33

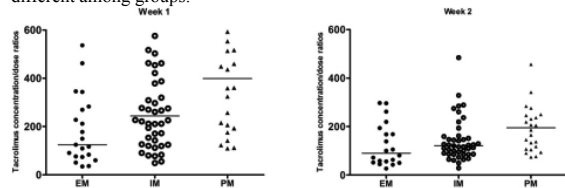
Combined Effect of Donor CYP3A5 and Recipient CYP3A4 Polymorphisms on the Individual Dosage Regimen of Tacrolimus in Chinese Liver Transplant Patients. Feng Guo, Junwei Fan, Zhaowen Wang, Dawei Chen, Zhihai Peng. Department of Hepatobiliary Pancreatic Surgery, Shanghai First People's Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai, China

Objective: To investigate the effect of donor CYP3A5 and recipient CYP3A4 gene polymorphisms on the concentration/dose ratios (C/D ratios) of tacrolimus in Chinese liver transplant patients.

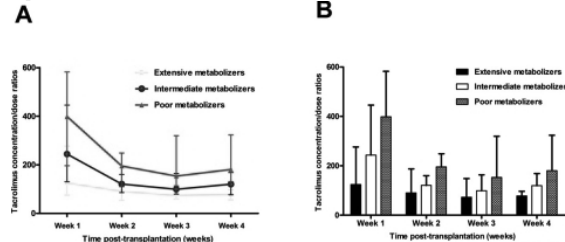
Methods: Ninety liver transplant recipients treated with tacrolimus and their co-respective donors were enrolled in this study. Tacrolimus dosage and trough blood concentration were determined at first month after liver transplantation. Polymerase chain reaction (PCR) amplification and DNA sequencing were applied to detect CYP3A5 rs776746 and CYP3A4 rs12333983 polymorphisms for all subjects. The relationship between gene polymorphisms and tacrolimus C/D ratios was analyzed.

Results: Both donor CYP3A5 rs776746 and recipient CYP3A4 rs12333983 polymorphisms were highly correlated with the tacrolimus C/D ratios at first month after liver transplantation. We did not observe any linkage

disequilibrium between donor CYP3A5 rs776746 and recipient CYP3A4 rs12333983 polymorphisms ($D' = 0.017$, $r^2 < 0.001$). The combined effect of these two polymorphisms demonstrated that the C/D ratios were significantly different among groups.



The trend of C/D ratios were highly significant at all investigated time points – extensive metabolizers ($n=22$) < intermediate metabolizers ($n=44$) < poor metabolizers ($n=24$)



Conclusion: Detection of donor CYP3A5 and recipient CYP3A4 genotypes may be performed prospectively to help individualizing tacrolimus dose regimen for liver transplant patients.

Abstract # LB-34

Stroke Volume and Systolic Pressure Variation Are Poor Predictors of Fluid Responsiveness During Major Pancreatic Surgery. Hassan Shakeban, Niamh Conlon, John Boylan. *Department of Anaesthesia, Intensive Care and Pain Medicine, St. Vincent's University Hospital, National Liver Transplant Centre, Dublin, Ireland*

Background

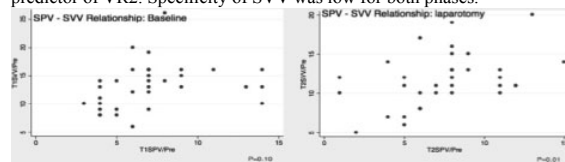
Stroke volume variation (SVV) and systolic pressure variation (SPV) have been shown to be reliable predictors of fluid responsiveness (FR) in a variety of clinical settings. The aim of this study was to evaluate their efficacy in major pancreatic surgery.

Methods

Thirty-five patients undergoing elective major pancreatic surgery were enrolled in this study. The patients were monitored using a radial artery catheter connected to Flo Trac™/Vigileo™ system. Fluid boluses of 7ml/Kg of Geloplasma were administered after induction of general anaesthesia (T1) and during steady state of surgery with open abdomen (T2). SVV, SPV, cardiac index (CI) and stroke volume index (SVI) were measured before and after each fluid bolus. FR was defined as a 15% increase in SVI.

Results

Volume responders (VR1, VR2) had similar demographics to non-responders. Pre-treatment CVP and SVR did not differ. Cardiac index, stroke volume index and mean arterial pressure were univariate predictors of volume responsiveness (VR1, VR2). SPV correlated inconsistently with SVV and did not predict volume responsiveness in either phase [Figure 1]. SVV did not predict VR1, but was a univariate ($P=0.04$) and multivariate ($P=0.057$) predictor of VR2. Specificity of SVV was low for both phases.



Discussion

SPV and SVV both lack consistency, depending at least partly on the timing of volume loading. SVV predicts cardiac output responses to volume but is an inconsistent, weak predictor of targeted increases. Goal-directed decisions about fluid therapy based on SVV data should probably be based on context (patient risk for organ failure vs. lung injury) – a 'gray zone' approach [Cannesson].⁽¹⁾ Our data suggest that the 'gray zone' also includes varying reliability of SVV measurements over time.

Reference

1. Cannesson M, Le Manach Y, Hofer CK, et al. Assessing the diagnostic accuracy of pulse pressure variations for the prediction of fluid responsiveness. A "gray zone" approach. *Anesthesiology* 2011; **115**: 231–241.

Abstract # LB-35

Management of Hepatic Venous obstruction after Pediatric Living Donor Liver Transplantation at Liver Transplantation Institute of Inonu University. Mehmet Yilmaz¹, Fatih Ozdemir¹, Suleyman Koc¹, Ramazan Kutlu², Volkan Ince¹, Burak Isik¹, Cengiz Ara¹, Sezai Yilmaz¹. ¹Department of Surgery, Division of Liver Transplantation, Inonu University Faculty of Medicine, Malatya, Turkey; ²Department of Radiology, Division of Liver Transplantation, Inonu University Faculty of Medicine, Malatya, Turkey

PURPOSE

Hepatic venous outflow obstruction is a relatively uncommon but important complication after liver transplantation. The purpose of our study was to evaluate the clinical outcomes for hepatic venous obstruction after pediatric living donor transplantation.

METHODS

108 pediatric patients received living donor liver transplantation between January 2011 and March 2014. Hepatic venous obstruction occurred in eight of 108 patients. Demographic data, post operative clinical findings, radiological interventions and clinical follow up were retrospectively analysed.

RESULTS

Eight of 108 (7.4%) patients developed hepatic venous obstruction after pediatric living donor liver transplantation. The diagnosis of these patients before transplantation were acute liver failure ($n=4$), congenital hepatic failure ($n=1$), cryptogenic cirrhosis ($n=2$), Wilson disease ($n=1$). Three of them were female and five of them were male with the mean age of 8.37 (1–17). Average body weight of the patients was 23.43 (7.5–64) kilos. Average pediatric end stage liver disease score was 22.25 (2–41). Mean GW/RW ratio was 0.028 (0.007–0.059). Mean time for diagnosis of hepatic venous obstruction was 127.3 (15–300) days postoperatively. Dilatation for hepatic venous obstruction was performed by interventional radiology approximately two times (1–6) for each patient. One patient received expandable metallic stent for hepatic venous obstruction. Mean follow up time was 6.18 (0.5–15) months. We lost 3 (37.5%) patients due to graft failure during follow up.

CONCLUSION

Hepatic venous obstruction is an important complication that causes morbidity and mortality after living donor liver transplantation especially in pediatric patients. Percutaneous venous angioplasty is such a preferred intervention for hepatic venous obstruction which lowers morbidity and mortality, even also metallic expandable stents can be useful for recurrent hepatic venous obstruction in order to prevent graft failure.

Abstract # LB-36

Biliary Complications after Living Donor Living Transplantation: Initial Experience at a Teaching Hospital. Kishore G.S. Bharathy, Aravind K. Seshadri, Piyush K. Sinha, Shridhar Sasurkar, Senthil Kumar, Viniyendra Pamecha. *Liver Transplantation & HPB Surgery, Institute of Liver & Biliary Sciences, New Delhi, India*

Aim

The objectives of this study were to evaluate the incidence of biliary complications after living donor liver transplantation (LDLT), analyze risk factors and assess their impact on outcome

Methods

Data of the first 120 patients undergoing LDLT from March 2010 till March 2014 at a specialized HPB and liver transplant unit in a teaching hospital were analyzed

Results

Biliary complications occurred in a total of 19 out of 120 patients (15.8%). The median age of this cohort was 41 (10–64) years. The median MELD score was 21 (10–32). Right hemiliver without middle hepatic vein was the predominant graft type (13). The median number of ducts were 2 (1–4). Duct to duct anastomosis was done in 16 and hepaticojejunostomy (HJ) in 3. Bile leak occurred in 15 (12.5%), while stricture occurred in 8 (6%). Five (4.1%) patients had both leak and stricture. Bile leak was detected after a median of 20 (range 2–103) days after transplantation, while stricture developed after 30.5 (18–262) days. All but 2 strictures were anastomotic. Five patients had hepatic artery thrombosis (HAT). Factors found to be significantly associated

with the development of biliary complications were HAT($p=0.008$) and the number of bile ducts for anastomosis($p=0.017$).Type of anastomosis(HJ vs. duct to duct),cold ischemia time were not different.The 19 patients required a median of 3(0-25) biliary interventions,1 (0-2) non biliary procedure to address the biliary complications.Out of the 15(89%) who are alive, 8 had complete resolution of their problems at a median follow up of 403(23-1286) days.Four out of 7 patients still have a stent in the biliary tree,while 3 have a controlled external biliary fistula.Two died of causes directly attributable to their biliary complications,while 2 died of unrelated causes.Only one patient with HAT died;the other patients and grafts were salvaged.The median hospital stay was 32(20-115) days,while the ICU stay was 17(7-115) days. Patients required 2(0-14) readmissions.The overall mortality rate was not different from those without biliary complications

Conclusions

Biliary complications after LDLT are common,result in significant morbidity,require multiple biliary interventions but do not result in increased mortality.

Abstract # LB-37

Living Donor Liver Transplantation in Patient With Christmas Disease: Case Report. Sanjeev Aneja¹, Navneethan Subramniam¹, Nitin Shankar¹, Subash Gupta². ¹Anesthesia & Intensive Care, Apollo Hospital, New Delhi, Delhi, India; ²Centre for Liver & Biliary Surgery, Apollo Hospital, New Delhi, Delhi, India

Purpose: Living Donor Liver transplantation is a curative option for patients with factor IX deficiency (Christmas disease).

Study Method: 53 year old male patient with family history of haemophilia B presented with hepatitis B related cirrhosis and was advised liver transplantation.

He was evaluated for living related liver transplantation. His factor IX levels were less than 1%. He suffered no other comorbidity.

Preoperatively, 2hrs before surgery the patient was administered calculated dosage of factor IX concentrate to increase the level to 100%. He received general anaesthesia and monitoring as per our institutional protocol. A continuous infusion of factor IX was started after induction at 3-5U/kg/ hour and the levels were monitored during transplantation every four hourly. Bolus doses of factor IX were given so as to keep levels 70-90%. Thromboelastograph was used during surgery to guide requirement of other blood products & development of any hypercoagulable state The Intraoperative period was largely uneventful.

Patient was extubated after 12 hours but Factor IX infusion was continued for next three days to keep the level above 70%. His factor IX level rose to 100% on third post-operative day and remained 100% during next 10 days of his stay without further supplementation. His stay in hospital was uneventful. Conclusion Living Related liver transplantation is a curative option for patients with Christmas disease as factor IX is solely produced by liver. But this requires facilities for measurement of factor IX level . Continuous monitoring for adequate dosing of factor IX concentrate is essential as deficiency of factor IX can cause life threatening bleeding & over treatment can cause thromboembolic phenomenon. Thromboelastograph in the perioperative period is helpful to detect hypercoagulable state.

REFERENCES

1. Z. Kadry, P. De Moerloose. et al. Orthotropic liver transplantation in haemophilia B: A case report. Transplnt Int. 1995; 8; 485-487.
2. V. J. Mathew. Peri-operative management of patients with coagulation disorders. BJA; 2000;85 (3):446-55.

Abstract # LB-38

Association of a Change in Immunosuppressive Regimen with Bone Disease after Liver Transplantation. Tonghai Xing, Lin Zhong, Li Huang, Junwei Fan, Zhihai Peng. *Department of General Surgery, Shanghai First People's Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai, China*

BACKGROUND:

Sirolimus is an immunosuppressant that inhibits T cell mTOR kinase activation.While sirolimus is thought to be a non-nephrotoxic agent, the toxicity of cyclosporine A (CsA) or tacrolimus is a serious problem in liver transplantation. One of the complications of liver transplantation and subsequent long-term immunosuppression is bone loss associated with osteoporosis and consequent fracture. The role of immunosuppressive agents in alteration of mineral metabolism is not clear.

METHODS:

In this study, we investigated the influence of sirolimus versus calcineurin inhibitor (CNI)-based immunosuppressive regimens on bone resorption in liver transplant patients. Twenty liver transplant patients were immunosuppressed with sirolimus as rescue therapy after CNIs treatment: 14 hepatocellular carcinomas; 6 renal insufficiencies. 100 patients were immunosuppressed cyclosporine A (CsA) or tacrolimus as the control group. Serum 1,25(OH)(2) vitamin D and bone mineral density (BMD) with were measured over a 1-year period in 120 patients receiving either CNIs or sirolimus.

RESULTS:

Significant differences were observed when comparing sirolimus with the CNIs group. CNIs, not sirolimus, elevated serum 1,25(OH)(2) vitamin D. But the sirolimus group showed a significant lesser down-regulation of BMD compared to CNIs group.

CONCLUSIONS:

The suppression of VDR by CNIs is probably the underlying mechanism of renal calcium wasting. Future trials are warranted to test why a sirolimus-based regimen conserves bone mineral density compared with a CNIs-based regimen.

Abstract # LB-39

Right Lobe Adult Living Donor Liver Transplantation: Does Portal Pressure Predict Outcome? Shridhar V. Sasturkar¹, Kishore G.S. Bharathy¹, Senthil Kumar¹, Shiv Kumar Sarin², Tushar Kanti Chattopadhyay¹, Viniyendra Pamecha¹. ¹Liver Transplantation and HPB Surgery, Institute of Liver and Biliary Sciences, New Delhi, India; ²Hepatology, Institute of Liver and Biliary Sciences, New Delhi, India

Introduction: Portal hemodynamic changes after living donor liver transplantation (LDLT) are attributed to influence graft function. Patient and methods: From March 2012 to February 2014, adult patients undergoing elective right lobe LDLT are included in the study. Portal pressure measurement was performed after graft reperfusion with direct insertion of 26 gauge needle into portal vein distal to the portal vein anastomosis. Pressure measured with electronic transducer and expressed in millimeter of mercury. Simultaneous central venous pressure (CVP) measured and porto-caval gradient was calculated. Preoperative patient details are summarized in table 1.

Introduction:

Portal hemodynamic changes after living donor liver transplantation (LDLT) are attributed to influence graft function.

Patient and methods:

From March 2012 to February 2014, adult patients undergoing elective right lobe LDLT are included in the study. Portal pressure measurement was performed after graft reperfusion with direct insertion of 26 gauge needle into portal vein distal to the portal vein anastomosis. Pressure measured with electronic transducer and expressed in millimeter of mercury. Simultaneous central venous pressure (CVP) measured and porto-caval gradient was calculated. Preoperative patient details are summarized in table 1.

Table 1: Preoperative variables

Variable	Median (Range)
Age	45(19-61)
Male(%)	42(87.5)
Female (%)	6 (12.5)
Etiology	n(%)
ALD	25(52.1)
HBV	7(14.58)
Cryptogenic	6(12.5)
HCV	2(4.16)
Others	8 (16.5)
MELD	20 (11-34)
Na MELD	24(14-38)
Platelet Count (103)	80(17-197)
GRWR	1.1(0.72-1.58)

Patients with acute liver failure and portal vein thrombosis were not included in the study.

Portal pressure was analyzed with CVP, porto-caval gradient, MELD, Na MELD, preoperative platelet count and graft to recipient weight ratio(GRWR). Post operative platelet count, serum total bilirubin, aspartate aminotransferase, alanine aminotransferase and International Normalization ratio (INR) were evaluated in first week. Postoperative complications were graded as per Clavien Dindo classification. Regression analysis was done and p value was calculated.

Results: Total 48 patients were enrolled in the study. All these patients underwent right lobe LDLT with reconstruction of anterior sector veins. Three patients were excluded from study: one patient required retransplantation and two patients expired within 7 days.The median portal pressure and portocaval gradient were 18 mm Hg(10-28) and 8.5 (2-16) respectively. The overall 30 days mortality in this cohort was 11%. Postoperative morbidity :Clavien grade II in 23 ; Grade III and IV in 20 patients. Portal pressure did not show any correlation with postoperative platelet count, liver function tests , INR or morbidity.

Conclusion: Portal pressure after reperfusion of graft does not predict liver graft function or morbidity in right lobe LDLT.

POSTER SESSION III

Abstract # P-475

Pre-Transplantation Hepatic Encephalopathy Is Associated With an Increase of Postoperative Morbidity after Liver Transplantation in Cirrhotic Patients. Paër-Sélim Abback^{1,2}, Amélie Toussaint^{1,2}, Linda Khoy-Ear^{1,2}, Jacqueline Cohen^{1,2}, Sylvie Janny^{1,2}, Didier Delefosse^{1,2}, Federica Dondero^{2,3}, Catherine Paugam-Burtz^{1,2}. ¹Anesthesiology and Critical Care, Beaujon Hospital, Clichy, France; ²Paris VII-Denis Diderot University, Paris, France; ³Hepatobiliary Surgery and Transplantation, Beaujon Hospital, Clichy, France

Introduction: Hepatic encephalopathy (HE) remains a common complication among cirrhotic patients expecting for liver transplantation (LT). For these patients, the existence of HE within 30 days before LT seems to be associated with postoperative neurological complications. However, few data exist concerning the influence of HE on the early postoperative period. Our objective was to evaluate the impact of HE on postoperative morbidity and mortality after LT in intensive care unit.

Methods: We analyzed a monocenter prospective database including all the cirrhotic patients who received LT from January 2010 to February 2013. HE group included all the patients who had presented at least one episode of HE during the year preceding LT. Postoperative morbidity included length of mechanical ventilation (MV), pneumonia, infections and length of stay in the intensive care unit. All statistically significant tests after univariate analysis were entered into a backward stepwise logistic regression model to determinate risk factors of prolonged MV (more than 3 days).

Results: Among the 342 patients who received LT during the study period, 236 cirrhotic patients have been included. 107 had had one or more HE episode before LT. Comparison between patients with or without HE is shown in Table 1. In multivariate analysis, HE and a preoperative MELD score >30 were independent risk factors of prolonged MV (OR 2.45 [1.17-5.26], p=0.02; OR 3.1 [1.43-6.6], p<0.05, respectively).

	HE+ (n=107)	HE- (n=129)	p
Age (years)	55 [48-62]	56 [50-61]	ns
Male	77 (72%)	101 (78.3%)	ns
Preop MELD	26 [17-33.5]	14 [10-22]	<0.01
IGS II	39 [31-46.5]	33 [28-40]	<0.01
Postop infections	56 (52.30%)	51 (39.50%)	0.05
Pneumonia	17 (15.90%)	10 (7.8%)	0.05
MV>3 days	32 (30%)	14 (11%)	<0.01
ICU LOS>3days	13 [9-21]	9 [7-14]	<0.01
Death in ICU	7 (6.5%)	5 (3.90%)	ns

MV: mechanical ventilation; ICU: intensive care unit; LOS: length of stay.

Discussion: Existence of HE in the year before LT was an independent factor of postoperative prolonged MV, was associated with an increase of pneumonia rate and a trend toward higher ICU mortality.

Abstract # P-476

Successful OLT in a Patient With ESKD With HCC With Chronic Atrial Fibrillation With Low Cardiac Index. Parshotam Lal Gautam¹, Chris Harle², Achal Dhir², Wojciech Dobkowski², Tony Vannelli², Fiona Ralley². ¹Anaesthesia, Dayanand Medical College and Hospital, Ludhiana, Punjab, India; ²Anaesthesia and Perioperative Medicine, Schulich School of Medicine and Dentistry, London, ON, Canada

67 year old male with ESKD following α 1 antitrypsin deficiency. (HCC= Postsurgical report) was listed for liver transplant. His MELD and MELD Na were 22 and 29. His co morbidities were had DM type -2 and chronic atrial fibrillation. He had complicated appendix and hernia surgery in the past. His work up showed Hb :114 g/mL, Platelets : 84,000 cells/mm³, INR 2.1, PTT 37 secs, Bilirubin: 114.1 mmol/L, Albumin 31 gmd/L, Urea/ creatinine 9.8/58 mmol/L, Na :123 mmol/L, Cl :94 mmol/L. He had atrial fibrillation for last 5 years. MIBI SCAN =Normal with EF60%, but fall in BP following stress. Aortic arch atherosclerosis, no clot mild MR and TR. CHADS =0 to 1. PFT revealed mild airway obstruction for which he was given salbutamol inhaler t.i.d. (Spiriva 18mcg). Cardio version failed to restore sinus rhythm. Heart rate was controlled with sotalol. Intraoperatively cardiac index remained low but didn't have much lactate accumulation during anhepatic phase. Intraoperatively haemodynamics have poor response to phenylephrine. Intraoperatively 8000ml of ascitic fluid was drained. He received 10 PRBC, 10x500 ml of FFP, 500 ml of platelets, albumin 5% 4500ml, NaCl 1000 and ringer lactate 1000. Anaesthesia was maintained

with sevoflurane and midazolam. Analgesia was given with fentanyl 1000 mcg. OLT was done using Piggy back technique with Clamp time of 42 min. Ephedrine, norepinephrine and vasopressin was used to maintain pressures in immediate post reperfusion period which were slow to recover. Cardiac index checked at that time was 1.7. No inotropes was required in postoperative period after half an hour of transplanation. Trachea was extubated after 5 hours. Liver enzymes and function improved in couple of days and transferred to ward after 24 hours. Metoprolol was started in postoperative period for heart rate control which resulted in hypotension and was switched over to digoxin 0.125mg. Postoperative course was uneventful.

Discussion: Atrial fibrillation is uncommon in ESKD. Management concerns regarding atrial fibrillation debated prior to OLT, and problems we faced like low cardiac index, reperfusion syndrome and poor tolerance to metoprolol in our patient will be discussed.

Abstract # P-477

Risk Factors for Vascular Catheter Complications in Liver Transplant. Marina Gitman, Ramona Nicolau, Donald Ganier, Bobby Nossaman. *Anesthesiology, Ochsner Medical Center, New Orleans, LA, USA*

Background: Orthotopic liver transplants (OLTs) require vascular catheter access which can be associated with complications.

Methods: After IRB approval, we retrospectively analyzed 406 OLTs performed in 389 patients between 01/08-12/11 and reviewed the role of risk factors and the rate of vascular access complications.

Results:

Table 1: Description of Vascular Complications in OLTs

Event	Age/Gender	BMI	Etiology	Complication	Cause	Treatment	Grade
1	42/M	30.6	HCV	r-CF AV fistula	DC	Conservative	I
2	56/M	24.2	HCV/HCC	l-CF AV fistula	DC	Surgical repair	IIIb
3 ¹	46/M	38.2	HCV	r-SCL fistula	DC	Stent graft	IIIb
4	52/M	30.4	NASH	r-fem hematoma	FAL	Conservative	I
5	57/F	32.4	EtOH	r-EIA injury, RP hematoma	FAL	Surgical repair	IIIb
6	56/F	46.9	HCV	r-SFA pseudoaneurysm	FAL	Thrombin injection	IIIa
7	52/F	31	EtOH/HCC	r-CFA pseudoaneurysm	FAL	Conservative	I
8	64/F	30.2	PBC	r-fem hematoma	FAL	Blood transfusion	II
9 ²	39/F	18.7	NASH	r-EIA injury, RP hematoma	FAL	Surgical repair	IIIb
10 ²	39/F	18.7	NASH	r-pneumothorax	CVC	Thoracostomy	IIIa
11	70/M	39.2	NASH/HCC	r-EIA injury	FAL	Conservative	I
12	24/F	32.9	HCV	r-CFA pseudoaneurysm	FAL	Conservative	I
13	47/F	31.4	HCV/HIV	r-CFA pseudoaneurysm	FAL	Thrombin injection	IIIa
14	65/M	35.5	EtOH	r-CFA pseudoaneurysm	FAL	Surgical repair	IIIb
15	57/M	21.7	AIH	r-pneumothorax	CVC	Thoracostomy	IIIa
16	59/M	28.6	NASH	l-hand paresthesia	RAL	Gabapentin	II
17 ³	59/M	24.1	HCV	l-arm ischemia	RAL	Amputation	IVa

BMI Body Mass Index ; Grade Clavien-Dindo classification; HCV HepatitisC; NASH Non-alcoholic steatohepatitis; EtOH Alcohol cirrhosis; PBC Primary biliary cirrhosis; HCC Hepatocellular carcinoma; AIH Autoimmune hepatitis; CF Common femoral; AV arteriovenous; SCL subclavian; fem femoral; RP Retroperitoneal; SFA superficial femoral artery; CFA Common femoral artery; EIA External iliac artery; DC dialysis catheter; FAL femoral arterial line; RAL Radial arterial line; CVC Central venous catheter; ¹DC placed by a nephrology; ²Same patient with Ehlers-Danlos syndrome; ³Multiple thrombotic intraoperative complications

With bivariate analysis, a BMI>30 was associated with an increased risk of femoral vascular complications (p<0.0015).

Conclusions: The overall complication rate of vascular catheter insertion in OLTs was 4.2%. Femoral catheters had higher risk, which may be due to technical difficulty.

Reference: Dindo, et al. Classification of Surgical Complications. *Ann Surg* 2004 August; 240(2): 205-213.

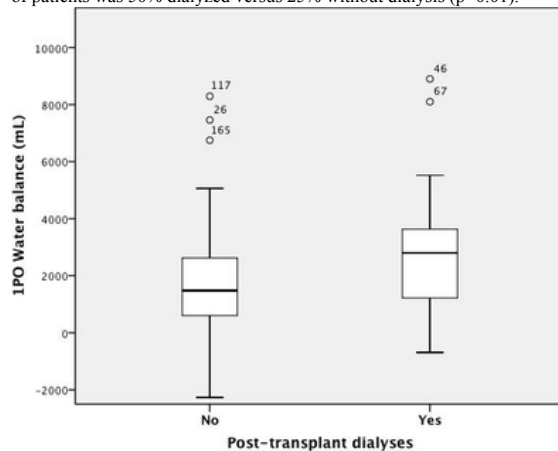
Abstract # P-478

Renal Insufficiency Leads To Increased Mortality in Post-Liver Transplantation. Luciana Haddad¹, Liliana Ducatti¹, Luiz Marcelo Malbouisson³, Etienne Macedo², Luis Ohnishi¹, Camila Lima², Wellington Andraus¹, Flair José Carrilho¹, Luiz Augusto Carneiro D'Albuquerque¹. ¹Gastroenterology, Sao Paulo University School of Medicine, Sao Paulo, SP, Brazil; ²Nephrology, Sao Paulo University School of Medicine, Sao Paulo, Brazil; ³Anesthesiology, Sao Paulo University School of Medicine, Sao Paulo, Brazil

Introduction: Acute renal failure (ARF) is a frequent medical complication after orthotopic liver transplantation (OLT), especially in regions that have a very high MELD for organ allocation. The aim of this study was to determine the factors related to the need for dialysis in transplant patients and their evolution in the center with high average MELD.

Methods: We made a prospective study of liver transplanted patients from January 2011 until end of December 2012. Re-transplants, double liver-kidney transplantation and living donor transplantations were excluded. Renal replacement therapy was started for metabolic or fluid balance control. The groups were assessed for data preoperative, from the donor, intra and postoperative.

Results: 179 patients were included in the study. Of these, 51 required dialysis after transplantation. The average MELD of OLT was 27, with 47% of patients with MELD scores greater than 29. The factors significantly associated with post-transplant dialysis were transplanted for fulminant hepatitis (p=0.03), transplantation without hepatocellular carcinoma (p=0.04) and MELD (p<0.01). Dialyzed patients had longer hospital stay (52.2±45 vs 19.8±14.2 days, p<0.01) higher volume recovered in the cell saver (1315ml±2406ml vs 548ml±1216ml; p=0.03), lower urine output (436ml±482ml vs 1020ml±672ml; p<0.01) and higher water balance at 1 postoperative (2735ml±2139ml vs 1711ml±1763ml; p=0.01). The mortality of patients was 50% dialyzed versus 25% without dialysis (p<0.01).



Conclusion: The high average MELD of transplanted patients is associated with a high frequency of dialysis post OLT. Furthermore, dialysis is directly related with mortality after transplantation. Thus, we need to reduce the average MELD transplanted in order to decrease mortality after transplantation.

Abstract # P-479

Use of Continuous Intravenous Bumetanide Infusion With Albumin for Oliguria With Functioning Hepatic Allograft after Liver Transplantation (LTx). A. Jain, A. Pathak, D. Johnson, A. Karachristos, M. Maloo, K. Lau, A. Di Carlo. *Surgery, Temple University Hospital, Philadelphia, PA, USA*

Introduction: Renal dysfunction and oliguria is a common occurrence after successful liver, and often may require renal replacement therapy.

Aim of the study is to examine the utility of Bumetanide as continuous intravenous infusion in post LTx patients with function and hepatic allograft.

Patients and Method: 17 post LTx experienced oliguria with functioning allograft received Bumetanide drip 0.25mg/hour to 1mg/hour with 25% salt poor albumin (if serum albumin < 2.5gm %). BUN and serum creatinine on the day 3 and 7 of the therapy were examined. If urine output did not improve after 12 hours the Bumetanide was discontinued.

Results: Mean serum creatinine initially increased from day #1 of therapy 2.8±1.1 to 3.0±1.9 mg/dL day #3 of therapy. However on day #7 it decreased

to 2.6 ± 1.99 mg/dL. On individual basis 12 patients showed decreased in s. creatinine by day #7, in two patients it remained same and 3 patients it was worse.

Patient #	Blood Urea Nitrogen mg/dL			Serum Creatinine mg/dL		
	Day-1	Day-2	Day-3	Day-1	Day-2	Day-3
1	61	58	38	3.3	3.3	2.8
2	45	42	25	2.8	1.5	1.4
3	54	67	58	5.6	6.2	4.3
4	85	38	84	3.8	2.6	1.9
5	39	51	23	1.7	1.3	1.2
6	55	53	56	1.4	1.0	0.9
7	51	154	167	4.4	7.9	7.9
8	29	36	38	2.3	1.0	1.5
9	35	36	49	2.4	2.3	2.4
10	49	129	98	2.4	3.5	2.4
11	14	46	29	0.8	1.3	0.8
12	50	84	70	2.4	2.4	1.9
13	72	11	89	2.6	3.2	2.0
14	25	78	65	2.3	2.8	1.3
15	43	29	48	3.1	1.9	2.1
16	57	86	94	3.3	3.8	2.7
17	36	86	146	3.1	5.4	6.8
Mean	47.1	64.4	69.2	2.81	3.02	2.60
SD	17.2	37.6	40.6	1.13	1.92	1.98

More importantly none of the 17 patients required renal replacement therapy. Three patients who did not show response on day #7 eventually normalized their renal function.

Conclusion: With functioning hepatic allograft, post LTx oliguric patients may respond to Bumetanide IV infusion and avoid the need for renal replacement therapy.

Abstract # P-480

Incidence and Outcome of Acquired Hepatocerebral Degeneration in Liver Transplantation Recipients: A Retrospective Analysis of 383 Preoperative Brain MRI. Sun-Key Kim, Jung-Won Kim, SooHo Lee, Hwa-Mi Lee, Sung-Hoon Kim, Dong-Min Jang, Gyu-Sam Hwang. *Department of Anesthesiology and Pain Medicine, Laboratory for Cardiovascular Dynamics, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea*

Acquired hepatocerebral degeneration (AHD) is a clinical neurologic syndrome which is observed in patients with advanced liver disease and portosystemic shunts. AHD can be manifested as increased T1 signal on Magnetic resonance imaging (MRI) within the pallidum nuclei, basal ganglia. The aim of this study was to evaluate the incidence of AHD by brain MRI, and to identify the impact of AHD in patients underwent liver transplantation (LT). A total of 500 patients who underwent LT at Asan Medical Center, Seoul, Korea, between October, 2009, and February, 2011, were enrolled. Of these, 117 patients who had not taken brain MRI were excluded from this analysis. The remaining 383 LT recipients were included in this retrospective analysis and were divided into two groups based on the presence or absence of AHD by the MRI diagnosis. Patient demographics, postoperative neurologic complication in the first 30 days, clinical course and outcome including intensive care unit (ICU) stay, hospital stay, 30-day mortality were analyzed. Overall MRI abnormality was found in 24.5% (n=94) of LT recipients, and the incidence of AHD was 5.2% (n=20). Other MRI abnormalities were comprised of chronic ischemia (n=33, 8.6%), carotid and vertebral artery stenosis/hypoplasia (n=30, 7.8%), aneurysm (n=12, 3.1%), arteriovenous malformation (n=3, 0.8%), central pontine myelinolysis (n=2, 0.5%), and others (n=6, 1.6%). Patient demographics and clinical findings including age, sex, presence of hepatic encephalopathy, Child-Pugh score, MELD score, and preoperative laboratory values did not show differences between two groups (all P>0.05). Neurologic complication in the first 30 day occurred in 15% (n=3/20) of patients with AHD group, and in 15.7% (n=57/363) with non-AHD group (P>0.05). The neurologic complications were delirium (n=1) and post-transplant encephalopathy (n=2) in AHD group. There were no statistically significant differences in ICU stay, hospital stay, 30-day mortality. The prevalence of AHD in LT recipients was 5.2%, but there was no significant difference in short-term outcome after LT between two groups. Further studies are needed to determine long-term morbidity and mortality, and to follow up the clinical course of the AHD after LT.

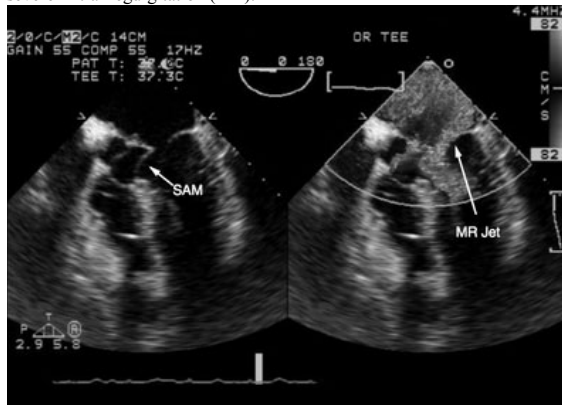
Abstract # P-481

Haemodynamic Instability during Liver Transplantation: Role of Intraoperative Echocardiography. Michael Kluger¹, Massimiliano Meineri¹, Grant R. David², Adriaan Van Rensburg¹. ¹Anesthesia and Pain Management, Toronto General Hospital, University Health Network, University of Toronto, Toronto, ON, Canada; ²Division of General Surgery, Toronto General Hospital, University Health Network, University of Toronto, Toronto, ON, Canada

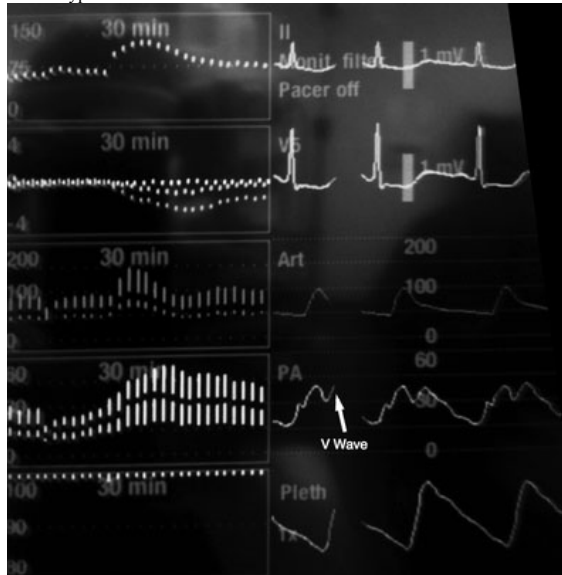
End-stage liver disease is associated with hyperdynamic circulation including high cardiac output and low systemic vascular resistance (SVR). Orthotopic liver transplantation (OLT), leads to further compromises by rapid blood loss, fluid shifts, and vascular clamping. Anaesthetic management often includes monitoring with pulmonary artery catheter (PAC). We demonstrate the crucial role of intraoperative Transoesophageal Echocardiography (TOE) in diagnosis and management of severe hypotension in OLT.

Cases

55 year-old with polycystic liver and kidney disease for living-related combined liver and kidney transplant. Moderate blood loss preceded profound hypotension. TOE revealed systolic anterior motion (SAM) of the mitral valve causing dynamic left ventricular outflow obstruction (DLVOTO) and severe mitral regurgitation (MR).



54 year-old for living-related OLT for hepatocellular carcinoma developed severe hypotension and new V-wave on the PAC trace.



TOE confirmed DLVOTO and new MR.

Discussion

Increased heart rate, contractility, reduced preload and low SVR promotes SAM and DLVOTO. These conditions are common in OLT. A new V-wave on the PAC trace is a sign of severe MR making DLVOTO the likely diagnosis. Use of inotropic agents worsens DLVOTO and can lead to harm.

Conclusion

Diagnosis of DLVOTO is crucial to make in OLT. This uncommon and easily missed diagnosis is readily made with TOE allowing rapid and appropriate management with fluid loading and vasopressors.

Abstract # P-482

Comparison of Acute Physiology and Chronic Health Evaluation (APACHE) II, APACHE IV, Simplified Acute Physiology Score 3, and Model for End-Stage Liver Disease Score To Predict Early Mortality after Liver Transplantation. Hannah Lee, Anna Kim, Hogeol Ryu. *Anesthesiology and Pain Medicine, Seoul National University Hospital, Seoul, Korea*

Several prognostic systems such as Model for End-Stage Liver Disease (MELD), Child-Pugh score and Charlson comorbidity index have been used to predict mortality after liver transplantation. Their performance measured by the area under the receiver operating curve (AUC) was moderate. The Acute Physiology and Chronic Health Evaluation (APACHE) IV score and Simplified Acute Physiology Score (SAPS) 3 were developed recently and include liver transplantation as a diagnostic category.

The aim of this study was to compare the performance of APACHE II, APACHE IV, SAPS 3, and MELD score for predicting in-hospital mortality and 1-year mortality in liver transplant patients. We studied 200 consecutive patients who had undergone living donor or deceased donor liver transplantation between January 2011 and March 2012. And we also evaluated risk factors associated with mortality. Patients who were 18-years-old or younger were excluded from the analysis. APACHE II, APACHE IV, SAPS 3 and postoperative MELD scores were recorded on postoperative day 1. Preoperative MELD score also calculated before operation.

The overall in-hospital and 1-year mortality rates were 4% and 7%, respectively. Hosmer- Lemeshow C-statistics showed good calibration for all 4 prognostic models in predicting in-hospital mortality. The AUC was 0.807 for APACHE IV, 0.853 for preoperative MELD, 0.807 for postoperative MELD, 0.882 for SAPS 3 and 0.841 for APACHE II. There were no significant differences of AUCs among 4 models. Through multivariate regression analysis, SAPS 3, use of postoperative inotropes and postoperative RBC transfusion were associated with in-hospital mortality. The AUCs for predicting 1-year mortality were 0.740, 0.733, 0.713, 0.665, and 0.651 for APACHE IV, preoperative MELD, postoperative MELD, SAPS 3 and APACHE II, respectively. The calibration of all prognostic models to predict 1-year mortality was good except of postoperative MELD.

In conclusion, SAPS 3 had best performance in predicting in-hospital mortality. To predict 1-year mortality, APACHE IV performed better than other prognostic models.

Abstract # P-483

Intraoperative Changes in Corrected QT and JT Interval in Pediatric Liver Transplantation. Byungdoo Andrew Lee, Won-Jung Shin, In-Gu Jeon, Sung-Moon Jung, Gyu-Sam Hwang. *Anesthesiology and Pain Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea*

Background and Purpose: Children awaiting liver transplantation (LT) frequently have cardiac repolarization abnormalities noted as corrected QT interval (QTc) prolongation, and may be associated with disease severity and arrhythmogenicity. We evaluated the changes in parameters of repolarization on electrocardiography at different stages of liver transplantation in children.

Methods: In 36 pediatric recipients (age ranged from 5 months to 13 years), we measured the interval of QT, JT and from peak to the end of the T wave (Tp-e) using LabChart software. The QTc was calculated by correction for heart rate with Bazett's formula. QT parameters were obtained as 1-minutes average values at the following stages of LT: before anesthetic induction (baseline), pre-anhepatic, anhepatic, 5 minutes after graft reperfusion, 1 hour post-reperfusion, and end of the surgery.

Results: Baseline QTc was >440ms in 31% of children, however, was not significantly associated with disease severity. QTc and JT interval progressively increased from pre-anhepatic to post-reperfusion stages, and returned to the baseline level at the end of the surgery.

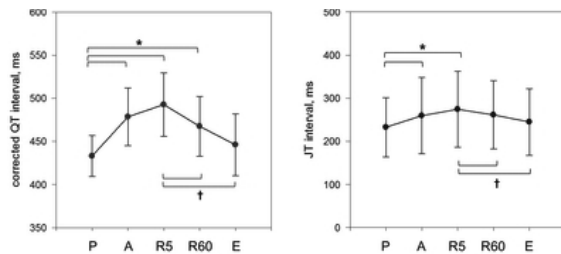


Fig 1. Alterations in corrected QT and JT intervals during pediatric liver transplantation. * <0.05 compared to the preanhepatic value. † <0.05 compared to the value at 5 minute after graft reperfusion. P, preanhepatic; A, anhepatic; R5, 5 minute after graft reperfusion; R60, 1 hour after reperfusion; E, end of surgery.

At 5 minutes after reperfusion, 89% of the patients showed prolonged QTc >440ms and 44% of patients had marked QTc prolongation > 500ms. At the anhepatic stage, Tp-e decreased significantly compared to the baseline value. **Conclusion:** During pediatric LT, marked prolongation of QTc and JT interval was frequently observed. Despite reversibility of repolarization abnormalities, it is important to minimize the risk of significant arrhythmias, especially in period of post-reperfusion stage.

Abstract # P-484

Clinical Implication of Carboxyhemoglobin during Living Donor Liver Transplantation. Hyunyoung Lim¹, Minseok Oh¹, Gaabsoo Kim¹, Justin Sangwook Ko¹, Suk-Koo Lee². ¹Department of Anesthesiology and Pain Medicine, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea; ²Department of Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

Background: Carbon monoxide produced by heme catabolism dilates blood vessel, and immediately combines with hemoglobin yielding carboxyhemoglobin (COHb). In end-stage liver disease patients with hyperdynamic circulation, the production of carbon monoxide by oxidative stress during liver transplantation may aggravate hemodynamic instability. We investigated whether COHb is associated with hemodynamic variables during living donor liver transplantation

Methods: One hundred sixty-three adult patients undergoing primary living donor liver transplantation were included. Arterial blood COHb was measured by arterial blood gas analyzer after anesthetic induction (1st), at the beginning of anhepatic phase (2nd), 10 minutes before reperfusion (3rd), 5 minutes after reperfusion (4th), and one hour after reperfusion (5th). We compared patients characteristics between L group (1st COHb < 2.0%, N = 92) and H group (1st COHb ≥ 2.0%, N = 71).

Results: There was no significant change in COHb during liver transplantation in both groups. Age, gender ratio, body weight, height, and GRWR were not different between two groups. Preoperative MELD score was higher in H group than L group (12.2±6.8 vs 20.0±10.5, P = 0.001). Vasopressor (dopamine and norepinephrine) requirement at one hour after reperfusion calculated by relative potency was higher in H group than L group (P = 0.001). **Conclusion:** COHb was increased in advanced liver disease and might be used as a predictor of vasopressor requirement after reperfusion during living donor liver transplantation. Further study about the role of carbon monoxide during liver transplantation is needed.

Abstract # P-485

Continuous Renal Replacement Therapy as Bridging Therapy to Retransplantation during 64 Hours of Anhepatic State in a Nine-month Old Infant. Marge Lindeberg Lindvet¹, Lars Saraste¹, Anna Januszkiewicz¹, Bo-Göran Ericzon². ¹Anesthesiology and Intensive Care, Karolinska University Hospital, Huddinge, Karolinska Institute, Stockholm, Sweden; ²Division of Transplantation Surgery, Karolinska University Hospital, Huddinge, Karolinska Institutet, Stockholm, Sweden

Case report

A nine month old child weighing 7 kg with biliary atresia, underwent liver transplantation with segment 2 and 3 from a live donor. She was cardiopulmonary healthy and had a normal renal function. On postoperative day 1 thrombosis of the hepatic artery and portal vein was diagnosed. Despite declotting of occluded vessels she developed acute liver and renal failure. Continuous renal replacement therapy (CRRT), here performed as CVVHD,

was started on postoperative day 2 due to lactic acidosis and hyperkalemia. Blood flow was adjusted to 50 ml/min and dialysate flow to 350 ml/min. Patients general condition was stabilized by this therapy and vasopressor infusion could be terminated. Lactate decreased from 8 to 4 mmol/L and acid-base balance normalized. Retransplantation from another live donor was performed 64 hours after the primary operation with ongoing CRRT. The patient was extubated the day after retransplantation. Unfortunately she developed intestinal complications later on and died in multi-organ failure about 2,5 month after retransplantation.

Conclusions: We have demonstrated that CRRT is safe and useful in this pediatric group. CRRT enabled patient survival during a 64 hours long anhepatic state.

Abstract # P-486

Role of Nitric Oxide (NO) in the Intraoperative Management of Severe Pulmonary Hypertension during LT. Alejandro Mejia¹, Anthony Aramoonie², Carlos Fasola¹, Stephen Cheng¹, Federico Osorio², Richard Dickerman¹, David Defazio², Gong Lee². ¹The Liver Institute, Methodist Dallas Medical Center, Dallas, TX, USA; ²Anesthesia Consultants of Dallas, Methodist Dallas Medical Center, Dallas, TX, USA

Introduction:

Severe pulmonary hypertension (PH) can be found at the time of transplant in a small percentage of recipients. Depending upon the overall condition of the patient, transplant can be aborted. However, when patients are in critical need of a new liver, a difficult dilemma is encountered, especially for the anesthetic management of this group of patients. In this case, we report the use of NO as a salvage therapy for acute onset PH causing Right heart failure.

Case Report:

A 58 yo Male with cirrhosis due to Hep C was hospitalized with decompensated liver disease after chemo-embolization for HCC. Cardiac evaluation 6 months prior included a Right heart cath showing PAP of 38/9. His MELD was 29 and a 23 yo donor was accepted for him. Patient was induced uneventfully. During the pre-anhepatic phase and at the beginning of the hepatectomy, continuous TEE showed Peak Pulm pressures of 91 mmHG and significant right heart dysfunction. The hepatectomy created significant blood transfusion requirement and Epi was started. Epoprosterenol infusion was then started at 6 ngr/kg/min without appreciable change in Right heart function. Inhaled Nitric Oxide was then started at a range of 10 to 20 ppm with immediate improvement of Peak pulm pressure to 61 mmHG and real time TEE showing improved Right heart function. The new graft was unclamped with adequate hemodynamic response and controlled pulm pressures. Postoperatively, Epoprosterenol was adjusted to 8 ngr/kg/min and the NO was weaned over 3 days from 15 to 7 ppm. Patient was extubated with good graft function and remains on epoprosterenol at 4 month follow up. Table shows Pulmonary pressures.

Table 1. Pulmonary Pressures

	6 months pre LT	Preanhepatic phase	Reperfusion	POD#3	Extubation (POD#6)
PAP(mmHg)	58/9	91	61	57/35	47/28
Epoprosterenol (ngr/kg)		6	6	6	8
inhaled NO (PPM)		15	15	7	0

Discussion:

Ideally, patients with PH should be well controlled on oral agents and/or epoprosterenol infusion at the time of LT. In cases when the pressures are severe and newly diagnosed, inhaled NO can be lifesaving and should be part of the armamentarium of LT anesthesia. Intraoperative TEE was adequate and invaluable in the management of this case and should also be a requirement for liver transplant anesthesia.

Abstract # P-487

Antithrombin III As Predictor of Early Graft Function. Andrei F. Minou¹, Aliaksei E. Shcherba², Denis J. Efimov², Alyaksandr M. Dzyadko¹, Oleg O. Rummo². ¹Anesthesiology and Intensive Care, Republican Center of Organ and Tissue Transplantation, Minsk, Belarus; ²Transplantation, Republican Center of Organ and Tissue Transplantation, Minsk, Belarus

Background: Simple parameter which would represent the quality of the graft and could serve as a predictor of graft function is still missing.

Objective: To investigate utility of Antithrombin III (ATIII) as marker of graft quality and predictor of graft function.

Methods: Data of 111 consecutive liver transplant recipients (11/2011-11/2013) were reviewed. We analyzed correlation between ATIII activity

(daily values and dynamics of its levels during first 5 postoperative days) and incidence of early allograft dysfunction (EAD), MELD on 5th postoperative day (MELD5), graft steatosis and hospital length of stay.

Results: Among all parameters representing activity of ATIII and dynamics of its growth during first 5 postoperative days, the difference between ATIII activity on 3rd POD and ATIII activity at the end of operation ($\Delta\text{ATIII}_{3\text{e}}$) had the highest coefficient of correlation (r_s) with incidence of EAD, MELD5, degree of steatosis and hospital stay.

	Incidence of EAD	MELD5	Graft Steatosis	Hospital Stay
$\Delta\text{ATIII}_{3\text{e}}$	-0.468*	-0.322*	-0.478*	-0.336*

* - $p < 0.01$

Patients who received steatotic grafts had lower growth of ATIII activity ($\Delta\text{ATIII}_{3\text{e}}$) compared to those who received grafts without steatosis.

	Steatosis < 10% (n=47)	Steatosis 10-30% (n=44)	Steatosis > 30% (n=20)
$\Delta\text{ATIII}_{3\text{e}}$	21 (9-32)	12 (-2 - 19)*	4 (-13 - 11)***

* $p < 0.01$ compared with 1st group, ** $p < 0.01$ compared with 2nd group

ROC analysis showed that criterion $\Delta\text{ATIII}_{3\text{e}} < 20\%$ had good sensitivity (80%) but low positive predictive value (43%) for predicting EAD (area under ROC curve (AUC) was 0.672). With regard to prediction of MELD5 ≥ 19 the criterion $\Delta\text{ATIII}_{3\text{e}} < 20\%$ had sensitivity of 84% and positive predictive value of 45% (AUC=0.682).

Patients who died within 1 year after transplantation had significantly lower level of $\Delta\text{ATIII}_{3\text{e}}$ compared to those who survived: -9 (-14 - -1) and 19 (7-29) respectively. Criterion $\Delta\text{ATIII}_{3\text{e}} < 0\%$ had sensitivity of 83%, specificity of 84%, positive predictive value of 25% and negative predictive value of 99% (AUC=0.854) for predicting unfavorable outcome within 1 year after transplantation.

Conclusion: Difference between ATIII activity on 3rd POD and ATIII activity at the end of operation could serve as marker of graft quality and possibly reflects graft regeneration capacity. It also could be used as a predictor of further graft function.

Abstract # P-488

Change in Intraoperative Use of Blood and Blood Products in Paediatric Liver Transplantation. Zubair U. Mohamed, John Sedgewick, Paul Bras, Simon Cottam, Zoka Milan. *Department of Anaesthesia, King's College Hospital NHS Foundation Trust, London, United Kingdom*

Aim: This study aimed to compare the replacement practices followed for intraoperative blood and blood products during paediatric liver transplantation (LT) in a single centre currently and 10 years earlier.

Method: We retrospectively analysed our database and compared the data for LT patients from the last two years (2011 to 2013)- late group- with that from 10 years earlier (1999 to 2003)- early group.

Statistics: We used the Student's t test or the Fisher exact test, as appropriate; $p < 0.05$ was considered statistically significant.

Results: Demographic data: The late and early groups consisted of 72 and 63 patients, respectively. The aetiology of liver disease, type of grafts (split/non-split), pre-op haemoglobin and INR were similar. The patients in the late group, in comparison with the early group, were significantly younger (68.1 vs. 100 months, $p < 0.01$) and lighter (22.7 vs. 30.9 kg, $p = 0.02$) and had higher preoperative platelet count (210 vs. 141 $\times 10^9/\text{L}$, $p < 0.01$).

Intraoperative data: Relative to the early group, intraoperative blood loss (151 vs. 86 mL, $p < 0.01$), intraoperative fresh frozen plasma/octaplas (76.9 vs. 39.3 mL/kg, $p = 0.01$), and cryoprecipitate (2.2 vs. 0.5 mL/kg, $p < 0.01$) replacement was higher in the late group. Late group had longer surgery (6.9 vs. 5.8 hours, $p = 0.003$) and anaesthesia time (8.9 vs. 6.9 hours, $p = 0.001$). **End of surgery data:** The final haemoglobin (83 vs. 77 g/L, $p = 0.04$), platelet count (127.7 vs. 80.6 $\times 10^9/\text{L}$, $p < 0.01$), and lactate (5.3 vs. 2.9 mmol/L, $p = 0.05$) were significantly higher in the late group. The INR, base excess, and urine output were similar in both groups.

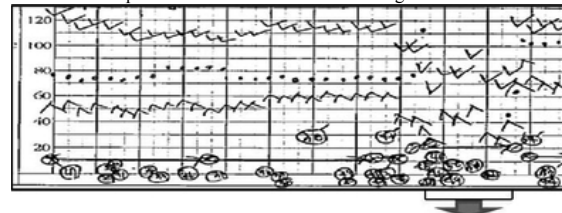
Discussion and conclusion: Unlike in the adult LT population, blood loss has increased in the last 10 years in paediatric patients. This can be attributed to a younger, smaller and possibly sicker patient population, redo of LTs and longer surgical and anaesthetic time. Increased blood loss did not trigger increased blood transfusion but increased FFP/octaplas and cryoprecipitate replacement and resulted in higher haemoglobin and platelet levels in the late group with similar INR in both groups. Volume replacement is increasingly achieved using blood products rather than colloid or crystalloid solutions. Increased lactate in the late group is another proof that the patients of late group were sicker during LT.

Abstract # P-489

Successful Resuscitation of 30-Minutes' Cardiac Arrest during Liver Transplantation. Yang Won Nah¹, Chang Woo Nam¹, Min Su Noh¹, Soon Eun Park², In Young Huh². ¹Department of Surgery, Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan, Korea; ²Department of Anesthesiology, Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan, Korea

In liver transplantation (LT), the incidence rate of intraoperative cardiac arrest (ICA) is relatively high, 1% to 5.5% with 29% intraoperative death rate. Two well-known causes of ICA in LT are post-reperfusion syndrome (PRS) and pulmonary thromboembolism. The authors experienced a case of ICA due to PRS during deceased donor liver transplantation (DDLT), which was successfully resuscitated with advanced life supports including transdiaphragmatic cardiac massage for 30 minutes and report here.

A 53-year-old man underwent DDLT for HBV-related liver cirrhosis. MELD score was 15. Preoperative EKG and echocardiography were within normal limit. A donor liver with mild fatty changes had been harvested from a 42-year-old man who died of cerebral hemorrhage. Recipient hepatectomy was uneventful, and the donor liver was transplanted using a total IVC clamping technique without venovenous bypass. During the anhepatic phase blood pressure was kept stable, at 110/60 mmHg. Within 5 minutes after reperfusion of the new liver, however, the heart came to a standstill suddenly. The cold ischemia time was 9 hours. This patient required 30 minutes of resuscitative supports including injection of epinephrine, lidocaine, NaHCO₃, and calcium gluconate together with transdiaphragmatic cardiac compressions and ventilation with 100% oxygen to regain sinusoidal rhythm. During transdiaphragmatic cardiac massage, the usual/lowest systolic and diastolic blood pressure was 80/60 and 45/30 mmHg.



Cardiac arrest period

Fortunately, there was no specific organ or graft damage and the patient was discharged 25 days after LT and is doing well now 37 months after the surgery. In conclusion, facing intraoperative cardiac arrest, the collaboration between the surgical and anesthesia teams is crucial to overcome cardiac arrest. In an open abdomen, transdiaphragmatic cardiac compression was effective in keeping acceptable blood pressure and effective circulation during advanced life support.

Abstract # P-490

Curative Hepatorenal Transplantation in the Primary Hyperoxaluria Type 1. Gonzalo J. Pérez Villarejo, Antonio Diaz Martínez, Pablo Romero Ávila, Javier Yebes González, Juan Carmona Auriolos. *Anestesia y Reanimación, Hospital Regional Carlos Haya, Málaga, Spain*

Primary hyperoxaluria type 1 (PH1) is caused by a deficiency of the liver peroxisomal enzyme alanine glyoxylate aminotransferase. Glyoxylate is converted to oxalate, which forms insoluble calcium salts that accumulate in the kidney, heart and other organs. Individuals with PH1 are at risk for recurrent nephrolithiasis, nephrocalcinosis or end-stage renal disease (ESRD). The natural history of untreated PH1 is one of inexorable decline in renal function and death from ESRD.

Case report:

A 53 years old woman present ESRD due to PH1 and an atypical Haemolytic-uraemic syndrome. She also present restrictive cardiomyopathy with severe left ventricular dysfunction, EF 35%, requiring hospital admission in some occasions. The EF improve with Dobutamine to EF 50% as can be seen in a pharmacologic stress echocardiogram.

She is treated with plasmapheresis and haemodialysis in order to reduce the levels of calcium oxalate and is proposed to receive a combined liver/kidney transplantation.

Liver transplantatiton in patients with PH1 is very complex and need a multidisciplinary approach. To get a right haemodynamic balance is a challenge for the Anesthesiologist.

We proceed to use Dobutamine at a dosage of 5-15mcg/kg/min to improve the cardiac output. To maintain a correct hydric balance intraoperative continuous venovenous hemofiltration with low dosage of potassium and heparin is used; so the patient present no problems in the anhepatic and reperfusion phases. Prothrombin and haemoglobin levels keep normal until the kidney transplantation where the vascular graft starts bleeding Hb<7 so the patient is transfused.

After the combined liver/kidney transplantation the patient goes to Intensive Care Unity.

Liver Transplantation is curative in PH1 and heart contractility will recover to normal range because oxalate deposits will disappear in the cardiac muscle. Kidney function will no return to normality so patients may need a kidney transplantation.

Perioperative management is complex taking into account the long duration surgery: It includes the need of preoperative plasmapheresis and haemodialysis, intraoperative continuous venovenous hemofiltration and rigorous control of the coagulation system.

Its mandatory to avoid transfusion of blood or hemo-derivatives, to maintain a correct hydric balance and to avoid hypoperfusion of the transplanted organs using vasoactive drugs.

Abstract # P-491

Case Report: the Use of Intra - Operative Hemodialysis in Pediatric Liver Transplant. Bruno F.F. Tonelotto, Claudia M. Simoes, Marcela Mallavazi, Alexandre Cruz. *Anesthesia, Hospital Sirio Libanes, Sao Paulo, SP, Brazil*

BACKGROUND: Liver transplantation (TF) is a surgical procedure that today can be challenging. One of the common findings in the patient who will hold a orthotopic liver transplantation is renal failure, and may complicate the intraoperative developments and increase the morbidity and mortality of these patients. The use of intraoperative hemodialysis is described by many centers as an aid during the TF in cases with renal failure. Unfortunately, there is a paucity of data available, which is limited to case reports, there are few studies that structured intraoperative hemodialysis was used.

CASE REPORT: SLAV, 3 years and 7 months, 15 kg patient with biliary atresia with Kasai prior, 1 month ago admitted with septic shock, renal and respiratory failure. Intubated, mechanically ventilated, and using noradrenaline to maintain hemodynamic stability. Underwent liver transplantation with living donor surgical time of 15 hours and received 460ml of red cells, fresh frozen plasma 400ml, 75ml of 20% albumin, maintained under inhalation anesthesia with sevoflurane, monitored with minimally invasive cardiac output (FloTrac®), continuous venous oxygen saturation (PediSat®), invasive blood pressure, ECG, end tidal CO₂, O₂ and anesthetic gases. Intra-operative bleeding ships in 300ml, 300ml diuresis, required norepinephrine and dobutamine. Performed intraoperative dialysis (ultrafiltration) for 90 minutes without the need to increase the dose of vasopressor. At the end of the ICU intubated, sedated with midazolam and fentanyl and dobutamine 3mcg/kg/min was sent.

DISCUSSION: The logic behind the use of intraoperative hemodialysis during the TF in patients with renal dysfunction is that the procedure, usually complicated by large hemodynamic changes, metabolic disturbances and changes in coagulation; situations that can be better managed during surgery when uses to renal replacement therapy. The data available in the literature suggested intraoperative hemodialysis as a safe and viable option. Moreover, it seems the recovery of renal function occurs in about 100 % of patients after one year when used this technique.

CONCLUSION: Hemodialysis is widely recognized as a treatment option for stable patients with renal impairment, however still little used intraoperatively. The control of hemodynamic and metabolic changes during the TF can be obtained with the use of hemodialysis, renal function and prognosis.

Abstract # P-492

Postoperative Glucose Levels and Outcome after Liver Transplantation. Melissa M. Grant, Gebhard Wagener. *Anesthesiology, Columbia University Medical Center, New York, NY, USA*

Introduction

Glucose control in critically ill patient is controversial. Initial studies reported improved outcome with tight glucose control, recent trials demonstrated increased risk for hypoglycemia. For liver transplant recipients intraoperative hyperglycemia may be associated with an increase in mortality (1) but little is known about the effect of postoperative hyperglycemia on outcome.

Methods

This is a retrospective, single center study of adult patients undergoing cadaveric donor liver transplantation. Daily mean and peak glucose levels for the first 3 postoperative days were recorded. Hyperglycemia was defined as glucose > 200 mg/dL; early graft failure (EGF) was as death or re-transplantation within 90 days. For early graft dysfunction the definition by Olthoff et al. was used (2). (total bilirubin >=10mg/dL on day 7, INR >=1.6 on day 7, and AST or ALT >2000 IU/L within the first 7 days). Acute kidney injury was defined by RIFLE risk criteria.

Results

559 patients were included in this study. Patients with hyperglycemia (peak glucose levels >200 mg/dl) in the first 3 days were older and had lower preoperative MELD scores.

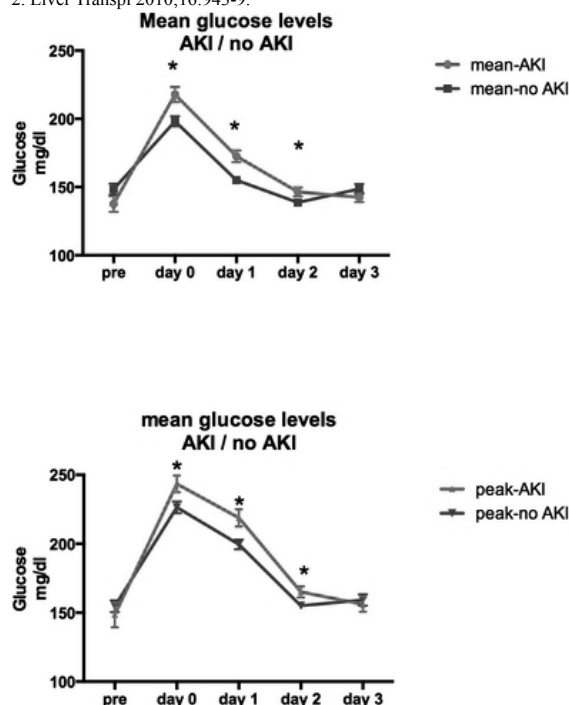
38 patients died or required re-transplantation within 90 days. (EGF) There were no differences between mean and peak glucose levels in patients with and without EGF. Patients with early graft dysfunction had higher peak and mean glucose levels on day 1 but lower mean levels on days 2 and 3. Patients with acute kidney injury (RIFLE-risk) had higher mean and peak glucose levels on postoperative days 0 to 2 (figure1).

Discussion

Postoperative hyperglycemia did not affect graft failure and mortality after liver transplantation and the effects on early graft dysfunction were conflicting. Patients who developed acute kidney injury however had significantly higher mean and peak glucose levels during the first 3 postoperative days. Further studies need to evaluate if treatment of hyperglycemia may ameliorate the risk for acute kidney injury after liver transplantation.

References

1. J Surg Res 2007;140:227-33.
2. Liver Transpl 2010;16:943-9.



Abstract # P-493

Impact of Timing of Drainage of Massive Ascites on Operative and Post-Operative Course in Living-Donor Liver Transplant Recipients. A Prospective Randomized Controlled Trial. Amr M. Yassen¹, Waleed R. Elsarraf¹, Mohamed A. Elmorshidy¹, Tarek Salah², Ahmed M. Sultan², Mohamed Elsadany³, Helmy E. Elgindy², Usama M. Sheha⁴, Mohamed Abdel Wahab². ¹Anesthesia and Intensive Care, Mansoura Faculty of Medicine, Mansoura, Dakahlia, Egypt; ²Surgery Department, Mansoura Faculty of Medicine, Mansoura, Dakahlia, Egypt; ³Internal Medicine Department, Mansoura Faculty of Medicine, Mansoura, Dakahlia, Egypt; ⁴Radiology Department, Gastroenterology Surgical Center, Mansoura, Dakahlia, Egypt

Background: Massive ascites is usually controlled over several weeks pre-operatively in liver transplant recipients with the risk of encephalopathy and peritonitis. We hypothesized that intra-operative drainage of ascites will be safe and avoids the inherent risks of pre-operative drainage.

Patients and methods: Thirty seven patients scheduled for living-donor liver transplantation in Mansoura university were enrolled in this prospective randomized controlled trial. They had Massive ascites by abdominal ultrasonography. Patients were randomly allocated into either Op_group (n=17), with ascitic fluid drained through an abdominal incision after anesthesia or, the Pre_group (n=20) (Control group), with ascites drained over the pre-operative week through multiple ultrasound guided paracentesis. Hemodynamic and oxygenation data were measured 10 minutes after insertion of the pulmonary artery catheter (Basal), 5 and 10 minutes after full drainage of ascites in the Op_group and equivalent time in the pre_group, end of hepatectomy, end anhepatic, 5 and 15 minutes after reperfusion, skin closure, 24, 48 and 72 hours post-operatively. Blood loss, fluid and blood product transfusion were calculated at skin closure. 28th day mortality was adopted as a primary outcome parameter.

Results: We did not find any statistically significant difference between both groups in patient and graft outcomes, routine laboratory data or transfusion requirements. Heart rate, central venous pressure, mean pulmonary artery pressure, pulmonary capillary wedge pressure, systemic vascular resistance were significantly higher while the mean blood pressure, arterial oxygen tension, arterial oxygen saturation were significantly lower in the Op_group compared to the Pre_group at the basal reading. However, none of these changes were clinically significant.

Conclusion: Operative drainage of tense ascites can be as safe as lengthy pre-operative ascites drainage with less cost and fewer interventions.

Abstract # P-494

Effects of Early Enteral Nutrition to the Liver Transplant Patients. Ik Jin Yun. Surgery, Konkuk University Hospital, Seoul, Korea

Background

Many surgeons think that nutritional support after liver transplantation surgery is unnecessary due to the early beginning of oral feeding and nutritional improving effect of transplantation itself. However, malnutrition more severe than moderate degree before transplantation is common and many damages related to transplantation surgery easily deteriorate the graft function, so nutritional therapy should be considered seriously in many cases. Even enteral feeding (EN) is more physiologic and effective method, many regard "nil to mouth" until gas-out is common sense and early application of EN before "gas out" is not secure and safe.

Methods and Materials

From June 2006 to July 2008, total 19 patients received liver transplantation in Konkuk University Hospital. Early EN is applied to all the transplants. Naso-intestinal tube is inserted during operation and EN is started from first postoperative day. L-tube is removed at first postoperative day. Feeding method is continuous infusion with 20 hour per day and beginning with water and increasing concentration and amount. With oral diet, EN is ceased when the 80% purpose calorie is reached by oral diet.

Results

EN can be started 15 hours after extubation. On the third day of post-operation, EN feeding reaches to needed calories. Oral diet is beginning 4 days after transplantation. There is no complication including wound problems and postoperative infection. Antibiotics is used until 1-2 days after operation. No GI motility problem is provoked and all the scheduled EN can be performed successfully. Average stay in ICU is 9.37 days and for average postoperative hospital stay, 39.6 days. No postoperative mortality is occurred.

Conclusions

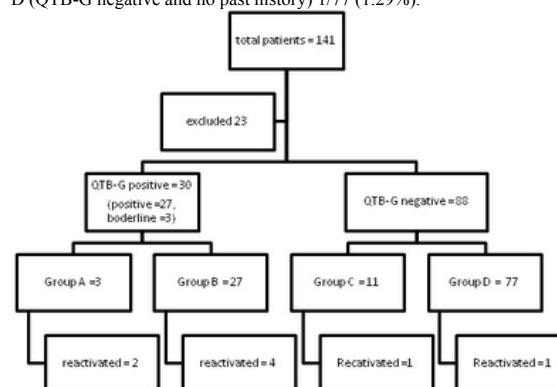
Early EN after liver transplantation surgery is safe and effective. All the patients are tolerable to the early EN. No delayed wound healing and severe infectious complications are occurred even for the more than moderate malnourished patients. Good outcomes may be closed related to the proper nutritional therapy. Early EN after liver transplantation seems to be the safe and effective nutritional therapy and recommended to all the liver transplantation patients.

Abstract # P-495

Quantiferon TB Test – Does It Have a Role in Identifying Patients at Risk for Reactivation of Tuberculosis in Liver Transplant Recipients: A Study from an Endemic Country.

Pavan Kumar Addala¹, Nataraj Murugan², Bipin Vibhute⁴, Ramgopal Krishnan³, Mahesh Gopasetty⁴, Manish Varma⁴, Anand Khakhar⁴, Anand Ramamurthy⁴. ¹Department of Surgical Gastroenterology and Centre for Liver Diseases, Apollo Hospitals, Chennai, Tamil Nadu, India; ²Dept of Hepatology, Apollo Hospitals, Chennai, Tamil Nadu, India; ³Dept of Infectious Diseases, Apollo Hospitals, Chennai, Tamil Nadu, India; ⁴Centre for Liver Diseases and Transplantation, Apollo Hospitals, Chennai, Tamil Nadu, India

Background: Quantiferon-TB (QTB -G) gold test has been found to be a reliable marker of past or current exposure to TB but its role in identifying at risk patients for reactivation is not known. Also previous treatment for active TB may be an important risk factor in reactivation. **Aims:** The aim of this study was to identify patients at risk for reactivation of TB by screening with and analysing QTB-G results. **Results:** Retrospectively, 141 liver transplant [OLT] patients between January 2011 and June 2013 were analysed with follow up between 3 and 28 months post OLT. Of the 118 patients that met inclusion criteria, 27 (22.88%) were positive and 3 (2.5%) were borderline positive, totalling 30/118 (25.42%) who were positive for QTB -G. The remaining 88 patients (74.57%) were QTB -G negative. Amongst those who were QTB-G positive, 6/30 (20%) patients had evidence of reactivation of TB after OLT, compared to only 2/88 patients (2.27%) in those who were QTB-G negative. (p<0.01; Chi square test). On subgroup analysis based on QTB-G result and past history of treatment for TB, reactivation of TB was seen as follows: group a (QTB-G positive and past history of TB) 2/3 (66.7%); group B (QTB-G positive and no past history of TB) 4/27 (14.81%); group C (QTB-G negative and past history of TB) 1/ 11 (9.09%); and group D (QTB-G negative and no past history) 1/77 (1.29%).



Conclusions: Amongst OLT recipients in India, patients who are QTB -G positive have a significantly higher risk for reactivation of TB post OLT. Patients who are QTB-G positive, especially those with a past history of TB treatment, may be candidates for prophylaxis and close follow up for reactivation after OLT.

Abstract # P-496

Emodin Ameliorates Hepatocellular Injury and Fibrosis in Bile Duct-Ligated Mice. Yinghua Chen¹, Wenhui Luo³, Yi Ma¹, Xiaoshun He¹. ¹Organ Transplantation Center, The 1st Affiliated Hospital of Sun Yat-san University, Guangzhou, Guangdong, China;

²Medical Record Management Department, The 1st Affiliated Hospital of Sun Yat-san University, Guangzhou, Guangdong, China
AIM. Liver fibrosis is a major cause of morbidity and mortality worldwide. However, there are little effective antifibrotic therapies for patients with liver fibrosis. In the present study, the anti-hepatofibrotic effects of emodin were evaluated.

Methods. Male Sprague-Dawley rats underwent common bile duct ligation (BDL) for 14 days and were treated with emodin by gavage (20, 40 and 80 mg/kg body weight).

Results. Treatment with emodin decreased serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) as well as hydroxyproline after BDL in a dose-dependent manner. Furthermore, emodin significantly reduced liver mRNA and/or protein expression of transforming growth factor b1 (TGF-b1), collagen type I (Col I) and α -smooth muscle actin (α -SMA).

Conclusion. Emodin exerts antifibrotic effects in the liver fibrosis and may represent a novel antifibrotic therapy.

Abstract # P-497

BAFF Binding to T Cell-Expressed BAFF-R Promotes Follicular Helper T Cell Proliferation and GC B Cell Responses. Maogen Chen^{1,2}, Zhiyong Guo¹, Dongping Wang¹, Weiqiang Ju¹, Qiang Tai¹, Qiang Li^{1,2}, William Stohl², Songguo Zheng², Xiaoshun He¹. ¹Organ Transplant Center, 1st Affiliated Hospital of Sun Yat-sen University, Guangzhou, China; ²Division of Rheumatology and Immunology, Department of Medicine, University of Southern California, Los Angeles, USA

Recent studies have defined a crucial role for the B cell-activating factor belonging to TNF family (BAFF) in promoting germinal center (GC) responses in mouse model. BAFF-deficient (BAFF^{-/-}) mouse was defective in primary B cell survival and development, including a loss of transitional type 2, follicular, and marginal zone B cells. This fact prompted us to investigate the influence of BAFF on follicular helper T (T_{fh}) cells, another important subset that helps antibody production in GC. In vivo, various strains of mice were immunized with keyhole limpet hemocyanin (KLH) emulsified in CFA. We first observed that BAFF deficiency impairs GC B cell responses to T cell dependent antigens. We also found that BAFF^{-/-} mice, but not APRIL^{-/-} mice, have a defect on the generation of T_{fh} cells and antibody production. Similar to BAFF^{-/-} mice, BR3^{-/-} mice also showed almost none of T_{fh} cells in draining lymph node. While BCMA^{-/-} or TACI^{-/-} mice appeared to be normal or even higher percentage of T_{fh} cells in spleen and lymph node after antigen stimulation. Thus, BAFF might upregulate the T_{fh} cells via BR3, rather than BCMA or TACI, all of which are BAFF receptors. To rule out the influence of impaired B cell by BAFF, Bcl2 Tg and BAFF^{-/-}Bcl2 Tg mice were employed for keeping survival B cells in BAFF deficient background. To the end, we found that lack of BAFF still caused impaired T_{fh} cell and antibody production. With a co-transfer experiment, we further confirmed that BAFF is required for the differentiation of T_{fh} cells and production of GC B cells. Our novel findings support the crucial role of BAFF on the induction of T_{fh} cell in vivo. BAFF and its downstream signaling pathway might be a target for the regulation of autoimmunity disease and chronic graft-versus-host disease.

Abstract # P-498

Experimental Study of the Distribution and Differentiation of Nanosecond Pulse Processed Bone Marrow Stem Cells in the Transplanted Rat Liver. Xinhua Chen, Zhigang Ren, Jianwen Jiang, Shengyong Yin, Shusen Zheng. Department of Hepatobiliary Surgery, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, China

Objective: the post-transplantation complications such as small liver syndrome after liver transplantation, immune rejection and ischemia-reperfusion injury can lead to hepatal hypoproliferation, resulting in insufficient quantity or hepatic liver failure, thus improving the ability of the liver regeneration is essential for liver transplantation. Bone marrow-derived stem cells have the potential to hepatic lineage differentiation, but participation in the repair process of liver injury can also cause chronic liver fibrosis, malignant transformation. Nanosecond pulses can inhibit tumorigenesis, activate

platelets, reducing myocardial infarction after ischemia-reperfusion injury and promote myocardial function reconstruction. The research studied the activation of bone marrow stem cells by nanosecond pulses as well as their distribution and differentiation

Methods: The rat orthotopic liver transplantation model was set up with double cuff technique. The donors were female Wistar rats, the recipients were female SD rats. Recipient mice were randomly divided into control group (n = 6) and experimental group (n = 12). The control group did orthotopic liver transplantation only. Experimental group extracted the subculture bone marrow stem cells and purified by using immunomagnetic screening, and treated by 100ns30Kv/cm ultrashort 100 pulses. The experimental group were injected the bone marrow stem cells during surgery via the portal vein, and evaluate the differentiation of bone marrow stem cells into vascular endothelial cells.

Results: nanosecond pulse treated bone marrow-derived stem cells express AFP, Alb, CK18 and other liver cell-specific markers. They mainly distributed in the liver, showing gradual migration from a small branch of the portal vein to the liver parenchyma. the liver biochemical tests confirmed that the transplanted liver can maintain normal function; histopathological examination revealed severe liver graft rejection does not occur.

Conclusion: Nanosecond pulse can activate the bone marrow stem cells and the treatment lead cells differentiate into hepatocytes. Nanosecond pulse can promote them to mature in the transplanted liver hepatocytes and transformed as endothelial cells, enhance liver regeneration, reduce acute rejection of transplanted liver.

Abstract # P-499

Protective Effect of Ginsenosides Rg3 for the Intestinal Mucosal Immunity in Rats after Liver Transplantation. Xinmei Chen¹, Jianwen Jiang². ¹School of Pharmacy, Shandong University of Traditional Chinese Medicine, Jinan, Shandong, China; ²The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, China

Objective: Ginsenoside Rg3 is a chemical monomer extracted from Chinese ginseng. Our previous study found that Rg3 can induce apoptosis of hepatoma cells, inhibit liver cancer cell proliferation, invasion, angiogenesis and metastasis. In addition to inhibition of the tumor, it plays important role in immune regulation in hepatocellular carcinoma after liver transplantation. Intestinal mucosal injury is a common complication after liver transplantation. Patients with nutritional complications often have increased infection. Chinese traditional medicine has found that the intestinal mucosa is a powerful immune system thousand years ago. In this study, rat orthotopic liver transplantation model was set up to study the protective effects of ginsenosides Rg3 on intestinal mucosal immunity after liver transplantation. Methods: SD rats orthotopic liver transplantation model was set up. After transplantation rats were randomly divided into treatment group with daily gavage ginsenoside Rg3 200mg/kg of 12 weeks; saline control group (NS); sham operation group (SO). Before the transplant, one month after transplantation, two months and three months, the intestinal mucosal lymphocytes were separated and fluorescently labeled with CD4, CD8, CD3 monoclonal antibody on isolated lymphocytes by immunofluorescence staining and analyzed with flow cytometry. The lymphocyte transformation test was used to observe the use of T cell and NK cell function.

Results: Ginsenoside Rg3 can significantly reduce the infection post transplantation (P <0.01) and the lymph nodes area reduced. Ginsenoside Rg3 can increase the CD4 + lymphocytes percentage (P <0.05), but no effect on the percentage of CD8 + cells. 1 month after transplantation, Rg3 treated group showed higher CD3, CD4 lymphocyte stimulation index number and recovered to pre-transplant levels. In the 2nd, 3rd month after the transplant, CD3 CD4 lymphocyte stimulation index number are significantly higher in Rg3 treatment group. The lethality of NK cell returned to preoperative levels. Conclusion: Liver transplantation inhibit intestinal mucosal immune function, and ginsenosides Rg3 can significantly improve the state of the mucosal immune suppression.

Abstract # P-500

Effects of Resistin and Visfatin in Rat Steatotic Hepatic Ischemia-Reperfusion Injury. Maria Elias-Miró¹, Marian Mendes-Braz^{1,2}, Ruben Cereijo³, Francesc Villarroja³, Mónica Jiménez-Casto¹, Jordi Gracia-Sancho⁴, Sergi Guixé-Muntet⁴, Marta Massip-Salcedo¹, Joan Carles Domingo³, Raquel Bermudo⁵, Juan Rodés^{1,6}, Carmen Peralta¹. ¹Institut d'Investigacions Biomèdiques August Pi i Sunyer, Barcelona, Spain; ²University of São Paulo, São Paulo, Brazil; ³Departament de Bioquímica i Biologia Molecular, i Institut de Biomedicina, Universitat de Barcelona, Barcelona, Spain; ⁴Barcelona Hepatic Hemodynamic Laboratory, IDIBAPS, Barcelona, Spain; ⁵Tumour Bank, IDIBAPS, Barcelona, Spain; ⁶Liver Unit, Hospital Clínic, Barcelona, Spain

Steatotic livers show increased hepatic damage and impaired regeneration following liver surgery under I/R-which is commonly applied in clinical practice to reduce bleeding. Using Zucker rats, a genetic obese model, we examined whether the regulation of resistin and visfatin could reduce damage and improve the regeneration in both steatotic livers undergoing partial hepatectomy under I/R. Increased resistin levels in liver and plasma were observed in obese animals livers undergoing liver surgery, without changes in adipose tissue; whereas visfatin levels were reduced in liver, and increased in plasma and adipose tissue. Endogenous resistin maintains low levels of visfatin in the liver by blocking its hepatic uptake from the circulation, thus regulating the visfatin detrimental effects on hepatic damage and regenerative failure. Anti-resistin antibodies administration increased hepatic accumulation of adipocyte-derived visfatin, exacerbating damage and regenerative failure. Interestingly, anti-visfatin antibodies administration protected steatotic livers, and similar results were obtained with the concomitant inhibition of resistin and visfatin. Thus, when visfatin was inhibited the injurious effects of anti-resistin antibodies disappeared. We show that upregulation of visfatin increased NAD levels in the remnant steatotic liver, whereas visfatin inhibition decreased them. These suggests that visfatin may favour synthesis of NAD instead of DNA and induces alterations in amino acid metabolism-urea cycle and NO production, overall negatively affecting liver viability. Thus, in terms of clinical application, visfatin blocking-based therapies in steatotic livers undergoing partial hepatectomy with ischemia-reperfusion might open new avenues for liver surgery that specifically benefit the steatotic livers.

Abstract # P-501

Potential of Mesenchymal Stem Cells Co-culture with Primary Human Hepatocytes for Alginate Microbead Transplantation. Celine Filippi^{1,2}, Fabiane Barbero Klem¹, Suttiruk Jitraruch¹, Sharon C. Lehec¹, Emer Fitzpatrick¹, Ragai R. Mitry¹, Robin D. Hughes¹, Anil Dhawan¹. ¹Institute of Liver Studies, King's College, London, United Kingdom; ²NIHR BRC at Guy's and St Thomas and King's College, London, United Kingdom

Previous studies have shown the positive effect of mesenchymal stem cells (MSCs) on various primary cell types, improving their viability and function ex vivo. We hypothesized that MSCs would improve the viability and function of hepatocytes isolated from donor livers and could be beneficial for their use in alginate-encapsulated hepatocyte transplantation.

Aim:

To study the effects of MSCs co-culture on primary human hepatocyte function in 2D culture and 3D-alginate microbeads.

Materials and methods:

Human or rat hepatocytes (n=3) were plated onto collagen-coated plates with or without umbilical-cord derived human MSCs, at ratios of 10:1, 10:2 or 10:3. Samples were collected every other day for 23 days for measurement of cell function (albumin synthesis), cell attachment and growth (SRB test). Immunofluorescence was used to detect potential MSC differentiation into hepatocytes. For microbead tests, hepatocytes and MSC (10:1, n=3) were encapsulated at 3.5.10e6 cell/ml in ultrapure GMP alginate, before measurements of cell numbers and metabolism over 11 days.

Results:

In 2D culture, MSC addition dramatically improved hepatocyte attachment, increasing SRB values 7 folds from day 1 (p<0.05). MSC proliferated throughout the experiment either in mono or co-cultures. Whilst MSC co-culture did not initially have any effect on hepatocyte function, by day 5 the production of albumin was increased 3 folds, progressing to 40 folds by day 23 (p<0.002 vs hepatocyte monoculture). This was not due to MSC

differentiation into hepatocytes, as proven by immuno-fluorescence and further experiments using rat hepatocytes and human MSCs, where no human albumin was detected.

Co-encapsulation of MSCs and hepatocytes in alginate beads resulted in the total loss of benefit of MSCs observed in 2D cultures, with no improvement in albumin synthesis or urea synthesis. MSC did not proliferate in beads, which could contribute to this loss of function.

Conclusion:

MSCs have a strong effect on primary human hepatocytes in conventional 2D cultures, which is lost when the cells are encapsulated in pure alginate beads. This dramatic loss of function should warrant further study into the effects of alginate gel formula modifications and cellular interactions.

Abstract # P-502

Circulating Regulatory T Cells As Markers of Immune Response To Tolerance in Living Donor Liver Transplant Recipients. Manoj Gupta¹, Naimish Mehta¹, Kriti Mangla², Vinay Kumaran¹, Dheeraj Mohaniya², Samiran Nundy¹, Sangeeta Chaudhary². ¹Surgical Gastroenterology and Liver Transplantation, Sir Gangaram Hospital, New Delhi, Delhi, India; ²Research, Sir Gangaram Hospital, New Delhi, Delhi, India

Introduction: In Liver transplantation, ability to produce a state of tolerance would potentially obviate long-term immunosuppression. In this study, we investigated the prevalence of peripheral regulatory T cells (Tregs) in living donor liver transplant (LDLT) recipients. The association of tolerance induction was evaluated based on aetiology of disease and immunosuppressive therapy.

Patients and Method:

We included 24 LDLT recipients (out of 32) and their respective donors from March 2012 to October 2012 and subdivided into different categories [Alcoholic Cirrhosis (AC; n = 4); Acute liver failure (ALF; 4); Cryptogenic chronic liver disease (CLD) 3; Hepatitis B virus (HBV) related CLD (5); Hepatitis C Virus (HCV) related CLD (3), Hepatocellular Carcinoma (HCC) (5)]. Standard triple drug immunosuppression was given.

Tregs were enumerated from peripheral blood mononuclear cells, using flow cytometry at fixed time points. A panel of conjugated/labelled antibodies/markers (CD3/CD4/CD8/CD25/CD127) were used to study representative population.

Results:

The frequency of T-cell co-receptor -positive cells expressing CD4 (CD3+CD4+) were lower than healthy donors before transplantation, but post-induction the levels increased to normal.

The percentage of T regs expressing CD3+CD4+CD25highCD127dim elevated within 24 hours of receiving graft in patients diagnosed with cryptogenic and ALF. This elevated level was down-regulated as early as 8 days post-transplantation. Conversely, frequency of Tregs in patients diagnosed as HCC and HCV related CLD did not differ from that of controls. LDLT patient classified as AC and ALF showed an increased percentage of regulatory T cells over a period of 3 - 4 months following immuno-suppressive therapy, compared to induction therapy but HCC and HCV patients showed the opposite pattern.

Conclusion:

Our study shows that the frequency of regulatory T cells increased immediately on receiving the graft. These elevated levels were suppressed by administration of immunosuppressive drug therapy. Moreover, our study also demonstrates a differential expression pattern of regulatory T cells in recipients diagnosed with diverse liver disease conditions.

Abstract # P-503

Influence of Immunosuppressive Drugs on CCC-Cell Tumour Growth and Tumour Invasion Under Paracrine Stimulation of Tumour Associated Fibroblasts. Nils G. Heits¹, Alexander Bernsmeier¹, Tillmann Heinze¹, Jannik Kerber¹, Thomas Becker¹, Jan H. Egberts¹, Holger Kalthoff², Felix Braun¹. ¹Department for General Surgery, Visceral-, Thoracic-, Transplantation- and Pediatric Surgery, UKSH Campus Kiel, Kiel, Germany; ²Department of Experimental Cancer Research, Christian-Albrechts-University, Kiel, Germany

Introduction: Cholangiocellular carcinoma (CCC) is the most common primary liver malignancy with increasing incidence worldwide. CCC is a tumor which has a great proportion of desmoplastic stroma and is correlated with a worse prognosis when cancer associated fibroblasts (CAFs) are present. Nowadays surgical resection is the only curative therapy. Recent

studies showed promising results after liver transplantation in non resectable early stage CCC-tumours. The influence of immunosuppressive drugs on tumour proliferation and migration after paracrine stimulation by CAFs has not been investigated. The mTor inhibitor Everolimus recently showed an antiproliferative effect. However it is still unknown which signaling pathways are being activated in this specific cell-cell interaction.

Materials and Methods: Human CCC cell lines HuCCT1 and TFK1 were used generating in vitro data. The CAFs were extracted from resected human CCC cancer tissue. Cell vitality was measured by using crystal violet assay, tumor cell invasion was quantified with a modified co-culture transmigration assay using a transwell system.

Results: CCC cells treated with mycophenolic acid lead to a strong dose related decrease in cell viability. Dexamethasone and Everolimus also inhibited proliferation significantly whereas Everolimus already showed an effect in very low concentrations which could not be enhanced by treating with higher doses. Cyclosporine A-treatment had no effect on CCC cell viability. The pro-invasive effect of CAFs in co-culture transmigration assay could be significantly reduced by Everolimus in concentrations of 1nM ($p=0.047$) and 10 nM ($p=0.0008$). All other tested immunosuppressants showed no effect in tumor cell invasion.

Conclusion: Liver Transplantation for non resectable early stage CCC is currently performed in the context of several clinical studies. Knowing that common immunosuppressants can inhibit cell proliferation and invasion makes chemotherapy combined with immunosuppression following transplantation a promising therapy option. Being able to positively influence CAF mediated tumor cell invasion and proliferation makes Everolimus an interesting substance.

Abstract # P-504

The Utility of MicroRNA Expression Profiling To Determine Quality of Donation after Cardiac Death (DCD) Liver Grafts.

Shirin E. Khorsandi, Siamak Salehi, Wayel Jassem, Hector Vilca-Melendez, Andreas Prachalias, Parthi Srinivasan, Nigel Heaton. *ILS, King's College Hospital, London, United Kingdom*

Methods
Three DCD groups were studied. PNF group ($n=8$) retransplanted within a week, good group ($n=7$) $AST \leq 1000$ IU/L and poor group/IPGF ($n=8$) $AST \geq 2500$ IU/L. miRNA was isolated from FFPE trucut post perfusion biopsies. Affymetrix GeneChip® miRNA 2.0 Arrays (Santa Clara, CA, USA) were used. Expression data analysis was based on ANOVA statistics in the Partek Genomic Suite software (Partek Inc., ST Louis, MI, USA). A statistical significance level of $p < 0.05$ was used to identify differentially expressed miRNA in comparison of the three groups. To validate microarray results real time quantitative PCR (RT-qPCR) was performed on all samples for miRNA species identified as being significant. Ct (threshold cycle) values were normalised using the average Ct of the endogenous control to generate ΔCT and fold-change to reference sample of normal liver ($2^{\Delta\Delta CT}$) for relative expression analysis. Data was then analysed by one way non parametric ANOVA to detect significance ($p < 0.05$) between the three groups. If significance was found the Bonferroni correction for multiple comparisons was applied.

Results

From the array analysis 16 miRNA species (miR-107, miR-378, miR-23b and miR-122, miR-103, miR-125b, miR-24, miR-let-7a, miR-191, miR-194, miR-296-5p, miR-455-3p, miR-940, miR-let-7d, miR-22 and miR-155) were identified as being significantly different ($p < 0.05$) and of potential biological interest. miR-155 and miR-940 had the highest relative expression across all samples. The miRNA that was found to have a significant differential expression between the three groups was miR-22. From computational biology analysis miR-22 was predicted to influence signalling pathways that impact protein turnover, metabolism and apoptosis/cell cycle.

Conclusion

Based on this analysis microRNA expression patterns have a low diagnostic potential in discriminating DCD graft quality. The miRNA species (miR-22), that appeared to define whether a poor quality graft had the potential to recover (IPGF) to one that would not (PNF), are those that contribute to the "survival response" by minimising cellular replacement processes and halting apoptotic initiation of proliferation to conserve energy.

Abstract # P-505

FK506 Induced Apoptosis Is Mediated By Endoplasmic Reticulum Derived Calcium Dependent Caspase-12 in Jurkat Cells. Hak Joo Kim¹, Soo Jin Na Choi², Sang Young Chung².

¹*Surgery, Korea Insurance Review & Assessment Service, Seoul, Korea;* ²*Department of Surgery, Chonnam National University Hospital, Gwangju, Korea*

Purpose: The effect of FK506 on endoplasmic reticulum(ER) derived calcium and caspase-12 mediated apoptosis in Jurkat human T-lymphocyte was investigated.

Method: Cell viability was measured by flow cytometry. Intracellular calcium generation was measured. Western blotting of procaspase-12 was performed. And the catalytic activity of caspase -3, -6, -8, and -9 proteases in Jurkat cells was also measured.

Results: FK506 dose-dependently decreased the viability in Jurkat cells. Increased intracellular accumulation of calcium in FK506 treated Jurkat cells from 24hours. FK506 continuously increased calcium concentration from 24hours to 72hrs. There was no evidence of calcium ionophore (A23187) increased intracellular calcium changes with or without FK506 but calcium ATPase inhibitor (Thapsigargin) increased intracellular calcium accumulation and FK506 more and more increased calcium ATPase inhibitor(Thapsigargin) derived intracellular calcium accumulation. Procaspase-12 protease analyzed from 48hours. Treatment of cells with FK506 increased activation of caspase-12 protease. FK506 increased the catalytic activity of caspase-3 but there was no evidence of increased catalytic activation of caspase-6, -8 and -9 proteases in Jurkat cells.

Conclusion: These data indicate that understanding of ER derived calcium and caspase-12 mediated apoptosis in human Jurkat cell line.

Abstract # P-506

The Phospholipase A2 Domain of Peroxiredoxin 6 Plays a Critical Tumor-Suppressing Role in the Carcinogenesis and Recurrence of Hepatocellular Carcinoma. Di Lu, Xiao Xu, Shusen Zheng. *First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China*

Background and methods: This study used 2-dimensional difference gel electrophoresis and mass spectrometry to identify differentially expressed proteins in hepatocellular carcinoma(HCC) tissues and peri-tumorous tissues. Altogether, 11 differentially expressed proteins(>3 folds, $P < 0.01$) were identified. Among them, Peroxiredoxin 6(Prdx6) was distinguished as having much higher expression level in the peri-tumorous tissues than in the tumorous ones(5.9 folds, $P < 0.001$). However, Prdx6, which contains a peroxiredoxin domain and a calcium-independent phospholipase A2 domain (iPLA2), is commonly acknowledged as an anti-apoptosis and cancer-promoting protein. Therefore, Prdx6 was further analyzed.

Results: In the tissues from HCC patients, the same expression pattern of Prdx6(higher in the peri-tumorous tissues) was validated by Western blot($N=12$, $P=0.007$), real-time qPCR($N=50$, $P=0.018$), and immunohistochemistry($N=192$, $P < 0.001$). Immunohistochemistry was further prospectively performed on 75 pairs of HCC sample after hepatectomy and 40 pairs after liver transplant, and the survival analysis showed that decreased expression of Prdx6 was closely related with tumor recurrence after both types of surgery($P < 0.05$). In HCC cell lines, over-expression of Prdx6 (lentivirus-mediated gene transfer) enhanced the apoptosis induced by TNF- α (accompanied with reduced proliferative activity compared to the negative control), while reduced the apoptosis induced by H_2O_2 . This effect of Prdx6 was validated by the exactly reverse trend in the P6-silenced cells(siRNA interference). Western blot revealed that, under the exposure to TNF- α , Prdx6 over-expressed cells had elevated expression of Caspase 3, Caspase 8 and its precursor, but reduced expression of BAK, which is an apoptotic protein of the intrinsic pathway(related to mitochondria and oxygen radicals). The Prdx6 over-expressed cells presented a dramatic increase of iPLA2 activity (iPLA2 activity ELISA kit) when exposed to TNF- α , while the increase was less significant in the negative control cells. Additionally, Prdx6 over-expressed cell lines displayed impaired ability in cell migration (wound of scratch assay) and colony formation.

Conclusion: Prdx6 presents impressive prognostic capacity in HCC patients after hepatectomy as well as liver transplant. The iPLA2 domain of Prdx6 plays a critical tumor-suppressing role in the carcinogenesis of HCC.

Abstract # P-507

The Roles of IP10 in Liver Regeneration and Tissue Repair Are Cell Type Dependent. Yuenyuen Ma, Changxian Li, Wei Geng, Kevin T.P. Ng, Chungmau Lo, Kwan Man. *Surgery, The University of Hong Kong, Hong Kong, Hong Kong*

Introduction and aim:

Impairment of liver regeneration is the major consequence resulted from acute phase marginal liver graft injury. Understanding of key players in liver regeneration is crucial to develop potential treatments such as stem cell therapy. IFN-inducible protein 10 (IP10) was reported to have controversial roles in liver regeneration. Here, we aimed to investigate the role of IP10 in marginal graft regeneration, and to explore its effect on bone marrow derived mesenchymal stem cells (BM-MSC) proliferation.

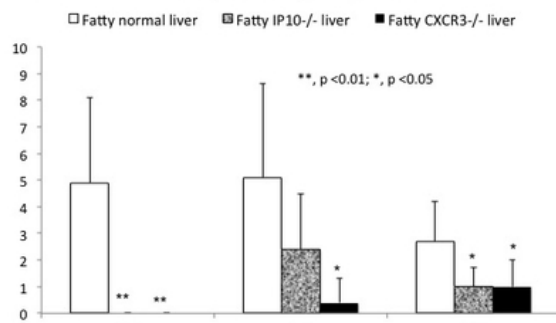
Methods:

The expression of hepatic IP10 and hepatocyte proliferation was assessed at day 2, 4 and 7 post-transplantation in a rat orthotopic liver transplantation model using normal or fatty small-for-size grafts. To investigate the role of IP10 in hepatocyte proliferation and liver regeneration, IP10^{-/-} and CXCR3^{-/-} (IP10 receptor) mice with or without fatty liver were subjected to major hepatectomy and partial hepatic ischemia/reperfusion injury. Mice hepatocyte proliferation, expressions of HGF and vascular endothelial growth factor were compared among the different groups. To explore the role of IP10 on BM-MSC, we compared cell proliferation, differentiation and cell cycle of the BM-MSCs from IP10^{-/-}, CXCR3^{-/-} and wild type mice.

Results:

Intrahepatic IP10 expression was significantly reduced in small-for-size fatty graft in comparison to normal graft (day 2: 2.48 vs 8.22 folds, p < 0.05) and correlated with lower hepatocyte proliferation (day 2: 6.5/HPF vs 32/HPF, p < 0.01) after transplantation. Significant impairment in hepatocyte proliferation in IP10^{-/-} and CXCR3^{-/-} mice was also detected.

Fig. 1 PCNA positive hepatocyte/HPF



IP10^{-/-}, CXCR3^{-/-} mice models showed lower hepatocyte proliferation in fatty liver than normal liver. On the contrary, the absence of IP10 and CXCR3 increased the proliferative potential of BM-MSCs in vitro.

Conclusion:

IP10 and its receptor, CXCR3, play a crucial role in hepatocyte proliferation both normal and fatty livers. However, IP10 may impair the proliferation of BM-MSC. Therefore, the roles of IP10 in liver regeneration and tissue repair are cell type dependent.

Abstract # P-508

In Utero Transplantation to Decrease Immune Response in a Porcine Model of Hereditary Tyrosinemia Type 1. Shennen Mao¹, Jaime Glorioso¹, Raymond Hickey¹, James Fisher¹, Joseph Lillegard¹, Michael Strausbauch¹, Markus Grompe², Peter Wettstein¹, Scott Nyberg¹. ¹Mayo Clinic, Rochester, MN, USA; ²Oregon Health and Science University, Portland, OR, USA

Hereditary tyrosinemia type 1 (HT1) is an autosomal recessive inborn error of metabolism caused by a deficiency in the enzyme fumarylacetoacetate hydrolase (FAH) resulting in hepatic failure and death or cirrhosis unless treated with the protective drug 2-(2-nitro-4-trifluoromethylbenzoyl)-1,3-cyclohexanedione (NTBC). A murine model of HT1 (Fah^{-/-}/Rag2^{-/-}/Il2rg^{-/-} mouse) offers robust *in vivo* expansion of human hepatocytes following intrasplenic inoculation and NTBC withdrawal to produce a selective advantage. We postulated that a large animal model of HT1 could result in large scale *in vivo* expansion of human hepatocytes for research and therapeutic applications.

Heterozygote FAH^{+/+} pigs were produced through adeno-associated virus-mediated gene targeting to disrupt the porcine FAH gene. Homozygote FAH^{-/-} pigs resulted from breeding of FAH^{+/+} pigs. NTBC administration to FAH^{-/-} pigs led to normal phenotype. In contrast, withdrawal of NTBC from FAH^{-/-} pigs resulted in rapid progression to liver failure with near total cessation of weight gain, accumulation of ascites, and hepatic encephalopathy. Laboratory studies following NTBC withdrawal indicated elevated alkaline phosphatase, aspartate aminotransferase, and ammonia in conjunction with coagulopathy and hypoglycemia.

In order to avoid the potentially lethal complications of genetic immunodeficiency or immunosuppressive drugs, *in utero* human cell transplants were performed in FAH^{-/-} pigs at 40 days gestational age, prior to the development of the porcine immune system. Ultrasound guided fetal intrahepatic injections of 5-10x10⁶ human hepatocytes or hepatocyte-like cells (HLC's) derived from human induced pluripotent stem cells were performed. Decreased immune response of recipient piglets to donor human cells was observed on enzyme-linked immunosorbent spot (ELISPOT) assay persisting 2 months postnatal.

In conclusion, the FAH^{-/-} pig represents a large animal model of a metabolic liver disease for the study of acute liver failure and potentially cirrhosis. Based on our findings, the FAH^{-/-} pig may also serve as a bioreactor for large scale production of human hepatocytes. *In utero* tolerization strategies may allow for robust xenogeneic expansion without or with reduced immunosuppression and its associated co-morbidities.

DISCLOSURE: Grompe, M.: Stockholder, Yeucuris Inc., Nyberg, S.: Stockholder, Liver Cell Therapies Inc.

Abstract # P-509

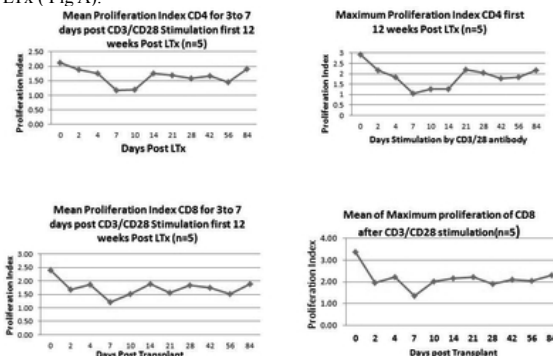
Immunological Biomarker for Overall Immunosuppression (IS) in Liver Transplant (LTx) Recipients Using Proliferation Index of CD4 & CD8 Lymphocytes Stimulated With Monoclonal Anti-CD3 & Anti-CD28 Antibodies. A. Mukerji², R. Potula³, S. Geier³, H. Parekh³, A. Karachristos¹, M. Maloo¹, A. Jain¹. ¹Surgery, Temple University Hospital, Philadelphia, PA, USA; ²Surgery, Bronx Lebanon Hospital, Bronx, NY, USA; ³Pathology & Laboratory Medicine, Temple University Hospital, Philadelphia, PA, USA

Introduction With current usage of IS, graft loss from immunologic reasons after LTx is rare. Metabolic syndrome, have come to forefront. Are we over immunosuppressing patients? An immunological biomarker to assess overall level of IS is needed.

Aim of the present study was to evaluate the proliferative changes in T-cell receptor (TCR) CD8mediated activation of CD4 and CD8 T-cell subset. And compare the post LTx values at different time point with pre LTx values.

Patients & Methods: Lymphocytes from peripheral blood were separated before LTx (n=5) and frequently up to 12 weeks post LTx. They were activated with anti-CD3/CD28, and T cell proliferation of CD4/8 T cell subsets were determined by CFSE labeling followed by flow cytometry. Proliferation index were examined at 0, 3, 5 and 7 days of stimulation using Flow Jo software.

Results: For CD4 Lymphocyte, mean proliferation index (PI) after stimulation with anti-CD3/CD28 before LTx was 2.1±0.45. On post LTx day 7 it decreased to 1.16±0.08 and increased to 1.91±0.34 by 12th week LTx (Fig A).



The mean of maximum PI from day 3 to 7 of stimulation pre LTx, post LTx day 7 and week 12th were 2.91±0.94, 1.06±0.25, 2.18±0.039 respectively (B). For CD8 lymphocytes the mean PI before LTx, post LTx day 7 and 12 week were 2.24±0.6, 1.21±0.09 and 1.88±0.4 (Fig C). Similarly, mean of maximum PI pre LTx, post LTx day 7 and post LTx week 12 were 3.38±1.12, 1.35±0.12 and 2.29±0.57 (D).

Conclusion Both mean proliferation of index of CD4 and CD8 lymphocyte after stimulation with monoclonal CD3+CD28 antibody, decrease to lowest at day 7 and improve by week12 post LTx. Initial higher IS inhibits PI of both CD4 and CD8 lymphocytes which improves by 12th post LTx week. This immunological biomarker, provides cumulative effect of IS, and could have a potential to avoid over immunosuppression post LTx.

Abstract # P-510

Neither IgM nor B Cells Play a Critical Role in the Pathogenesis Or Resolution of Hepatic Ischemia-Reperfusion Injury. James Richards^{1,2}, Emily Hesketh¹, Martina Busciaova¹, Chiara Ventre¹, Steve Anderton¹, Sarah Howie¹, Wigmore Stephen¹, Hughes Jeremy^{1,2}. ¹Centre for Inflammation Research, The University of Edinburgh, Edinburgh, United Kingdom; ²Clinical Surgery, The University of Edinburgh, Edinburgh, United Kingdom

Background

Hepatic ischemia reperfusion injury (IRI) is a clinically important form of acute sterile liver inflammation. In the world of transplantation surgery, IRI is linked to early graft failure and transplant rejection. RAG1^{-/-} mice, which are deficient in Immunoglobulin M (IgM), B and T cells, are protected from hepatic IRI. B cells and/or IgM have been implicated as key mediators in renal, intestinal, cardiac and skeletal muscle IRI.

Study aim

Explore the role of IgM and B cells in both the evolution and resolution of hepatic IRI.

Materials and Methods

This paper uses an established surgical model of warm left lobed hepatic IRI, with the murine liver being allowed to reperfuse for between 1 hour and 7 days. The extent of injury was measured in terms of biochemical (serum ALT) and histopathological parameters. Wildtype (WT), RAG1^{-/-} and B cell deficient (mMT) mice were to dissect out the relative importance of B cells and IgM. Findings were correlated with other models of acute sterile liver injury (Concavalin A (Con A) hepatitis and paracetamol induced liver injury). The extent of IgM deposition was evaluated in paraffin-embedded fixed tissue.

Results

There was a significant and rapid deposition of IgM into the injured lobe (p<0.0001) upon reperfusion. This deposition was also seen in other models of acute liver injury (Con A, paracetamol) and appears to be a feature of acute liver injury. Serum transfer into IgM-deficient RAG1^{-/-} mice failed to reconstitute injury (p=0.66), despite objective evidence of successful engraftment of IgM.

RAG1^{-/-} mice (p<0.001), but not mMT (p=0.93), were significantly protected from injury; this implied that neither IgM, nor B cells, were critical to the pathogenesis of hepatic IRI. B cell deficient mice were also found to have normal resolution of injury.

Conclusions

- Significant deposition of IgM occurs following acute liver injury.
- Neither IgM, nor B cells, were critical to either the pathogenesis or resolution of hepatic IRI.

Abstract # P-511

Transcriptomic Signature in Cirrhotic Patients in the Liver Transplantation Waiting List. Pilar Bueno-Requena, Jesus F. Bermejo-Martín, Felix Garcia Pajares, Alba Vargas, Fernando Santos Santamarta, Ramon Sanchez Ocaña, Lucia Rico, Veronica Iglesias, Eva Muñoz Conejero, Carolina Almohalla Alvarez, Gloria Sanchez Antolin. *Hepatology Unit. Liver Transplant Unit, Hospital Universitario Rio Hortega, Valladolid, Spain; Laboratory Service, Hospital Clinico Universitario, Valladolid, Spain; Research Unit(CBIC), Hospital Clinico Universitario, Valladolid, Spain*

Background: Cirrhosis is a top cause of morbidity and mortality in developed countries and leads to a high percentage of cases to a liver transplant. Aim: To know the potential transcriptomic signatures in cirrhotic patients in the waiting list for liver transplantation.

Material and Methods: To understand physiopathology of liver cirrhosis we evaluated potential transcriptomic signatures of 37 patients with terminal cirrhosis in the waiting list for liver transplantation and 15 controls. The etiology of cirrhosis was alcoholic liver disease in 18 patients, Hepatitis C in 9 and other liver pathologies in 10 patients. The indication for liver transplantation was Hepatocellular carcinoma in 19 patients and advanced liver disease in the others patients. RNA was extracted from peripheral blood,

and transcriptome was analysed using Whole Human Genome Microarrays 4x44K v2 from Agilent. We compare the transcriptomic signatures between cirrhotic patients and the control group

Results Patients with terminal cirrhosis had 3569 genes differentially expressed compared to controls. Ingenuity Pathways Analysis revealed that this patients had significant higher expression levels of genes of the IL-15 pathway: IL15R, a transmembrane receptor (fold change: 4.1) IL17A, a cytokine (3.2), BCL2L1, a transporter (3.6) RAC3, a enzyme (3.2), AKT1(6.4), AXL(3.1), JAK3(2.3), MAPK11(2.3), MAPK12(4.4), PIK3C2B(3.5), PIK3CD(2.3) and PTK2(2.4). This is a relevant Th1 related, pro-inflammatory signaling pathway. There weren't differences between patients with or without HCC.

Conclusion: Patients with terminal cirrhosis in the liver transplantation waiting list show over-expression of genes of the Interleukin-15 pathway in peripheral blood. These results suggest a main role for IL-15 in the pathogenic events leading to hepatic cirrhosis.

Abstract # P-512

Generation of NK Cells from Hematopoietic Stem Cells In Vitro for Anti-HCV and Anti-HCC Immunotherapy: Evaluation Using Human Hepatocyte Chimeric Mice. Seiichi Shimizu, Yuka Tanaka, Ryuichi Hotta, Hideki Ohdan. *Department of Gastroenterological Transplant Surgery, Hiroshima University, Hiroshima, Japan*

We have reported that IL-2-stimulated CD56⁺ cells derived from the liver exert vigorous cytotoxicity against HCC and inhibit HCV replication. Based on these results, we performed an adoptive immunotherapy phase I/II trial using IL-2-stimulated liver mononuclear cells from donor liver allografts in HCV-infected recipients. Although this approach led to transient reduction of HCV RNA titers, recurrent HCV infection eventually occurred in most HCV-infected recipients. These findings prompted us to develop a technique to generate NK cells from hematopoietic progenitor cells in vitro for additional anti-HCV and anti-HCC immunotherapies.

To differentiate NK cells, we incubated bone marrow-derived CD34⁺ hematopoietic progenitor cells in 5% serum-supplemented X-VIVO-15 medium containing SCF, Flt-3, IL-7, and IL-15 for 28 days (n=12, 2.76–98.4%, median 28.1%). These NK cells expressed NKp46, a specific receptor of NK cells, and were phenotypically similar to resident NK cells, i.e. they expressed TRAIL, NKG2D, CD94, and CD226. The propagated NK cells produced IFN- γ . Thus, the CD34⁺ cells effectively differentiated into IFN- γ -producing NK cells that have the potential to inhibit HCV RNA replication. In an experiment using genomic HCV replicon-containing hepatic cells, the propagated NK cells significantly inhibited HCV replication, whereas isolated non-NK cells had no effect (inhibition ratio of HCV RNA: propagated cells, 90%, n=6 vs. isolated non-NK cells, 52.3%, n=5, p=0.014). In an in vivo experiment using human hepatocyte chimeric mice, administration of the propagated NK cells reduced the incidence of HCV infection after 1 week. In contrast, administration of non-NK cells derived from the progenitor cells aggravated the incidence of HCV infection. Furthermore, in cytotoxic assays using the HepG2 cell line, the propagated NK cells exhibited vigorous cytotoxicity against HCC (n=4, 9.3–48.7%, median 21.9%, effector/target ratio, 40:1).

In conclusion, NK cells differentiated from hematopoietic progenitor cells exhibit both anti-HCV and anti-HCC activities. The use of NK cells for immunotherapy relies on the availability of large numbers of purified NK cells with optimal anti-HCC and anti-HCV activities. Repeated adoptive immunotherapy with these cells may be a promising modality to prevent the recurrence of HCC/HCV after liver transplantation.

Abstract # P-513

Synergistic Effects of Metformin in Combination With Rapamycin on Hepatocellular Carcinoma Cell Lines. Suk-Won Suh, Kwang-Woong Lee, Jeong-Moo Lee, YoungRok Choi, Nam-Joon Yi, Kyung-Suk Suh. *Department of Surgery, College of Medicine, Seoul National University, Seoul, Korea*

Background

Several studies have shown that metformin had an anti-tumor effect on several cancers, including hepatocellular carcinoma (HCC). After liver transplantation (LT), immunosuppression is needed to avoid rejection and graft loss, however, it can stimulate HCC recurrence and progression. The aim of this study was to evaluate interactions between metformin and immunosuppressive agents for antitumor activity.

Methods

Antiproliferative effects were assessed using HCC cell line as HepG2, Hep3B, Huh7. Metformin (10mM/L) and several immunosuppressive agents such as Sirolimus (5ng/ml), Tacrolimus (5ng/ml), and MMF (500ng/ml) were evaluated. Cell viability was determined using a standard colorimetric 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay after 48 hours. Western blot analysis were performed to investigate protein levels in HCC cells.

Results

Metformin and Sirolimus itself had antitumor effect in all of the HCC cell lines (73% and 66%, HepG2; 84% and 73%, Hep3B; 77% and 66%, Huh7). They also had significant synergistic antiproliferative effect in all of the HCC cell lines (68%, HepG2; 57%, Hep3B; 63%, Huh7), however, there was no synergistic effect with other immunosuppressive agents. In addition, combination of metformin, sirolimus and MMF showed some synergistic antiproliferative effect in Hep3B and Huh7 HCC cell lines (53%, Hep3B; 53%, Huh7).

Conclusion

Metformin had synergistic interactions with Sirolimus in terms of antitumor effects for HCC cell lines.

These results may provide a foundation for further studies to evaluate combination therapies for patients with HCC who underwent LT in clinical era.

Abstract # P-514

Quantitative Proteomic Analysis Identified CAPS as a Novel Potential Biomarker for Early Detection of HBV-Related Hepatocellular Carcinoma. Jianguo Wang, Xiao Xu, Xuyong Wei, Di Lu, Haiyang Xie, Qi Lin, Lin Zhou, Shusen Zheng. *First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China*

Background

Hepatocellular carcinoma (HCC) is one of leading cause of cancer-related deaths worldwide. The complex protein changes and signature of protein expression in HCC has not been well defined. Although several studies have investigated the protein profile in HCC, the knowledge is far from complete. In this study, we investigated the overall protein profile in tissues of normal liver, hepatitis B, hepatocirrhosis, HBV-related HCC and paired peritumoral. Our data suggested that calyphosine (CAPS) was progressively increased in HBV-related HCC process. However, the expression and function of CAPS during human HBV-related HCC carcinogenesis remain unknown.

Method

iTRAQ-tagging combined with 2D LC-MS/MS analysis was used to identify differentially expressed proteins in the human HBV-related HCC carcinogenic process. The Gene Ontology (GO) function and pathway analysis were performed for the differentially expressed proteins. The expression statuses of CAPS were examined by immunohistochemistry in 20 normal liver, 15 hepatitis B, 29 hepatocirrhosis and 140 HBV-related HCC cases. The effects of CAPS were assessed by silencing in HCC cell lines focusing on cell proliferation, apoptosis, and transwell assays.

Results

A total of 998 differentially expressed proteins were identified by quantitative proteomics. 44 and 99 proteins (fold change >2.0) were consistently up- and down-regulated in the tumor tissues as compared to that of normal liver, hepatitis B, hepatocirrhosis, and paired peritumoral samples. Bioinformatics analysis identified roles of proteins in this subset including lipid transport, angiogenesis, and anti-apoptosis. CAPS was selected and confirmed being progressively increased in the HBV-related HCC process. Knockdown of CAPS by its specific siRNA inhibits cell migration and proliferation, and induces apoptosis.

Conclusion

A subset of tumor-associated proteins was differentially expressed in HBV-related HCC. The present data suggested that increased CAPS is an early event in the HBV-related HCC process. The differential expression of CAPS in HCC might serve as a novel potential biomarker for early detection of HBV-related HCC and candidate as a potential therapeutic target.

Abstract # P-515

Upregulation of microRNA-423-5p Promotes Cancer Cell Proliferation and Predicts Poor Prognosis of Hepatocellular Carcinoma Following Liver Transplantation. Liming Wu, Sheng Gao, Zhe Yang, Chunyang Xing, Tingting Pan, Lin Zhou, Haiyang Xie, Shusen Zheng. *Key Lab of Combined Multi-organ Transplantation, Ministry of Public Health, Department of Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China*

Background: MicroRNA-423-5p has been demonstrated to play a crucial role in cellular proliferation and apoptosis of cancer cells. However, its effects in hepatocellular carcinoma (HCC) has rarely been investigated. The aim of this study was to identify the clinical and functional association of microRNA-423-5p in hepatocellular carcinoma (HCC).

Methods: MiR-423-5p was detected using real-time polymerase chain reaction. Kaplan-Meier and Cox proportional regression analyses were utilized to determine the association of miR-423 with survival of patients. The potential functions of miR-423-5p on proliferation, invasion and migration were evaluated using cell counting kit, transwell assay and Flow cytometer. Results: miR-423-5p expression in HCC tissues was significantly higher than that in the corresponding normal adjacent liver tissues. In addition, HCC patients with higher miR-423-5p expression had significantly poorer recurrence-free survival ($P < 0.01$) and overall survival ($P < 0.01$). Multivariate analysis revealed that high miR-423-5p expression was an independent predictor of poor prognosis ($P < 0.01$). Moreover, in vitro assays demonstrated that the ectopic expression of miR-423-5p could significantly promote the cellular proliferation, invasion, and migration of HCC cell lines. Conclusions: MiR-423-5p is upregulated in HCCs and associates with HCC recurrence and prognosis. Upregulation of miR-423-5p increases the proliferation abilities of HCC cells. Our findings suggest miR-423-5p may represent a novel potential therapeutic target and biomarker for survival of HCC patients.

Abstract # P-516

Donor Transmitted Malignancy Induce Severe Immune Reaction after Allogenic Mice Liver Transplantation. Sheng Yan, Yuan Ding, Yang Wang, Yang Tian, Lin Zhou, HaiYang Xie, ShuSen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China*

Objectives

Allogenic mice liver transplantation is a classic spontaneous immune tolerance model. Previous studies have shown that regulatory T cells, kupffer cells, hepatic stellate cells and many other cells play an important role in this process. Our study showed donor transmitted malignancy significantly reduce the mean survival time of experiment group after allergenic mice liver transplantation. Our data provide theory evidence for research about growth pattern of donor transmitted malignancy and its influence on grafted liver.

Methods

Based on mouse liver transplantation model, CBF1 mice (H2bd) were chosen as donors and C3H mice (H2k) were chosen as recipients. Prepared $5 \times 10^6/10\text{ul}$ single cell suspension with cultured CT-26 cell line(H2d). After liver transplantation, we injected 10ul CT-26 cell suspension into the left lobe of grafted liver in experiment group (N=12), while 10ul normal saline was injected instead in control group (N=16). Mice were kept in IVC cages separately with free water and food, the survival rate was observed and recorded. At the end of the observation, we performed histological examination by H&E staining with grafted liver.

Results

The middle survival time of experiment group was 5days, while that of control group was 12days, which was significantly longer than experiment group ($P < 0.05$). Survival rate of experiment group at 1 week post-transplantation was 0, while the survival rate of control group was 56.25% at 1 week, 37.5% at 2 weeks and 31.25% at 3 weeks, respectively. Survival curve of two groups was examined with Log-Rank test, verifying that the survival difference between two groups was significant ($P = 0.0009$). Histological examination of graft liver showed a great scale of inflammatory cells infiltrating and large area of necrosis in grafted liver without tumor growth in experiment group, confirming that severe immune rejection occurred intra-graft. While there was no necrosis in grafts of control group, and inflammatory cells infiltrating was milder.

Conclusions

Donor transmitted malignancy brake the spontaneous immune tolerance after mice liver transplantation. Our study showed allogenic tumor cells might induce severe immune reaction in recipients leading to graft rejection and mice death. This finding may help for the establishment of marginal donor selection criteria in future.

Abstract # P-517

IL-22 Ameliorates Mouse Liver Ischemia-Reperfusion Injury (IRI) by Promoting Hepatocellular Autophagy. Yu Zhang^{1,2},

Haofeng Ji¹, Yuanxing Liu¹, Xiu-Da Shen¹, Feng Gao¹, Ronald W. Busuttil¹, Shusen Zheng², Jerzy W. Kupiec-Weglinski¹. ¹Dept of Surgery, Dumont UCLA Liver Transplant Center, Los Angeles, CA, USA; ²Dept of Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital, Zhejiang University, Hangzhou, Zhejiang, China

Background: We have shown that exogenous rIL-22 regulates liver IRI by activating STAT3 signaling. Here, we studied whether parenchymal autophagy, a pathway crucial for cell differentiation, and homeostasis, might be responsible for rIL-22 facilitated hepatocellular survival in IR-stressed livers. **Methods&Results:** First, we employed conditional IL-22Tg mice (B6; under the control of albumin promoter) in which hepatocytes selectively overexpress IL-22 protein. In a model of warm hepatic ischemia (90min), followed by reperfusion (6h), IL-22Tg mice were protected against liver IRI, evidenced by diminished serum ALT levels and preserved hepatic architecture, as compared with WT controls. We then assessed autophagy activity in IL-22Tg vs. WT livers subjected to IR insult. Interestingly, IL-22 overexpression significantly enhanced hepatocellular autophagy, evidenced by accumulated LC-3a and Beclin-1 levels, increased conversion of LC3-I/LC3-II, and abundant visualized endogenous LC3 punctae. This effect was accompanied by up-regulation of p-STAT3, and enhancement of HGF (Hepatocyte Growth Factor)/c-Met signaling. In parallel, intrahepatic expression of proinflammatory cytokines/chemokines (TNF- α , IL-1b, IFN-b and CXCL10) was blunted in IL-22Tg hosts. Strikingly, IL-22-facilitated autophagy in vivo was abolished and the hepatocellular injury was restored after adjunctive treatment with autophagy inhibitor (3-MA). Consistently, IL-22-induced autophagy prevented hydrogen peroxide (H2O2)-mediated hepatocyte necrosis in primary hepatocyte cultures. The cytoprotective effects of IL-22 on hepatocytes in vitro were confirmed by decreased cytoplasmic LDH release, increased conversion of LC3-I/LC3-II, and abundant visualized endogenous LC3 punctae. In contrast, addition of autophagy inhibitors reversed IL-22-induced hepatocellular autophagy/survival in vitro. **Conclusion:** This study provides evidence that IL-22 overexpression ameliorates liver IRI and promotes local cytoprotection/regeneration via integrated hepatocellular autophagy signaling network. These findings support the role of IL-22 as a novel regulator of hepatocyte survival and liver homeostasis in a therapeutic strategy against organ IRI in transplant recipients.

Abstract # P-518

AMP-Activated Protein Kinase (AMPK) Deficiency Increases Mitochondrial Dysfunction after Liver Transplantation in Mice.

Qinlong Liu¹, Hasibur Rehman¹, Yasodha Krishnasamy¹, Rick Schnellmann^{1,2}, John Lemasters¹, Zhi Zhong¹. ¹Medical University of South Carolina, Charleston, USA; ²Ralph H. Johnson VA Medical Center, Charleston, USA

Background & Aim: AMPK is critical for the regulation of metabolic processes in response to cellular stresses. Because mitochondrial dysfunction and ischemia/reperfusion injury occur in liver transplantation (LT), we investigated the role of AMPK in mitochondrial function and graft injury after LT. **Methods:** Livers were explanted from wild-type (WT), AMPK+/-, and AMPK-/- mice, respectively, and implanted into WT recipients. Liver mitochondrial polarization and cell viability were assessed in grafts of living recipients using intravital multiphoton microscopy of Rh123 that sequesters in polarized mitochondria and propidium iodide (PI) which labels the nuclei of non-viable cells, respectively. **Results:** In transplanted WT grafts, hepatic AMPK protein increased 38% and phosphorylated AMPK increased 2-fold, indicating increased expression and activation. AMPK expression was 55% lower in AMPK+/- mice and absent in AMPK-/- mice before LT. At 2 h after LT, mitochondria depolarization increased from 0% in controls to ~5%, 21% and 71% in WT, AMPK+/- and AMPK-/- grafts, respectively. Nuclear PI staining was barely detectable at this time, indicating mitochondrial depolarization occurring prior to cell death. At 6 h after LT, serum ALT increased from 34 U/L in controls to 950, 2300 and 8900 U/L in recipients of WT, AMPK+/-, and AMPK-/- grafts, respectively. Necrosis was

undetectable in controls whereas necrotic areas were 1.9%, 2.3% and 22% in WT, AMPK+/-, and AMPK-/- grafts, respectively. TUNEL-positive cells were 0.3% in the livers of sham-operated mice and increased to 0.8%, 0.9% and 2.4% in WT, AMPK+/-, and AMPK-/- grafts, respectively. Cleaved caspase-3 increased slightly in WT and AMPK+/- grafts and overtly on AMPK-/- grafts. c-Jun-N-terminal kinase (JNK) activation leads to the mitochondrial permeability transition. Hepatic total JNK1/2 expression was not altered after LT. Phosphorylated JNK1/2 increased slightly in WT and AMPK+/- grafts but markedly in AMPK-/- grafts. **Conclusion:** AMPK activation is required for protection of liver grafts after LT. Deletion of one copy of the AMPK gene slightly increased graft injury whereas AMPK deficiency markedly increased graft injury after LT. The protection of AMPK is mediated, at least in part, by inhibition of mitochondrial dysfunction (NIDDK).

Abstract # P-519

Prophylaxis of De Novo Hepatitis B Virus Infection With Lamivudine in HBsAg-Negative Naïve Recipients of Hepatitis B Core Antibody-Positive Livers: A 13-Year Single-Center Experience.

Ana Maria Braithwaite¹, Maria Garcia^{1,2}, Angel Rubin^{1,2}, Victoria Aguilera^{1,2}, Salvador Benlloch^{1,2}, Marina Berenguer^{1,2}, Carmen Vinaixa^{1,2}, Martin Prieto^{1,2}. ¹Hepatology and Liver Transplantation, Hospital Universitari y Politecnic La Fe, Valencia, Spain; ²Ciber de Enfermedades Hepaticas y Digestivas (Ciberehd), Valencia, Spain

Lamivudine(LAM) is extensively used to prevent de novo hepatitis B virus(HBV) infection in HBsAg-negative recipients of hepatitis B core antibody-positive(HBcAb+) livers. However, this practice is mainly derived from studies with short follow-up and limited number of naïve recipients. The aim of this study was to assess the long-term efficacy of LAM in HBsAg-naïve recipients of HBcAb+ livers. We aimed also to assess the relative contribution of LAM resistance when HBV infection occurs. The study population consisted of 52 HBsAg- naïve recipients of HBcAb+ livers who underwent liver transplantation (LT) between 1/1/1999 and 31/12-2011 and received LAM to prevent HBV infection, defined as detection of HBsAg on at least two consecutive occasions. After a median post-LT follow-up of 3.8 years (range: 0.1-11.6 yrs), 7 (13.5%) patients developed HBV infection at a median of 2 years (range: 1-6.5 yrs) after LT: in 3 cases after accidental LAM withdrawal and while on continued LAM therapy in the remaining 4 cases. The cumulated probability rates of HBV infection were 2%, 13%, 17%, and 23% at 1, 3, 5, and 10 years, respectively. LAM-specific mutations were present only in the 4 patients with HBV infection while on continued LAM therapy. HBcAb turned from negative to persistently positive after LT in four (11%) of the 45 patients who remained HBsAg- after LT. Patient survival rates were 94%, 74%, and 55% at 1, 5, and 10 years, respectively, with no deaths due to hepatitis B. **Conclusions:**HBV infection either overt or cryptic is increasingly observed with prolonged follow-up in HBsAg-negative naïve recipients of HBcAb+ grafts treated with lamivudine.

Abstract # P-520

Primary Non Function and Ischemia Times in the Era of Extended-Criteria Liver Allografts.

Umberto Maggi¹, Leonardo Centonze¹, Ernesto Melada¹, Gianluca Fornoni¹, Barbara Antonelli¹, Giorgio Rossi². ¹UO Chirurgia Generale e Trapianti di Fegato, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy; ²General Surgery and Liver Transplantation Unit, Department of Patophysiology and Transplantation, University of Milan, Milano, Italy

Background

It is generally accepted that very long ischemia times are detrimental for grafts in Liver Transplantation (LT), but clear evidence concerning the influence of ischemia times shorter than 12 hours on primary non function (PNF) in the era of extended donor criteria is still lacking.

Patients and Methods

Data were retrieved from a prospective database concerning LT performed in adult recipients during the last 15 years (from 1998 to 2013). PNF was defined by death or re-transplantation due to liver failure within 14 days from initial transplant unrelated to acute rejection. Early allograft dysfunction (EAD) was defined according to Olthoff's criteria.

Relationships between total ischemia time, PNF, 1-year graft survival, long-term survival and EAD were investigated.

Results

531 LT were performed from 1998 to 2013; 10 PNF (1.9%) occurred. Six patients underwent re-transplantation and 4 died. PNF was statistically related to 4 different variables on multivariate analysis: donor age over 60 years ($p=0.01$), female donor gender ($p=0.01$), total ischemia time longer than 10 hours ($p=0.03$), infusion of more than 30 fresh frozen plasma units during transplant procedure ($p=0.02$). Hepatectomy time retained a statistically significant correlation with PNF as well, with $p=0.03$, unlike warm ischemia time.

Ischemia time longer or shorter than 10hrs was significantly related to 1-year (84.5% vs 65.6% respectively, $p=.0001$) and long-term graft survival (70 vs 59.6%, $p=.04$) but not with EAD.

No statistical relation was found between EAD and 6-month-graft survival ($p=0.175$).

Conclusion

The rising number of extended-criteria liver allografts in recent years has probably changed the influence of ischemia time on liver function after LT. Donor age, total ischemia time, female donor gender and a high consumption of fresh frozen plasma units significantly influenced PNF development in our study.

Focusing on total ischemia time we identified a cut-off value of 10 hours significantly influencing 1-year and long-term graft survival. Hepatectomy time was also important.

This retrospective single-institution study should be hopefully validated by further multi-centre prospective studies.

Abstract # P-521

Comparison of Short-Term and Long-Term Outcomes after DCD and DBD Donor Liver Transplantation. M. Cortes, D. Chasiotis, S.E. Khorsandi, E. Kontis, V.R. Patcha, A. Athale, I. Gomez, A. Ciscar, Ma Heneghan, J. O'Grady, H. Vilca-Melendez, A. Prachalias, P. Srinivasan, M. Rela, N. Heaton, W. Jassem. *Liver Transplantation, Institute of Liver Studies, London, United Kingdom*

Introduction:

Liver transplantation (LT) using donation after cardiac death (DCD) allografts has been increased, however the occurrence of primary non-function (PNF) and ischaemic cholangiopathy (IC) has curbed their expansion. Here we compare the outcome of LT with donation after brain death (DBD) and DCD grafts performed in our institution.

Study design:

Between 2001-2013 we carried out 255 adult controlled DCD LT, which were compared to matched 255 DBD allografts. DCD grafts had a cut-off of maximum 30 min of warm ischaemia and were allocated to consented.

Results:

There was no difference in MELD at transplant, gender and recipient BMI between DBD and DCD transplants, DBD donors were older and had longer cold ischaemic times. Patients receiving DCD grafts had higher peaks of AST ($p<0.0005$) and PNF was significantly higher in DCD allografts ($p<0.0005$). There was no significant difference in ICU or Hospital stay between the 2 groups. No difference in incidence was found in renal replacement therapy after LT, incidence of rejection, biliary or vascular complications between the 2 groups. There were no significant differences in PIC occurrence between the 2 groups. Although more patients with hepatocellular carcinoma (64.06%) received a DCD graft, there was no difference in HCC recurrence. Overall patient and graft survival was higher in the DBD group ($p=0.025$, $p=0.002$). When transplants for HCC are excluded, no difference in overall patient and graft survival are observed between the two groups.

Conclusions:

The data shows a favourable outcome of liver transplants using DCD allografts. More work is required to explore the impact of DCD status on HCC recurrence. Minimising CIT and optimising donor/recipient matching contribute to achieve good outcome.

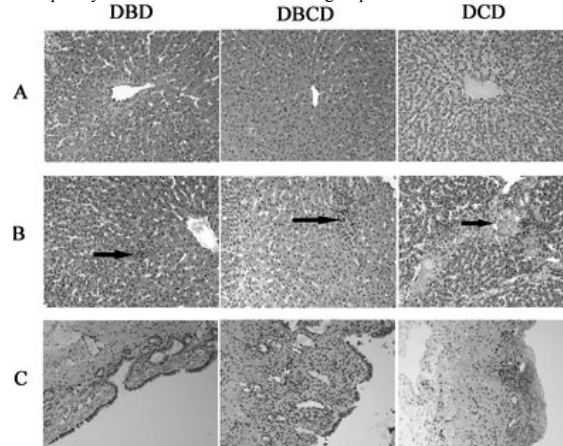
Abstract # P-522

Pathological Characteristics of Liver Allografts from Donation after Brain Death followed by Cardiac Death in Pigs. Zhiyong Guo, Hui Ye, Guixing Xu, Chuanzhao Zhang, Xiaoshun He. *The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

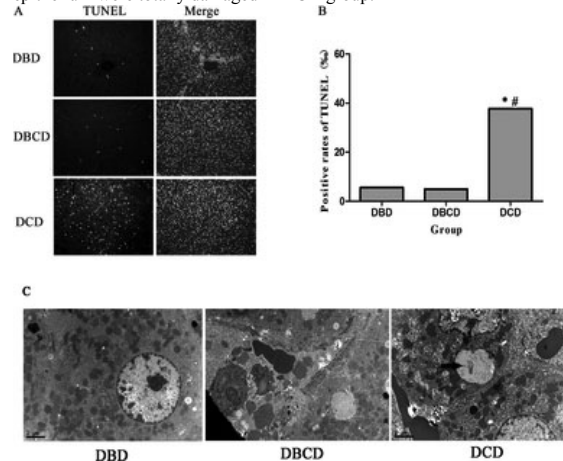
Objective Donation after brain death followed by cardiac death (DBCD) is a unique practice in China. The aim of this study is to define the pathologic characteristics of donated livers from DBCD in large animal models.

Methods Fifteen male pigs (25-30kg) were allocated randomly into DBD, DCD and DBCD groups ($n=5$ in each group). Brain death was induced by augmenting intracranial pressure with an inserted catheter into intracranial space using our modified technique. The donor livers were perfused *in situ* with 1 L hypertonic citrate adenine solution and 1 L Celsior solution at 4°C. Isolated organs were stored with 4°C Celsior solution for 4 hours. Liver tissue samples were kept for hematoxylin and eosin stain, TUNEL testing and electron microscopy examination. Bile duct samples were adopted for pathologic examination.

Results The necrotic extent of hepatocytes in DBD and DBCD groups was significant less than in DCD group. Spot necrosis was showed in hepatic parenchyma of DBD and DBCD groups, while a large area of necrosis was showed in DCD group. There was no significant difference in necrotic area of hepatocytes between DBD and DBCD group.



The positive rates of apoptotic hepatocytes in DBD, DBCD and DCD groups were $5.62\pm2.99\%$, $4.96\pm1.11\%$, $37.70\pm33.39\%$, which was significant higher in DCD group than DBD and DBCD groups ($p<0.05$). The structures of bile duct were intact in DBD and DBCD groups. The bile duct injury in DCD group was severer than in DBD and DBCD groups. The structures of biliary epithelium were totally damaged in DCD group.



Conclusion The pathologic characters of DBCD liver were similar to the DBD liver, although the functional discrepancy between the two types of donors still needs to be clarified in the future.

Abstract # P-523

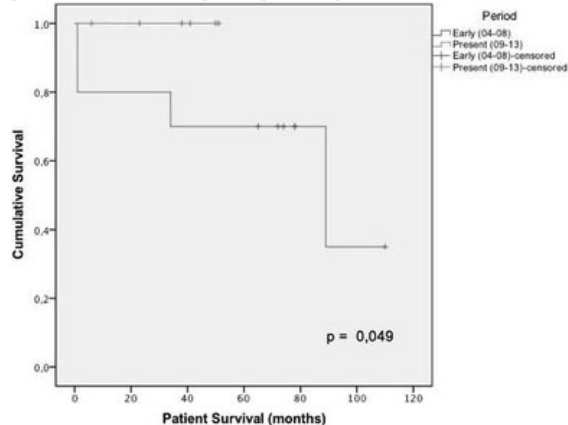
The Impact of the Learning Curve on the Outcome of Domino Liver Transplantation. Luis M. Marin-Gomez¹, Gonzalo Suarez-Artacho¹, Jose M. Alamo-Martinez¹, Carmen Bernal-Bellido¹, Juan Serrano-Diaz-Canedo¹, Jose M. Sousa-Martin², Francisco J. Padillo-Ruiz¹, Miguel A. Gomez-Bravo¹. ¹Liver Transplantation Unit, University Hospital "Virgen del Rocío", Seville, Spain; ²Hepatology Unit, University Hospital "Virgen del Rocío", Seville, Spain

Domino liver transplantation (DLT) is a strategy used to increase the number of available grafts. It is mandatory that the graft should be fully functional

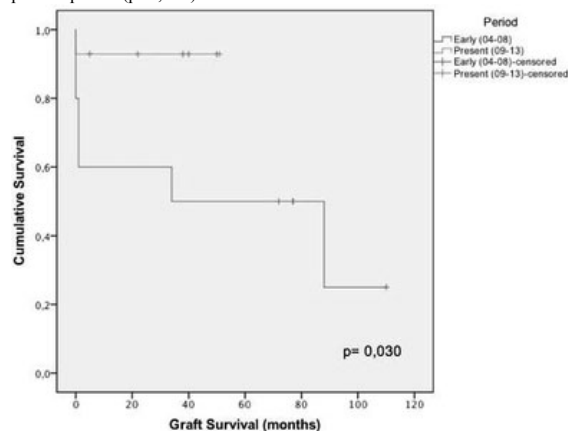
and the genetic defect should recur with sufficient latency period in the new recipient. Familial amyloidotic polyneuropathy (FAP) satisfies these conditions.

We retrospectively reviewed our prospective database of DLT. Between July 2004 and April 2013, we performed 12 DLT. We assessed age, gender, real MELD, waiting list time, cold and warm ischemia time, intraoperative transfusion requirements, hospital stay, early peri-transplantation morbidity (post-reperfusion syndrome, intraoperative cardiac arrest, post-transplantation thrombotic events and biliary morbidity), acute cellular rejection, re-transplantation, mortality, patient and graft survival.

With the intention to study the effect of the learning curve in the global survival results (Including together the FAP-donors and FAP-recipients group), we divided our serie in two periods. The early period (from 2004 to 2008) and the present period (from 2009 to 2013). The crude mortality was 40% vs 0%, $p=0,042$, in the early and present period respectively. The cumulative patient survival (Figure 1) is also significative in favour of the present period ($p=0,049$). The graft lost prevalence was 60% vs 7,1%, $p=0,019$, in the early and present period respectively.



The cumulative graft survival (Figure 2) is also significative in favor of the present period ($p=0,030$).



As conclusion, we believe that DLT is a complex procedure, whose initial results are conditioned by the learning curve.

Abstract # P-524

Liver Transplantation Using Steatotic Donor Grafts: Characteristic Molecular Mechanisms Associated with Ischemia Reperfusion Injury. Jihee L. Suh, Ricardo C. Gehrau, Shawn Pelletier, Valeria R. Mas, Daniel G. Maluf. *Surgery, UVA, Charlottesville, VA, USA*

Severe graft steatosis has been associated with poor outcomes after liver transplantation (LT). The present study aimed to identify molecular mechanisms associated with ischemia reperfusion injury (IRI) in steatotic liver allografts.

Patients and Methods: Consecutive LT cases ($n=46$) were grouped by allograft steatosis as Non-Fatty (NF) ($< 15\%$, $n=22$) and Fatty (F) ($> 15\%$, $n=24$). Paired biopsy samples at pre (L1) and post-reperfusion (90 min, L2) were

collected. Total RNA was isolated and used for gene expression microarrays hybridization. Probeset summaries were obtained using RMA algorithm. Pairwise comparisons between L1 vs. L2 were fit using two-sample t-test. A p -value ≤ 0.001 was considered significant. FDR was controlled at 10%. Affected cellular functions and molecular pathway analysis from the identified gene expression profiles were conducted using IPA tool. Top significant genes were confirmed using RT-qPCR.

Results: Demographics and clinical characteristics were similar between groups. Pairwise comparisons between L1 vs. L2 identified 474 genes and 467 genes significantly and differentially expressed for NF and F allografts, respectively. Both molecular profiles revealed 122 common genes encoding mostly for pro-inflammatory cytokines and chemokines involved in myeloid cells, neutrophils, and phagocytes mobilization. Pathway analyses were performed for each molecular profile. Interestingly, a comparison analysis revealed marked T cell-mediated immune response activation in F allografts post-reperfusion. Deregulated F allograft cellular functions post-reperfusion demonstrated chemotaxis activation and increased proliferation of T lymphocytes, thymocytes, with increased T helper cells differentiation. However, NF allograft post-reperfusion molecular profiles showed T lymphocytes proliferation inhibition. Post-reperfusion F allograft molecular profiles also associated with activation of connective tissue cells and keratinocytes proliferation and increased fibroblasts mobilization may be in response to increased tissue damage. Conversely, the connective tissue cells proliferative activity was decreased in NF graft livers.

Conclusions: Increased allograft steatosis may trigger exacerbation of IRI through a pro-inflammatory processes by induction of a T cell-mediated immune response.

Abstract # P-525

A Review of Initial Graft Function and Biliary Complications in Recipients of DCD Liver Grafts Receiving Streptokinase Pre-Flush during Procurement. Dhakshinamoorthy Vijayanand, Caroline Atkinson, Rajveer Thethi, Rajiv Dave, Magdy Attia, Ernest Hidalgo, Giles Toogood, Stephen Pollard, Raj Prasad, Niaz Ahmad. *Hepatobiliary and Transplant Unit, St James's University Hospital, Leeds, United Kingdom*

Introduction: Liver transplantation using grafts from donors after circulatory death (DCD) have doubled in the last decade. The extent of primary warm ischaemia time and the quality of graft flush at the time of procurement and the quality of re-perfusion at implantation determines subsequent graft function & biliary complications. A normothermic pre-flush with anti-fibrinolytic agent streptokinase (SK) at the time of procurement has shown to improve hepatic microvascular perfusion in animal models.

Aim: We reviewed our experience of using streptokinase pre-flush for DCD liver procurement on initial graft function and biliary complications over a period of 3 years (September 2009- September 2012).

Methods. Outcome of DCD liver transplants were reviewed from January 2008 to December 2013. Streptokinase (1,500,000 units) pre-flush was introduced to our DCD procurement protocol in September 2009 and discontinued in October 2012 with the implementation of the National Organ Retrieval Service (NORS) protocol. During this period 28 DCD livers had SK pre-flush. Outcome of those grafts were compared with 31 DCD liver transplants in pre and post SK periods. Initial poor function was defined according to the Ploeg-Maring criteria.

Results: 61 DCD liver transplants have been performed in our centre since Jan 2008 (28 SK and 33 Non-SK). One patient (3.6%) in SK group had primary non-function (PNF) compared to 2 patients (6.2%) in non-SK group. Initial poor function based on day 2-7 serum Transaminase and Pro-thrombin time was higher in non-SK group but failed to reach statistical significance (24% vs 29%, $p=0.67$). Six patients (21%) in SK group developed biliary complications compared to 10 patients (31%) in non-SK group (NS).

Conclusion: Streptokinase pre-flush at the time of procurement showed a trend towards improved outcome in DCD liver transplantation. Both PIF and biliary complication rates were lower in SK group but failed to achieve a statistical significance. This may have been due to smaller number of patients in our cohort and premature termination of the use of SK pre-flush.

Abstract # P-526

Safe Use of Liver Grafts from Hepatitis B Surface Antigen Positive Donors in Liver Transplantation. Songfeng Yu, Wei Zhang, Zhiyong Yu, Longyu Cheng, Yufu Ye, Jun Yu, Weilin Wang, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China*

Background and objectives: The disparity between the large amount of patients waiting for liver transplantation (LTx) and the limit of available organ donors has forced the transplant community to accept so called marginal grafts that might have been discarded in previous years. In this regard, utilizing liver grafts from hepatitis B virus (HBV) surface antigen (HBsAg) positive donors could have a possibility to increase potential donor pool, especially in high HBV prevalence area. The aim of this study was to assess the outcomes and experiences of liver transplants from HBsAg positive donors in a single transplantation center.

Methods: From January 2010 to February 2013, 42 adult patients underwent LTx using liver grafts from HBsAg positive donors and 327 patients received liver grafts from HBsAg negative donors. The outcomes including complications and survivals of these two groups were compared and the antiviral therapy retrospectively reviewed.

Results: HBsAg positive liver grafts were more likely to be allocated to patients with HBV-related diseases and/or cancer diagnosis than HBsAg negative grafts. There were no difference based on sex, age at transplantation, model for end stage liver disease score, total operation time, and blood loss in operation. Post transplant monitoring results showed similar graft function regain after LTx and no differences in complications such as primary nonfunction, acute rejection, biliary complications, and tumor recurrence. Patient and graft survivals were also comparable between the two groups. Furthermore, HBsAg persisted after LTx in all patients received positive grafts. While long time follow-up showed HBVDNA of these patients were quickly cleared and maintained undetectable thereafter, and none had developed HBV flare up under antiviral therapy of oral nucleotide analogues, no matter with or without hepatitis B immunoglobulin.

Conclusions: Utilization of liver grafts from HBsAg positive donors does not increase the postoperative morbidity and mortality. Therefore it is a safe way to expand the donor pool when no suitable donor livers are available. Our experience also suggests that hepatitis B immunoglobulin is dispensable for HBV prophylaxis in the present era of highly effective antiviral therapy.

Abstract # P-527

State of the Nation - Management of Acute Liver Failure in a Developing Country. Impact of the Advent of Liver Transplantation. C. Ramkiran, B. Singh, K. Venugopal, S. Mohan, R. Ravichandra, B. Ashish, M.K. Dharmesh, P.T. Cherian, S.M. Rela. *HPB & Liver Transplantation, Global Hospitals, Hyderabad, Andhra Pradesh, India*

Introduction:

Outcome of acute liver failure (ALF) remains dismal in developing countries with a mortality of 60-70% (up to 84% in children) in patients who reach intensive care facilities, although the vast majority do not reach these facilities, when outcomes would clearly be worse. Given that liver transplantation(LT) has only recently become an option, its impact on ALF has largely been unstudied in these populations. We hereby report the outcomes of patients we have transplanted for ALF and highlight issues we have faced in setting up such a service.

Methods:

We retrospectively analyzed the data of all 14 patients who presented to us in acute or acute on chronic liver failure who received a LT between October 2009 and July 2013. All acute recipients fulfilled King's college criteria. Data on their presentation, perioperative stay, morbidity and mortality were collated and analyzed to derive strategies for improvement. The cost implications of ALF in a private health care system are discussed.

Results:

Of the 14 patients, 5 were male and the median age was 21 years (8 to 50 years). Etiology was viral hepatitis in 7 patients(50%), Wilson's disease in 2(14.3%), drug induced hepatitis in 1(7.1%) and Non-A Non-B hepatitis in 4 patients(28.6%). Mean duration between jaundice and encephalopathy was 6.6 days. All the patients underwent living donor LT (1 left lateral, 4 left, 9 right lobe grafts). Four of 14 patients(28.6%) died within 30 days of operation. Median time of discharge from the hospital was 23 days among those alive. One patient developed portal vein thrombosis and later

pancytopenia – she died 8 months after transplantation. Eight patients(57%) showed complete recovery and are on regular follow up. One patient suffered a partial neurological deficit (improving).

Conclusion:

As expected, LT has improved ALF outcomes compared to historical data with a current mortality rate of 14.3% for patients transplanted in the last 12 months. Delayed referrals and high infection rates played an important role in mortality in our series. Refined surgical technique, improved ITU care including neuroprotection strategies and fast track donor assessment are measures that we used to improve outcomes, as our service developed. Increased transplantation services and early referral could potentially improve things further.

Abstract # P-528

Molecular Absorbent Recirculating System in Acute Liver Failure in a Mexican Population. Laura E. Cisneros^{1,2}, Maria R. Muñoz², Linda E. Muñoz³, Jose A. Velarde⁴, Rosalba Moreno⁵, Eduardo Marin⁶, Nahum Méndez⁷. ¹Hepatology, Hospital San José Tec de Monterrey, UMAE # 25 IMSS, Monterrey, Nuevo León, Mexico; ²Intensive Care, Unidad Médica de Alta Especialidad # 25 IMSS, Monterrey, Nuevo León, Mexico; ³Hepatology, Hospital Universitario de Monterrey, Monterrey, Nuevo León, Mexico; ⁴Gastroenterology, Hospital Civil de Guadalajara, Guadalajara, Jalisco, Mexico; ⁵Gastroenterology, Hospital de la Beneficiencia Española, Puebla, Mexico; ⁶Hepatology, Departamento de Investigación Biomédica, México, Mexico

Thirty-eight ALF patients with Acute Liver failure were listed for emergency liver transplantation and treated with Molecular Absorbent Recirculating System (MARS) in seven different tertiary Mexican hospitals Aim: The aim of this study was to assess the effects of the Molecular Absorbent Recirculating System (MARS) on patients with acute liver failure (ALF) in a Mexican population . Material and Methods: From August 2003 to December 2011, MARS was used in 38 patients with ALF with different etiologies . The treatment was performed every day over 8 hours. The patients were examined using a standard liver function test , vital signs, presence of ascites and encephalopathy before and after each treatment. The therapeutic response, patient status, follow-up status. Mars was used like a bridge to liver transplantation. Results: Seventy-nine MARS procedures were performed. MARS was used for ALF in 38 patients The ALF etiology was principally drug related with 20 patients (29.2%)severe acute alcoholic hepatitis in six (8.5%), idiopathic in six (8.5%). hepatitis a virus in four (5.6%) and autoimmune hepatitis in two . There were significant improvements in serum bilirubin (p = 0.000), aspartate aminotransferase (p = 0.000), alanine aminotransferase (p = 0.030), gamma-glytamyl transpeptidase (p = 0.044), alkaline phosphatase (p = 0.006), and encephalopathy grade (p = 0.000). Thirty-eight ALF patients were listed for emergency liver transplantation and treated with MARS; 20 of these patients died on a waiting list (52.6%), 18 survived (47.4%). Of the 18 surviving patients only four underwent liver transplantation (10.4%)and 14 (37%; 95% confidence interval [CI] 0.5%-93%)avoided transplantation because their liver function improved, and they fully recovered thereafter .

In conclusion: MARS is a safe and effective procedure. Our results suggest that MARS therapy can contribute to native liver recovery in ALF patients.

Abstract # P-529

Acute Liver Failure in Taiwan-A Nationwide Longitudinal Analysis. Cheng-Maw Ho¹, Chih-Hsin Lee², Jann-Yuan Wang³, Yao-Ming Wu¹, Ming-Chih Ho¹, Rey-Heng Hu¹, Po-Huang Lee¹. ¹Department of Surgery, National Taiwan University Hospital, Taipei, Taiwan; ²Department of Internal Medicine, Taipei Tzu-chi Hospital, Taipei, Taiwan; ³Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

Aim

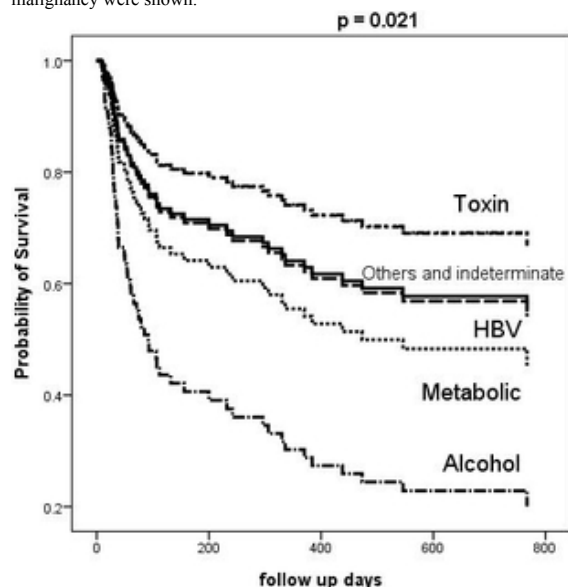
We investigated the etiological exposure, outcome and prognostic factors of acute liver failure (ALF) in Taiwan.

Methods

From the longitudinal health insurance database 2005, we identify patients admitted due to ALF between January 2005 and September 2007. ALF was diagnosed based on ICD code, laboratory order, and prescriptions. Risk factors were identified using Cox or logistic regressions when appropriate.

Results

A total of 218 patients (150 males) were identified. Mean age is 57.9±17.1 years and 1-year survival rate was 49.3%. Possible etiological exposures disclosed virus (45.4%, mainly hepatitis B virus), chemical (alcohol or toxin) (33.5%), malignancy (4.6%), miliary tuberculosis (1.4%), others (2.3%) and indeterminate (13.3%) and the adjusted survival curves excluding malignancy were shown.



Multivariate Cox regression revealed that alcohol consumption (Hazard ratio [HR] [95% confidence interval] 1.67 [1.01-2.77]), malignancy (HR 2.90 [1.92-4.37]), frequency of check per week for total bilirubin (T-bil) (HR 1.57 [1.40-1.76]), occurrence of sepsis (HR 1.85 [1.20-2.85]), and receiving hemodialysis/hemofiltration (HR 2.12 [1.15-3.9]). One-year survival rate in patients of ALF without malignancy was 61.9%. Logistic regression analysis revealed risk factors for in-hospital hemorrhagic complication were peptic ulcer and respiratory failure, and for sepsis, renal insufficiency, receiving computed tomography, and frequency of T-bil check per week. Eight were considered for liver transplantation (LT) consideration. Among them, three survived without LT, and one received LT and survived.

Conclusion

In Taiwan, ALF is mainly due to viral infection. Patients with malignancy and alcohol exposure had worst prognosis.

Abstract # P-530

Prognostic Criteria after Artificial Liver MARS in Fulminant Hepatitis.

Vincenzo Morabito¹, Massimo Rossi¹, Quirino Lai², Francesco Pugliese³, Simone Novelli³, Giancarlo Ferretti⁴, Pasquale B. Berloco¹, Gilanrdo Novelli¹. ¹General Surgery and Organ Transplant, Sapienza University of Rome, Rome, RM, Italy; ²Liver Transplant Unit, Azienda Ospedaliero Universitaria, Pisa, Pisa, Italy; ³Anesthesia and Intensive Care, Sapienza University of Rome, Rome, RM, Italy; ⁴Aerospace and Mechanical Engineering, Sapienza University of Rome, Rome, RM, Italy; ⁵Infectious Disease, Sapienza University of Rome, Rome, RM, Italy

Background. The aim of this study was to confirm the improvement of prognostic parameters after treatment with the Molecular Adsorbent Recirculating System (MARS) in patients with fulminant hepatitis (FH) respect to analysis effected on 45 pts in 2009.

Materials. New twenty-six pts with diagnosis of FH were enrolled in this study for a total of 71 pts. Continuous variables were provided as medians and interquartile ranges. Continuous variables were compared with the Kruskal-Wallis test. A p-value <0.05 was considered statistically significant. A receiver operating characteristic (ROC) curve analysis was performed with the intent to validate the investigated score in predicting survival, need for LT or death: sensitivity and specificity were evaluated.

Results. The entire cohort was stratified in 2 groups: patients alive without LT (n=28) and patients transplanted or dead before LT (n=43). Thirteen pts (18.3%) died before LT and in 30 cases (42.3%) a LT was performed. ROC analysis was performed with the intent to evaluate the predictive role of the

scoring system for LT or patient death. The score showed a high AUC (91.4%). The arbitrary cut-off values of 2 and 4 showed high sensitivity (81.4 and 48.8%) and specificity (92.9 and 96.4), respectively. Patients corresponding to the low risk group (scoring points: 0-2; n=36) did not experience deaths, and only 8 (23.5%) of them underwent a LT. Patients with intermediate risk (3-4 points; n=22) were mainly transplanted (20 pts; 90.9%). In the high risk group (5-6 points; n=13), no patient survived.

Conclusions. We were able to confirm that the following criteria: GCS ≥ 11 with ICP <15 mm Hg, lactate level < 3 mmol/L, TNF-α < 20 pg/mL, IL-6 < 30 pg/mL, and a change in hemodynamic instability from hyperkinetic to normal kinetic conditions, after 40 hours by the first MARS treatment, enabled us to determine their outcomes.

Abstract # P-531

Emergency Living Donor Liver Transplantation Using ABO-Incompatible Donor for Acute Liver Failure.

Masahiro Shinoda¹, Osamu Itano¹, Hideaki Obara¹, Minoru Kitago¹, Taizo Hibi¹, Yuta Abe¹, Hiroshi Yagi¹, Minoru Tanabe², Yuko Kitagawa¹. ¹Surgery, Keio University School of Medicine, Tokyo, Japan; ²Hepato-Biliary-Pancreatic Surgery, Tokyo Medical and Dental University, Tokyo, Japan

Background: Outcomes of emergency ABO blood type incompatible (ABOI)-living donor liver transplantation (LDLT) for acute liver failure (ALF) have not been well reported so far. We assessed the outcome of emergency ABOI-LDLTs for ALF in our hospital. Patients and methods: We have performed 120 cases of adult LDLT since 1998. Out of the 120 cases, there have been 24 cases of ABOI-LDLT for ALF including 5 cases of emergency ABOI-LDLT. Three cases of emergency ABOI-LDLT were performed after introduction of rituximab (cases 1, 2, and 3). Our current protocol for elective ABOI-LDLT is as follow: 1) the systemic immunosuppression consists of calcineurin inhibitor, steroid, and mizoribine, 2) plasma exchange (PE) and splenectomy are performed, 3) rituximab is administered 1-3 weeks before surgery, and 4) portal infusion treatment is postoperatively employed. In emergent ABOI cases for ALF, we attempted to employ the protocol above as much as possible. Results: Although significantly higher incidences of postoperative bleeding, cytomegalovirus infection, and thrombotic microangiopathy were observed in the group of ABOI cases, there was no significant difference of 5-year survival rate between the groups of non-ABOI (n=96) and ABOI (n=24). In the emergent ABOI cases, blood type of fresh frozen plasma used for PE was converted to type AB on -3, -2, and -7 POD in case 1, 2, and 3, respectively, resulting on the successful reduction of anti-donor blood type antibody titers. Rituximab was administered on 0 and 1 POD in case 1, on -2 and 1 POD in case 2, and on 1POD in case 3, respectively. Rate of CD19 and CD20 positive lymphocytes in spleen and rate of CD 19 positive lymphocytes in peripheral blood were higher in the emergent ABOI-LDLT than those in elective ABOI-LDLT on the operation day. Postoperative antibody titers were higher in the emergent ABOI-LDLT than in elective ABOI-LDLT. All other treatments in the protocol were uneventfully performed. No antibody mediated rejection occurred in the 3 cases of ABOI-LDLT. The 3 cases are still alive for 7, 6, and 1.5 years, respectively. Conclusion: Although timing of rituximab administration was modified, emergency ABOI-LDLTs for ALF were successfully performed employing our current protocol for ABOI-LDLT.

Abstract # P-532

The Impact of IL-28B Polymorphism and Diabetes on SVR after Antiviral Therapy (AT) for Post- Liver Transplant (LT) HCV Recurrence. Davide Bitetto^{1,12}, Vittoria Vero¹, Silvia Pecere^{1,8}, Luca Belli², Rosa M. Iemmolo³, Maria C. Morelli⁴, Francesca Donato⁵, Patrizia Burra⁶, Maria Rendina⁷, Francesca R. Ponziani⁸, Lucia Miglioresi⁹, Daniele Di Paolo¹⁰, Manuela Merli¹¹, Antonio Gasbarrini⁸, Stefano Ginanni Corradini¹¹, Edmondo Falletti¹², Tullia De Feo¹³, Pierluigi Toniutto¹², Stefano Fagioli¹.

¹Gastroenterology and Transplant Hepatology, Papa Giovanni XXIII Hospital, Bergamo, Italy; ²Niguarda Ca' Granda Hospital, Milan, Italy; ³University of Modena, Modena, Italy; ⁴Sant'Orsola Malpighi Hospital, Bologna, Italy; ⁵IRCCS Foundation Ca' Granda Maggiore Hospital, Milan, Italy; ⁶University of Padua, Padua, Italy; ⁷University of Bari, Bari, Italy; ⁸A. Gemelli Hospital, Rome, Italy; ⁹San Camillo Spallanzani Hospital, Rome, Italy; ¹⁰University of Torvergata, Rome, Italy; ¹¹University "La Sapienza", Rome, Italy; ¹²University of Udine, Udine, Italy; ¹³Nord Italian Transplant, Milan, Italy

Diabetes (DM) is a well known negative prognostic factors for SVR to Dual AT in the non-transplant setting. Donor/recipient IL-28B polymorphisms can be a predictor of SVR. This study aimed at investigating the interactions between calcineurin inhibitors, IL-28B polymorphism, diabetes and SVR after LT.

This retrospective multicenter study included 381 LT recipients (LTR) treated with dual AT for recurrent HCV from 2001 to 2009. In a subgroup of 147 patients IL-28B rs12979860 C/T polymorphism was assessed in both donors and recipients.

DM was present in 148/381 (38.3%) LTR. The only factor found to be associated to DM was recipient/donor IL-28B genotype in patients under Tacrolimus (TAC): 4C-alleles 0/7 (0.0%), 3C-alleles 8/31 (25.8%) and ≤ 2 C-alleles 18/41 (43.9%), $p=0.012$ for trend. SVR rate was 35.4% (135/381): 69.8% (60/86) G2-3 vs 25.4% (75/295) G1-4. DM was associated with lower rates of SVR in G2-3 patients (11/27 Vs 49/59, $p=0.0002$), but not in G1-4 alone. The association between DM and SVR was confirmed by logistic regression in G2-3 patients. Analysis of risk factors for no response to AT: according to DM, TAC and carrying less than 3 IL-28b "C" alleles, patients were stratified in four groups: a) no risk factors; b) 1 risk factor; c) 2 risk factors; d) 3 risk factors with the following rates of SVR: a) 19/29 (65.5%); b) 22/64 (34.4%); c) 13/36 (36.1%); d) 1/18 (5.6%), $p=0.0002$ for trend. Donor and recipient rs12979860 alleles influence the onset of DM in TAC group, and DM itself has a significant impact on SVR.

Abstract # P-533

The Mean Platelet Volume and the Mean Platelet Volume/Platelet Count Ratio As Potential Markers for Progressive Liver Fibrosis in Post Transplant Hepatitis C (HCV) Patients. Yamen Jabri, Shirin Khorsandi, Wajid Jasssem, V.R. Patcha, Ruchi Sharma, Andreas Prachalias, Parthi Srinivasan, Arjuna Singanayagam, Kosh Agarwal, Nigel Heaton. Institute for Liver Studies, Kings College Hospital, London, United Kingdom

BACKGROUND AND AIMS:

The mean platelet volume (MPV) may be a useful marker of the degree of liver fibrosis in patients with viral hepatitis and the mean platelet volume/platelet count ratio (MPV/PC) ratio has been suggested as being more representative of platelet inflammatory potential. The aim of this study was to determine whether MPV or MPV/PC ratio were important variables associated with progressive fibrosis in serial biopsies of post liver transplant Hepatitis C (HCV) patients.

MATERIALS AND METHODS:

Post Hepatitis C transplant patients biopsies were histologically divided into two groups: patients with mild fibrosis (Ishak staging scores of 0-2) and advanced fibrosis (Ishak staging scores of 3-6). MPV and platelet count were performed at time of biopsy and the MPV/PC ratio calculated. For statistical analysis the Mann Whitney U test T test was used.

RESULTS:

Twenty five post-transplant patients with HCV were studied. There were 19 males and 6 females. Age (mean $\pm$ SD) age, 57 ± 10.2 years). Each patient had 2 to 6 biopsies in the 5 year follow up period of this study. The total number of biopsies was 73. The fibrosis scores of 62 biopsies (85%) were less or equal to 2. 11 biopsies (15%) were higher than 2. MPV values were significantly higher from patients with advanced fibrosis as compared to those with mild

fibrosis (9.43 ± 0.69 fL vs. 8.91 ± 1.57 fL.) P value = 0.044. However, the MPV/PC count ratio had no statistical difference between the two groups (0.0793 ± 0.0742 vs. 0.0823 ± 0.0314) P value = 0.143.

CONCLUSION:

MPV may provide useful information to predict in post transplant Hepatitis C (HCV) patients. However, MPV/PC was not a useful surrogate marker of progressive liver fibrosis.

Abstract # P-534

The Results of Response Guided Therapy for Hepatitis C Virus Recurrence Based on Early Protocol Liver Biopsy after Liver Transplantation in the Favorable Interleukin-28B Genotype Prevalent Area. Hyeyoung Kim¹, Kwang-Woong Lee¹, Nam-Joon Yi¹, Kyoungbun Lee², Suk-Won Suh¹, Tae Yoo¹, Min-Su Park¹, YoungRok Choi¹, Geun Hong¹, Hae Won Lee^{1,3}, Kyung-Suk Suh¹. ¹Surgery, Seoul National University College of Medicine, Seoul, Korea; ²Pathology, Seoul National University College of Medicine, Seoul, Korea; ³Surgery, Seoul Metropolitan Government - Seoul National University Boramae Medical Center, Seoul, Korea

Hepatitis C virus (HCV) recurrence after liver transplantation (LT) is universal and progressive. Serial liver biopsies remain the best way of monitoring disease progression. There is a trend of HCV treatment based on protocol biopsy. Here, we report the recent results of response guided therapy for recurrent HCV based on early protocol biopsy after LT in the favorable interleukin-28B genotype prevalent area, Korea. We prospectively collected the data and retrospectively analyzed the results of protocol biopsies (3, 6 and 12 months after LT) in HCV related recipients who underwent LT between January 2010 and December 2012. In case of fibrosis or moderate and more inflammation on histology, and mild hepatitis combined with abnormal liver function test, we started HCV treatment with ribavirin and pegylated interferon. According to the treatment response, we treated HCV recurrence for 6 months in case of rapid virological response, and treated for 1 year after negative conversion of HCV RNA in complete or partial early virological response. Among total 510 recipients, 50 patients were related with HCV (9.8%), and among them, 60.0% (n = 30) underwent early protocol biopsies more than once. The mean follow-up was 27.4 months (12 - 44 months) after LT. Mean age was 58.1 years, and 56.7% was living donor LT. The genotype I and II were in 53.3% and 26.7%. Finally, 66.7% (n = 20/30) started treatment for HCV recurrence based on early protocol biopsies. Early virological response including one case of rapid virological response was present in 90.0% (18/20). Except 7 patients of ongoing treatment or follow-up, sustained virological response was achieved in 53.8% (n = 7/13) until last follow-up. Three patients had an end-of treatment response but relapsed (23.1%). The remaining 3 patients stopped the treatment due to non-tolerance (n = 2) or non-compliance (n = 1). In conclusion, response guided therapy for HCV recurrence based on early protocol biopsy after LT showed good result in the favorable interleukin-28B genotype prevalent area.

Abstract # P-535

Living Donor Liver Transplantation in a Patient With Strongly Positive Crossmatch. Naimish N. Mehta¹, Shailendra Lalwani¹, Vivek Mangla¹, Anil Arora², Kamini Khillan³, R. K. Saran³, Samiran Nundy¹. ¹Department of Surgical Gastroenterology & Liver Transplantation, Sir Ganga Ram Hospital, New Delhi, India; ²Department of Gastroenterology & Transplant Hepatology, Sir Ganga Ram Hospital, New Delhi, India; ³Department of Blood Transfusion Medicine, Sir Ganga Ram Hospital, New Delhi, India

Introduction Historically a positive pretransplant antibody crossmatch has been a contraindication for performing solid-organ transplants. Liver transplant has been performed in selected patients with positive crossmatch, without detrimental effect on patient and graft survival. However some authors have reported increased incidence of acute cellular rejection leading to poor graft survival and patient survival. We present our experience of living donor liver transplantation (LDLT) in a patient with strongly positive crossmatch. Case Report

We present a case of 49 year old male who was being evaluated for LDLT, for Hepatitis C virus related end stage liver disease and hepatocellular carcinoma. However during routine testing prior to the scheduled transplant procedure, it was found that he has multiple antibodies in the blood, leading to strongly positive cross match. Panel reactive antibodies (PRAs), DSAs (IgG class) and CD 20 count were determined. His antibody titre was 1:512, aggressive

immunosuppressive therapy is generally reserved for ABO-incompatible transplant, however in spite of a ABO compatible donor, our patient was subjected to 5 sittings of plasmapheresis, 5 Immunoglobulin injections (IVIg) and Monoclonal antibodies (Rituximab) administered one week before the transplant operation to reduce chances of antibody mediated rejection. CD-20 cell count reduced to zero and his antibody titre reduced to 1:8 weakly positive on the day of transplant. Patient successfully underwent LDLT with right lobe graft, graft to recipient weight ratio of 1.22, Cold ischaemia and warm ischaemia time of 132 and 79 min respectively. Total hospital stay was 12 days. Various studies have reported inferior graft and patient survival, cholestasis, thrombocytopenia, early & increased episodes of rejection in patients with strongly positive cross match. In the current study, patient has antibody titres of 1:8 at follow up of 3 months, normal liver function and no episodes of acute rejection.

Conclusion

LDLT can be safely performed despite strongly positive crossmatch with aggressive immunosuppression pre-transplant.

Abstract # P-536

Assessment of HCV-Induced Insulin Resistance in Egyptian HCV End-Stage Cirrhotic Patients before and after Living Donor Liver Transplantation. Mahmoud Elmeteni, Mohamed Sakr, Magdah Elmonayeri, Eman Barakat, Sara Abdelhakam, Hend Ebadah, Mohamed Bahaa, Amr Abdelaal, Mohamed Fathy, Hany M. Dabbous, Iman Fawzy. *Ain Shams Center for Organ Transplantation (ASCOT), Ain Shams University, Cairo, Egypt*

Introduction: HCV virus has been shown to induce insulin resistance (IR) itself and thereby to promote hepatic inflammation and fibrosis and a lower SVR rate. Patients with Type 2 diabetes mellitus or even IR have higher post transplantation complication rates than those without glucose metabolic disarrangement.

The aim of this work was to evaluate HCV-induced IR in Egyptian HCV cirrhotic patients after LDLT and to correlate the occurrence of IR with the level of HCV-RNA viremia and the status of HCV disease recurrence post LDLT.

Patients and methods: 67 patients had received LDLT from November 2010 to November 2012. Seventeen of them were included in this prospective research by the following criteria 1) Patients with HCV related End Stage Liver Disease, who were eligible for liver transplantation. 2) Patients with HOMA level ≥ 2 and /or (impaired fasting plasma glucose (FPG) and/or impaired oral glucose tolerance test (OGTT)). Patients were followed up with the following schedule: FPG, OGTT and an estimate of IR using HOMA equation were routinely done 3, 6 and 12 months post LDLT. HCV RNA level by PCR was performed 1, 6 and 12 months to follow up the level of viremia post LDLT. Protocol liver biopsies were taken 6 and 12 months post LDLT. Results: The median HOMA value showed improvement during the 1st year post LDLT which was the lowest at 6 months post LDLT with a modest increase at the end of follow up (12 months post LDLT). This reduction was not significant at 3 months post LDLT (p value=0.055), was highly significant at 6 months post LDLT (p value=0.002) and was again significant at 12 months post LDLT (p value=0.028). Recurrence of HCV-disease was documented histologically in 11 patients (64.7%) at 6 months and 1 year post LDLT. There was no statistically significant relation between median HOMA values and either level of HCV-RNA viremia or histological recurrence of HCV 6 and 12 months post LDLT.

Conclusion: To our knowledge, this is the first study of HCV-induced IR that was conducted on LDLT recipients. HCV-induced insulin resistance is improved 1 year after LDLT. Neither level of HCV- viremia nor histological recurrence of HCV was significantly related to HCV-induced IR.

Abstract # P-537

Potential Net Health Benefit of Pretransplant Sofosbuvir To Prevent Recurrence of HCV Infection after Liver Transplantation: A Multicentre, Cohort Model Study.

Alessandro Vitale¹, Stefano Fagioli², Tullia Maria De Feo³, Patrizia Burra¹, Luca Belli³, Francesca Donato⁴, Davide Bitetto², Renato Romagnoli⁵, Antonio Picciotto⁶, Pierluigi Toniutto⁸, Sherrie Bhoo⁹, N. Passigato¹⁰, Marco Vivarelli¹¹, Umberto Cillo¹. ¹University Hospital of Padua, Padua, Italy; ²Ospedale Papa Giovanni XXIII, Bergamo, Bergamo, Italy; ³Ospedale Niguarda Ca' Granda, Milan, Italy; ⁴Maggiore Hospital Policlinico, Milan, Italy; ⁵AOU San Giovanni Battista, Torino, Italy; ⁶IRCCS San Martino, Genova, Italy; ⁷IRCCS Ca' Granda OMP, Milan, Italy; ⁸University of Udine, Udine, Italy; ⁹IRCCS INT, Milan, Italy; ¹⁰Verona Hospital, Verona, Italy; ¹¹Ancona Hospital, Ancona, Italy

Background. New data are now available showing the efficacy of Sofosbuvir in preventing recurrence of HCV after liver transplantation (LT) in HCC patients. The aim of this study is to evaluate the cost-effectiveness of this potential new strategy in the North Italy Transplant program area.

Methods. We enrolled 894 consecutive adult HCC patients in the waiting list for LT (2004-2009).

We compared two strategies (Markov model): one using Sofosbuvir as prophylactic therapy before LT, and the other using conventional post-LT dual antiviral therapy. The endpoints were: survival benefit measured in quality-adjusted life months (QALMs), costs (C) in €, incremental cost-effectiveness (ICER), willingness to pay (WTP), and net health benefit (NHB), where NHB = survival benefit - C/WTP. The maximum acceptable WTP of Sofosbuvir in Italy was assumed 40000€/QALY.

Results. Among the 713 transplanted patients, 374 (52%) were HCV positive and 50% of them had conventional dual antiviral therapy after LT (costs = 12000 € for treated patient).

HCV aetiology had a significant impact on post-LT survival (hazard ratio=1.46, 95% CI=1.00-2.15, p=0.04). Using recent data on Sofosbuvir efficacy and costs in this setting, probabilistic sensitivity analysis showed a median survival benefit due to Sofosbuvir therapy of 14.4 QALMs (IQR=13.5-15.5), a median ICER of 31895€/QALY, and a median NHB of 2.9 QALMs (IQR=2.2-3.5).

In a supplementary simulation analysis we showed that triple antiviral regimens with DDI were not cost-effective with respect to conventional dual therapy.

Conclusions Sofosbuvir used as prophylactic pre-transplant therapy in HCC and HCV patients proved to be a cost-effective treatment strategy compared with post-LT dual and triple antiviral therapy.

Abstract # P-538

Results of Preemptive Treatment of Hepatitis C Genotype 3 after Living Related Liver Transplant (LRLT) – Based on RVR, a Novel Approach. Manav Wadhawan¹, Subash Gupta², Neerav Goyal². ¹Hepatology and Liver Transplant, Indraprastha Apollo Hospital, Delhi, India; ²Surgical Gastroenterology and Liver Transplant, Indraprastha Apollo Hospital, Delhi, India

Background: Treatment of HCV recurrence after liver transplant has poor response rates. As response rate is poor, some patients will be exposed to complications of prolonged treatment without benefit. Rapid virological response (RVR) in non-transplant patients predicts response to therapy in 90% cases. RVR has not been studied to identify good responders post transplant. We present the results of preemptive treatment for HCV genotype 3 based on RVR. Methods: Patients transplanted for HCV genotype 3 related liver diseases were included. Patients were evaluated for treatment at 6 months post LRLT. All patients with no rejection on liver biopsy or biliary obstruction on imaging were included irrespective of inflammation/fibrosis. PEG-interferon alfa-2a (180 mcg weekly) and ribavirin (1 gm/day) was given. HCV-RNA was repeated after 4 weeks of therapy, those negative at 4 weeks were continued on treatment for 24 weeks. Treatment was discontinued in those with positive HCV-RNA at 4 weeks. All patients were monitored for side effects and efficacy of treatment. Results: Forty-three patients have been treated till date. Five patients had grade-1 fibrosis; all others had no fibrosis. Median HAI was 3 (2-7) at 6 months post transplant. The median HCV RNA level was 106 IU/ml (105-108 IU/ml). Twenty patients had an exposure to IFN/PEG-IFN before transplant. Thirty-eight patients achieved RVR, and were continued on therapy. Thirty-three of these 38 achieved SVR. In three patients therapy was stopped despite RVR (severe depressive illness-1, pulmonary tuberculosis on therapy-1, renal failure-1). Two patients

achieved ETR but had recurrence at 6 months post treatment. Erythropoietin was required in a majority of patients (30/37), ten of these patients required blood transfusions. In twenty patients growth factors were used to maintain WBC counts above 2000. In patients who achieved RVR, the SVR rate was 86.8% (33/38). Conclusions: HCV genotype 3 recurrence after LRLT has very good response to treatment with PEG-IFN & Ribavirin if RVR is achieved. Preemptive treatment at 6 months maybe indicated in HCV genotype 3 patients by identifying rapid responders by RVR.

Abstract # P-539

Impact of Basiliximab Therapy in the Severity of Hepatitis C Recurrence after Liver Transplantation. Mariana Cleres, Fernando Gruz, Sebastian Raffa, Silvina Yantorno, Pablo Barros Schelotto, Gabriel Gondolesi, Valeria Descalzi. *Liver Transplant Unit, Fundacion Favaloro Hospital Universitario, Buenos Aires, Argentina*

The worst survival in hepatitis C (HCV) liver transplant (LT) compared with other etiologies, is mainly determined by severity of HCV recurrence. Immunosuppression is considered one of the factors that can negatively influence on post-LT outcome. Reports related to the use of basiliximab (Bxmab) and severity of HCV recurrence are scarce **Aim:** Evaluate the impact of Bxmab in HCV recurrence **Materials and Methods:** Retrospective analysis in 111 adult HCV transplant patients (pts) between 2/02 and 7/13. Pts with survival <48 h, early re-transplant or hepatorenal transplantation were excluded. Population was divided in 2 groups according to whether or not received Bxmab. Demographic, biochemical, virological and transplant variables were evaluated at pre-LT, at 6 months and 1 year post-LT. Recurrence was defined based on histological findings associated with positive viremia. Severe recurrence was defined as fibrosis stage $\geq$ F2 at 1 year post-LT or cholestatic fibrosing hepatitis (CFH). Statistical analysis was performed using SPSS v19: Chi-square, t tests, Kaplan Meier. $p < 0.05$ was considered to be statistically significant. **Results:** Mean age of the pts was 54 ± 9 years, 62% were male and median time of follow-up post-LT was 39 (0.2-117) months. 28 pts (25%) received Bxmab (Group A) and 83 (75%) did not (Group B). Recurrence of hepatitis C could be diagnosis in 101 pts (87%): 53 (47%) had mild and 36 (33%) severe recurrence (12 CFH). At pre-transplant: GFR was lower ($p=0.001$) and INR ($p=0.002$) creatinine ($p=0.001$) and consequently MELD ($p=0.003$) were higher in group A. Also in this group use of mycophenolate was significantly higher after LT ($p=0.008$). No statistically significant differences were observed regarding severity, type and time to recurrence after LT between the two groups. Viral load at recurrence and at 1 year, and creatinine and GFR at 6 months and 1 year post-LT were also not statistically significantly in the compared groups. Actuarial survival at 1, 3 and 5 years in group A/B was: 92/92%, 78/83% and 70/78% ($p=0.71$) **Conclusion:** 1) The use of Bxmab in pts transplanted for HCV cirrhosis, does not adversely impact on HCV recurrence or modified post-LT survival. 2) Bxmab proved to be a safe drug, allowing minimize or delay the use of nephrotoxic immunosuppressors in immediate post-transplant period.

Abstract # P-540

De Novo Immunosuppression With Generic Tacrolimus: Outcomes at One Year Compared To Prograf®. Emily Dannhorn¹, David Patch¹, Douglas Thorburn¹, Andrew Burroughs¹, Aileen Marshall¹, James O'Beirne¹. ¹*Institute of Liver and Digestive Health, Royal Free Hospital, London, United Kingdom;* ²*Department of Pharmacy, Royal Free Hospital, London, United Kingdom*

Generic formulations of tacrolimus in liver transplantation (LT) could result in cost savings associated with immunosuppression (IS). Generic tacrolimus has been shown to be bioequivalent to innovator tacrolimus in healthy volunteers, and in renal transplant patients. However, there are limited data on the safety, efficacy and costs associated with the de novo use of generic tacrolimus in LT. The aims of this study were to determine if the de novo use of generic tacrolimus (Adoport, Sandoz, UK) resulted in different outcomes, safety and cost compared to innovator tacrolimus (Prograf, Astellas, Japan).

Methods

Patients undergoing LT at a single centre were studied before and after a planned change from de novo IS with Prograf to Adoport. Demographics, disease severity, post transplant outcomes, tacrolimus levels, dose adjusted levels and costs were compared for the first 14 days post transplant. Tacrolimus doses, levels and renal function were also analysed at 30 days and 1 year

Results

94 patients were studied, 46 Prograf and 48 Adoport. There were no significant differences in the aetiology, disease severity (MELD & UKELD) or renal function (eGFR) between groups. There were no significant differences in. Adoport patients received significantly less tacrolimus on day 1 and day 5, and were more frequently given basiliximab as part of a renal sparing regimen, despite no significant differences in renal function at baseline. Initial tacrolimus costs were significantly reduced with the de novo use of Adoport. At day 14, dose normalised levels showed significantly greater variation in Adoport treated patients compared to Prograf. At the day 30 and 1 year there were no significant differences in the dose or levels of tacrolimus between groups. At 1 year eGFR was similar but Prograf treated patients had a significantly higher serum creatinine.

There were no significant differences in the rates of rejection, CMV, AKI, sepsis or graft loss between groups.

Conclusions

Adoport is safe and effective when used de novo in LT patients. Costs were significantly reduced by the use of Adoport. Wider variation in dose adjusted levels between Adoport and Prograf treated patients suggests greater inter-patient variability and may have implications for switching stable patients from innovator to generic tacrolimus.

Abstract # P-541

Exploring the Impact of Everolimus-Based Immunosuppression on Renal Function: the Reflect Study. Paolo De Simone¹, Matteo Cescon², Umberto Cillo³, Giuseppe Tisone⁴, Raffaella Guarisco⁵, Stefano Fagioli⁶. ¹*Hepatobiliary Surgery and Liver Transplantation, University of Pisa Medical School Hospital, Pisa, Italy;* ²*General and Transplant Surgery, Sant'Orsola University Hospital, Bologna, Italy;* ³*Hepatobiliary Surgery and Liver Transplantation, University of Padua Medical School Hospital, Padua, Italy;* ⁴*Transplant Surgery, Tor Vergata University Medical School Hospital, Rome, Italy;* ⁵*Novartis Italy, Origgio, Italy;* ⁶*Gastroenterology, Riuniti Hospitals, Bergamo, Italy*

Background: Calcineurin inhibitor (CNI) minimization facilitated by everolimus (EVR) provides comparable efficacy as standard tacrolimus (TAC) exposure, while improving renal function (RF) up to 36 months (M) after liver transplantation (LT). CNI elimination in the early post-transplant course has the potential to further increase RF and needs being explored in clinical practice.

Methods: REFLECT is an Italian, phase III, multicenter, randomized, open-label, two-parallel group study enrolling adult, consenting, de novo LT recipients on TAC-based immunosuppression. Eligible patients will be enrolled 1M after transplantation and enter a 4-month, run-in phase of reduced TAC (rTAC) exposure (3-5 ng/mL) facilitated by EVR (3-8 ng/mL). Five months after LT, patients will be randomized to withdraw TAC (TAC-WD; EVR 6-10 ng/mL) (group A) or to continue combination treatment with rTAC+EVR (group B). Patients will be followed until M12 after LT and further clinical information will be collected at M18.

Results: The primary endpoint is evaluation of RF as per estimated glomerular filtration rate (eGFR) between groups, aiming to prove ≥ 8 mL/min/1.73m² superiority of the TAC-WD group vs. rTAC+EVR at M12. A sample size of 415 enrolled patients will allow for 352 patients to be randomized, taking into account a 5% drop-out and a 15% randomization failure rate. Patient enrolment is expected to start in February 2014 and last 24 months.

Conclusion: The results of the REFLECT study will help define the best strategy to improve RF early on after LT and single out patients who might benefit from CNI withdrawal while maintaining efficacy.

DISCLOSURE: De Simone, P.: Speaker's Bureau, Novartis, Astellas., Cescon, M.: Grant/Research Support, Novartis., Cillo, U.: Speaker's Bureau, Novartis., Tisone, G.: Speaker's Bureau, Novartis, Astellas., Guarisco, R.: Employee, Novartis., Fagioli, S.: Speaker's Bureau, Novartis.

Abstract # P-542

Impact of Calcineurin Inhibitors on Sustained Virological Response in Maintenance Liver Transplant Patients With Recurrent Hepatitis C: Results from the SUSTAIN Study.

C. Duvoux, F. Villamil, G.A. Levy, E.L. Renner, G.L. Grazi, R.J. Firpi, F. Schirm, B. Rauer, P. Bernhardt. *For SUSTAIN Study Group, Creteil, France*

Background: The choice of calcineurin inhibitors (CNI) may influence the response to antiviral therapy (AVT) for recurrent hepatitis C viral (rHCV) infection in maintenance liver transplant recipients (LTxR). Here, we evaluated the sustained virological response (SVR) rates in maintenance LTxR with rHCV infection on cyclosporine-microemulsion (CsA-ME) vs. tacrolimus (TAC) based immunosuppression.

Methods: SUSTAIN (NCT00938860) was a randomised, open-label, multicentre trial, in which maintenance LTxR with rHCV infection were switched to CsA-ME or continued TAC therapy before starting 48-week AVT of pegylated interferon alpha2a and ribavirin. The primary endpoint was SVR rates at Week 24 after end of AVT. Key secondary endpoints were rate of fibrosis progression (Ishak-Knodell [IK] score), composite efficacy endpoint (biopsy-proven acute rejection/death/graft loss), other virological responses (VR), and safety and tolerability of CsA-ME vs. TAC. No inferential statistics were computed due to the fact that the number of patients recruited (N=92) was lower than planned (N=355).

Results: Overall, 54.3% patients completed the study as per protocol. The SVR rates were 60.0% vs. 43.5% (adjusted OR [95%CI]: 1.85 [0.53, 6.43]; p=0.331) for CsA-ME vs. TAC. The RVR (rapid VR) at Week 4, EVR (early VR) at Week 12 and ETR (end of treatment response) rates were 11.1% vs. 13.2% (adjusted OR [95%CI]: 0.76 [0.18, 3.16]; p=0.705), 90.3% vs. 83.3% (adjusted OR [95%CI]: 2.04 [0.44, 9.38]; p=0.358) and 68.6% vs. 69.2% (adjusted OR [95%CI]: 0.97 [0.35, 2.67]; p=0.947) for CsA-ME vs. TAC, respectively. Increase in IK score by 1 from the baseline was 23.1% and 29.4% (adjusted OR [95%CI]: 0.68 [0.12, 3.87]; p=0.667) for CsA-ME and TAC. Kaplan-Meier survival rate for the composite efficacy endpoint was 94.3% vs. 96.3% (p=0.544) for CsA-ME vs. TAC. Safety profile was comparable for both groups. Incidences of adverse events (AEs) and serious AEs were 94.0% vs. 100.0% and 36.0% vs. 40.5% for CsA-ME vs. TAC, respectively.

Conclusion: Conversion from TAC to CsA-ME was safe with no increase in rejections. SVR rates were numerically higher and fibrosis progression was lower with CsA-ME vs. TAC. The differences did not reach statistical significance.

DISCLOSURE: *Duvoux, C.*: Grant/Research Support, Novartis, Astellas, Roche; Speaker's Bureau, Astellas, Roche and Novartis., *Villamil, F.*: Grant/Research Support, Novartis, Janssen, Astellas; Other, Roche, Gador, Travel grant., *Levy, G.A.*: Other, Therapure Biopharma, Chair, Advisory Board, Astellas, Novartis and Therapure, Consultant., *Renner, E.L.*: Grant/Research Support, Novartis and Roche, Gilead Sciences, Advisory Committee; Speaker's Bureau, Novartis, Scientific Committee Member; Other, Astellas, Novartis, Roche and Vertex, Consultation., *Grazi, G.L.*: Grant/Research Support, Novartis and Astellas, Travel grant; Other, Novartis, Advisory Board Member., *Firpi, R.J.*: Grant/Research Support, Gilead Sciences, Boehringer, Idenix, Genfit, Salix, Daiichi Sankyo, Bayer; Other, Gilead Sciences, Vertex, Kadmon, Advisory Board Member., *Schirm, F.*: Other, Novartis, Consultant., *Rauer, B.*: Employee, Novartis., *Bernhardt, P.*: Employee, Novartis.

Abstract # P-543

Side Effects and Predictive Factors of Intolerance of Mammalian Target of Rapamycin Inhibitors in Liver Transplantation. Stéphanie Faure, Bénédicte Gagniard, Yohan Duny, Guillaume Danan, Christophe Carenco, Astrid Herrero, Michael Bismuth, Dominique Larrey, Georges Philippe Pageaux. *Liver Unit, Saint-Eloi Hospital, Montpellier, France*

Use of mammalian target of rapamycin (mTOR) inhibitors such as everolimus (EVR) may provide an alternative to calcineurin inhibitors (CNI) after Liver Transplantation (LT). However it also has different side effects, which need to be handled.

This retrospective study of prospectively collected data included all the patients transplanted in our center between January 2000 and December 2012 and once treated by EVR. The main objective was to study the side effects and the risk factors of intolerance to EVR. The analysed variables were age, gender, sexe, indications for LT, dyslipidemia, renal function, and exhaustive immunosuppressive regimen during follow-up.

59 patients were included with 81.4 % of men, mean age 53.6 +/- 10.4 yrs and mean MELD of 17.2 +/- 8.9 at LT. The primary indication for LT was hepatocarcinoma (44.6%), alcoholic cirrhosis (28.8%), viral cirrhosis (11.9%)

and others (15.2%). Most of the patients (49,15%) were treated with EVR because of renal impairment, 42,37% for antiproliferative effect, and 8,47% for CNI intolerance. The mean delay between LT and EVR initiation was 26.8 months, and the mean duration for EVR treatment was 21.5 +/- 20 months. Side effects occurred in 37,9% of the patients and 32,2% had to discontinue the treatment. The most frequent side effects were cutaneous events (40,9%) which were responsible of 26.3% of treatment discontinuation. The others causes were rejection (15.8%), proteinuria (10.5%), infection, leucopenia, hyperlipidemia (5.3%). In univariate analysis, association with another suppressive treatment such as mycophenolate mofetil (p=0,01; OR 0,22 [0,06;0,77]) or tacrolimus (p=0,05 ; OR=0,31 [0,10 ; 1]) reduced the risk of adverse effects. The male gender also seemed to be protective (p=0,01 ; OR=0,16 [0,04;0,7]). Whereas renal dysfunction is the first indication for EVR conversion in LT, a creatinine level >110 micromol/L at baseline predisposed to the accuracy of side effects (p=0,02; OR=4 [1,2 ; 13,1]), and patients with EVR because of renal impairment had significantly more side effects than the others (p=0,07; OR=2,8 [0,9;8,3]).

One third of the patients treated by everolimus after LT have to discontinue treatment because of side effects. Women with renal dysfunction and everolimus in monotherapy seem to be particularly exposed.

Abstract # P-544

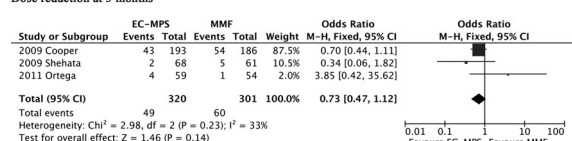
Outcomes of Renal Transplant Recipients Treated With Mycophenolate Mofetil Versus Enteric Coated Mycophenolate Sodium: A Meta-Analysis. Zhiyong Guo, Weiqiang Ju, Fei Li, Dongping Wang, Xiaoshun He. *Organ Transplant Center, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Background: Mycophenolate mofetil (MMF) has been widely used in CNI minimization protocols. Enteric coated mycophenolate sodium (EC-MPS) is expected to have equivalent immunosuppressant effects while reducing incidence of GI adverse events. Here we conduct a meta-analysis on the comparison of outcomes of EC-MPS vs MMF in de novo renal transplant recipients.

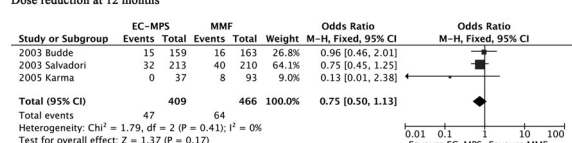
Methods: We included trials with no year and language restriction. All data were analyzed using fix or random effect model. We performed meta-analyses on both safety and efficacy endpoints. Safety endpoints include GI adverse events and dose change of EC-MPS or MMF during follow-up time. Efficacy endpoints include biopsy proven acute rejection (BPAR) and patient survival.

Results: There was no statistical significance in the incidence of GI adverse events between EC-MPS and MMF groups at both 3 months (Z=0.91, P=0.36) and 12 months (Z=0.45, P=0.65).

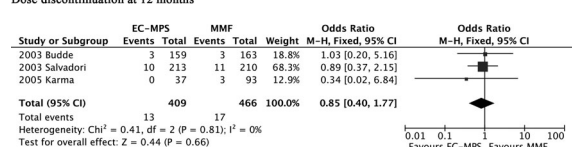
Dose reduction at 3 months



Dose reduction at 12 months



Dose discontinuation at 12 months



At the end of both 3 and 12 months, no difference was found in incidence of dose reduction or interruption due to GI adverse events in EC-MPS and MMF groups (Z=1.46, P=0.14 and Z=1.37, P=0.17 respectively). Similarly, no statistical significance was detected in the comparison of dose discontinuation due to GI adverse events in these two groups at month 12 (Z=0.44, P=0.66). The 12-month and long term BPAR rate was comparable

between EC-MPS and MMF groups ($Z=1.21$, $P=0.22$ and $Z=0.76$, $P=0.45$ respectively). The long term patient survival was also comparable between the two groups ($Z=0.67$, $P=0.50$).

Conclusion: The findings of this meta-analysis suggest that EC-MPS doesn't reduce incidence of GI side effects although have similar immunosuppressant effects as MMF.

Abstract # P-545

Role of Intravenous (IV) Mycophenolate Mofetil with Delayed Introduction of Tacrolimus in Liver Transplant (LTx) Recipient Who are on Renal Replacement Therapy (RRT) Prior To LTx.

A. Jain¹, A. Murkerji², A. Karachristos¹, M. Maloo¹, K. Lau¹, A. Di Carlo¹. ¹Surgery, Temple University Hospital, Philadelphia, PA, USA; ²Surgery, Bronx Lebanon Hospital, Bronx, NY, USA

Introduction: With introduction of organ allocation based on MELD (Model of End stage Liver Disease), more patients are being transplanted with renal dysfunction or renal failure often on renal replacement therapy. Various strategies have been used with use of antibody preparation to minimize or delay the use of tacrolimus to preserve the renal function. We have in the past shown that absorption of MMF in first few weeks post LTx is impaired and IV MMF provides the 100% delivery of the drug with higher peak and better area under the curve concentration (AUC). With this strategy, without use of anti-body preparation has shown immunological advantages.

Aim of the present study is to examine the outcome of LTx recipients who are on RRT before LTx using the strategy of IV MMF with delayed introduction of tacrolimus.

Patients and Methods: Between Feb 2009 to July 2013, nine patients underwent LTx with RRT for 1 to 14 weeks prior to transplant. All patients received 1gm IV MMF with incision, single oral dose of tacrolimus 0.03 to 0.05 mg/kg on call to surgery and IV 500 mg Methyl Prednisolone (MP) in an hepatic phase. Post LTx IV MMF 1 g twice a day for about a week. Introduction of tacrolimus was gradually delayed after LTx as program matured; MP taper total of 600 mg over five days. All patients were followed for 12 months.

Results: All nine patients came off dialysis post LTx after 0 to 9 sessions of RRT. One patient died of MI after discharge at home. Remaining eight patients (88.9%) are free from dialysis for 25 to 51 months as shown in table. All patients remained free from acute rejection.

Patients on Pre LTx dialysis (n=9)

No.	Age	Gender	Weeks Dialysis Pre LTx	Post LTx Dialysis sessions	Current status Months
1	55	M	3	0	Died of MI
2	48	M	2	9	34.3
3	26	F	1	0	36.6
4	44	M	14	1	25
5	61	F	1	2	38
6	53	M	5	1	39
7	52	M	1	2	41.4
8	52	M	2	7	46.4
9	60	F	2	5	51.3

Conclusion: As published before, IV MMF provides higher peak concentration and AUC that allows delayed introduction of tacrolimus after LTx which gives native kidneys time to recover. This strategy is useful without any antibody preparation in LTx patients who are on RRT at the time of LTx.

Abstract # P-546

Excellent Short-Term Outcome of Reduced Dose of Mycophenolate Mofetil With Tacrolimus Combination Immunosuppression in Living Donor Liver Transplantation.

Hyeyoung Kim¹, Nam-Joon Yi¹, Juyeun Lee², Min-Su Park¹, YoungRok Choi¹, Geun Hong¹, Hae Won Lee^{1,3}, Kwang-Woong Lee¹, Kyung-Suk Suh¹. ¹Surgery, Seoul National University College of Medicine, Seoul, Korea; ²Pharmacy, Seoul National University Hospital, Seoul, Korea; ³Surgery, Seoul Metropolitan Government - Seoul National University Boramae Medical Center, Seoul, Korea

In Asian countries, a reduced dose of Mycophenolate mofetil (MMF) has been used clinically based on the side effects instead of conventional fixed dose (2 - 3g/day). However, there are a few studies about that. We aimed to assess the pharmacokinetic study for reduced dose of MMF, and to validate the feasibility of that with tacrolimus combination immunosuppression in living donor liver transplantation (LDLT). Two sequential studies were performed in adult LDLT recipients since October 2009. First, we performed a prospective preliminary study in 15 recipients, and the area under the curve from 0 to 12 hours (AUC_{0-12}) of mycophenolic acid was checked at postoperative days 7 and 14. Second, among 215 LDLT recipients, we reviewed 74 patients who were initially administered reduced dose of MMF (1.0 g/day) with tacrolimus (through level, 8 - 12 ng/mL for the first month, and 5 - 8 ng/mL thereafter), with a post-LT follow-up of 1 year and investigated the short-term outcomes. We performed protocol biopsies at postoperative days 10 ± 4 and 1 year after LT. In the preceding pharmacokinetic study, the AUC_{0-12} was less than 30 mg/h/L in 93.3%. In the following validating study, among 74 recipients, 41.9% needed dose reduction or stop due to side effects (most commonly, leukopenia in 36.5%) within the first year after LT. At 12 months after LT, 17.6% administered lower dose of MMF (0.5 g/day), and 16.2% needed permanent stop for side effects. The 1-, 6- and 12-months rejection-free survival was 98.6%, 98.6% and 97.3%. In conclusions, reduced dose of MMF was pharmacokinetically low compared to existing recommend therapeutic range; however, clinically, immunosuppression of reduced dose of MMF combined with low level of tacrolimus was feasible with an excellent short-term outcome in adult LDLT.

Abstract # P-547

Prolonged Release Tacrolimus in De-Novo Liver Transplantation:

A Single Centre Experience. Francesco Lupo, Elena Mazza, Francesco Tandoi, Damiano Patrono, Renato Romagnoli, Mauro Salizzoni. Liver Transplant Center - University of Turin, Turin, Italy

Background: few data are reported for "de novo" use of once daily prolonged release tacrolimus (Advagraf®) in post liver transplant (LT). **Material&Methods:** From 02/13 to 10/13, 53 first cadaveric LT were treated with Advagraf® from day1, steroids and mycophenolate mofetil. Cirrhosis aetiology was viral on 47%, alcoholic on 40%, other on 13% of cases. HCC was present on 55%. Advagraf® initial dose was started at 0.15mg/kg/day. Blood target level was 8-10 ng/ml (evaluated by HPLC). Clinical endpoint was established at day 2, 5, 10, 15 and 30. Advagraf® given dose and trough level was recorded at each endpoint. Renal function (MDRD-GFR), Δ -GFR from pre-LT (intended as the difference between pre-LT GFR and current GFR at endpoint), given dose/trough level ratio, were calculated at endpoint. LT-MELD, D-MELD, donor age were recorded. Correlations between variables were calculated. Side effects were recorded. Follow-up ended at 30th p.o. day. **Results:** Median donor age was 70 years (13-84). Median MELD at LT was 14(6-32) and D-MELD 84(108-2031). Target level was reached in a median of 3 days(2-14). To reach the target we needed to rise the dose (after day 4) by 30% in 11 cases (11%), 60% in 8 (15%), 90 % in 11 (11%). Median given dose was 10, 9, 10, 12, 8 mg at day 1, 4, 9, 14, 29 respectively. 15(28%) patients reached a trough level peak ≥ 15 ng/mL. The median peak level was 17ng/mL(15-21). There were 3 episodes(5.6%) of biopsy proven rejection(2 moderate, 1 severe), treated with steroid pulses. Median MDRD-GFR at LT was 86.5 ml/min(40.6-165). Renal function data and tacrolimus trough levels are resumed in table 1. There were 27 de-novo diabetes(51%) and 14 de-novo hypertension cases(26%). No correlation was found between D-MELD and Δ -GFR at endpoint as well as there was no correlation between the given dose/C0 ratio and the D-MELD, the MDRD-GFR and the Δ -GFR, respectively. 4(8%) patients switched to tacrolimus BID(2 low absorbers, 1 hepatitis of unknown origin, 1 because dialysis need). **Conclusions:** De-novo use of Advagraf® seems to be safe and effective. Rejection rate is similar to

literature data. The initial worsening of GFR almost completely resolved at day 30. The high rate of de-novo diabetes has to be further investigated, even if the absence of a control group may affect the result.

	Day2	Day5	Day10	Day15	Day30
MDRD-GFR(ml/min)	46	59	71	73	79
Δ-GFR pre-LT (ml/min)	33	27	15	26	5
Median Trough level(ng/mL)	6	8	7	8	7

Abstract # P-548

A Single-Center Experience With Once-Daily Prolonged-Release Tacrolimus in Liver Transplantation. Giuseppe Tarantino, Nicola Cautero, Nicola De Ruvo, Roberto Ballarin, Valentina Serra, Fabrizio Di Benedetto. *Hepato-Pancreato-Biliary Surgery and Liver Transplantation Unit, University of Modena and Reggio Emilia, Modena, Italy*

BACKGROUND: The prolonged release formulation of tacrolimus is administered in the morning once daily. The aim of this study was to show our experience in the utilization of this drug as de novo immunosuppressive agent after liver transplantation (LT). Herein we analyzed the safety, efficacy and drug doses.

METHODS: We analyzed 95 recipients of a first liver transplantation from November 2000 with 6 months follow-up. Forty-two patients were administered the once-daily prolonged release formulation of tacrolimus as de novo drug (group A) while 53 as conversion after the twice-daily formulation administration (group B). We collected the efficacy and safety variables as the incidence of acute rejection, the impact of the drug on liver function, patient and graft survivals, and the incidences of diabetes mellitus and arterial hypertension after LT.

RESULTS: The incidence of biopsy proven acute rejection episodes was 4% (n = 2), in group a and 15% (n=8) in group B. Renal failure (meant as mean serum creatinine level higher than 1.5 mg/dl or eGFR less than 50 ml/min) occurred in 33.3% of patients (n=14) and in 28.3% of patients (n=15) in group B. Both groups showed a high incidence of diabetes mellitus after LT that is 28.6% (n=12) in group a and 24.5% (n=13) in group B. Only 2 patients in group a and 4 patients in group B developed arterial hypertension necessitating more than one pharmacological agent.

CONCLUSION: Oral administration of prolonged release formulation of tacrolimus for de novo liver transplantation recipients was well tolerated in our experience showing no difference in terms of efficacy and safety compared to the twice-daily tacrolimus. A close control in the adjustment of drug doses is necessary in the early administration period. A variable learning curve is also necessary for the physicians involved in the management of these patients to get confident with this immunosuppressive agent.

Abstract # P-549

Chelerythrine Attenuated the Rejection of MHC Fully-Mismatched Cardiac Allografts in Mice. Qiyi Zhang, Yang Tian, Sheng Yan, Yuan Ding, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, Zhejiang University, Hangzhou, China*

Background. The improvement of graft survival over the past decade has mainly been due to the development of more highly specific immunosuppressive agent calcineurin, which inhibits T cell activation by interfering with the calcium-mediated pathway, one of two pathways needed for T cell activation. The other pathway, mediated by protein kinase C (PKC), is not currently a target of any clinically used immunosuppressive agent. The purpose of this study was to assess the immunosuppressive properties of PKC-α inhibitor chelerythrine in preventing acute rejection in mouse heterotopic heart transplantation.

Methods. Mice were randomly divided into two groups, each were six animals. The control group received PBS, and the chelerythrine treated group was given intraperitoneal injection of chelerythrine (10 mg/kg) from day 0 to day 14 after heart transplantation. Six days after transplantation, cardiac allografts were harvested for immunohistology, flow cytometry and flowcytotoxic analysis.

Results. In the chelerythrine treated group, the survival of the allografts was significantly improved compared with the control group (42.5±28.3 days vs. 8.5±0.5 days, P<0.05). The number of graft infiltrating CD4+ T cells was considerably reduced in chelerythrine treated group compared with control group (15±14.4 vs. 37.3±13.1 per visual field, P<0.05), while CD8+ cells showed the similar fashion (17.5±8.3 per visual field vs. 60.8±15.4 per visual field, P<0.05). A changing pattern of Th1/Th2 cytokine expression was found in the allografts of chelerythrine treated mice.

Conclusion. The administration of PKC-α inhibitor chelerythrine attenuated acute rejection and displayed significantly longer survival after heart transplantation.

Abstract # P-550

Straddling the Fence With Middle Hepatic Vein for Living Liver Donors. Ramesh K. Batra, Kunam S. Reddy, Winston R. Hewitt, Jr, Nitin N. Katariya, David C. Mulligan, Adyr A. Moss. *Abdominal Transplant Surgery, Mayo Clinic, Phoenix, AZ, USA*

AIM:

Living donor liver transplants at our center dates back to 2001 and our experience allowed us to modify our technique to share the MHV with both the donor and the recipient by sparing the partial trunk of MHV for the donor which gave segment IVa branch, whilst allowing us to include the rest of the MHV with the right lobe to be implanted in the recipient as a common trunk. The 3 variations in techniques for subtotal/total inclusion of MHV, and exclusion of MHV from the living donor liver graft at our center allows us to compare the outcomes for liver donors.

METHODS:

Retrospective evaluation of 133 right lobe hepatectomies for living donor liver transplant from 2001-2013. We sub-classed them into three groups: Donors with the entire MHV trunk, Donors with partial MHV trunk and Donors who lost the entire MHV trunk with the right lobe liver graft for the recipient. We then compared outcomes based on total Bilirubin, AST and ALT at discharge and 1 month. Furthermore comparison was also made against variables like length of hospital stay, complications in the living liver donors within 1st month post donation, based on Clavien scoring system and the nature of complications.

We analyzed the data with ANOVA.

RESULTS:

LIVER ENZYMES ON DISCHARGE-IMPACT OF MHV TRANSECTION PLANE				
	Donors with entire MHV trunk	Donors with no MHV trunk	Donors with partial MHV trunk	p Value
No. of Patients	50	14	69	
Mean T-Bilirubin at discharge (mg/dL)	1.5	1.5	2.1	0.15
Mean AST at discharge (u/L)	82	80	75	0.45
Mean ALT at discharge (u/L)	119	128	113	0.54

LIVER ENZYMES AT 1 MONTH-IMPACT OF MHV TRANSECTION PLANE

	Donors with entire MHV trunk	Donors with no MHV trunk	Donors with partial MHV trunk	p Value
No of patients	49	14	64	
Mean T-Bilirubin at 1 month (mg/dL)	0.6	0.6	1	0.22
Mean AST at 1 month (u/L)	36	37	39	0.85
Mean ALT at 1 month (u/L)	43	50	49	0.62

Length of hospital stay and Clavien score did not achieve clinical or statistical significance in the three groups.

CONCLUSION :

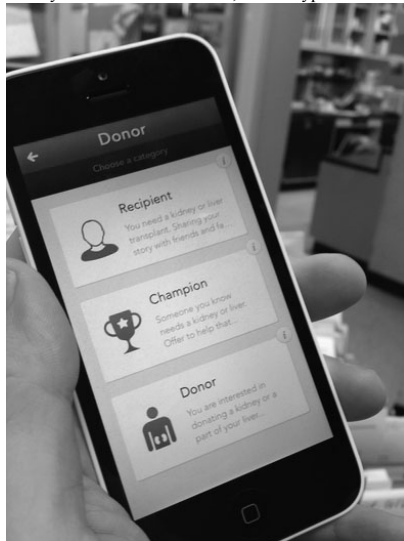
Our data suggests that the living liver donors who donated their right liver lobe with the entire MHV did not suffer hepatic insufficiency or venous congestion based on liver enzymes and was comparable to the other groups in terms of complication rates and also length of hospital stay. We agree that power is the limitation of our study but to our knowledge this is the first reported subgroup analysis of outcomes in living liver donors based on MHV distribution.

Abstract # P-551

Development of an iPhone Facebook App to Help Waitlisted Candidates Identify a Living Donor. Andrew M. Cameron, Elizabeth King, Dorry L. Segev. *Surgery, The Johns Hopkins School of Medicine, Baltimore, MD, USA*

We have collaborated previously with Facebook, the large online social network, to use social media and social networks to improve the organ availability crisis by encouraging cadaveric organ donation registration. We here report a continuation of these efforts which has resulted in the development and production of a mobile App (application) to assist a transplant candidate waiting on the list with appropriate identification of a potential living donor. **The obstacles** to finding a living donor can be considerable: recipients are hesitant to ask friends, family, or loved ones to donate even though many may be willing and indeed even unaware of

the friend's need. **The app:** a) allows waiting recipients to declare to their Facebook friends that they need an organ. The app makes available to these friends the facts behind living donation, what to expect, recovery times, etc. b) The app facilitates positive replies ("I'd like to see if I could donate") and refers those friends to the recipient's transplant center to officially initiate the process. c) The app also lets a friend pass on the news or status that one of their friends needs a transplant to all of their friends. This spreads the story of need to an expanding network of people who may want to help. d) the app lets both participants' friends stay updated on the donation and ultimately transplant process with messages as milestones in the transplant workup process are hit and when the transplant actually happens. And finally, the app makes very clear and transparent the "groundrules" of living donation, which is to say the law of the country: organs may not be sold or exchanged for any valuable consideration, and no type of coercion is ever appropriate.



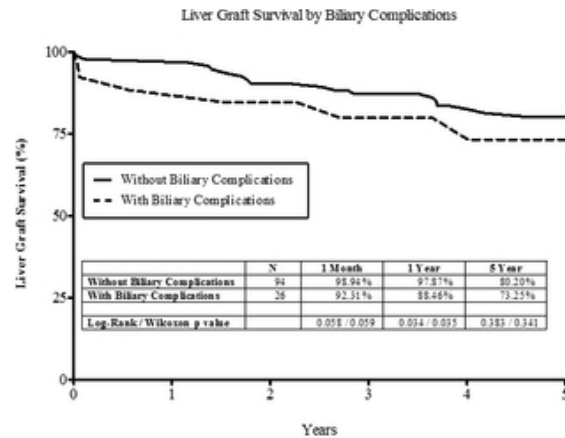
Abstract # P-552

Impact of Early Biliary Complications on Long Term Graft and Patient Survival after Right Lobe Living Donor Liver Transplantation (LDLT). Jennifer Leiting¹, Timothy L. Pruett¹, Martin L. Freeman², David M. Radosevich¹, Keshav Mangalick¹, Raja Kandaswamy¹, William D. Payne¹, Julie A. Thompson², Mohamed A. Hassan², John R. Lake², Srinath Chinnakotla¹. ¹*Surgery, University of Minnesota, Minneapolis, USA;* ²*Medicine, University of Minnesota, Minneapolis, USA*

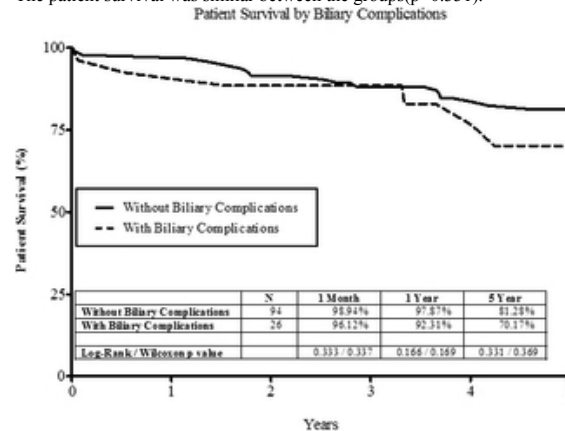
Background: There is a significantly biliary complications after LDLT compared to deceased donor TX. It is not clear if this negatively impacts long term patient and graft survival after LDLT.

Methods: Analysis of a prospectively maintained database at a single center of 120 LDLT with >2 year follow up. Actuarial patient and graft survival rates were estimated using Kaplan Meier methods.

Results: 26 patients had biliary complications (bile leak=24; Stricture=12) and all occurred within 90 days post tx. 20 patients were managed by endoscopic stenting (58 procedures in 20 pts); 6 required surgical exploration (none in the last 5 yrs). Time-to-complete resolution of leak and stricture was 37 and 82 days respectively. Number of bile ducts, duct to duct vs. roux-en-y, interrupted vs. continuous anastomosis, graft weight were not statistically associated with biliary complications. By Multivariate Cox Proportional Hazards regression model cardiovascular disease pretransplant ($p=0.042$) and HCV etiology ($p=0.026$) were associated with biliary complications. The one-year graft survival was lower (88% vs. 97%; $p=0.034$) in biliary complications group, however there was no statistical difference in the 5-year graft survival ($p=0.380$).



The patient survival was similar between the groups ($p=0.331$).



Conclusions: Early Biliary complications result in lower 1-year graft survival but do not negatively impact long term patient survival after LDLT.

Abstract # P-553

Outcome of Living Liver Donors in LDLT: A First Report from Pakistan. Faisal S. Dar¹, Haseeb H. Zia, Abdul W. Dogar, Amna Liaqat, Minhal Pervaiz, Husnain A. Ilyas, Muhammad O. Querishi, Nasir A. Khan, Najam Ul Hassan Shah, Mohamed Rela². ¹*Department of Liver Transplantation/ Hepatobiliary & Pancreatic Surgery, Shifa International Hospital, Islamabad, Pakistan;* ²*Department of Liver Transplantation/ Hepatobiliary & Pancreatic Surgery, Global Hospital, Chennai, Tamil Nadu, India*

Introduction: Liver Transplant is the treatment of choice for end stage liver disease (ESLD). Living donor liver transplant (LDLT) has emerged as a viable option in countries like ours. We aimed to evaluate donor outcomes.

Methods: From May 2012 to December 2013, 56 LDLT's were performed. Demographic, clinical, radiological, pathological, operative details and postoperative events were recorded and analyzed in SPSS 19.

Results: In donors, 57.1% (32) were males and 42.9% (24) were females. Mean donor age, BMI and LAI was 28.1 years (17-45), 25.37 and 11.4 respectively. Biopsy was done in 22.8% (13) donors, showing fat content (range 2-12%). Right lobe grafts without MHV were 53.6% (30), partial MHV 30.4% (17) and complete MHV were 10.7% (6). Two (3.5%) grafts were left lobe. One was a whole liver as domino graft. Biliary anatomy was variant 41.1% (23); most common was RPHD draining into LHD 21.4% (12). Arterial variants were 50% (28). Most common was replaced RHA from SMA 21.4% (12). Mean blood loss was 468ml (range 200-900). Mean graft weight for right lobe was 720.9 Gms. Mean Post transection portal pressure was 9.3 (range 5-14). Postoperatively, mean peak bilirubin and INR were 3.01mg/dl (0.8 – 7.1) and 1.51 (1-2.3) respectively. Mean hospital stay was 09 days (range 6-18). There was no donor mortality. One patient had a bile leak requiring ERCP. Eight (14.5%) suffered minor complications.

Conclusion: The safety of a live donor is of paramount importance and is dependent on strict selection criteria, sound planning and safe surgical technique. This is reflected in our results.

Abstract # P-554

Vascular Anatomy in Living Donor Liver Transplantation.

Manuel E. De Guglielmo¹, Elena Pestana¹, Hildemaris Atienza¹, Bruno Diaz¹, Nelson Covarrubias¹, Damelys Marín¹, Miguel Vasallo¹, Carlos Rodríguez¹, Tomoaki Kato², Pedro Rivas¹.
¹Programa Metropolitano de Trasplante de Hígado - Fundahigado, Caracas, Distrito Capital, Venezuela; ²Department of Surgery, Center for Liver Disease and Transplantation, Columbia University, New York, NY, USA

Background: Vascular anatomic variations are common and increase the likelihood of complications during donor hepatectomies and partial liver transplantation. The preoperative work up of potential living liver donors includes determination of liver volume to be transplanted as well as hepatic artery, portal and hepatic veins anatomy.

Objectives: To describe the vascular anatomy of living liver donors evaluated at Programa Metropolitano de Trasplante de Hígado - Fundahigado. Caracas - Venezuela.

Methods: We retrospectively evaluated the vascular anatomy of living donors for liver transplants performed between April 2005 and November 2013 (58 patients) at Programa Metropolitano de Trasplante de Hígado - Fundahigado using CT scans angiographies. Arterial distribution pattern was assessed according to the Michel classification. The portal venous distribution pattern was assessed according to the Cheng classification and the hepatic veins were evaluated based on the presence or absence of variants and or accessories. Results: We evaluated 58 living donor liver segments in a row. The average age of donors was 34.10 years, 62% were male and 38% female. The most common arterial distribution was Michel's type I (60.78%), in second place Michel's type III (13.79%). The most common portal distribution was Cheng's type I (88%) and 45% of the hepatic veins were considered normal with the presence of accessories in 44.8% and variants in 10.2%.

Conclusions: The prevalence of vascular anatomic variations by CT scans angiographies in the case of the arterial distribution is comparable with the rates reported by Michel in his work. The portal vein evaluation showed a percentage of anatomic variations in less than 20% of patients and hepatic veins variants and or accessories were found in 55% of all cases. The evaluation of vascular anatomy is essential for surgical planning. Our follow up of the performed donors shows a 100% survival and 0% complications in the management of vascular anatomy.

Abstract # P-555

Evaluation of Histopathological Findings Among Living Donors for Liver Transplantation and Assessment of Their Impact on the Outcome of the Donors and Recipients. Naglaa Allam¹, Wael Abdel-Razek¹, Asmaa Ibrahim¹, Nermine Ehsan², Dina Alazab², Imam Waked¹. ¹Hepatology, National Liver Institute, Shebeen El Kom, Egypt; ²Pathology, National Liver Institute, Shebeen El Kom, Egypt

Background and Aim: Living donor evaluation protocols meet great variability among individual centers of liver transplant performing LDLT. Potential donors, in our center, are subjected to mandatory liver biopsy for histopathological evaluation prior to liver donation. Histological changes such as minimal hepatitic changes, <20% steatosis and minimal fibrosis are accepted as donors for LDLT. In this study we aimed to assess the effects of these changes on the outcome of the donors and recipients. Patients and Methods: The study included 108 donors (77 males; mean age 28.2 y; mean BMI 24 with normal liver biochemistry and imaging; negative hepatitis B and C markers) and their related recipients (96 males; age 47.32; mean MELD score 16.5 and range 11-25; with hepatitis C underlying etiology of cirrhosis in 92.5%). Post-operatively, donors' and recipients' lab findings [(ALT, AST, bilirubin, INR) on postoperative days 1 (POD1), 7, 14, 30 and days of ICU and hospital discharge]; length of ICU and hospital stay; complications and morbidities; recipients' portal vein velocity and hepatic artery resistivity index on POD1 and 1-year survival were correlated to different minimal changes in donor histology. Results: Forty-two donors (38.9%) had minimal hepatitic changes, 4 revealed steatosis (10-20%), 24 had minimal portal fibrosis, 11 showed mild hepatitic changes, 2 revealed ductular proliferation and 1 exhibited minimal lobular hepatitis. None of these changes had significant impact on donor or recipient parameters or on the 1-year survival [steatosis (p=0.9), portal fibrosis (p=0.44), hepatitic changes (p=0.73)]. Conclusion:

Liver grafts from living donors with these minimal histologic changes were transplanted with good donor outcome, and no negative impact on recipient outcome and one-year survival, even recipients with MELD score up to 25.

Abstract # P-556

Laparoscopic Left Lateral Hepatectomy for Living Donor Liver Transplantation in Pediatrics: A Single Center Experience.

Yasser M. Elsheikh, Hamad Albahili, Ahmed Algoahary, Dieter Broering. Liver & Small Bowel Transplantation & HBP Surgery, KFSH & RC, Riyadh, Saudi Arabia

BACKGROUND:

Laparoscopic left lateral hepatectomy (LLLH) is a standardized and anatomically well-defined resection and may transform into a primarily laparoscopic procedure for cancer surgery or living donor hepatectomy for transplantation.

Advanced knowledge and skills are needed in both Laparoscopic technique and open liver surgery in order to achieve the favorable outcome of this minimally invasive approach.

PATIENTS/METHODS:

We report 10 cases that underwent Laparoscopic left lateral hepatectomy (LLLH) in the period between May 2013 till December 2013 in the Department of liver & Small Bowel transplantation & HBP surgery at KFSH & RC in Riyadh, Saudi Arabia. There Demographic data, Operative time, Warm ischemia time before graft retrieval, conversion rate, bloods loss, blood transfusion, Overnight recovery stay, Hospital stay, complications, Pain scale according to the Adult Communicative Pain score assessment were all observed.

RESULTS:

2 adult females & 8 males stepped forward voluntarily to donate part of their livers to their relatives; work up was done as per our unit protocol. There age(21-38yrs) mean 29.3 yrs, BMI ranged (15.4-28.5) mean of 23, graft weight (213-295 grams) mean 250.8 gm, Operative Time (4 hrs 13 min - 6 hrs 43 min) mean of 5 hrs 28 min, Warm Ischemia time (2 - 7 minutes) mean 3.2 min, Conversion rate 1 out of 10 due to bleeding from left hepatic vein after complete parenchymal transection, Blood loss ranged (50 - 600 ml) mean 205 ml, NO Blood transfusion was required. The hospital stay was (3 - 12 days) mean of 4.7 days, our reported complications were 1 case grade I and 1 case grade II; according to Clavien Dindo grading System of Surgical complications, 1 case of wound hematoma (Pfannestiel incision treated conservatively) and 1 case of segment 5 infarction "10x4x6 cm", with fever, leucocytosis, required IV antibiotics. Days zero, 2, & 3 labs were within acceptable range for there matched pairs in open approach.

CONCLUSION:

Laparoscopic LLS is a safe procedure with minimal blood loss and overall morbidity, and a favorable outcome. Though requiring a learning curve, but may become a standard of care in the future.

Abstract # P-557

Post Cholecystectomy Status Is Not a Contraindication for Right Lobe Liver Donation. Parthasarathy Govindaraju, Neerav Goyal, Manav Wadhavan, Subhash Gupta. Surgical Gastroenterology and Liver Transplantation, Indraprastha Apollo Hospital, New Delhi, India

Background

Previous upper abdominal surgery is considered a contraindication for donor hepatectomy in living related liver transplantation (LRLT). Cholecystectomy causes adhesions around the hepatoduodenal ligament making isolation of vascular structures difficult. This complicates donor surgery and may lead to rejecting an otherwise acceptable donor for LRLT. In some instances a potential donor with previous cholecystectomy is the only related donor available. In this scenario, it may be worthwhile to accept such a donor for LRLT.

Aim

To assess the safety and feasibility of right lobe liver donation from donors who have undergone cholecystectomy in the past.

Patients and methods

Retrospective analysis of prospectively collected data of liver donors who underwent right hepatectomy at our centre from September 2006 to November 2013 was done. Donors who had undergone cholecystectomy in the past were identified. The data was analysed with respect to demographic profile, type of cholecystectomy (laparoscopic / open), duration from cholecystectomy to liver donation, intraoperative technical difficulties and their management, operative time, post operative morbidity and hospital stay.

Results

Of the 1200 liver donors who underwent donor hepatectomy, 9 had undergone cholecystectomy in the past. Of these there were 8 females and one male, aged 19 to 55 years. The time interval between cholecystectomy and liver donation ranged from 1 year to 18 years. Eight patients had dense adhesions in the hepatoduodenal ligament making dissection of right hepatic artery from the right hepatic duct difficult. Cholangiogram could be obtained after cannulating the cystic duct in eight patients. In one patient without a cystic duct stump a choledochotomy was done to obtain an intraoperative cholangiogram. In one patient intimal dissection of the right hepatic artery occurred which could be successfully repaired. Operative time was prolonged compared to other donors. All patients but one had a smooth postoperative recovery and were discharged in 8 days. One patient had prolonged postoperative ileus. One patient had minor bile leak in the drain which resolved with time.

Conclusions

In our experience, right lobe of the liver can be safely harvested in donors with previous cholecystectomy and should not be considered a contraindication for right lobe liver donation.

Abstract # P-558

Refining Technique of Hepatic Duct Transection in LRLT.

Neerav Goyal, Subash Gupta. *Centre for Liver and Biliary Sciences, Indraprastha Apollo Hospital, New Delhi, Delhi, India*

Objective: In Living liver donors with a short right or left HD and early division into sectoral ducts, one may get 2 or 3 ducts in the graft to anastomose in the recipient. We modified our procedure of duct transection to avoid this problem and studied its safety, reproducibility and predictability.

Methods: From September 2011 to October 2013, 550 LDLT donors were retrospectively studied. All donors underwent evaluation by 3T MRCP and intra operative cholangiogram (IOC). Biliary anatomy was categorized based on classification by Choi et al. Parameters studied: Difficulty of parenchymal transection, anatomy on 3T MRCP and IOC, ability to predict the number of ducts in graft before cutting the duct, accuracy of cutting the duct as a single lumen in Type 2 anatomy, luminal narrowing of the remnant HD requiring redo repair. SPSS 20 statistical system used. In type 2 the median length of common stump of RHD was 3mm (range 0-4mm). At IOC the predictability of getting a single ductal lumen in graft in Type 2 anatomy was 91.7%. Overall accuracy across all types of ductal anatomy was 97%. Preciseness of the duct transection was assessed by accuracy of predicting number of ducts and by assessing the incidence of complication of remnant duct narrowing requiring its redo repair. Overall narrowing of remnant duct was 0.99%. 2% developed clinically evident bile leak, with one requiring percutaneous drainage.

Conclusion: The Hepatic duct transection technique being followed is safe, reproducible and predictable.

Abstract # P-559

How Much Could We Cool Inside of the Liver Graft by Slush/Ice Bath during the Back-Table Procedure? Sinan Hatipoglu, Adil Baskiran, Cuneyt Kayaalp, Sezai Yilmaz. *Inonu University School of Medicine, Malatya, Turkey*

Introduction: The liver graft should be kept in slush-ice mixture temperature (2-6 °C) and this cold must be kept throughout the procedure to prevent cell damage during back table procedure. Despite the fact that the temperature of the cold bath with liver is known, there are no adequate studies regarding intrahepatic temperature changes. We have recorded graft temperature changes using intrahepatic temperature probe during the back-table process. The aim of the study was to evaluate the intrahepatic temperature changes as a response to cooling treatment and time.

Methods: The study was conducted on 25 adult donor patients with right lobe liver grafts during the back-table time. The grafts were passed through cold preservation solution and kept in slush-ice bath afterwards. The bath and intrahepatic temperatures were measured every 10 minutes during the routine back-table procedure. Intrahepatic temperature was measured via a temperature probe inserted into right hepatic vein. No addition of slush-ice was made into the bath during the procedure.

Results: The mean age was 30.1 ± 8.9 (18-55) years and 11 (44%) of the patients were female. Mean graft weights were 727.12 ± 114.41 grams. Mean graft perfusion and back table procedure times were 25.8 ± 5.03 (16-35) and 76.7 ± 21.62 (42-122) minutes respectively. Graft temperatures before and after the procedure were 35.63 ± 0.66 °C and 13.11 ± 1.22 °C respectively. Intrahepatic temperature was generally declining to levels below 10 °C in 30 minutes. The lowest temperature levels, i.e. 8.95 ± 1.76 °C, were reached

at nearly 80th minutes and temperature rise was beginning after this time. Intrahepatic temperature measurements were observed to be approximately 6-7 °C higher during all the time periods compared to extra hepatics.

Conclusions: Although the cold bath with slush-ice is kept in 2-6 °C during back table procedure, the intrahepatic temperature is 6-7 °C higher. Ideal intrahepatic temperature that must accompany back table time is not clear. But the target intrahepatic 2-6 °C temperature is not reached with external cooling. We can suggest that there is no need for additional slush-ice into cold bath during the first 80 minutes. But temperature monitorization should be made, especially during long back-table processes.

Abstract # P-560

Experience of Female Spouses as a Living Liver Donor. Jung Ja

Hong¹, Hea Seon Ha¹, In Ok Kim¹, Kyung Choon Lim², Myung Sun Yi³, Shin Hwang⁴. ¹Organ Transplantation Center, Asan Medical Center, 88, Olympic-Ro 43-Gil, Songpa-Gu, Seoul, Republic of Korea; ²College of Nursing, Sungshin University, 76 Dobong-Ro, Kangbuk-Gu, Seoul, Republic of Korea; ³College of Nursing, Seoul National University, Seoul, 103 Daehak-Ro, Jongno-Gu, Republic of Korea; ⁴Division of Liver Transplantation and Hepato-Biliary Surgery, Asan Medical Center, Seoul, 88, Olympic-RO 43-GIL, Songpa-Gu, Republic of Korea

Purpose: Liver transplantation is the best type of treatment for end-stage liver disease. In spite of that there are few studies related to living donors, most liver transplantation in Korea has been performed with living donors whose portion is 77% until 2012. Therefore, this study was aimed to understand the Korean living liver donors' experiences, especially from the female spouses.

Materials and Methods: Data were collected from August to September, 2013. Four women who donated liver to their spouse as a living liver donor were participated in this study. Several open-ended audiotaped in-depth interviews were utilized in meetings with female spouses at a university-affiliated hospital setting. The transcribed data were analyzed using qualitative content analysis. **Results:** From the significant statements, eight categories of themes were integrated into the essential structures for female spouse's experience as a living liver donor. Eight categories of themes were 1) Saving husband's threatened life, 2) Disappointing with close family members' attitudes likely to be bystanders, 3) Being pushed into situations that the wife has to donate to her husband inevitably, 4) Being in charge of taking care of her husband as well as donation, 5) Undertaking the roles suddenly as the head of a household, 6) Paying for the medical expenses beyond her control, 7) Keeping husband's role as a father in great respect, 8) Showing gratitude for his being alive. **Conclusion:** The results of this study provided deep understanding for the whole process of female spouses' donation experiences as living liver donors. This information would be helpful for establishing more appropriate intervention to improve quality of life for the female spouses as living liver donors.

Abstract # P-561

Long-Term Outcome of Living Donor Liver Transplantation for Patients With Alcoholic Liver Disease. Shin Hwang, Chul-Soo Ahn, Deok-Bog Moon, Tae-Yong Ha, Gi-Won Song, Dong-Hwan Jung, Gil-Chun Park, Sung-Gyu Lee. *Department of Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea*

Background: Since most liver transplantation (LT) studies for alcoholic liver disease (ALD) were performed on deceased donor LT, little was still known following living donor LT (LDLT).

Methods: The clinical outcomes of 126 ALD patients who underwent LDLT for 11 years in a high-volume LT center were assessed retrospectively.

Results: ALD cases occupied 5.7% of adult LDLT indication (n = 2196). ALD occupied 1.9% (4 of 207) during 2000 to 2001, whereas the proportion gradually increased up to 11.3% (34 of 301) in 2010. The model for end-stage liver disease score was 22.1±9.9, and 6-month abstinence was observed in 105 (83.3%). Related donors were 123 (97.6%). Single-graft and dual-graft were implanted to 111 and 15, respectively. Main graft type was single right liver graft (n=108, 85.7%). Graft-to-recipient weight ratio was 1.02±0.16. Postoperative mortality within 3 months occurred in 5 (4.0%). Overall 1-, 3-, 5- and 10-year patient survival rates were 92.1%, 88.0%, 85.8% and 83.7%, respectively. Most patients were totally abstinent from alcohol intake, but at least 10 patients (7.9%) were identified as abused or slipped on the medical record or on concurrent cross-sectional study. Posttransplant alcohol relapse occurred in 6 of 105 patients (5.7%) who observed the 6-month abstinence rule and 4 of 21 patients (19.1%) who did not observe this rule, showing

no statistical significance ($p=0.11$). Three patients died from alcohol abuse. De novo hepatitis B virus infection occurred in 2 of 26 after implantation of core antibody-positive graft and no further cases happened after strict application of prophylaxis.

Conclusions: The results of this study revealed that the survival outcome of LDLT in ALD patients is comparable to that of deceased donor LT. To achieve favorable long-term survival, a multidisciplinary approach can be an effective strategy, including the interaction between the patient, the physician, and the family members.

Abstract # P-562

Volumetry Guided Right Hepatectomy in the Presence of Hypoplastic Left Lateral Segment in the Living Donor. Sorabh Kapoor¹, Sharad Maheshwari², Barun Nath¹, Vibha Varma¹, Ankur J. Shah¹, Vinay Kumaran¹. ¹Liver Transplantation & HPB Surgery, Kokilaben Dhirubhai Ambani Hospital & Medical Research Institute, Mumbai, Maharashtra, India; ²Radiology, Kokilaben Dhirubhai Ambani Hospital and Medical Research Institute, Mumbai, Maharashtra, India

Background: Variant anatomy often leads to exclusion of potential living donors. However, in Asia and India, there is near total reliance on living donation. We report the case of a successful living donor right hepatectomy in the presence of hypoplastic segments 2 & 3. **Method:** A 42 year old male suffering from cirrhosis, MELD 16, hepato-hydrothorax & ascites with SBP. was evaluated for Liver transplant. His brother, aged 32 years, volunteered to donate. On evaluation, his LAI (liver attenuation index) was +1 and Liver biopsy had 15% macro-vesicular steatosis. After psychological, cardiac and pulmonology evaluation he was accepted for donation. His triphasic CT scan of liver & volumetry showed a congenitally small left lateral segment (Whole liver 1107 ml; Segment 2&3 81 ml). Routine transection plane through the Middle Hepatic Vein (MHV) yielded a right graft of 840 ml {GRWR (Graft to Recipient Weight Ratio) =1.1} and RLV (Remnant Liver Volume) 267 ml (24%) precluding safe donor hepatectomy. Since the left liver was mainly constituted by Segment 4, the hepatectomy plane was modified according to portal vein supply and leaving MHV in the donor to prevent any congestion in Segment 4. The new lane yielded right graft volume of 750 ml and RLV 357 ml (32.2%). After extensive counseling and authorization committee approval, transplant was done. The recipient operation was delayed till the donor hilar dissection ensured that the transection plane matched the preoperative planning. **Results:** The donor hepatectomy was uneventful (blood loss 500 ml; no transfusion). The donor made an uneventful recovery and was discharged on POD 7. The retrieved graft was 720 grams (GRWR= 0.940). The recipient had a smooth post-operative course. Follow up donor CT at 3 months showed increase in Left liver volume to 902 ml (RLV 357); segment 4 from 276 to 633 ml and seg 2&3 from 81 to 269 ml. **Conclusion:** In the absence of a viable deceased donor program, predominantly living donor centers will be forced to accept donors with variant anatomy. Preoperative planning and use of imaging and volumetry to guide hepatectomy can allow retrieval of grafts from these donors without increasing the risk.

Abstract # P-563

Outcome of Left Lobe Grafts with the Caudate Lobe in Donor Hepatectomy for Living Donor Liver Transplantation: A Single Japanese Center Experience. Shozo Mori, Mitsugi Shimoda, Takatsugu Matsumoto, Takayuki Shiraki, Takayuki Kosuge, Yukihiko Iso, Masato Kato, Junji Kita, Keiichi Kubota. *Department of Gastroenterological Surgery, Dokkyo Medical University, Tochigi, Japan*

Background: For obtaining a left lobe graft with the caudate lobe, additional surgical techniques are required, and this may cause adverse events in the donor. The study aimed to compare the outcomes of left lobe grafts with and those without the caudate lobe in donor hepatectomy.

Methods: Between October 2000 and September 2013, 34 consecutive donors underwent left hepatectomy for living donor liver transplantation at Dokkyo Medical University Hospital, Japan. Patients were divided into the following 2 groups: left lobe graft with the left portion of the caudate lobe (Lt-C, n = 12) and without the caudate lobe (Lt, n = 22). Pre-, peri-, and post-operative variables were compared between the groups.

Results: All donors recovered well and returned to their usual lifestyle. Operation time and postoperative hospital stay were significantly longer in the Lt-C group than in the Lt group (516 min vs. 384 min, $P=0.028$; 16 days vs. 14 days, $P=0.007$, respectively). However, blood loss and postoperative liver function test results did not differ between the 2 groups. Additionally,

the actual graft volume (GV) and the GV/standard liver volume ratio of the recipients were similar between the Lt and Lt-C groups (383 ml vs. 392 ml, 37.4% vs. 35.9%). However, actual GV/estimated GV ratio was significantly higher in the Lt-C group than in the Lt group (15.2% vs. -9.3%, $P=0.04$). The estimated volume of the left portion of the caudate lobe in the total liver volume of the donor was 21.3 mL (1.7%). Postoperative complications, including pleural effusion, subcutaneous abscess, and bile leakage, were observed in 3 patients (25%) in the Lt-C group and 4 (18%) patients in the Lt group ($P=0.479$). However, biliary anastomotic strictures of the recipients occurred in the Lt group only (n = 7 [32%], $P=0.032$).

Conclusions: Use of Lt-C appears to be a feasible and safe option, and it can increase the graft volume in small-for-size grafts.

Abstract # P-564

Outcome of LDLT With Grafts from Obese Donors. N. Vijai Anand, Sanjay Goja, Amit Rastogi, Balachandran Menon, Arvinder Singh Sooin, Ravi Mohanka. *Institute of Liver Transplantation and Regenerative Medicine, Medanta, Medicity, Gurgaon, Haryana, India*

INTRODUCTION

Safe and successful deceased donor liver transplantation (DDLT) from obese donors has been reported. The outcome of grafts from obese living donors in LDLT is unclear. We analysed recipient and donor outcome after LDLT from obese donors.

AIM

The aim of the study was to analyze the effect of grafts from high BMI donors on graft function, post transplant recipient and donor morbidity and mortality.

MATERIAL AND METHODS

Retrospective analysis of 500 consecutive adult to adult LDLT at our institution, between July 2011 and November 2013, were selected for the study. Healthy donors between 18-58 years were selected as per our institute protocol. Study population was divided into two groups; Group 1, donor BMI < 27.5 and Group 2 BMI > 27.5. Donor with BMI more than 30 undergo preoperative liver biopsy with more 20% macrovesicular steatosis as cut off for donor rejection. These groups were comparable for recipient age, gender, CTP, MELD, etiology of liver disease, type of graft (right or left) and graft to recipient weight ratio (GRWR). Graft/ liver function in recipients and donors was assessed by bilirubin, enzymes and INR on day 7 and day 3 respectively.

Results

There were 378 donors in group 1 (BMI <27.5) and 122 in group 2 (BMI >27.5). There was no statistically significant difference in operation time, (730.64 + 164.13 in Group 1 vs 757.69 + 210.45 in Group 2, p. 077), hospital stay (18.96 + 10.34 vs 20.64 + 14.05, p. 13) ICU stay (6.63 + 4.57 vs 7.39 + 5.18 p. 15), postoperative biliary complications and one year survival (85.3 vs 83.5% p. 36)

Post operative bilirubin on day 7 was statistically significant in the recipient who received graft from high BMI donors (4.52 + 5.03 vs 5.92 + 7.35 p. 01) although other parameters of graft function were insignificant.

Intrap blood loss was more in donors with high BMI which was statistically significant (549.39 + 298 vs 634.71 + 344.71 p. 00). There was no significant difference in liver function test on day 3, hospital stay (7.27 + 2.91 vs 7.02 + 1.78 p. 0.13) between two groups. Post operative complications were also not different between two groups. There was no donor mortality in either group.

Conclusion

This study suggests that liver grafts from high BMI donors can assure a normal functional recovery for both donors and recipients when selected appropriately.

Abstract # P-565

Intraoperative 'No Go' Donor Hepatectomy in Living Donor Liver Transplantation: A Single Center Experience. Ahmed Hussein Khalil¹, Karim Adel Hosny¹, Tamer Elbaz², Dina Omar³, Elsayed Abdelhalim¹, Ezz Eldeen Korashy¹, Mostafa Elshazly¹, Ayman Salah¹, Hesham Aboueisha¹, Ahmed Nabil¹, Adel Hosny¹.

¹General Surgery, Cairo University, Cairo, Egypt; ²Endemic, Hepatology and Gastroenterology, Cairo University, Cairo, Egypt; ³Pathology, Cairo University, Cairo, Egypt

Liver transplantation is the treatment of choice for patients with end-stage liver diseases and congenital hepatobiliary disorders. Donor safety is the primary concern in all living donor liver transplantation programs. Meticulous preoperative assessment of the donor is crucial for donor safety. However these investigations cannot predict unexpected events that put donor safety in question. This is a retrospective study including 129 living donors. Ninety six

donors (74.4%) were males, while 33 (25.5%) were females. It was carried at the liver transplantation center, Cairo University during the period between October 2004 and November 2013. We had 2 aborted donor surgeries (1.6%) after the abdominal incision due to unexpected poor liver quality that was not predicted by the preoperative assessment modalities of the donor.

table 1

Age (year)	Gender	BMI (kg/m ²)	Reason for abortion	Intraoperative management	Hospital stay	Final pathology
29	Male	23	Poor liver quality	Biopsy	3	Brigding fibrosis with mild portal inflammation
30	Male	25	Poor liver quality	Biopsy	3	Chronic hepatitis with mild portal fibrosis

Intraoperative liver biopsy was done revealing mild portal fibrosis and chronic inflammation.



The preoperative protocol for donor evaluation, including liver biopsy, still has some false negative results. Laparoscopic donor assessment is helpful in conjunction with liver biopsy to exclude donors with poor liver quality and preventing unnecessary abdominal incision.

Abstract # P-566

Intra-Operative Contrast Cholangiography and Preoperative Magnetic Resonance Cholangiography in Right Lobe Living Donors, Evaluation of Results and Clinical Impact. Duilio Pagano¹, Marco Spada¹, Marco Paci², Davide Cintorino¹, Sergio Li Petri¹, Roberto Miraglia¹, Calogero Ricotta¹, Pasquale Bonsignore¹, Bruno G. Gridelli¹, Salvatore Gruttadauria¹. ¹ISMETT - UPMC Italy, Palermo, Italy; ²Foundation I.R.C.C.S. Policlinico San Matteo, Pavia, Italy

Background: The reported accuracy of pre-transplant magnetic resonance cholangiography(MRC) is 92%, however intra-operative contrast cholangiography(IOC) remains the definitive diagnostic tool. We aim to analyze the clinical impact of biliary anatomy mismatches obtained by comparing preoperative evaluation obtained by MRC imaging with IOC. **Materials and Methods:** From 2002 to 2013, 359 potential living liver donors underwent pre-transplant evaluation in ISMETT. Of these 107 live donor hepatectomy of which in details: 95 for adult patients and 12 for pediatric recipients. We focused the study on 85 donors underwent right hepatectomies for living donor liver transplantation(LDLT), from 2003 to 2011. Anatomic biliary variances and biliary recipient complications (BC) assessed on the basis of clinical follow-up were analyzed. **Results:** There were no donor deaths, and all of the live donors returned to their normal activities after the perioperative period, 8 (9.4%) had BC; in 7 cases the grade was 3b, according to Clavien classification. Biliary anatomy mismatches between MRC and IOC was evidenced in 32 cases (37.6%). Recipient BCs were detected in 38 (44.7%) patients; in 28 cases the grade was 3b; a significant association with anatomic mismatch was showed (p=0.05).

Table 1

Biliary Variance	N	%	Donor Biliary Complication	%	Recipient Biliary Complication	%
A1	23	27.1	3	3.5	14	16.5
A2	4	4.7	1	1.2	3	3.5
A3	4	4.7	0	0.0	1	1.2
A5	1	1.2	1	1.2	1	1.2

Description of anatomic biliary variances (Huang's classification) in 32 donors with imaging mismatches and related short-term biliary worse complications (□ Clavien Grade IIIa).

Survival rates at 1, 3 and 5 years after LDLT for all of the recipients vs. patients with occurrence of biliary complications were: 89.3, 83.2, and 77.8% vs. 89.4, 81.5, 72.1% for patient survival, and 83.4, 77.7%, 71.9% vs. 86.8, 78.9 and 73.1% for graft survival, respectively. Although recent reports emphasize the role of MRC, we think that IOC is still paramount in obtaining definitive information and plane surgical strategy. Promising results could be pretransplant use of MEVIS Hepavision which in our experience gave precise information on biliary anatomy with no miss matches when compared with IOC.

Abstract # P-567

Distal Splenorenal Shunt for Portal Vein Thrombosis after Liver Transplantation. Status after 10 Years Follow Up. Rebeca M. Sanabria, Alejandro Manrique, Iago Justo, Naim Fakh, Alberto A. Marcacuzco Q, Oscar M. Caso, Jorge Calvo, Felix Cambra, Alvaro Garcia Sesma, Carmelo Loinaz, Carlos Jimenez. *Surgery, 12 de Octubre University Hospital, Madrid, Spain*

INTRODUCTION

The occurrence of portal vein thrombosis after liver transplantation may condition the graft loss and the need for retransplantation. The resolution of the complications of portal hypertension by a surgical porto systemic shunt, has not been described in the literature after receiving a liver transplant.

MATERIAL AND METHODS

A 50 year old woman, was transplanted in 2000 secondary to cryptogenic cirrhosis. Three years later, she came to the emergency with upper gastrointestinal bleeding, an upper endoscopy is done with diagnosis of esophageal varices treated with chemical sclerosis during the endoscopy. Secondary, an ecodoppler was performed showing absence of portal flow at the hepatic hilum in a patient with normally functioning graft. Given the findings, it was decided to perform a distal splenorenal shunt.

Since 2003, the patient has not presented more episodes of gastrointestinal bleeding, has a functioning shunt and normally functioning graft despite cirrhosis diagnosed 10 years ago.

DISCUSSION

Late portal vein thrombosis after transplantation is described in a 1.16 to 2.7%. Treatment of patients with PVT has usually been regarded as necessary when additional complications such as arterial occlusion or bile duct injuries have occurred. PVT occurring after liver transplantation has been managed surgically by thrombectomy, retransplantation, splenorenal shunt or Wall-stent placement at laparotomy; or non surgically by angioplasty, local high-dose infusion of thrombolytic agents or systemic thrombolytic therapy with several results.

This case shows a disease-free survival 10 years after a splenorenal bypass surgery, currently functioning in a patient with no further episodes of bleeding, with normal liver function despite a cirrhotic liver, which has not been described in literature so far.

Abstract # P-568

Preoperative Prediction of Short-Term Prognosis after Adult-to-Adult Living Donor Liver Transplantation: A Way to Zero-Mortality. Tsuyoshi Shimamura¹, Masato Fujiyoshi¹, Tomomi Suzuki¹, Kenichiro Yamashita², Takeshi Aoyagi¹, Ryouichi Goto¹, Toru Takahashi¹, Yasuyuki Koshizuka¹, Masahiko Taniguchi³, Hiroyuki Furukawa³, Satoru Todo⁴. ¹Division of Organ Transplantation, Hokkaido University Hospital, Sapporo, Japan; ²Department of Transplantation Surgery, Hokkaido University, Sapporo, Japan; ³Department of Surgery, Asahikawa Medical University, Asahikawa, Japan; ⁴St. Maria Hospital, Kurume, Japan

<Background and Aim> In deceased donor liver transplantation, several scoring systems for evaluating postoperative prognosis have been proposed. However, no reliable model has been established in living donor liver transplantation, especially in the adult-to-adult setting (AA-LDLT). In this paper, we developed a prediction model of short-term prognosis after AA-LDLT, and its usefulness was assessed.

<Patients and Methods> Between September 1997 and June 2009, 142 patients underwent AA-LDLT in our hospital. Of these, 16 recipients died within 6 months after the operation. The following parameters were assessed as possible preoperative risk factors influencing postoperative mortality: age, gender, etiologies, preoperative status, MELD score, and renal replacement therapy (RRT) requirement in recipients, while age, gender, graft type and graft volume/standard liver volume (GV/SV) ratio in donors. The 6-month survival was used as outcome variable. After January 2010 when our

prediction model had been implemented, the recipient-donor selection was made based on the predicted 6-month mortality rate. Consequently, 23 AA-LDLT were carried out.

<Result> MELD score (>20), preoperative status, RRT requirement, donor age (>50 year-old) and GV/SV ratio remained as independent risk factors for 6-month survival by univariate analysis. Of these, MELD score, donor age and GV/SV ratio were significant with multivariate analysis. Using regression coefficient, 6-month mortality rate was calculated with a risk score (RS) through the formula: $e^{RS} / (1 + e^{RS})$, where RS was expressed as $[2.2689 \text{ (if MELD score } >20) + 1.3395 \text{ (if Donor age } >50) - 7.9486 \times \text{GV/SV ratio} - 0.0131]$. After January 2010, 23 recipients underwent AA-LDLT and all are surviving.

<Conclusion> Higher MELD score more than 20, older donor over 50 years old, and small GV/SV ratio were significant preoperative risk factors for 6-month mortality. Appropriate recipient-donor selection based on the prognosis prediction by the established model could be a way for achieving zero-mortality after AA-LDLT.

Abstract # P-569

Living Donor Liver Transplantation for Alcoholic Steatohepatitis: Survival and Recidivism. Ravichand C, Siddachari, Neerav Goyal, Manav Wadhawan, Subash Gupta. *CLBS, Apollo Hospital, Delhi, India*

Introduction:

Liver transplantation for alcoholic steatohepatitis (ASH) still remains controversial. The fear of organ shortage, ethical issue and recidivism has compelled most centres performing deceased donor liver transplantation (DDLT) to stick to policy of 6 months of abstinence. However the same is not applicable to living donor liver transplantation (LDLT) where there is no public restrains regarding organ shortage. Moreover 70-80% of patients die while waiting to complete 6 months of abstinence. Non response to medical therapy is associated with high mortality rates. Furthermore, six months abstinence does not affect recidivism after liver transplantation.

Aim: To study outcome of LDLT in patients with alcoholic steatohepatitis.

Materials and Methods:

Thirty three patients with ASH underwent LDLT between Sep 2006 and May 2013. Patients who failed to respond to medical therapy (rising bilirubin, INR and renal failure) were selected. All these patients had liver donation from close relatives and had good support from family. Mortality and survival were analysed. Recidivism was assessed in these patients and compared them with alcoholic liver disease (ALD) patients (127 patients) who underwent liver transplant after being abstinent for more than six months during the same period.

Results:

All were male patients and mean age was 46.2 (range 30-69 years). Mean Maddrey's discriminant function was 91.24 and mean MELD was 30. Ten patients (30.3%) died in the early postoperative period due to septic complications. Seven patients developed septicaemia in the early post operative period. One patient developed ARDS. One patient had biliary leak and CMV viraemia. One patient developed duodenal perforation after 10 days post transplant which was repaired however died due to sepsis. Six months survival was 69.7%. Two patients had delayed death. One died after 7 months due to pneumocystis jiroveci pneumonia and fungal sepsis. One resumed drinking and died after 11 months due to graft hepatitis and sepsis. Twenty one patients are alive (63.6%) and remain sober. Median duration of follow up was 33.7 months. Recidivism in these patients was 9.1% (3) compared to 8.7% in ALD patients (11) who were abstinent for more than 6 months.

Conclusions:

Patients failing medical therapy for ASH have very high mortality rates. Liver transplant is the only option with survival benefit up to 70%. Recidivism in these patients is comparable to ALD patients.

Abstract # P-570

Surgical Outcome of Living Donor Hepatectomy: Single-Center Experience. Aydin Dalgic¹, Hakan Sozen², Osman Yuksel¹, Gokhan Yagci³, Billur Demirogullari⁴. ¹General Surgery, Gazi University, Ankara, Turkey; ²Transplantation, Gazi University, Ankara, Turkey; ³Pediatric Surgery, Gazi University, Ankara, Turkey

Donor hepatectomy for living related liver transplantation (LRLT) has begun an accepted and widely used worldwide. **Aim:** To assess surgical outcome of living donor hepatectomies as a single center experience. **Material and Methods:** Totally 24 living liver hepatectomies were performed at Gazi University Transplantation Center/Ankara/Turkey since 2006. All data retrospectively collected from hospital charts. Donor evaluation's first step

is full blood tests, viral load, blood group analyses. If there isn't any problem all recipients have gone through surgery team, gastroenterology, pulmonary, cardiologic and psychiatric evaluation as second step. Then, all had 3D celiac CT scan for evaluation of the hepatic vascular anatomy as third step. We perform intraoperative cholangiography for all donors to evaluate biliar tree during the surgery. We use xiphoid extended right subcostal incision for donor hepatectomy. **Results:** There were 13 female, 11 male as donor. Donors' origin was 13 parents, 5 siblings, 2 spouses, 1 aunt, 1 nephew and 2 others. Mean age of the donor was 32 ± 7.5 years (between 23-48 years). Mean BMI of the donor was 27.2 ± 1.9 (median 27). Eleven out of 24 right hepatectomy, 9 out of 24 left and 4 left-lateral hepatectomy were performed. The mean % of remnant liver for right hepatectomy was 33.8 ± 4 (median 35%) and median graft-to-recipient body weight ratio of the right lobe was 1.7% (between 0.9-1.5%). The mean intraoperative blood transfusion was 1.3 ± 1.4 U ES (0-6 U). Donors' average hospital stay was 9 ± 3 days (6-17 days, median 9 days) after surgery. We have not seen any late surgical complications. Only 1 early surgical complications (surgical bleeding, 4%) in grade III Clavien system detected. Patient re-explored and was found that blood was coming from left gastric artery stump (LL segmentectomy; segment's artery was originating from LGA). Stump successfully repaired again without any problem. This patient discharged at D7 after surgery. We have not seen any vascular complication at the post-hepatectomy period. **Conclusion:** Donor hepatectomy for living LT is a safe procedure. We believe that, donor safety should be the first priority of all living liver donor programs. It is efficient way of treatment method country like Turkey that has very low diseased donor donation.

Abstract # P-571

Effectiveness of Continuous Wound Infusion of Ropivacaine for Postoperative Pain Management after Donor Hepatectomy in Living Donor Liver Transplantation. Suk-Won Suh, Jeong-Moo Lee, YoungRok Choi, Nam-Joon Yi, Kwang-Woong Lee, Kyung-Suk Suh. *Department of Surgery, College of Medicine, Seoul National University, Seoul, Korea*

The highest priority in living donor liver transplantation (LDLT) is donor safety. With an improvement of clinical outcomes in recent periods, another important aspect of donor outcome, the impact of the donation on the quality of life (QOL) received attention. Feeling throbbing, itching or numbness around the wound was the most common physical symptom disturbance reported by donors and it had a negative impact on donor physical and psychological facets of QOL. We analyzed the synergistic effect of local anesthetic-based analgesia which had been known to provide effective pain control on patients who underwent donor hepatectomy in LDLT. In this prospective, randomized study, 46 donors were allocated to both groups. Group A was Pain-Buster group (n = 23), who received continuous local 0.5% ropivacaine via a multi-orifice catheter placed at the wound in addition to continuous intravenous opioid-based analgesia as fentanyl (PCA). Group B (n = 23) was the donors who only had PCA postoperatively. Demographics, a visual analogue scale (VAS) at rest and with coughing at 6, 12, 24, 48, 72 postoperative hours, rescue IV fentanyl and meperidine consumption, the times to first flatus, oral intake and ambulation, postoperative laboratory results, side effects, including sedation, dizziness, nausea, vomiting, pruritus, respiratory depression, wound symptoms and patient satisfaction using a questionnaire (EQ-5D) were compared were compared. There was no significant difference of demographics in both groups. The VAS score at rest during the first 24 and 48 postoperative hours was significantly lower in group A, compared with group B. There were no differences in consumption of additional analgesics, however, the times to ambulation were significantly shorter in group A, than group B. Among side effects, nausea and vomiting were significantly reduced in group A, and others had no significant difference. Donor satisfaction using questionnaire showed more satisfactory of self-care, usual activities and pain/discomfort in group A, compared with group B. In conclusion, additional continuous wound infusion of ropivacaine for postoperative pain management in donors in LDLT showed effective pain control with faster recovery of usual activities and it also achieved higher patient satisfaction levels from improved QOL for themselves.

Abstract # P-572

Recent Advancements and Perspectives of Donor Operation in Living Donor Liver Transplantation: Single-Center Experience of 886 Patients in 13 Years. Kyung-Suk Suh. *Department of Surgery, Seoul National University College of Medicine, Seoul, Korea*

Objectives: To address the past, present, and future of donor surgery for living donor liver transplantation (LDLT).

Summary Background Data: Despite the recent advancement of LDLT, donor safety remains a concern.

Methods: a total of 886 donor hepatectomies between January 1999 and December 2012 at a single center were investigated. Three groups were divided: the initial period (1999–2004, n=239); the primary usage of right liver with middle hepatic vein reconstruction (2005–2010, n=422); and a standardized protocol using right liver exclusively with localized heparin washout, preoperative magnetic resonance spectroscopy, and cholangiography; no central vein catheterization, and incremental application of minimal incisions (2011–2012, n=225). The selection of donors and clinical outcomes were compared.

Results: The proportion of patients older than 50 years increased (2.5% vs. 4.7% vs. 8.9%), whereas a remnant liver volume $\leq 30\%$ (6.5% vs. 13.9% vs. 6.3%) and macrosteatosis $\geq 10\%$ (7.9% vs. 11.1% vs. 4.4%) decreased in recent period. Operative time (292.7 vs. 290.0 vs. 272.8, mins), hospital stay (12.4 vs. 11.2 vs. 8.5, days), and overall morbidity rate (26.4% vs. 13.3% vs. 5.8%) including major complications, more than grade III (1.7% vs. 1.9% vs. 0.9%) and biliary complications (7.9% vs. 5.0% vs. 0.9%) were markedly reduced recently. No patient required intraoperative transfusion, and there were no mortalities.

Conclusions: Recently, donor surgery has been standardized with a large volume of experience, and it has a minimal risk. However, a constant evaluation of our experience is critical to our preparedness for any unavoidable crisis.

Abstract # P-573

The Analysis of the Changes of Immunologic Factors in Long-Term Adult ABO-Incompatible Living Donor Liver Transplantation. Mitsuhisa Takatsuki, Masaaki Hidaka, Akihiko Soyama, Tomohiko Adachi, Amane Kitasato, Tamotsu Kuroki, Susumu Eguchi. *Department of Surgery, Nagasaki University, Nagasaki, Japan*

Aim

The aim of this study is to analyze the changes of immunologic factors in long-term adult ABO-incompatible living donor liver transplantation (LDLT). Patients and Methods

Of the 191 LDLT cases from Aug 1997 to Dec 2013, 17 adult cases older than 18 years which were surviving more than 1 year after ABO-incompatible LDLT were enrolled in this study. They consisted of 8 males, 9 females with median age at LDLT of 52 years old (range, 25–70). All except the first case received rituximab before LDLT, and plasma exchange was performed just before transplantation in all cases to reduce the anti-donor blood type antibody. The serial changes of anti-donor blood type antibody titers and B lymphocyte markers CD19/20 were retrospectively reviewed.

Results

All patients were doing well with median follow-up period of 63 months (range, 14–135) after LDLT. Median alanine aminotransferase and total bilirubin at the last follow-up was 22 IU/L (range, 6–63) and 0.7 mg/dL (range, 0.4–2.5), respectively. The titer of anti-donor blood type antibody after LDLT were significantly lower than that of preoperative one, as 64x at preoperatively, 4x at 1 month, 4x at 6 months, 4x at 1 year, 2x at 3 years, 2x at 5 years after LDLT, respectively. The count of CD19/20(%) reached preoperative level until 1 year, after gradual recovery as 12.5/14.0 at preoperatively, 0.2/0.1 at 1 month, 6.8/5.3 at 6 months, 13.0/9.0 at 1 year, 13.0/12.5 at 3 years, 13.9/13.6 at 5 years after LDLT. When we picked the blood type O recipients (n=9) of blood type A donor (n=7) or blood type B donor (n=2) with measuring both blood type A and B, the titers of anti-donor blood type antibody at any time point after LDLT were significantly lower than that of non-anti-donor blood type antibody titers (64x, 2x, 4x, 4x, 2x, 2x vs 64x, 8x, 16x, 16x, 16x, 16x (P<0.05)).

Conclusion

The long-term outcome of adult ABO-incompatible LDLT was excellent, and donor-specific hypo-production of antibody was observed in these cases.

Abstract # P-574

The Role of Liver Transplantation for Hilar Cholangiocarcinoma: A Single-Center Experience. Liping Cao, Jian Wu, Lei Geng, Weilin Wang, Shusen Zheng. *The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang, China*

Background: Hilar cholangiocarcinoma is the second most common primary liver malignancy, often unresectable when diagnosed. Orthotopic liver transplantation (OLT) may offer a chance for cure, but the survival rate in the past is disappointing.

Purpose: The aim of this study was designed to review our single experience in OLT for irresectable hilar cholangiocarcinoma and try to evaluate the prognostic factors that could influence survival.

Methods: A retrospective analysis was performed on 11 consecutive patients with hilar cholangiocarcinoma who underwent OLT between September 1999 and August 2013 in our center.

Results: The overall survival rate for hilar cholangiocarcinoma at 1, 3, and 5 years were 88.6%, 66.7%, and 66.7%. Two patients died during the perioperative period and one died of tumor recurrence. Lymph node metastases and high level of CA19-9 were found in five and four patients, respectively. They both had a statistically significant negative impact on overall survival irrespective of tumor size or differentiation degree.

Conclusion: Acceptable survival rates can be achieved by OLT for hilar cholangiocarcinoma, with lymph node metastases and high level of CA19-9 as the exclusion criterion.

Abstract # P-575

Pre-Transplant Downstaging for T2 Hepatocellular Carcinoma.

Laura Coletti¹, Paolo De Simone¹, Irene Bargellini², Alessandro Silvestri¹, Giulia Lorenzoni², Daniela Campani³, Carlo Bartolozzi², Franco Filipponi¹. *¹Hepatobiliary Surgery and Liver Transplantation, University of Pisa Medical School Hospital, Pisa, Italy; ²Radiology, University of Pisa Medical School Hospital, Pisa, Italy; ³Pathology, University of Pisa Medical School Hospital, Pisa, Italy*

Background and aim: To present the long-term results of downstaging with trans-arterial chemo-embolization (TACE) for T2 hepatocellular carcinoma (HCC) before liver transplantation (LT).

Materials and methods: This was a retrospective analysis of a single-center, prospectively collected database. The current analysis included 112 patients transplanted between January 1996 and December 2010 and undergoing pre-transplant TACE for radiologically diagnosed T2 HCC. Response to TACE was evaluated one month after the procedure and graded according to the modified RECIST (mRECIST) criteria. Patients were classified as complete response (CR) (group A) or as the composite of stable disease, partial response and progression (group B). Endpoints were evaluation of overall (OS) and recurrence free survival (RFS) according to Kaplan-Meier.

Results: Group A (#60) and B (#52) patients were similar in terms of demographics and pre-transplant liver function variables. 5-year OS and RFS were 65% and 92.6%, respectively. After censoring for perioperative deaths (#7), both OS and RFS were higher for group A vs. group B (p<0.05). At multivariate analysis, response to TACE and AFP were independent predictors of RFS.

Conclusion: CR after TACE is a predictor of RFS for T2-HCC patients undergoing LT.

Abstract # P-576

The Fate of Intra-Ductal Papillary Mucinous Neoplasms of the Pancreas after Liver Transplantation.

Laura Coletti¹, Paolo De Simone¹, Paola Carrai¹, Davide Ghinolfi¹, Giovanni Tincani¹, Gabriele Catalano¹, Alessandro Silvestri¹, Daniela Campani², Carlo Bartolozzi³, Franco Filipponi¹. *¹Hepatobiliary Surgery and Liver Transplantation, University of Pisa Medical School Hospital, Pisa, Italy; ²Pathology, University of Pisa Medical School Hospital, Pisa, Italy; ³Radiology, University of Pisa Medical School Hospital, Pisa, Italy*

Background: Due to the burden of immunosuppression, presence of pre-malignant disease may be relative contraindication to liver transplantation (LT). We report a single-center experience of patients with intra-ductal papillary mucinous neoplasms (IPMN) of the pancreas and end-stage liver disease (ESLD) undergoing LT.

Methods: Retrospective review of a prospectively collected database. Patients with ESLD and IPMN undergoing LT were included. Pre-transplantation, IPMN was diagnosed by contrast-enhanced radiology.

Results: Between January 2002 and November 2013, 11 patients (3 M, 8 F; median age 54 years) with IPMN were listed for LT. IPMN was branch duct (BD-IPMN) in 90.9% patients (10/11) and main duct (MD-IPMN) in 9.1% (1/11). Indications to LT were: primary biliary cirrhosis (PBC) in 36.4% (4/11), hepatitis B virus-related cirrhosis (HBV) in 18.2% (2/11), primary sclerosing cholangitis (PSC) in 18.2% (2/11), cryptogenic cirrhosis (CRYPTO) in 18.2% (2/11), and secondary biliary cirrhosis (SBC) in 9.1% (1/11). Hepatocellular carcinoma (HCC) was present in 18.2% (2/11) cases. Patients (90.9%) with branch duct BD-IPMN underwent LT only and were followed-up with contrast-enhanced radiology every 6 months, while the 1 (9.1%) with MD-IPMN underwent simultaneous LT and total pancreaticoduodenectomy. At a median follow-up of 4 years (range 2-11), no patient with BD-IPMN showed radiologic progression of disease nor developed symptoms of pancreatic disease.

Conclusions: Due to improvement in radiologic techniques, pancreatic cystic lesions are being frequently diagnosed in the general population. No information is currently available on outcome of IPMN after LT. Albeit retrospective, the current evidence suggests that BD-IPMN should not contraindicate LT. Larger series and longer follow-ups are strongly favored.

Abstract # P-577

NUC Therapy in HBV- Related Chronic Liver Diseases: Any Impact on HCC Development? Massimo De Giorgio, Silvia Pecere, Luisa Pasulo, Maria Grazia Luca', Vittoria Vero, Giulia Magini, Giovanna Gaffuri, Davide Bitetto, Stefano Fagioli. *Gastroenterology and Transplant Hepatology, Papa Giovanni XXIII Hospital, Bergamo, Italy*

Background and aim The impact of HBV antiviral treatment on HCC occurrence is still debated.

Methods This study included 188 (166 males, median age 63 years) HBsAg positive patients who were consecutively evaluated for the occurrence of HCC at our Centre since 2000. One hundred and twelve had cirrhosis (59.6%), 10 (5.3%) were co-infected with delta virus, 18 with HCV (9.6%) and 30 (16%) had a significant concomitant alcohol consumption. The distribution of patients according to the duration of antiviral treatment was evaluated.

Results Twenty seven patients (14.4%) were not treated with NUCs for spontaneous undetectable viremia, 83 (44.1%) were initially treated with lamivudine (LAM), 8 (4.3%) with LAM+adefovir (ADV), 52 (27.7%) with entecavir (ETV) and 18 (9.6%) with tenofovir (TDF). In 52 (27.7%) treatment was modified: 11 patients (5.8%) added ADV to LAM, 6 (3.2%) switched from LAM to ETV, 32 (17.0%) from LAM to TDF and 3 (1.6%) from LAM to ETV+TDF. Median number of HCC nodules at diagnosis was 1(1-5), while cumulative dimension was 3.85 (1.2-32.1) cm, 17 patients (9.0%) had a concomitant portal vein thrombosis, median levels of alpha-fetoprotein were 13 (1-46767) ng/ml. Patients were then divided into 8 groups according to the duration of antiviral therapy prior to the occurrence of HCC: 100 patients (54.3%) started NUCs at the time of diagnosis of HCC, 37 (20.1%) were treated for up to 24 months (mo), 18 (9.8%) >24 mo and ≤48 mo, 10 (5.4%) >48 mo and ≤72, 9 (4.9%) >72 mo and ≤96 mo, 7 (3.8%) >96 mo and ≤120 mo, 2 >120 mo and ≤144 mo and finally 1 (0.5%) >144 mo. Considering only the 84 patients who started NUCs before HCC diagnosis and who followed a regular HCC screening, there was a significant linear trend (p<0.0001) in the distribution of patients according to the duration of antiviral treatment. On the contrary there was no relationship between the number or dimension of HCC nodules and the duration of antiviral treatment.

Conclusions In this cohort study the distribution of HBsAg positive patients presenting with HCC seems to be strictly related to the duration of antiviral treatment.

DISCLOSURE: Fagioli, S.: Speaker's Bureau, None.

Abstract # P-578

Liver Transplantation for Hepatocellular Carcinoma (HCC): Customization of Immunosuppression and Close Follow Up Yields Better Outcomes. Sukru Emre, Roger Patron-Lozano, Amy Kim, Katarzyna Cartiera, Michael Schilsky, Manuel I. Rodriguez-Davalos. *Yale-New Haven Transplantation Center, New Haven, CT, USA*

Aim: Review single center outcomes of liver transplantation (LTx) in patients with HCC.

Methods: Prospectively collected data was reviewed retrospectively in patients that underwent LTx in our center from 8/2007 to 11/2013. Of 260 LTx performed at Yale, 60 (23%), had HCC (45 males and 15 females; average age was 61.5±7y). HCV was the etiology of cirrhosis in 38 (63%)

with HCC. The majority, 54 patients, received deceased donor grafts and 6 had living donors (LDLT). All patients were started on sirolimus 4-8 weeks after LTx. Post-LTx imaging studies were obtained every 3-6 months. The average follow-up was 30 months (range: 1-75)

Results: Pre-LTx ablative therapy was performed in 96% of patients; with 8(13.3%) down-staged from beyond UCSF or Milan criteria. Average waiting time was 365±425 days for deceased donor LTx and 75±62days for LDLT. Mean pre-LTx AFP level was 33.12ng/ml (range: 1-881). Based on dynamic imaging, 48(81.36%) patients were within Milan criteria, 10(16.95%) within UCSF criteria and 1 (1.69%) patient was beyond Milan/UCSF criteria. Histopathological examination of explants showed 42(70%) were within Milan, 17 (28.3%) were within UCSF and 1 (1.69%) beyond UCSF criteria. Average tumor size was 2.74±1.66 cm (range 1-10) and average number of tumors per patient was 2.16±1.7 (range 1-7). Histology showed 14 (23.3%) were well differentiated, 36 (60%) were moderately differentiated and 3 (5%) were poorly differentiated HCC; in 7 (11.7%) patients, there was no active tumor in the explant. Lymphovascular invasion was present in 6 (10%) patients. A total of 4 (6.7%) patients had tumor recurrence and 3 (5%) died: 2 with hepatocolangiocarcinoma and 1 with HCC beyond UCSF criteria.

Conclusions:

We observed a low post-LTx recurrence of HCC in our cohort. These results are likely due to our aggressive approach with pre-LTx ablation therapies, use of sirolimus post-LTx, long waiting time for LTx allowing aggressive HCC cases to drop from the waiting list (natural selection) and close follow up of our patients. Select downstaged patients can have excellent outcomes after LTx. Diagnosis of hepatocolangiocarcinomas before LTx and exclusion of these cases from LTx is important since their overall outcomes remain poor. Further prospective studies are needed to delineate the role of rapamycin on post-LTx HCC recurrence.

Abstract # P-579

Liver Transplantation for Combined Hepatocellular Carcinoma and Cholangiocarcinoma a Case Match Analysis. Enrico Gringeri¹, Francesco E. D'Amico¹, Egle Perissinotto³, Claudia Mescoli², Domenico Bassi¹, Marina Polacco¹, Riccardo Boetto¹, Giacomo Zanusi¹, Massimo Rugge², Umberto Cillo¹. ¹Department of Surgery Oncology and Gastroenterology, Hepatobiliary and Liver Transplant Unit, Padova, Italy; ²Department of Medicine DIMED, Surgical Pathology & Cytopathology Unit, Padova, Italy; ³Department of Environmental Medicine and Public Health, Padova, Italy

Introduction: Combined hepatocellular carcinoma and cholangiocarcinoma (cHCC-CC) is a rare tumor of difficult differential diagnosis with hepatocellular carcinoma (HCC) or cholangiocarcinoma (CC). Therefore some patients who undergo liver transplantation (LT) for supposed HCC are eventually diagnosed with cHCC-CC. Aim: The aims of the study is evaluate incidence, characteristics, preoperative treatments and post-transplant outcomes of patients who underwent LT for HCC and were found to have cHCC-CC at pathology. Materials and Methods: Since 1991 to 2012 we retrospectively analyzed all patients who underwent LT for cHCC-CC in our Center. Pathologic specimens were reanalyzed to confirm diagnosis. Demographics, clinical data, survival and outcomes after LT were compared to patients with HCC. Furthermore we performed a case match analysis pairing patients 1:2 (cHCC-CC:HCC) by age, sex, and the following pre-LT tumor characteristics: number of nodules, maximum size of biggest nodule and sum of total tumors diameter. Results: During the study period 24 patients underwent LT for cHCC-CC and 299 for HCC. Patients affected by cHCC-CC were younger (55,9 vs 60,3 years; p=0.01). No differences were found in preoperative patient and tumor characteristics. Patients affected by HCC received significantly more pre-LT treatments (p=0.03), particularly alcohol injection (p=0.02). No differences in recurrence were found (cHCC-CC 22,2% vs HCC 20,4%). Survival at 1 and 3 years were significantly different between groups, (85% and 75% for HCC vs 67% and 60% for cHCC-CC; p=0.04). When cHCC-CC and HCC were paired with a ratio 1:2 no differences in overall survival were observed. Conclusion: In our experience cHCC-CC and HCC had a similar recurrence rate and a similar oncologic outcome according to the case match analysis. Preoperative diagnosis of cHCC-CC is often not possible and no clinical protocols are described regarding best immunosuppression regimen or adjuvant treatments. Multicenter studies will be necessary.

Abstract # P-580

A New Score Based on Inflammatory Markers and Alpha-Fetoprotein for the Selection of Patients With Hepatocellular Cancer Waiting for Liver Transplantation. Quirino Lai, Edward Castro Santa, Juan M. Rico Juri, Rafael S. Pinheiro, Jan Lerut.

Starzl Unit of Abdominal Transplantation, University Hospitals St. Luc, Université Catholique Louvain – UCL, Brussels, Belgium

Introduction: In recent years, growing interest has been focused on the connection between inflammatory and biological markers and the risk of recurrence after liver transplantation (LT) in patients with hepatocellular cancer (HCC). The aim of this study is to investigate the role of different inflammatory and biological markers available during the waiting period as potential predictors of drop-out and post-LT death.

Methods: One hundred sixty-three HCC patients were listed for LT during the period July 2000-March 2012 in the Brussels transplant unit. All the patients underwent locoregional treatments during the waiting time.

Median follow-up for the entire population was 3.3 years (range 1.2-6.8). Twenty-six (16.0%) patients dropped out, 14 (8.6%) of whom due to cancer-related causes.

Results: Last determinations of four different inflammatory markers (neutrophil and platelet-to-lymphocyte ratio, C reactive protein and albumin) and alpha-fetoprotein (AFP) slope were evaluated in a combined AFP-inflammatory score (AIS). Patients with AIS > 2 had worse 5-year intention-to-treat survival rates (45.0 vs. 70.7; P .015). At multivariate Cox regression analysis, AIS (HR 1.3; P .04) and mRECIST progression (HR 2.4; P .005) were the unique independent risk factors for patient death.

Conclusions: AIS is an easy and feasible tool for the selection of patients waiting for LT. Its combination with radiological parameters can further improve the selection ability.

Abstract # P-581

Not All the Times Morphology Tells the Entire Story: AFP Slope and Radiological Progression Improve HCC Recurrence Prediction in Milan Criteria-In Patients. Quirino Lai^{1,2}, Gerd Otto³, Ivo Graziadei⁴, Alfonso W. Avolio⁵, Giuseppe Tisone⁶, Massimo Rossi², Jan Lerut¹.

¹University Hospitals St. Luc, Université Catholique Louvain – UCL, Brussels, Belgium; ²University Sapienza, Umberto I Hospital, Rome, Italy; ³University of Mainz, Mainz, Germany; ⁴Medical University Innsbruck, Innsbruck, Austria; ⁵University Cattolica, Agostino Gemelli Hospital, Rome, Italy; ⁶Foundation PTV, University Tor Vergata, Rome, Italy

Introduction: Milan criteria (MC) are routinely adopted for selecting patients with hepatocellular cancer (HCC) waiting for liver transplantation (LT). MC-IN patients are typically considered a homogeneous cohort of low-risk individuals for HCC recurrence. However, only morphology is not enough for a good tumor aggressiveness discrimination. Consequently, parameters such as alpha-fetoprotein (AFP) slope and radiological progression have been investigated for better select patients with unfavorable outcomes. The aim of the study is to investigate predictors of recurrence in a population of MC-IN patients, with the intent to identify a sub-cohort of potentially high-risk patients for recurrence.

Methods: Eight hundred sixty-two HCC patients were transplanted in six collaborative centers involved in the EurHeCaLT Study Group. Of those patients, 258 were enrolled for the present study. Exclusion criteria were: a) major lesion > 1 cm, b) MC-OUT status, c), follow-up < 24 months in no-recurrence patients. The study period was Sep1987-May2010. Median follow-up was 4.8 years (range 3.0-7.3). Fifty-three (20.5%) patients recurred.

Results: At forward stepwise Cox regression analysis, AFP slope $\hat{n}$ 15 ng/mL/month (HR 5.2; P < .001), major diameter of the lesion (HR 2.3; P < .001) and mRECIST progression (HR 2.8; P .03) were independent risk factors for recurrence. A score was calculated according to the logarithm: $0.813 \times \text{major diameter} + 1.65(\text{if AFP slope } \hat{n} 15 \text{ ng/mL/month}) + 1.029(\text{if mRECIST progression})$.

Patients with a value $\hat{n}$ 2.15 (median value) had a higher recurrence rate (37.2 vs. 3.9%) and poorer 5-year disease-free (62.1 vs. 95.7%; P < .001) and patient survivals (59.3 vs. 90.0%; P < .001).

Conclusions: Despite the idea that MC-IN patients are a homogeneous population with similar risks of recurrence and death, more the dimension of the tumor, more the risks. Combination of morphological aspects with “dynamic” parameters further ameliorate selection ability. Their application needs to be prospectively validated.

Abstract # P-582

Salinomycin Enhances the Therapeutic Efficiency of Doxorubicin By Preventing Epithelial-Mesenchymal Transition Via Inhibiting Wnt Signaling in Hepatocellular Carcinoma Cells. Chao Liang, Wei Chen, Xiao Zhi, Xueli Bai, Tingbo Liang. *Hepatobiliary and Pancreatic Surgery, The Second Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China*

Introduction: Epithelial-mesenchymal transition (EMT) induced drug resistance is a main cause of little therapeutic efficiency of doxorubicin-based chemotherapy in hepatocellular carcinoma (HCC). We aimed to investigate whether salinomycin, an ionophore antibiotic which has been reported recently to selectively kill cancer stem cells, exerts synergistic cytotoxicity with doxorubicin in HCC cells and the underlying mechanisms.

Methods: The cell viability and EMT-associated proteins (E-cadherin, Vimentin, ZO-1 and twist) were assessed by cell count kit-8 (CCK-8) and Western blot in HCC cells (Huh7, HepG2 and Hep3B) after treatment of doxorubicin or doxorubicin plus salinomycin. The expression of critical genes and proteins in Wnt/b-catenin signal transduction pathway, a central pathway in cancer stem cell, were analyzed by Western blot and reverse transcription-polymerase chain reaction (RT-PCR) in doxorubicin or doxorubicin plus salinomycin treated Huh7, HepG2 and Hep3B cells. Alterations of the expression of Wnt-associated genes were exerted by transfecting HCC cells with protein-specialized siRNA or plasmid.

Results: Doxorubicin treatment significantly reduced expression of E-cadherin and ZO-1 and upregulated Vimentin and twist in Huh7, HepG2 and Hep3B cells compared to untreated control, whereas salinomycin reversed doxorubicin-induced expression changes of EMT-markers and significantly enhanced the cytotoxicity of doxorubicin. Interestingly, salinomycin showed little effect in these cells when used alone. Moreover, salinomycin phosphorylated glycogen synthase kinase 3 β (GSK-3 β), reduced phosphorylation of Wnt co-receptor lipoprotein receptor related protein 6 (LRP6) and the expression of Wnt target genes such as cyclin D1, LEF1 and fibronectin, which were upregulated in doxorubicin-treated HCC cells compared to untreated control. Either knockdown of LRP6 or expression of constitutively active GSK-3 β attenuated the doxorubicin-induced EMT and enhanced the cytotoxicity of doxorubicin in Huh7, HepG2 and Hep3B cells.

Conclusion: This study demonstrated that activation of the Wnt/b-catenin signaling is required for doxorubicin-induced EMT in HCC cells and salinomycin enhances cytotoxicity of doxorubicin in HCC cells by preventing EMT process via inhibiting Wnt signaling.

Abstract # P-583

Is Sequential Liver Transplantation a Reasonable Approach for Curatively Resected Hepatocellular Carcinoma? Chih-Chi Lin, Chih-Chi Wang, Shih-Ho Wang, Yueh-Wei Liu, Chee-Chien Yong, Ting-Lung Lin, Wei-Feng Lee, Yu-Hung Lin, Tsan-Shiun Lin, Chao-Long Chen. *Liver Transplantation Center, Koahsiung Chang Gung Memorial Hospital, Koahsiung, Taiwan*

Purpose: The recurrent rate of hepatocellular carcinoma (HCC) after curative resection is extremely high because of underlying hepatitis and cirrhosis. Salvage liver transplantation (LT) may be an alternative treatment for recurrent HCC. However, about 20% recurrent HCC present beyond Milan criteria and are excluded for salvage LT. Therefore, sequential liver transplantation is proposed to perform LT before tumor recurrence after curative resection to improve the outcomes after LT for HCC. Herein, we report the results of sequential living donor LT (LDLT).

Patients and methods: Between Jan 2000 and Jul 2013, 73 patients who underwent LDLT with prior curative resection were enrolled. Negative for HCC recurrence in preoperative image study or final pathology in explanted liver were defined as sequential LDLT. Others with HCC recurrence were defined salvage LDLT. The clinical data were retrospectively reviewed.

Results: Six patients were negative for HCC recurrence in pre-LDLT image study; one (16%) of which showed HCC recurrence within Milan criteria in explanted liver. 67 patients were positive for HCC recurrence in pre-LDLT image study; 7(11%) of which were negative for malignancy in explanted liver. All 13 patients survived without tumor recurrence until the end of Sep 2013 of follow-up. The recurrent rates of HCC were 8.3% vs 0 in salvage and sequential LDLT. The 1,3,5-year survival rates were 92vs 100%, 83 vs 100% and 83 vs 100% in salvage and sequential LDLT respectively.

Conclusions: Sequential LDLT provides excellent long-term survival with low recurrent rate of HCC. The patients with HCC showing high recurrent factors such as microvascular invasion, large size or multinodularity could be advised to perform sequential LDLT.

Abstract # P-584

Influence of the Type of Calcineurin Inhibitor on HCV Recurrence after Liver Transplantation. Results of a Prospective Randomized Study. Laura Llado, Joan Fabregat, Carme Baliellas, Emilio Ramos, Jaume Torras, Lluís Secanella, Jose Castellote, Rosa Rota, Juli Busquets, Nuria Pelaez, Xavier Xiol, Teresa Serrano, Antoni Rafecas. *Liver Transplant Unit, Hospital U Bellvitge, Barcelona, Spain*

HCV recurrence is one of the main concerns after liver transplantation. The aim of this study is to compare the incidence and severity of HCV recurrence after liver transplantation depending on the type of immunosuppression based on cyclosporine or tacrolimus.

Material and methods: From March 2007 till April 2013 all patients transplanted for HCV cirrhosis at our institution were included in the study. They were randomized during transplantation to receive either basiliximab and cyclosporine (CsA Group; n=53) or basiliximab and tacrolimus (TAC Group; n= 52), in all cases without steroids. We evaluate postoperative evolution, adverse events, and HCV recurrence based on protocol biopsies. Results: Preoperative, donor and perioperative data were similar between groups. Acute rejection incidence was higher in CsA Group (CsA: 11 (21%) vs TAC: 1 (2 %); p= 0.003). Three patients in CsA group required conversion to tacrolimus for rejection. There were higher incidence of "de novo" hypertension in CsA group (CsA: 26 (50%) vs TAC: 14 (28 %); p= 0.02), but no other significant differences on adverse events after liver transplantation (renal insufficiency, "de novo" diabetes or "de novo" tumour).

Patients in CsA group had earlier clinical HCV recurrence (CsA: 8 ± 11 vs TAC: 17 ± 15 months; p= 0.06) and higher fibrosis (grade 0/1/2/3/4) at 12 months after LT (CsA: 48/40/3/6/3 % vs TAC: 66/8/18/0/0 %; p= 0.005). Till now patients in CsA group received antiviral treatment in 25 cases, compared to 19 in TAC group (p= 0.26), with similar sustained virological response (CsA: 13 % vs TAC: 10 %; p= 0.94). There were no differences on 3-year actuarial survival (CsA: 68 % vs TAC 72 %; p=0.87).

Conclusions: The type of calcineurin inhibitor has influence on the incidence of rejection and on HCV recurrence after liver transplantation in HCV patients. However, we need more patients and further follow-up to conclude about the influence on HCV recurrence.

Abstract # P-585

Living Donor Liver Transplantation With Partial Nephrectomy for End-Stage Liver Disease With Incidentally Detected Renal Cell Carcinoma - A Case Report. Vivek Mangla¹, Shailendra Lalwani¹, Ajay Sharma², Piyush Ranjan³, Sunita Bhalla⁴, Samiran Nundy¹, Naimish N. Mehta¹. *¹Surgical Gastroenterology and Liver Transplantation, Sir Ganga Ram Hospital, New Delhi, Delhi, India; ²Urology, Sir Ganga Ram Hospital, New Delhi, Delhi, India; ³Gastroenterology, Sir Ganga Ram Hospital, New Delhi, Delhi, India; ⁴Pathology, Sir Ganga Ram Hospital, New Delhi, Delhi, India*

Introduction

Patients with co-existing malignancy and end-stage liver disease are at a high risk of liver failure and mortality following non-transplant surgery. We describe a case of Hepatitis B virus (HBV) related ESLD with an incidentally detected right renal cell carcinoma (RCC).

Case Report

A 47 year old lady, known Hepatitis B virus (HBV) related cirrhosis (Child's C, MELD 19) with history of spontaneous bacterial peritonitis, was evaluated for LDLT. Contrast enhanced computed tomography (CECT) scan revealed cirrhosis, and a 2 cm lobulated hypodense heterogeneously enhancing lesion (RCC) in right kidney (non avid on Fludeoxyglucose Positron Emission Tomography [FDG PET-CT]). DTPA scan revealed a total glomerular filtration rate (GFR) of 52.92 ml/minute; 46.3% in the left kidney and 53.7% in the right kidney.

Patient underwent right lobe LDLT (Graft weight 870g, Graft Recipient Weight Ratio 1.1) with partial right nephrectomy. During the operative procedure, recipient hepatectomy was done followed by partial right nephrectomy. Frozen section of the partial nephrectomy specimen confirmed the presence of malignancy with uninvolved margins. Right lobe implantation was performed as done routinely. The post-operative course was largely uneventful except for slightly deranged renal functions (which normalized by post-operative day 7), ascites and hyperkalemia which responded to medical management. Patient was discharged on post-operative day 21. Histopathological examination of the partial nephrectomy specimen revealed RCC, clear cell variant, Stage T1aN0M0. Patient is doing well at 6 months follow-up without any evidence of recurrence of RCC on CECT abdomen.

Conclusion

Liver transplantation with simultaneous resection of the extra-hepatic tumour in carefully selected patients appears to be a feasible and safe strategy for management of these patients with a good outcome.

Abstract # P-586

Case Report and Review of the Literature – Inexplicable Outcome of Early Appearance of De Novo HCC in the Allograft after DDLT. Benjamin Navarro, Kwang-Woong Lee, Kyung-Suk Suh, Nam-Joon Yi, YoungRok Choi. *General Surgery, Seoul National University Hospital, Seoul, Korea*

Although only a few cases of de novo hepatocellular carcinoma (HCC) have been reported in the literature, occurrences of de novo HCC after liver transplantation for advanced cirrhosis have been diagnosed after many years of viral recurrence. We are presenting a unique case with the earliest appearance of de novo HCC in a patient with end stage liver disease (ESLD). Before liver transplantation (LT) the patient had YMDD viral mutation and hepatitis B and C co-infection. Twelve cases of de novo HCC after LT have been reported at this point in time, either with viral hepatitis background or a different etiology of liver cirrhosis. The earliest period of de novo HCC occurrence reported before the current case was diagnosed two years after LT in a HBV related patient. Whereas, the longest time interval reported is twenty-two years in a HCV related patient. Among these twelve cases, five of them were due to HBV, four associated with HCV and the other etiologies attributed to alcoholic cirrhosis, NASH and Budd Chiari syndrome. Our index patient was diagnosed with de novo HCC nine months after LT with a massive HCC detected in the right lobe on a CT scan. Concomitantly, HBV DNA was positive while HBsAg and HCV RNA were not detected. HBV DNA polymerase gene was determined using polymerase chain reaction (PCR). Direct sequencing and HBV DNA quantification were determined using real-time PCR, identifying HBV genotype C (C1) along with HBV YMDD mutation. HBV mutation and multi-drug resistance were identified on the sequences of the mutations. This intriguing case raises for us a challenge of elucidating potential theories to explain how de novo HCC could possibly appear in such short time duration, and in a case with a low suspicion.

Abstract # P-587

The 18-FDG-Positron Emission Tomography Is Useful in the Assessment of Transarterial Chemoembolization in Patients With Hepatocellular Carcinoma Awaiting Liver Transplantation. Pablo Ramírez, María del Rocío González, Erik Llacer-Millán, Pedro Cascales, Jesús De la Peña, José Luis Navarro, Matilde Fuster, Francisco Sánchez Bueno, Ricardo Robles, José Antonio Pons, Manuel Miras, Pascual Parrilla. *Cirugía. Unidad de Trasplante, Hospital Clínico Universitario Virgen de la Arrixaca, El Palmar, Murcia, Spain*

Introduction

Liver transplantation (LT) is the treatment of choice for various types of end-stage liver disease and the most appropriate alternative for the treatment of hepatocellular carcinoma (HCC) associated liver cirrhosis. The aim of this study is to analyze the utility of 18-FDG positron emission tomography (PET)/computed tomography CT to assess the efficacy of transarterial chemoembolization (TACE) in HCC patients undergoing liver transplantation, in order to evaluate the percentage of tumor necrosis achieved by TACE procedures. We also correlate the PET post-TACE with the pathological findings after liver transplantation.

Patients and Methods

From January 2007 through December 2013, 89 patients with HCC and liver cirrhosis were included in our liver transplantation program. Before LT, TACE was used to treat HCC in 61 candidates, 52 men and 9 women, with a mean age of 57.9 ± 4.58 years. The average number of sessions of chemoembolization per patient was 1.55 ± 0.75 . We included all the patients who underwent 18-fluorodeoxyglucose PET/CT (18-FDG PET/CT) pre- and post-TACE (n=20), and we correlate this finding with the pathological study (percentage of necrosis, and microvascular invasion). The mean follow up of the series is 29.4 months.

We have analyzed the survival of the patients and the disease-free interval, after 1 and 3 years of follow up.

Results

The median SUV (standardized uptake value) in the lesions studied was 3.8 (range 2.79-6.65) before TACE with a median post-TACE SUV of 0 (range, 0–4).

The percentage of necrosis after pathological study of the tumor was >70% in 18 patients ($p<0.05$). The one year survival of this series was 95% and at 3 years 82%. The disease-free interval was 100% after 1 year and 87% after 3 years.

Conclusion

The use of an 18-FDG PET/CT before and after TACE in patients with HCC awaiting liver transplantation provided valuable information with regard to the effectiveness of TACE.

Abstract # P-588

Response To Transarterial Chemoembolization in Candidates With Hepatocellular Carcinoma Within Milan Criteria Does Not Predict Post-Transplant Disease Free Survival. Paolo R. Salvalaggio, Guilherme E. Felga, Bianca Della Guardia, Marcio D. Almeida, Marcelo B. Rezende. *Hospital Israelita Albert Einstein, São Paulo, Brazil*

INTRODUCTION: Few studies have investigated the impact of neoadjuvant transarterial chemoembolization (TACE) in the post-transplant outcomes of patients with hepatocellular carcinoma (HCC).

AIM: To verify whether the response to TACE modifies post-transplant survival of HCC recipients.

METHODS: This a single center retrospective study of patients who underwent liver transplantation from 2006-2013. Included were adults with HCC within the Milan criteria, who were treated with TACE while on the waiting for a deceased donor liver transplant (LT), with minimum of 30-day post-LT survival and minimum follow-up of 30-days. We performed TACE as selectively as possible, injecting the feeding arteries to the lesion with doxorubicin and embolic agents under fluoroscopic control. A four-phase spiral CT or, preferably, an MRI was performed within 6-weeks of the TACE verify response and every 6-months for control, according to guidelines. Embolization was repeated every 6- to 8-weeks until complete devascularization was achieved. Patients were divided in groups according to response to TACE, following mRECIST criteria: complete response, partial response, stable disease and progressive disease. The imaging study closest to the date of transplant was used for the analysis of response to TACE. If imaging was not available between TACE and transplant, patients were grouped as not available for TACE response. The main endpoint was post-LT survival.

RESULTS: We included 187 patients in this study. The population had an average age of 57.5 years, predominantly formed by men (82.5%), with an average IMC of 26.7, MELD of 13, with viral hepatitis as main cause of liver disease. Average waiting time was 253 days and follow-up was 27.3 months. Based on response to TACE, 3-year disease free-survival was 84.1% for those with complete response to TACE, 84.1% for those with partial response to TACE, 85.7% for those with stable disease and 100% for patients with progressive disease. Multivariate analysis did not identify response to TACE as a predictor of disease-free post-transplant survival.

CONCLUSION: Response to neoadjuvant TACE in patients with hepatocellular carcinoma within Milan criteria is not a predictive factor for either post-transplant survival or disease free-survival. Other prognostic factors might impact post-transplant outcomes.

Abstract # P-589

Liver Transplantation for Liver Metastases from Ocular Melanoma. Jon Magnus Aa Solheim¹, Morten Hagness¹, Pål-Dag Line¹, Svein Dueland², Aksel Foss¹. ¹*Section for Transplantation Surgery, Department of Transplantation Medicine, Oslo University Hospital, Oslo, Norway;* ²*Oncology, Oslo University Hospital, Oslo, Norway*

Background: Ocular Melanoma (OM) metastasizes to the liver in 90% of the cases. Liver resection has life prolonging and overall survival ranges from 20-42% after five years. (Ryu SW et al. J Surg Oncol 2013) There is only published one case report on liver transplantation (LT) in a patient with OM liver metastases (LM). This patient had large amount of metastases and died 8 months after Lt. (Zhao J et al Hepatobiliary Pancreat Dis Int 2010) In Norway there has been a surplus of donor livers and an institutional intention to explore Lt for malignancies. The plan is to include 10 patients in a prospective pilot for non-resectable OM LM (the MECA-study). The objective is to assess safety and potential for long term survival.

Methods: This is a report of the first two patients included in the MECA-study.

Results: Background characteristics are given in table 1. Both recipients had a surgical history of OM. Both patients had non-resectable tumors and large tumor loads. (Table 1) Postoperative pathology confirmed diagnosis. In patient 1, histology showed breach of the liver capsule and thrombosis of the portal vein. No adjuvant chemotherapy was employed. In the first patient recurrence occurred 6 months after LT and the patient died of disseminated disease 8 months post-transplantation. The second patient has no evidence of disease 10 months after LT.

Conclusion/discussion: One of the two patients included died 6 months postoperatively of disseminated cancer, while the other is alive with no evidence of disease 10 months postoperatively. These are early and preliminary results from a pilot study; continuous reassessment regarding feasibility and ethics of allocating liver transplants for this purpose is mandatory.

Table 1

	Patient 1	Patient 2
Age at LT	61 years	67 years
Gender	Female	Female
Local treatment	Oclectomy	Brachytherapy
Number of metastases	Multiple	8
Size of largest metastasis	16 cm	15 cm
Time from OM to liver metastases	42 months	49 months

Abstract # P-590

Bridging the Gap -An Analysis of Bridging Therapies in Liver Transplantation for Hepatocellular Carcinoma. Nigel Tan Chun Han¹, Yu Yue², Nicholas Tan Yan Rui², Krishnakumar Madhavan¹, Iyer Shridhar Ganapathi¹, Stephen Chang Kin Yong¹, Alfred Kow Wei Chieh¹. ¹*Division of Hepatobiliary and Pancreatic Surgery, National University Hospital, Singapore, Singapore, Singapore;* ²*Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore*

Introduction: Liver Transplantation (LT) is a recognized treatment for Hepatocellular Carcinoma (HCC). The role of bridging therapy (BT) remains controversial. The aim of this study was to evaluate the outcome of BT for HCC patients going for LT at our institution.

Methods: From Jan 2001 to Oct 2012, 192 patients were referred to the our centre for consideration of LT for HCC. After excluding patients who were out of criteria and not suitable for LT, 33.8% (n=65) were found suitable for transplant and placed on the waitlist. Analysis was performed between the bridged & non-bridged groups.

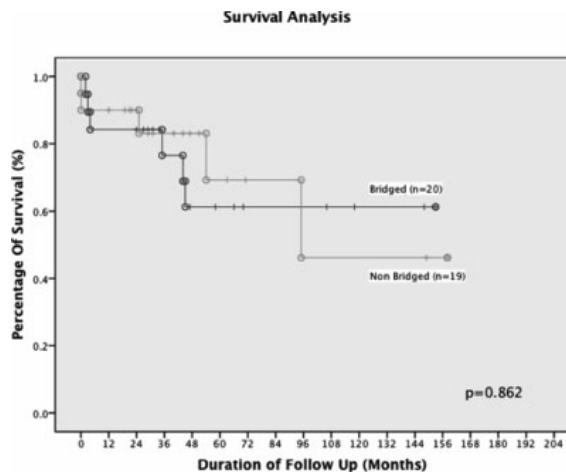
Results: The most common etiology of HCC was Hepatitis B Cirrhosis (n=28, 43.1%). Thirty six (55.4%) patients received bridging therapy. Disease and patient characteristics between groups were comparable.

Tumour Characteristics at Listing

	Non-Bridged (n=29)	Bridged (n=36)	P-value
Within Milan's	26	34	0.649
Out of Milan's	3	2	
Within UCSF	28	35	1.00
Out of UCSF	1	1	
Median Total Tumour size	14 (0-70)	24.5 (0-76)	0.099

The overall dropout rate was 44.4% and 34.5% for the bridged & non-bridged groups respectively (p=0.415). Dropout rate due to disease progression was 6.9% (n=2) in the nonbridged group & 19.4% (n=7) in the bridged group (p=0.145).

Thirty nine (60%) patients underwent LT. Within this group, 51.3% (n=20) had bridging. Among bridged patients, 30% (n=6) had complete response to treatment, 10% (n=2) had partial response, 45% (n=9) had stable disease and 15% (n=3) had progressive disease according to RECIST criteria. There was no significant difference in overall survival between the different RECIST criteria groups (p=0.431) & between the bridged & nonbridged groups (p=0.862).



Conclusion: Bridging therapy remains a viable option for patients awaiting liver transplantation. Our analysis suggests that bridging does not influence the dropout rate or the overall survival after LT.

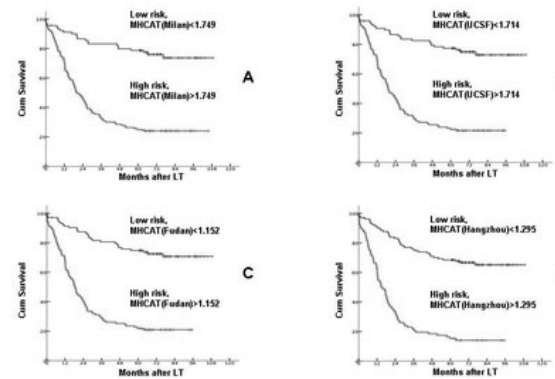
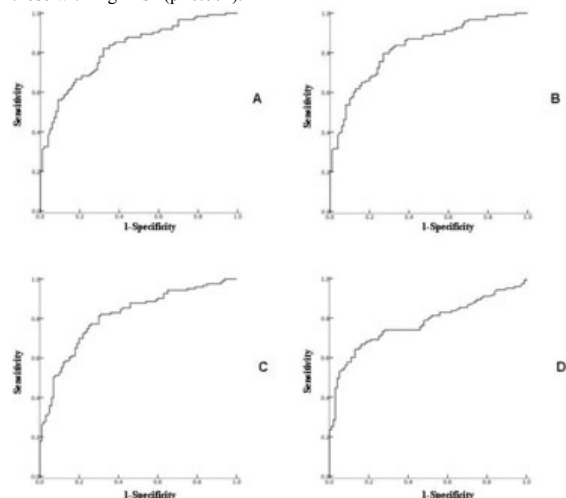
Abstract # P-591

Criteria-Specific Long-Term Survival Predicting Model for Hepatocellular Carcinoma Patients after Liver Transplantation: A Single-Center Experience. Fei Teng, Xiaomin Shi, Wenyan Guo, Guoshan Ding, Zhengxin Wang, Zhiren Fu. *Organ Transplantation Institute, Changzheng Hospital, Second Military Medical University, Shanghai, China*

Objective: With reference to different criteria, the aim of this study was to establish a model to predict long-term survival of hepatocellular carcinoma (HCC) patients after liver transplantation (MHCAT).

Methods: Two hundred and twenty-three patients with HCC were followed for at least six yr to identify independent risk factors for long-term survival after liver transplantation. The criteria for HCC liver transplantation included the Milan, University of California San Francisco, Hangzhou and Shanghai Fudan criteria. The Cox regression model was used to build MHCAT specifying these criteria. A survival analysis was carried out of patients with high risk or low risk.

Results: Pre-operative alpha-fetoprotein level, intraoperative blood loss and retransplantation were common significant predictors for HCC patients' long-term survival with reference to Milan, University of California San Francisco and Fudan criteria, whereas in MHCAT based on Hangzhou criteria, total bilirubin, intraoperative blood loss and retransplantation were independent predictors. The c-statistic for MHCAT was 0.773–0.824, (Figure 1) showing no statistical difference among these four criteria. According to the MHCAT scoring system, patients with low risk showed a higher five yr survival than those with high risk ($p<0.001$).



Conclusion: MHCAT may effectively predict long-term survival for HCC patients, but needs to be verified by multiple center retrospective or randomized controlled trials.

Abstract # P-592

Impact of Portal Hypertension in Patients Waiting for Liver Transplantation for Hepatocellular Carcinoma on Cirrhosis. F. Faitot, R. Adam, D. Castaing, D. Cherqui, A. Sa Cunha, D. Samuel, E. Vibert. *AP-HP Hopital Paul Brousse, Villejuif, France; Univ Paris-Sud, Villejuif, France; Inserm, Villejuif, France*

In patients (pts) waiting for liver transplantation (LT) for hepatocellular carcinoma (HCC), drop out due to progression alters the results of LT. No data exist regarding the impact of portal hypertension (PHT) at listing on the results of LT.

Method. 243 pts consecutively listed for LT for HCC on cirrhosis between 2000 and 2010 were included. PHT was defined according to EASL definition of significant PHT ie esophageal varices OR low platelet count ($<100000/\text{mm}^3$) associated to a splenomegaly ($>12\text{cm}$). Pts with or without PHT were compared and a logistic regression analysis was conducted to identify risk factors of drop out (DO) due tumor progression (TP). TP was defined according to mRECIST criteria and/or AFP slope $>15 \text{ ng/ml/month}$. The impact of PHT on survival was evaluated in an intention-to-treat analysis and after LT.

Results. Among the 243 listed pts, 155 had clinically significant PHT. These pts had a higher MELD score (15 vs 12, $p=0.002$) and a comparable tumor burden according to Milan criteria and French Risk Score. There were 23% DO in the 155 pts with PHT versus 9% in the 88 pts without PHT ($p=0.03$). PHT was an independent factor of DO for TP ($\text{OR}=3.05[1.18-7.87]$, $p=0.02$) as the absence of TACE ($\text{OR}=2.79[1.08-7.19]$, $p=0.03$). PHT was not associated with a lower rate of application of treatment on list ($p=0.171$) and particularly of TACE ($p=0.931$). Altogether, 199 pts were transplanted with a higher rate of transfusion in the PHT group (8.5 vs 4.7, $p=0.005$) and similar postoperative death rate (5% vs 7%, $p=0.47$). HCC were not histologically more aggressive in terms of differentiation, satellite nodule and microscopic vascular invasion. Complete tumor necrosis after TACE occurred more often in the group without PHT (32% vs 12%, $p=0.006$). Intent-to-treat 5-year overall survival was significantly lower with PHT (76% vs 65%, $p=0.046$). In transplanted pts, PHT was not associated with worse overall (80% vs 79%). There was no difference in recurrence-free survival and time to recurrence. **Conclusion.** PHT is associated with a significant risk of tumor progression in pts listed for LT with an associated high drop out rate. In this population, TACE was applicable with the same rate but seemed less efficient in term of complete tumor necrosis. Interestingly, PHT was not a predictive factor of recurrence in transplanted patients.

Abstract # P-593

Analysis of Prognostic Factors Affecting Tumor Recurrence and Patient Survival after Liver Transplantation for Hepatocellular Carcinoma Without Macrovascular Invasion. Guo-Ying Wang, Yang Yang, Hua Li, Shu-Hong Yi, Gen-Shu Wang, Jian Zhang, Gui-Hua Chen. *Liver Transplant Center of the Third Affiliated Hospital, Sun Yat-sen University, Guangzhou, China*

Background and aims: Alpha-fetoprotein (AFP) has been proposed to correlate with vascular invasion of hepatocellular carcinoma (HCC) and predict tumor recurrence after liver transplantation (LT). However, the

predictive role of AFP in patients with HCC without macrovascular invasion has not been clearly defined. In the present study we focused on the prognostic role of AFP in LT patients for HCC without macrovascular invasion.

Methods: We analyzed the outcome of 125 patients who underwent LT for HBV-associated HCC. Macrovascular invasion was defined as the presence of tumor emboli within the lobar or segmental branches of the portal or hepatic veins, which was diagnosed by preoperative computed tomography and magnetic resonance imaging. Clinical and pathological risk factors for disease-free survival (DFS) and overall survival (OS) were evaluated. Patients were divided into two groups according to different AFP cut-off level (20, 100, 200, or 400 ng/mL).

Results: Forty-three patients developed tumor recurrence during 37.3 months of follow-up. The 5-year DFS and OS were 61.7%, and 58.8%, respectively. Preoperative AFP level was closely related with vascular invasion, tumor size, and number. Of 89 patients without vascular invasion, 19 patients developed tumor recurrence. The 5-year DFS and OS were 75.5%, and 74.9%, respectively. Tumor size >5cm, tumor number >3, nonsingle nodular, beyond Milan criteria, and beyond UCSF criteria were the predictors of DFS. Surprisingly, there was no significant difference in DFS between two groups according to different AFP cut-off level. Tumor size >5cm, nonsingle nodular, AFP ≥ 200 ng/mL, beyond Milan criteria, and beyond UCSF criteria were the predictors of OS. The 5-year OS for patients with AFP < or ≥ 200 ng/mL were 82.2%, and 66.5%, respectively ($P < 0.05$). Cox regression analysis showed that nonsingle nodular was the only independent prognostic factor of poorer DFS. Tumor size >5cm and nonsingle nodular were independent prognostic factors of poorer OS.

Conclusions: AFP level was related with macrovascular invasion in HCC. Macrovascular invasion, tumor size and number are the leading factors impacting patient survival after LT for HCC. The radiologic imaging is still regarded as a good indicator for selecting suitable patients with HCC for LT.

Abstract # P-594

Family History May Not Influence the Early Onset of Hepatocellular Carcinoma. Qiang Wei, Xiao Xu, Yangbo Zhu, Qi Ling, Qinghong Ke, Weiling Wang, Shusen Zheng. *Division of Hepatobiliary-Pancreatic Surgery and Liver Transplantation, Department of Surgery, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang, China*

Objective: To evaluate the relationship between a positive family history of hepatocellular carcinoma (HCC) development in Chinese HCC patients. **Methods:** We studied a total of 444 patients diagnosed with HCC between January 2010 and December 2012, whose family history of HCC was clearly described in the medical records.

Results: Of the 444 patients, 41 (9.2%) had a positive family history of HCC and 403 (92.60.8%) did not. The male to female ratio was 7.4:1, and the major causes of HCC were chronic hepatitis B virus (HBV) infection in 84.5%, alcohol in 9.2% and combined of them in 6.1%. The median ages at diagnosis in the positive- and negative-history groups were 53 years (range: 29-74 years) and 56 years (range: 20-88 years), respectively ($P = 0.079$). Furthermore, among 375 HCC patients with HBV infection, the number of patients under 45 years of age out of 40 patients with positive family history was 10 (25.0%), whereas those out of 335 patients with negative family history was 74 (22.1%) ($P = 0.68$).

Conclusion: A positive family history may not be associated with earlier development of HCC in the Chinese population.

Abstract # P-595

In LDLT for HCC, Results of UCSF Criteria Are Inferior Compared To Milan Criteria. Shaleen Agarwal, Neerav Goyal, Manav Wadhawan, Giriraj Bora, Subash Gupta, Shishir Pareek, Muhammad Naeem, Subash Gupta. *Center for Liver and Biliary Sciences, Indraprastha Apollo Hospital, Delhi, India*

Objective: To audit the results of LDLT for HCC performed at a large volume centre and analyze the impact of UCSF criteria on the outcomes.

Methods: Data on patients undergoing liver transplant for HCC between Sept 2006 and Oct 2013 was analyzed with respect to tumor characteristics and selection criteria. Survival analysis was done using the Kaplan-Meier method. **Results:** Out of a total of 1122 liver transplants performed during the study period, 178 (15.8%) were for HCC. Mean age was 52 years and 149 (84%) patients were males. The etiology of underlying liver disease was chronic hepatitis C (62%), chronic hepatitis B (19%), NASH/cryptogenic (15%) and alcohol (3%). Majority of patients had advanced CLD. The CTP category was C (>9) in 59% patients. The MELD scores ranged from 7 to 36 (median

15). Most patients had low serum AFP values (median 9.5 ng/ml, range 1 to 8000 ng/ml). 70% tumors did not show FDG uptake on PET scan. On preoperative imaging 59% tumors fulfilled the Milan criteria, 20% were within UCSF and the remaining 21% were beyond UCSF criteria. 33 (20%) patients underwent downstaging; TACE in 25 (75%) and RFA in 6 (18%). Response was observed in 84% of these with 6 (18%) showing total tumor necrosis on histopathology. On explant histology, 58% tumors fulfilled Milan criteria, 16% were within UCSF criteria and 26% were beyond UCSF. 21 (12%) tumors were incidental. 30-day hospital mortality was 4.5% (8 patients) while another 28 (16%) patients died during follow up. With a median follow up of 23 months, 28 (16%) patients have documented tumor recurrence. 1, 3 and 5 year overall survivals (OS) for patients with tumors within Milan criteria were 88%, 79% and 75%; for tumors within UCSF survival figures were 77%, 51% and 50% while those for tumors beyond UCSF these figures were 80%, 50% and 33%. Tumor number, tumor size, PET avidity and response to downstaging were the factors impacting survival. Serum AFP levels were not found to impact survival.

Conclusion: Best Survival outcomes of LDLT for HCC are for tumors within the Milan criteria. For tumors beyond Milan but within UCSF criteria, the survivals are inferior as compared to Milan criteria but still nearly 50% 5-year survival is possible. For tumors beyond UCSF, LDLT should be performed selectively. Response to downstaging but not Serum AFP levels was found to impact survival.

Abstract # P-596

Liver Transplantation for HCC, Does the Type of Donor Graft Really Matter? Survival and Recurrence Meta-Analysis. Ibrahim Al Hasan¹, Jean C. Emond². ¹Department of Surgery, Prince Sultan Military Medical City, Riyadh, Saudi Arabia; ²Department of Surgery, NewYork-Presbyterian Hospital/Columbia, New York, USA

BACKGROUND: Living donor liver transplantation (LDLT) has been accepted as a procedure to overcome the shortage of cadaveric organ. Whether LDLT is equivalent to Deceased donor liver transplant (DDLT) for patients with hepatocellular carcinoma (HCC) remains undefined.

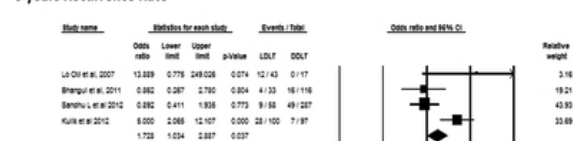
METHODS:

A systematic review of the literature was conducted for studies comparing DDLT and LDLT in patients with HCC between January 1990 and December 2012. Studies were identified by using Medline, Embase, Cochrane Library and CINAHL databases. Primary outcome of interest were overall survival rates (OS), tumor recurrence rates and recurrence-free survival (RFS) rates. A meta-analysis was performed to compare the outcomes from those studies which reported results from both the LDLT and DDLT patients.

RESULTS:

Seven retrospective studies, totaling 1388 patients (DDLT, n851; LDLT, n537), met the selection criteria. LDLT overall survival as well as disease-free survival were comparable to DDLT [OS: 1-year, odds ratio (OR) of 1.17, 95 % confidence interval (CI) = 0.79-1.72, 3-year, OR = 0.90, 95 % CI = 0.68-1.21, 5-year, OR = 0.89, 95 % CI = 0.66-1.21/ DFS: 1-year, OR = 0.94, 95 % CI = 0.67-1.3, 3-year, OR = 0.88, 95 % CI = 0.66-1.17, 5-year, OR = 0.93, 95 % CI = 0.7-1.23]. Although there was no significant differences in 1-and 3-year recurrence rate, LDLT was inferior to DDLT at 5-year recurrence rate [1-year, OR = 1.44, 95 % CI = 0.60-3.42, 3-year, OR = 1.62, 95 % CI = 0.89-2.92, 5-year, OR = 1.73, 95 % CI = 1.034-2.887].

5 years Recurrence Rate



Heterogeneity: $\chi^2 = 11.7$, df = 3, $P = 0.008$, $I^2 = 74.4\%$
Test for overall effect: $P = .037$

CONCLUSIONS:

LDLT in patient with HCC results in overall survival and disease-free survival that is comparable to DDLT. Long term recurrence was significantly higher in patients treated with LDLT. However, a properly controlled prospective trial with intention to treat analysis is needed to define whether type of donor graft would affect recurrence.

Abstract # P-597

Impact of Preexisting Diabetes Mellitus on Outcomes of Liver Transplantation in Patients With Hepatocellular Carcinoma.

Ibrahim Al Hasan, Albert C.Y. Chan, Kenneth S.H. Chok, See Ching Chan, Chung Mau Lo. *The University of Hong Kong, Hong Kong, Hong Kong*

BACKGROUND:

Preexisting diabetes mellitus (DM) has been identified as a negative prognostic indicator in hepatocellular carcinoma (HCC). So far, there is a scarcity of data on the prognostic impact of preexisting DM on liver transplant recipients with HCC.

METHODS:

A retrospective analysis of 185 adult patients who underwent liver transplantation (LT) for HCC at Queen Mary Hospital between 1996 and 2010. Demographics, Clinicopathological data, and graft details were compared between patients with and without DM prior to LT. Overall survival analysis (OS) was performed by Kaplan-Meier methods and compared by Log-rank test.

RESULTS:

Thirty nine (21%) patients had DM at the time of LT. Patient characteristics, graft type and waiting time were comparable between both groups. The incidence of microvascular invasion, however was significantly higher in DM group [16 (41%) vs 41 (28%), $P=0.032$] and higher proportion of DM patients had tumors beyond the Milan Criteria [19 (49%) vs 46 (31%), $P=0.034$]. The OS rates at 1, 3, and 5 years were equivalent: 97.4%, 92.3%, and 81.1%, respectively, for the DM group and 95.9%, 84.2%, and 79.9%, respectively, for non-DM group ($P=0.80$). The 1-, 3-, and 5-year HCC recurrence rates were also similar: 5.1%, 10.3%, and 10.3%, respectively, for the DM group and 7.5%, 14.4%, and 17.8%, respectively, for non-DM group ($P=0.50$).

CONCLUSIONS:

Preexisting DM is associated with more aggressive tumor pathological feature. Nonetheless, the overall prognosis of HCC after LT is similar between the two groups of patients.

Abstract # P-598

Pre-Operative Predictors of Renal Replacement Therapy after Orthotopic Liver Transplant for Chronic Liver Disease.

A. Athale, E. Kontis, K. Menon, A. Prachalias, P. Srinivasan, W. Jassem, H. Vilca-Melendez, W. Bernal, G. Auzinger, C. Villars, A. Sanchez-Fueyo, A. Suddle, K. Agarwal, V. Aluvihare, N. Heaton, J. Wendon. *Liver Unit, King's College Hospital, London, United Kingdom*

Background: Impairment of renal function is a recognised problem after orthotopic liver transplantation (OLT) - mild dysfunction with spontaneous recovery to severe dysfunction requiring Renal Replacement Therapy (RRT). We aimed to identify factors that predicted the need for RRT during the postoperative period after OLT in patients with Chronic Liver Disease (CLD).

Methods: We reviewed all elective OLT for CLD performed between 2003 and 2012 at our center, excluding patients on pre-operative RRT, combined liver and kidney transplant and age < 18. Of 1185 cases, we identified 151 who received RRT who were compared with 151 patients that did not require RRT postoperatively. Studied variables included donor and recipient age, diabetes, ascites, MELD Score, Pre-operative Creatinine, bilirubin, albumin, INR, type of caval anastomosis (Caval replacement or Piggy Back), blood loss, postoperative sepsis, length of ICU and hospital stay.

Results: Patients who required postoperative RRT (N=151) were older compared with non-RRT group (mean±SD: 53.01± 11.81 vs 49.68), Mann Whitney (MW) U test, $p=0.016$. There was no difference in terms of type of graft (DBD or DCD) or donor age between both groups. Diabetes, pre-transplant bilirubin, albumin, INR or blood loss during transplantation did not differ between the groups but RRT group had higher pre-op creatinine ($p=0.004$). Patients having caval replacement and ascites more often required RRT (Chi-square, $p=0.042$ and $p=0.028$). Patients who had RRT had a higher MELD score (median ±SEM: 10±0.66 vs 18±0.59, MW U test, $p<0.0005$), increased incidence of sepsis postoperatively (Chi-square, $p=0.001$), with prolonged ICU and hospital stay (MW U test, $p<0.0005$). When variables with significant difference were examined in multinomial logistic regression model, only MELD score and recipient's age were found to be significant predictors for RRT ($p<0.0005$). The equation predicting need for RRT= $3.738-0.166*(MELD) - 0.025*(RecipAge)$. This model correctly predicted need for RRT in 75.4% of the cases.

Conclusion: The predictive model using MELD score and recipient's age would allow us to identify patients at risk for post-operative need for RRT post OLT for CLD.

Abstract # P-599

Endoscopic Management of Post Live Donor Liver Transplant Biliary Strictures: A Prospective Study from Tertiary Centre in India.

Piyush Ranjan¹, Rinkesh Kumar Bansal¹, Naimish Mehta², Shailender Lalwani², Vinay Kumaran², Munish Sachdeva¹, Mandhir Kumar¹, Samiran Nundy². ¹Gastroenterology & Hepatology, GangaRam Institute of Postgraduation and Research Centre, New Delhi, Delhi, India; ²Surgical Gastroenterology & Liver Transplant, GangaRam Institute of Postgraduation and Research Centre, New Delhi, Delhi, India

Background - Liver transplantation has become common in india in last decade. Biliary strictures after transplantation cause significant morbidity. ERCP is safe and effective treatment modality in post transplant biliary stricture.

Aim -To evaluate prospectively outcomes of endoscopic treatment in post LDLT biliary strictures.

Methods - Consecutive patients of liver transplantation (june 2009 - june 2013) with biliary strictures attending Department of Gastroenterology, were included. All patients underwent liver function test, ultrasound abdomen and MRCP

Results-312 patients underwent liver transplant (305 LDLT, 7 DDLT). Out of 305 LDLT patients, ten patients (3.3%, 7 male: 3 female median age-52 years, range 4-60 years) developed biliary strictures. Biliary anastomosis was duct to duct in all patients, however, one patient had additional duct to jejunum anastomosis. Mode of presentation was cholangitis in 4 patients (40%), asymptomatic elevation of liver enzymes in 4 patients (40%) and jaundice in 2 patients (20%). Median time from transplantation to detection of stricture was 12 months (2- 42.5 months). ERCP was attempted as initial therapy in all patients: 7 were managed entirely by endoscopic therapy, and 3 required combined percutaneous and endoscopic approach. Total 32 sessions of ERCP were done. A mean of 3.2 (2-5) endoscopic sessions and 3.4 (1-6) stents were required to resolve the stricture. Median time from the first intervention to stricture resolution was 4 months (range 2-12 months). 6 patients had multiple stent (maximum-2) and all these patients required stricture dilatation. Seven patients completed treatment and are off stents at median follow up period of 9.5 months (7-11 months). Two patients developed recurrence of stricture after 7.5 months. Both these patients had long stricture and required combined endoscopic and percutaneous approach. There was one mortality due to sepsis secondary to cholangitis.

Conclusions-Post-LDLT biliary strictures can be successfully treated with ERCP and most patients remain well on follow-up. Combined endoscopic and percutaneous approach is useful when ERCP alone fails.

Abstract # P-600

Predictors of Survival in Patients With Hepatocellular Carcinoma Accepted for Living Donor Liver Transplantation Beyond the "Size-Number" Criteria. P. Bhangu, T. Piplani, D. Gautam, S. Saigal, A.S. Soin. Medanta Liver Institute, Delhi NCR, India

Background: While most selection criteria for liver transplantation (LT) in cirrhotic patients with hepatocellular carcinoma (HCC-cirr) are based on tumour size and number, even the best pre-operative imaging wrongly stages HCC in upto 25% patients. Besides, different criteria yield similar results. Given the "no competition" situation in living donor liver transplantation (LDLT), our policy is to accept HCC-cirr patients for LDLT irrespective of tumor number and size, provided there are no extrahepatic metastases or major vascular invasion. We analysed the predictors of overall (OS) and recurrence-free survival (RFS) in this group.

Methods: Of 1142 adults who underwent LDLT till December 2012, 203 had HCC-cirr on explant pathology, with 47% and 37% beyond Milan and UCSF criteria on imaging, respectively. Patient, disease, tumour characteristics, and long-term outcomes were studied to determine the predictive factors for OS and RFS.

Results: The operative mortality was 7% (14/203). At a mean follow up of 30 months (in the remaining 189 patients), 160 are alive (85%), 140 among these without recurrence. Thirty-six (19%) had HCC recurrence at a median of 13.5 months. The OS and RFS at 1 and 3 years were 95%/83%, and 89%/72%. On multivariate analysis, pre-LT alpha fetoprotein (AFP) ≥ 200 ng/ml (3-yr OS 74% vs 88% for patients with AFP < 200 ng/ml; $p=0.002$), tumours beyond

UCSF criteria (3-yr OS 66% vs 90% for patients within UCSF; $p=0.007$), and tumour recurrence (3-yr OS 46% vs 91% for patients without recurrence; $p<0.0001$) were bad prognostic factors for OS. Similarly, pre-LT AFP ≥ 200 ng/ml (3-yr RFS 68% vs 76%; $p=0.004$), tumours beyond UCSF criteria (3-yr RFS 44% vs 86%; $p<0.0001$), and presence of microvascular tumour invasion [MVI] (3-yr RFS 55% vs 83%; $p=0.02$) were bad prognostic factors for RFS. FDG-PET avidity and Milan criteria were not prognostic markers. Conclusion: Good long-term outcomes are obtained using our expanded selection criteria irrespective of tumour size and number. Pre-transplant AFP ≥ 200 ng/ml and tumours beyond UCSF criteria on imaging are poor prognostic factors for both OS and RFS; while MVI is an additional prognostic marker for RFS. Presence of these poor prognostic factors is an indication for pre-LT downstaging, and meticulous follow-up for recurrence after LT.

Abstract # P-601

Cardiopulmonary Exercise Testing Predicts Hospital, but Not Intensive Care Unit Length of Stay. Nibras Bughrara, Ahmet Gurakar, Stuart Russel, Aliaksei Pustavoitau. *Anesthesiology and Critical Care Medicine, The Johns Hopkins University School of Medicine, Baltimore, MD, USA*

Study purpose: Determination of physiologic reserve using cardiopulmonary exercise testing (CPET) has been previously reported in liver transplantation. In current study, we evaluated performance of CPET in our practice, prior to institution of specific interventions to improve outcomes of liver transplant recipients.

Methods: We evaluated records of all patients ($n=28$) who underwent CPET and had liver transplantation between November 2012 and September 2013. We excluded patients who underwent living donor transplantation ($n=2$) and patients who could not reach anaerobic threshold (AT) during CPET ($n=2$). Exploratory data analysis was performed to compare patients with AT ≤ 11 and > 11 ml/min/kg during CPET. This value defines acceptable level of cardiopulmonary fitness. Cox proportional hazards regression analysis was performed to identify CPET, donor-related and clinical predictors of length of Intensive Care Unit (ICU) and hospital stay.

Results: patients in groups with AT ≤ 11 ($n=6$) and > 11 ml/min/kg ($n=18$) were similar in clinical, donor-related and intraoperative characteristics. Compared to patients with AT > 11 ml/min/kg patients with AT ≤ 11 ml/min/kg had poorer cardiopulmonary fitness as evident by lower peak VO₂ (20.3 ± 5.0 vs. 12.2 ± 1.7 ml/min/kg, respectively), lower AT as a proportion of peak VO₂ (52.1 ± 11.2 vs. $40.3 \pm 4.5\%$, respectively), slower recovery of heart rate at 1 minute post-exercise (20.2 ± 8.7 vs. 10.3 ± 8.1 beats/min, respectively) and inability to achieve predicted heart rate during CPET (92.2 ± 10.4 vs. $76.7 \pm 19.4\%$ of predicted heart rate, respectively). There were no differences between the two groups in length of ICU or hospital stay. AT (HR 1.46, 95%CI 0.07-31.2 comparing patients with AT ≤ 11 to patients with AT > 11 ml/min/kg), other CPET measurements, donor and clinical characteristics did not predict ICU length of stay.

For hospital discharge, AT (HR 0.0006, 95%CI 4.48e-06-0.08, comparing patients with AT ≤ 11 to patients with AT > 11 ml/min/kg), age, BMI, MELD score, diagnosis of hepatocellular carcinoma, portal vein thrombosis, donor risk index, combined liver and kidney transplant and duration of surgical procedure were significant predictors of hospital discharge.

Conclusions: in our patient population CPET played a role in predicting hospital, but not ICU length of stay of liver transplant recipients.

Abstract # P-602

BAR score Is Better Predictor of Sort and Long-Term Survival in Liver Transplantation? Ivan Dias Campos Junior, Elisabete Yoko Udo, Raquel Silveira Bello Stucchi, Maria Fátima Trovato Mei, Ilka Fátima Santana Ferreira Boin. *Unit of Liver Transplantation, University of Campinas, Campinas, São Paulo, Brazil*

The BAR score (Balance of Risk Score) is used for patient survival prognosis following liver transplantation. Purpose: To compare the score system BAR with other systems to predict survival after liver transplantation. Methods: A retrospective observational study was performed for 300 patients submitted to liver transplantation between 1997 and 2012. Patients who had surgeries with traditional technique, reduced or split livers, and those with incomplete medical files, were excluded. Both donor and receiver data were evaluated. BAR scores, which range from 0 to 27 points, were computed through the site <http://www.assessurgery.com/bar-score/bar-score-calculator>. The BAR score was compared with other prediction systems including donor risk index (DRI), survival outcomes following liver transplantation (SOFT),

donor-age combined with MELD (D-MELD), and MELD score alone. Statistical analysis employed the Receiver Operator Characteristic (ROC curve) and Kaplan-Meier method (log-rank test) for survival. Results: For DRI, D-MELD, MELD, SOFT, and BAR scores the areas under the receiver operator characteristic curves were 0.5, 0.56, 0.61, 0.63, and 0.64 respectively. Conclusions: In our population the BAR score may offer great potential for better justice and utility, as it revealed to be superior to other prediction scores. It is a contribution to the incorporation of the BAR system into transplantation centers of the country.

Abstract # P-603

De Novo Hepatitis B Infection from HBcAb-Positive Donor during Hepatitis B Immune Globulin Prophylaxis. Seong-Hwan Chang. *Surgery, Konkuk University School of Medicine, Seoul, Korea*

De novo hepatitis B infection from HBcAb-positive donor in liver transplantation is well known, but the effective prevention strategy is not well established. Some insist on prophylaxis, and others insist prophylaxis with either hepatitis B immune globulin (HBIG) or lamivudine alone or with combination of HBIG and lamivudine. In our hospital, we do prophylaxis with HBIG monotherapy for recipients, who are HBcAb and HBsAb negative at the time of transplantation and receive a liver from a HBcAb positive donor. The prophylaxis method was decided this way because we thought that HBIG monotherapy is enough for prophylaxis of de novo hepatitis B in this clinical setting and because medical insurance allows only HBIG monotherapy. We had 4 recipients who are naïve to HBV and receive an HBcAb-positive graft since Aug. 2006. Two had died of other causes. Two patients are still visiting the outpatient clinic. One received liver transplantation 7 years and two months ago and free from hepatitis B. Another received transplantation 4 years and two months ago. We tested the patient's serum every year for HBsAg and all tests showed negative, but at 4 years after liver transplantation, his serum was found to be converted to HBsAg positive. There was no unusual finding with liver function test except undetectable HBsAb titer even though HBIG had been administered two months ago. HBcAg was reactive in his serum and anti-HBe Ab was negative and HBV DNA quantification showed 1.51×10^8 Copies/mL. We suggest more than HBIG monotherapy would be needed for these recipients.

Abstract # P-604

Outcome of Liver Transplantation in Alcoholic Liver Disease. Wontae Cho, Choon Hyuck David Kwon, Jin Young Choi, Seung Hwan Lee, Kyo Won Lee, Eunmi Gil, Byunggon Na, Dong Kyu Oh, Jinsoo Rhu, Jong Man Kim, Jae-Won Joh, Suk-Koo Lee. *Department of Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Republic of Korea*

Introduction

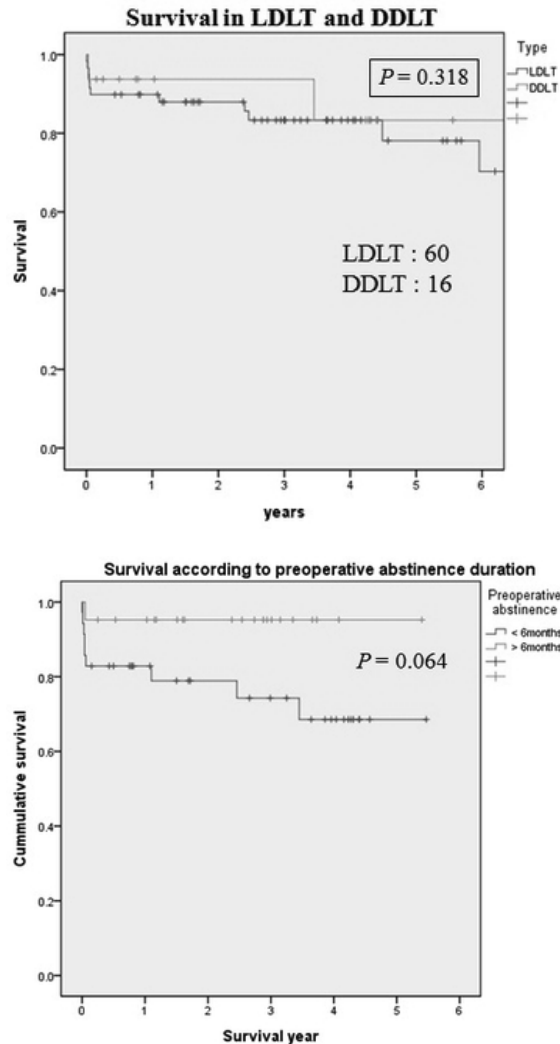
The primary effective strategy for patients with alcoholic liver disease (ALD) is total alcohol abstinence. When total alcohol abstinence does not result in a significant improvement of liver function, liver transplantation (LT) represents the gold standard treatment for end-stage ALD. This study evaluated the outcome of LT in ALD.

Methods

We evaluated 76 patients from Oct 2001 to Feb 2013. Clinical records were reviewed for intake and duration of alcoholic consumption, abstinence duration, history of psychiatric consultation, recidivism and survivals.

Results

Mean survival year after LT was 3.47 ($\pm$ SD: 2.71, range: 0-11.41) and there was no significant difference in acute and chronic alcoholic liver failure ($p=0.099$). The amount of alcoholic consumption and duration, history of psychiatric consultation, and type of LT (Living donor LT vs Deceased donor LT) also showed no statistical significance. The role of 6 months abstinence was not clear in patients survivals ($p=0.064$).



Conclusion

Liver transplantation for acute alcoholic hepatitis has good prognosis and should not be banned. LDLT can be applied for alcoholic liver disease with similar survival as DDLT. A flexible approach to "6 months rule" should be applied. A multidisciplinary support for alcoholic patients is warranted.

Abstract # P-605

Clinical Factors for Intraoperative Bleeding in Emergency Liver Transplantation for Patients in KONOS Status 2A. Gyu-Seong Choi¹, Ju Ik Moon². ¹*Surgery, Samsung Medical Center, Seoul, Republic of Korea;* ²*Surgery, Konyang University Hospital, Daejeon, Republic of Korea*

In Korea, the most common indication for emergency liver transplantation is KONOS status 2A, complicated end stage liver disease, such as mental status change, hepatorenal syndrome, uncontrolled ascites, and uncontrolled variceal bleedings. In these cases, massive bleedings are unavoidable and transfusions are inevitable. We conducted this study to find clinical factors for intraoperative bleeding in emergency LT for patients in KONOS status 2A. Methods : From 2008, to 2012, we analyzed 17 cases, emergency LT for KONOS status 2A in single center. Amount of intraoperative bleedings and transfusions were reviewed and correlations of important clinical factors-primary disease, pre transplant MELD score, fatty change of graft, type of donor (living donor or deceased donor), operative time, anhepatic time, and type of operators (beginner under 30 cases, intermediates under 100 cases, experts over 100 cases)- were assessed.

Result: Living donor transplantation was done in only one case and others were deceased donor transplantation. In 12 cases, hepatitis B related cirrhosis was primary disease and in 5 cases, alcoholic cirrhosis. Mean of estimated

amount of bleedings were 3658cc and mean RBC transfusion volume was 3242cc. In groups with bleedings more than 4000cc, operative time, anhepatic time and type of operators were revealed to statistical significant factors but this study shows donor/recipient-related factors were not related to intraoperative bleedings.

Conclusion: In emergency liver transplantations for patients with end stage liver disease, intraoperative bleedings depend on only surgeon's experience and operative times.

Abstract # P-606

Complication Rates and Longterm Outcome Following Liver Transplantation With an Arterial Conduit. Christian Denecke, Jannis Rorarius, Claudia Boesmueller, Matthias Biehl, Felix Aigner, Stefan Schneeberger, Johann Pratschke, Oellinger Robert. *Visceral-, Transplantation and Thoracic Surgery, Medical University Innsbruck, Innsbruck, Austria*

Background: In OLT patients, an insufficient arterial vasculature sometimes requires to conduct an arterial interposition graft to the recipients Aorta. In this study, 1-, 5- and 10 year patient and graft survival and complication rates following OLT with an arterial conduit were analyzed.

Methods: Data from 949 OLT Patients with standard arterial reconstruction and 52 OLT recipients with a donor iliac artery interposition graft transplanted between 1990 and 2012 at the Department of Surgery, Innsbruck, were retrospectively analyzed. Complication rates, shortterm and longterm outcome were investigated and risk factors for patient and graft survival were identified depending on the type of arterial reconstruction.

Results: OLT recipients with an arterial conduit had a higher labMELD while retransplantation rates and High-Urgency (HU) Transplantations were more frequent in this group. Besides, 5- and 10- year Patient - (5yr: 83,0% vs. 74,5%, 10 yr: 77,5% vs. 60,0%) and graft survival (5 yr: 78,7% vs. 60,9%, 10 yr: 71,8% vs. 36,5%) were significantly reduced following OLT with a conduit. While cold and warm ischemic times and bile duct complications were comparable between the groups, recipients with an aortic conduit had significantly more vascular complications and in particular arterial complications early after transplantation (0,6% vs. 8%, $p < 0.001$). On multivariate analysis, an arterial conduit was not identified as a risk factor for patient or graft survival. Similarly, no independent risk factors were identified in the conduit group. In contrast, bile duct complications and retransplantation were risk factors for inferior outcome in patients with a standard hepatic artery anastomosis.

Conclusion: Liver transplant recipients with an arterial conduit had a higher rate of vascular complications and an overall inferior longterm patient and graft survival. However, no outcome associated independent risk factors were identified in this group. Despite a higher rate of retransplantations and HU transplantations, an arterial conduit was associated with good 5- and 10- year graft and patient survival.

Abstract # P-607

The Impact of Body Mass Index in the Long Term Outcome of Liver Transplanted Patients. Itxarone Bilbao¹, Cristina Dopazo¹, Lluís Castells², Jose Luis Lazaro¹, Mireia Caralt¹, Sofia de la Serna¹, Gonzalo Sapisochin¹, Ramón Charco¹. ¹*Department of HPB Surgery and Transplants, Hospital Vall d'Hebron, Barcelona, Spain;* ²*Hepatology Unit, Department of Internal Medicine, Hospital Vall d'Hebron, Barcelona, Spain*

AIM : To analyse the impact of body mass index (BMI) in the long-term follow-up of liver transplanted patients

MATERIAL AND METHODS. From January-98 to December 2012, 664 patients with complete data and receiving immunosuppression based on Tacrolimus, have been submitted to liver transplantation (LT) in our Unit. According to BMI, three groups have been considered: BMI ≤ 20 , BMI > 20 and < 30 , BMI ≥ 30 . Demographic characteristics of recipients, donors, surgery, post-transplant events and survival have been compared between groups. Variables have been collected prospectively in all patients each year during the follow-up.

RESULTS. Distribution of patients were: BMI ≤ 20 =39 Patients (5.9%), BMI > 20 and < 30 = 484 patients (72.9%), BMI ≥ 30 = 141 patients (21.2%). Mean age was 52, 55 and 57 years respectively. Female-Male distribution was 51%-49%, 27%-73%, and 32%-68% ($p=0.004$). Indication for LT was different with more cases of acute liver failure, cholestatic disease and HCV postnecrotic cirrhosis in BMI ≤ 20 compared to the other two groups. Pre-LT comorbidities were : more hypertension and portal thrombosis in BMI ≥ 30 and more renal insufficiency in BMI ≤ 20 . Donors were younger in BMI

CONCLUSION. BMI impact in the comorbidities and long term survival after liver transplantation. Obesity (BMI > 30) as well as undernourished patients (BMI ≤ 20) at time of transplantation are the groups at risk. Active nutritional programs should be advised for these patients while in the waiting list.

Abstract # P-608

High-Altitude Liver Transplantation: Pulmonary Pressure and Its Implication on Mortality. Sergio Enderica-Gonzalez^{1,2}, Juan C. Aguilar¹, Harry Dorn¹, Juan J. Suarez^{1,2}, Vladimir Ullauri¹, Paul Astudillo¹, Frans Serpa¹. ¹*Transplant Unit, Hospital Metropolitano, Quito, Ecuador;* ²*School of Medicine, Universidad San Francisco de Quito, Cumbaya, Ecuador*

Ecuador largest liver transplantation center is located in Quito at an elevation of 9,350 ft. (2850m) above sea level, and most of its patient population comes from high-altitude (HA) cities. Pulmonary hypertension is commonly present among healthy HA natives. In addition of its intrinsic pulmonary hypertension due to HA, portopulmonary hypertension is a complication of chronic liver disease that has been associated with peritransplant and posttransplant morbidity and mortality. This study evaluated the implications of pulmonary pressures on mortality among HA liver transplant patients. We performed a retrospective review of all patients who underwent liver transplantation from 2009 to 2013 at Hospital Metropolitano (Quito, Ecuador). All patients included in the study had at least one measurement of pulmonary systolic arterial pressure (PASP) by echocardiography. Logistic regression was used to find association between pulmonary pressure and mortality. A total number of sixty liver transplant patients were included in the study. The mean age of liver transplant recipient was 50 years old. From all the patients that were transplanted 63.3% of them came from cities that were at least 2500 meters above sea level. In our patient population 93.2% had at least some degree of pulmonary hypertension, divided in severe (>45 mmhg) 1.6%, moderate (35-45 mmhg) 50%, mild (25-35 mmhg) 41.6%. However, no association between pulmonary pressure and mortality was found (p value 0.7). Our findings suggest that pulmonary hypertension is not associated with mortality in HA liver transplantation patients. Nevertheless, larger studies are needed.

Abstract # P-609

Liver Transplantation in Lebanon: A Hard Lesson To Learn (Updates). Walid Faraj, Ghattas Khoury, Samar Jabbour, Ali Haydar, Ali Shamseddine, Abdallah Abou Nijaj, Mohamed Khalife. *Liver Transplantation and Hepatopancreaticobiliary Surgery, American University of Beirut-Medical Center Beirut-Lebanon, Beirut, Lebanon*

Background: The aim of this study is to review all liver transplants performed at the American University of Beirut Medical Center from 1998 to present.

Material/Methods: From 1998 to present, 21 liver transplants were performed at our institution. Of these, 16 adults and 5 children. Indications for adult transplants were: 2 alcoholic liver cirrhosis, 4 cryptogenic, one hepatitis B, one hepatitis C with HCC, one subacute liver failure, one Budd Chiari syndrome, one biliary cirrhosis secondary to iatrogenic common bile duct injury, one multiple hydatid disease of the liver, two Autoimmune hepatitis, one Vanishing Bile Duct Syndrome, one Hyper coagulable status secondary to genetic mutation.

Pediatric transplant indications were: two cryptogenic liver cirrhosis, one extrahepatic biliary atresia, one familial hypercholesterolemia and one congenital hepatic fibrosis.

Results: The 10 years survival is 76% post transplant. There were 5 deaths at a median of 9 days (range 1–56) post-transplantation. The causes of death were: two primary non functions, one intraoperative cardiac arrest, one portal and hepatic artery thrombosis, and one severe cellular rejection. All 16 survivors are well, with normal liver function tests at a median follow-up time of 89 months (range 4 13–131 174) after transplantation.

Conclusions: Although the number of transplants performed in Lebanon is small, the 10-year survival rate is comparable to high load transplant centers. Cadaveric organ donations and transplantations should be encouraged to

increase the rate of transplantation. Living related liver transplant is an important alternative source of organs, but should not replace cadaveric donation.

Abstract # P-610

Different Score Systems To Predict Mortality: Which Is the Winner? The Experience of an Egyptian Centre for Living Donor Liver Transplant. Mona ElAmir¹, Hadeel GamalElDeen², Shreef Megawer¹, Gamal Esmat², Mostafa ElShazly³, Noaman ElGarem¹, Mohammed Said², Ayman Salah³, Adel Hosny³.
¹Internal Medicine, Cairo University (CU), Cairo, Egypt; ²Endemic

Hepatology, CU, Cairo, Egypt; ³**Liver Surgery, CU, Cairo, Egypt**

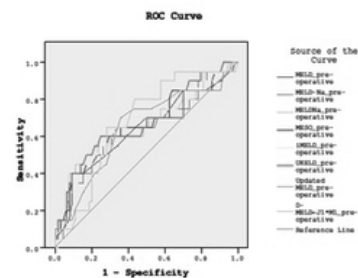
Introduction: Many scoring systems have been proposed to predict the outcomes of deceased donor liver transplantations. However, their impact on the outcomes in living donor liver transplantation (LDLT) has not yet been elucidated.

Aim: To assess performance of preoperative MELD score in predicting post-operative mortality in LDT and to compare it with **other scores:** MELDNa, United Kingdom MELD(UKLED), MELD to serum sodium ratio (MESO), updated MELD, Donor age-MELD(D-MELD) and integrated MELD(iMELD)

Methods: We analyzed retrospectively data from 86 adult Egyptian patients who underwent LDLT in a single centre. Preoperative MELD, MELD_{Na}, MES O₃UKLED, updated MELD, D-MELD and iMELD were calculated. Receiver Operating Characteristic (ROC) curves and area under the curve (AUC) used to assess the performance of MELD and other scores in predicting postoperative mortality at 3 months (early) and 12 months.

Results: Among the 86 patients: Mean age 48 ± 12 years, 76 (88%) were of male gender and 35 (40%) dead. Preoperative MELD failed to predict early mortality (AUC = 0.63; P value = 0.066). Comparing preoperative MELD with other scores: All other scores had better predictive ability (P value < 0.05) with D-MELD on the top of the list (AUC = 0.68, P = 0.016) followed closely by UKELD (AUC = 0.67, P = 0.025) After that, iMELD, MESO and MELD_{Na} with the same predictive performance (AUC = 0.65; P < 0.05), Updated MELD had the lowest prediction (AUC = 0.640; P = 0.04).

Figure 1: Receiver Operating Characteristic (ROC) Curve of different score systems to predict early mortality post LDLT



Moreover, all the scores failed to predict mortality at 12 months (P value >0.05). D-MELD cut off value of 485 and UKLED cut off value of 55.25 (70% sensitivity, 60% specificity; 65% sensitivity, 60% specificity respectively) could be used for predicting early mortality.

Conclusion:Preoperative MELD failed to predict either early or one year mortality post LDLT. D-MELD, UKELD, MELDNa,iMELD and MESO could be used as better predictors of early mortality, however, we need to develop our own model.

Abstract # P-611

Progressive Renal Dysfunction While on the Liver Wait list May Be an Indication for Simultaneous Liver-Kidney Transplantation. Muhammad Muneeb, Marc Heronemus, Aditi Gupta, Amna Ilahe, Timothy Schmitt, Bruce Kaplan, Richard Gilroy. *Transplantation, University of Kansas Medical Center, Kansas City, KS, USA*

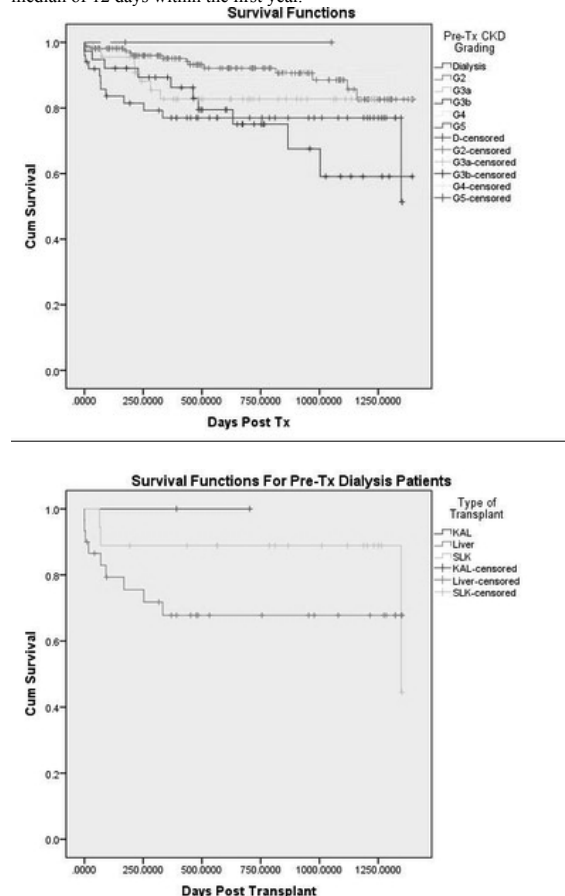
MELD allocation system has increased the percentage of people transplanted with renal dysfunction (RD). We assess the impact of RD on survival after listing for transplantation (Tx).

Methods: 516 consecutive patients (Pt) were staged by KDIGO CKD classification and underwent liver Tx between 01/09-10/12. BMI, primary diagnosis, diabetes, death date and serial creatinine (Cr) were tabulated pre- and post-Tx.

Results: Of 516 Pt, 334 transplanted, 38 too sick, 33 removed for other reasons, 62 still listed, and 49 died. Tab1: MELD at Tx, post operation stay and post-Tx Cr at 7 days, 1, 3, 6 and 12 months.

Fig1: Kaplan-Meier curves for CKD staging. Stage G3b had the lowest 3 year survival rate, no significant difference between the CKD stages in diabetes or HCV as primary diagnosis. There was a direct correlation between BMI and worsening RD (p-value 0.031).

Fig2: Dialysis dependent Pt with SLK have higher survival rates than liver Tx only. Cr >1.6 had 1-year survival of 84% and 35% required dialysis for median of 12 days within the first year.



Conclusion: Dialysis Pt with SLK have better survival outcomes than dialysis patients with isolated liver Tx. Although wait times before Tx are considerably longer in SLK, listed Pts mortality is not greater than isolate liver Tx.

Abstract # P-612

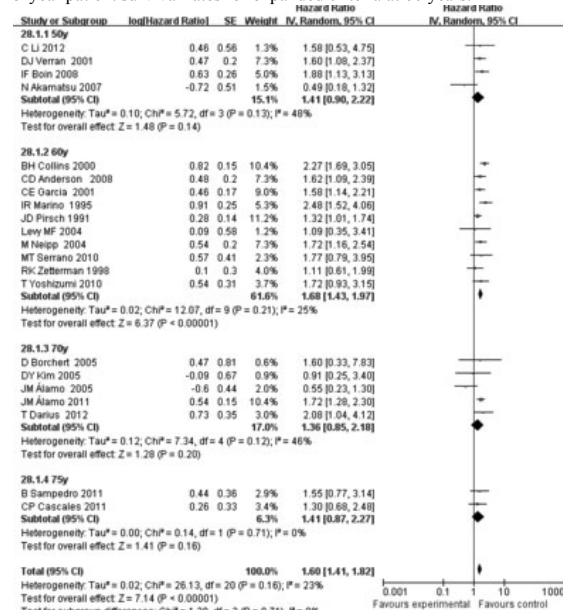
Elderly Vs Non-Elderly Donors for Liver Transplantation Among Different Expanded Criteria: A Meta-Analysis.
Zhiyong Guo, Weiqiang Ju, Dongping Wang, Shengwen Deng, Ye Xu, Xiaoshun He. *Organ Transplant Center, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Background The urgent need to increase organ donor pool, calls for the expanded criteria of donor selection. The aim of this study was to conduct a meta-analysis of the effects of different donor age criteria on graft and patient survival after liver transplantation (LT).

Methods Major databases were comprehensively searched to include all qualified studies. Unadjusted hazard ratios (HRs) were extracted and pooled using random effects model. Meta-disc software was used to perform comprehensive quantitative assessment for all included studies and summary forest plot were drawn.

Results We identified 15 studies with 2020 elderly and 3902 non-elderly recipients included. The combined HR was 1.60 (95% confidence interval [CI]: 1.41 - 1.82; $I^2 = 23\%$) for patient survival in recipients with non-elderly versus elderly donor organs, with 1.41 (95% CI: 0.90-2.22; $I^2 = 48\%$) for

criteria at 50 years old, 1.68 (95% CI: 1.43-1.97; $I^2 = 25\%$) for criteria at 60 years and 1.36 (95% CI: 0.85-2.18; $I^2 = 46\%$) for criteria at 70 years. Compared with non-elderly group, patients receiving elderly donor organs showed discrepancies in both graft and patient survival rate. Interestingly, the effects of age are not significant ($P > 0.05$) as shown in Z test for 1-year and 5-year patient survival for expanded criteria at 50, 70 and 75 years, while there are significant difference in research concerning 1-year, 3-year, and 5-year patient survival rates for expanded criteria at 60 years.



Conclusion Compared with non-elderly donor organs, elderly donor organs are related to inferior outcomes in liver transplantation, although the overall effects are not significant.

Abstract # P-613

De Novo Hepatitis B Virus Infection after Adult Liver Transplantation Using a Positive Hepatitis B Core Antibody Graft.
Jae Hyun Han, Dong Goo Kim, Eun Young Kim, Soo Hoo Lee, Young Kyoung You, Tae Ho Hong. *Surgery, Seoul St. Mary's Hospital, The Catholic University of Korea, Seoul, Republic of Korea*

Introduction

The use of hepatitis B core antibody (HBcAb)-positive grafts is increasing, especially where hepatitis B is endemic. However, this remains controversial because of the risk of development of de novo hepatitis B virus (HBV) infection.

Methods

Data gathered between January 2000 and December 2012 on 187 hepatitis B surface antigen (HBsAg)-negative donors and recipients were analyzed retrospectively. De novo HBV infection was defined as development of HBsAg positivity with or without detection of HBV DNA.

Results

Forty (21.4%) patients received HBcAb-positive grafts. Survival rate did not differ by donor HBcAb status ($p = 0.466$). De novo HBV infection occurred in five patients (12.5%) who were not treated with anti-HBV prophylaxis, and was significantly more prevalent in HBsAb- and HBcAb-negative than HBsAb- and HBcAb-positive recipients (50% vs. 4.2%, $p = 0.049$). All patients except one were treated with entecavir with/without anti-hepatitis B immunoglobulin and four were negative in terms of HBV DNA seroconversion. No patient died.

Conclusion

HBcAb-positive grafts are safe without survival difference. However, the risk of de novo hepatitis B virus infection was significantly increased in HBsAb- and HBcAb-negative recipients, who require pre-operative anti HBV prophylaxis. All patients were successfully treated even after recurrence.

Abstract # P-614

Nursing Experience of Anticoagulation Therapy after Multi-Organ Transplantation of Upper Abdominal. Xiaofeng He, Huili Ye, Qiaoling Zeng. *The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China; The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China; The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China*

Objective To explore the nursing of upper abdominal multiple organ transplantation patients with anticoagulant therapy after operation.

Methods From March 2009 to August 2013, 12 patients with end-stage liver disease and type 2 diabetes mellitus in our center underwent abdominal multiple organ transplantations. Eight patients were male, with an average of 50.5 years old (33 to 70y). All the 12 patients' primary disease was liver cirrhosis, including 7 cases with small hepatocellular carcinoma. All the recipients were treated with anticoagulant therapy. Liver and pancreas functions, coagulation time and drainage were closely monitored.

Results 12 patients recovered well after operation, no occurrence of hemorrhage or thrombosis.

Conclusion Abdominal multivisceral transplantation is a complex technique with many vascular anastomoses. Thrombus happened more in pancreas allograft than in other organ transplants since the pancreas implantation site is a low pressure area. Adjustment of anticoagulation drug dosage at any time, close monitoring of coagulation function and intensive nursing care were the keys for abdominal organ cluster transplantation.

Abstract # P-615

Improving Outcomes of Liver Retransplantation for End-Stage Alcoholic Liver Disease: An Analysis of Trends and Risk Factors. Zhenhua Hu^{1,2,3}, Zhiwei Li^{1,2,3}, Jie Xiang^{1,2,3}, Jie Zhou^{1,2,3}, Jian Wu^{1,2,3}, Sheng Yan^{1,2,3}, Lin Zhou^{1,2,3}, Shusen Zheng^{1,2,3}. *¹Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang, China; ²Key Laboratory of Combined Multi-Organ Transplantation, Hangzhou, Zhejiang, China; ³Ministry of Public Health Key Laboratory of Organ Transplantation, Hangzhou, Zhejiang, China*

Background: End-stage alcoholic liver disease is the main indication for primary liver transplantation, however, retransplantation (RT) in alcoholic patients remains controversial. We want to study trends in RT and evaluate the impact of alcohol in the context of a comprehensive recipient and donor risk assessment.

Methods: The Scientific Registry of Transplant Recipients database between 1998 and January 2010 was utilized to analyze 62373 LT and RT. Graft and patient survival along with patient and donor characteristics were compared for 4209 RT performed in alcoholic and non-alcoholic patients during 1998–2001, 2002–2005 and 2006–January 2010.

Results: Overall alcoholic prevalence at RT decreased from 13.9% in the initial period to 8.3% after 2006. In our study group, 1-year patient and graft survival post-RT improved over the same time intervals from 66% to 72% and 63% to 69%, respectively. Alcohol was associated with decreased patient and graft survival with a retransplant (LT-RT) interval (RI) ≥ 90 days, however improved patient and graft survival with an interval (RI) < 90 days. Independent predictors of mortality for RT were patient age, MELD score > 25 , warm ischemia time ≥ 75 min, Donor black ethnicity and donor age ≥ 60 . **Conclusion:** Outcomes of RT are improving, but can be optimized by weighing recipient factors, anticipation of operative factors and donor selection.

Abstract # P-616

Risk Factors for 3 Months Mortality Following Liver Transplantation in Romanian Transplant Program. Liana Gheorghe, Speranta Iacob, Carmen Ester, Razvan Cerban, Corina Pietrareanu, Dana Tomescu, Gabriela Droc, Doina Hrehoret, Vlad Brasoveanu, Irinel Popescu. *Fundeni Clinical Institute, Bucharest, Romania*

Background and aim: Short-term survival after liver transplantation (LT) is very good nowadays. The aim of this study was to investigate pre-transplant host and donor risk factors for mortality within 3 months after LT.

Methods: We prospectively followed the 103 adult liver allograft recipients transplanted from January to October 2013. We identified the factors that independently predicted 3 months mortality using multivariable logistic regression analysis.

Results: Overall 1 and 3 months post-LT survival was 94.6% and 83.6%. Univariate analysis identified the following predictors of 3 months mortality: living donor LT ($p=0.03$), higher recipient age ($p=0.006$), lower leucocytes levels at LT ($p=0.02$), a higher negative difference between donor age and recipient age ($p=0.02$), but not MELD, MELD-sodium or donor-MELD scores at LT, diabetes mellitus, presence of refractory ascites, hepatic encephalopathy or hepatocellular carcinoma. Independent risk factors for 3 months mortality were: living donor LT ($p=0.03$), recipient old age ($p=0.02$) and low white blood count ($p=0.02$). A cut-off > 53 years for the recipient age predicted 3 months mortality after LT with a high sensitivity 92.31% and high negative predictive value (NPV) 97.8% for a AUROC of 0.74. For an AUROC of 0.71, leucocytes $\leq 3110/mm^3$ at LT had a high specificity 91% and NPV 91% for predicting short-term post-LT mortality.

Conclusion: MELD-based allocation systems did not predict 3 months post-LT mortality in our transplant program. Advanced recipient age and low white blood count should be avoided in living donor LT because of increased risk of short-term mortality after LT.

Abstract # P-617

Frequent Appearance of HBs Escape Mutant after Successful Posttransplant Vaccination in Both HBV Carriers and Non-HBV Patients Received Grafts from HBcAb Positive Donors. Masatoshi Ishigami¹, Takashi Honda¹, Yoji Ishizu¹, Yasuharu Onishi², Hideya Kamei², Yasuhiro Ogura², Hidemi Goto¹. *¹Department of Gastroenterology and Hepatology, Nagoya University School of Medicine, Nagoya, Japan; ²Department of Transplant Surgery, Nagoya University School of Medicine, Nagoya, Japan*

[Backgrounds] Combination of nucleos(t)ide analogue (NA) and anti-HBs immunoglobulin (HBIG) is established as the standard regimen for prevention of HBV recurrence after liver transplantation. In spite of high effectiveness, cost is the big issue in this regimen. HB vaccine is one of the hopeful low-cost substitutes and some patients can get enough HBsAb titers. However, in well-responded patients, there are no data whether NA can also be safely stopped or not. In this study, we report the frequent appearance of HBs escape mutants after stopping NA in patients who could get enough HBsAb titers by HB vaccine.

[Patients and Methods] 17 HBV patients and 8 non-HBV patients who received grafts from HBcAb positive donors were included. Inclusion criteria were (1) more than 1 year after liver transplantation, (2) only stable dose of calcineurin inhibitor was applied as immunosuppression. In these patients, Heptavax (MSD Pharmaceutical Co, Ltd, Tokyo, Japan) was administered every month, and HBsAb $> 100IU/l$ without additional HBIG for more than 3 months was considered as successful response. In patients who recurred HBV viremia, sequence analysis of HBV envelope region was done. Statistical analysis for factors associated with appearance of viremia after stopping NA were done, and $p < 0.05$ was considered as statistical significance.

[Results] Among 2 HBV and 6 non-HBV patients who can get enough HBsAb titers and stop NA, 4 patients recurred HBV viremia after 12 months in median. To analyze amino acid sequence in 3 patients, various sites of mutation were seen in envelope region including D144A and G145R that were well-known mutations in a-determinant region and important for the neutralizing activity of HBsAb. Numbers of vaccine administration was a statistically significant factor associated with viremia after stopping NA ($p=0.008$).

[Conclusions] We report frequent vaccine escape mutant by HB vaccination after stopping NA in patients after liver transplantation, especially in patients who received frequent vaccination before getting enough HBsAb titers. Some stopping rule should be necessary for preventing vaccine escape mutant.

Abstract # P-618

Long-Term Course of Five Patients Who Underwent Liver Transplantation With Small-For-Size Grafts With a Hemi-Portocaval Shunt. Eitaro Ito, Taiji Tohyama, Jota Watanabe, Masahide Hatano, Hitoshi Inoue, Shoichi Kageyama, Tetsuya Mizumoto, Akihiro Takai, Fumiki Kushihata, Yasutsugu Takada. *Hepatobiliary Pancreatic Surgery and Transplantation, Ehime University, Toon, Japan*

The portal inflow modulation by a hemi-portocaval (PC) shunt effectively resolves the problem of small-for-size syndrome (SFSS) due to the lack of functional liver volume after liver transplantation. Unfortunately, the steal of the portal vein flow associated with a PC shunt can lead to the development of hepatic encephalopathy or graft liver atrophy. The effectiveness and safety

of the inflow modulation by a PC shunt are still unclear. Here, we report the long-term course of five patients who underwent liver transplantation with small-for-size grafts with hemi-portocaval shunts. <Follow-up period> The follow-up averaged 6 years and 4 months (range 5 years, 5 months to 7 years, 2 months). < Sex > Two males and three females. < Age range > 35 years to 58 years. < Primary disease > Two cases of fulminant hepatitis, one case each of liver cirrhosis due to hepatitis C virus, primary biliary cirrhosis, and alcoholic cirrhosis. < Graft > Four left lobe grafts, one posterior segment graft + PC. Average graft-recipient weight ratio (GRWR) 0.64% (range 0.54–0.73%). < Results> Only one case developed SFSS and this patient underwent a hemostasis operation for hemorrhage after liver transplantation. The PC shunts for the four left lobe grafts closed spontaneously within 6 months, while the PC shunt for the posterior segment graft showed long-term patency. Spontaneous closure of a PC shunt after 6 months is unlikely. The graft regeneration in the patient with a persistent PC shunt was poor, and he was admitted for hepatic encephalopathy 19 months after transplantation. In a patient with a persistent open PC shunt, it is necessary to consider shunt closure surgery in a comprehensive manner, considering the development of hepatic encephalopathy, liver regeneration, and the postoperative course.

Abstract # P-619

Influence of Body Mass Index (BMI) on Liver Transplantation.
Dinesh Jothimani, Sanjay Govil, Srinivas Reddy, Mohamed Rela.
Institute of Liver Disease and Transplantation, Global Hospitals, Chennai, Tamilnadu, India

Aim: To determine the outcome following liver transplantation in patients classified according to their BMI.

Methods: It is a retrospective analysis on all adult patients who underwent liver transplantation at our centre from 2011 to 2013. BMI was corrected for their ascitic fluid volume calculated at the time of transplantation. Patients were stratified according to the WHO classification of BMI. Risk factors and outcomes were assessed.

Results: A total 207 adult patients underwent liver transplantation at our institution of whom BMI data was available on 181 patients. Undernourished, normal weight, over weight and obesity was noted in 6.6%, 32.8%, 23% and 37.6%, respectively. MELD and Child Pugh score was not significantly different amongst the groups. A trend towards greater incidence of diabetes mellitus and renal dysfunction among overweight and obese patients noted ($p=0.1$). These patients were more likely to undergo diseased donor liver transplantation (DDLT) than living donor liver transplantation (LDLT), and the graft recipient weight ratio (GRWR) was significantly lower amongst those who underwent LDLT ($p=0.003$). The risk of small for size dysfunction (SFSD) was higher in obese patients undergoing LDLT. There was no significant difference in post-operative events including mortality.

Table 1. Post-operative events in patients with normal BMI and overweight/obesity

Post-operative events	Normal BMI	Overweight/obesity	p value
ICU stay (days)	5.8	7.1	$p=0.5$
Hospital stay (days)	20.5	20.8	$p=0.9$
Renal dysfunction	26%	26.5%	$p=1.0$
Sepsis	39%	42%	$p=0.5$
Biliary complications	11%	14%	$p=0.38$
Mortality	13%	11%	$p=0.86$

Undernourished patients had slightly more postoperative sepsis but it was not statistically significant.

Conclusion: Overweight and Obese patients had higher comorbidity, smaller GRWR and greater risk for SFSD during transplant. However this did not result in higher postoperative morbidity or mortality. Undernourished patients may be at risk for postoperative sepsis.

Abstract # P-620

Early Experience of the Use of Ringed PTFE Graft for Middle Hepatic Vein Reconstruction for Living Donor Liver Transplantation. Kwan Woo Kim¹, Jeong-ik Park², Sung-Gyu Lee³.

¹Department of Surgery, Division of Hepato-biliary and Pancrease, Dong-A Medical Center, University of Dong-A, College of Medicine, Busan, Korea; ²Department of Surgery, Division of Hepato-biliary and Pancrease, Haeundae Paik Hospital, University of Inje, College of Medicine, Busan, Korea; ³Department of Surgery, Division of Hepatobiliary and Liver Transplantation, Asan Medical Center, University of Ulsan, College of Medicine, Seoul, Korea

Background

We present the initial experience of use of ringed PTFE graft for middle hepatic vein (MHV) reconstruction for living donor liver transplantation (LDLT) at Haeundae Paik hospital during three years from the hospital

opening. Large vein allograft, especially cryopreserved vein, is suitable for MHV reconstruction, but its supply is often limited in a newly opened hospital. For this reason, ringed PTFE (GORE-TEX®) grafts (10-12 mm in diameter) were used to reconstruct MHV branches for the modified right lobe grafts in our institution.

Materials and methods

From March 2010 to June 2013, 15 LDLTs and 1 deceased donor LT were performed at our hospital. There were 13 cases of modified right lobe graft (MRL) and 2 cases of dual grafts. 11 ringed PTFE grafts were used in 13 MRL. In two MRLs, ringed PTFE did not need due to MHV branches were less than 5 mm in diameter. 10 of 13 cases were analyzed. One case was excluded because retransplantation was performed 3 weeks later of LDLT due to hepatic artery rupture.

Results

The patency of the ringed PTFE graft was checked with computed tomography scan of the liver. The 1-month, 4-month and 6-month patency rates of the ringed PTFE grafts were 100% (10/10), 50% (5/10) and 20% (2/10) respectively. All showing late obstruction (over 4 months) were asymptomatic (no elevated liver enzyme) and did not have congestion of the liver on CT scans. There were no specific complications related using ringed PTFE graft and no patient death, chronic graft dysfunction or graft loss during follow up period.

Conclusion

Although small cases, the early ringed PTFE graft function was excellent and late obstruction of ringed PTFE graft had no specific clinical problems on graft function or patient survival. Ringed PTFE graft seems to be a good alternative material for MHV reconstruction.

Abstract # P-621

The Effects of Early Enteral Feeding Within 48hrs after Living Donor Liver Transplantation: The Retrospective Review of 117 Cases. Eun Young Kim, Dong Goo Kim, Tae Ho Hong, Gun Hyung Na, Jae Hyun Han, Soo Ho Lee, Young Kyoung You. *HBP Surgery, The Catholic University, Seoul St. Mary's Hospital, Seoul, Republic of Korea*

BACKGROUND

The importance of nutritional support in posttransplant patients is well known and the advantages of enteral feeding over parenteral feeding has been accepted widely, therefore the need of starting for enteral feeding in early postoperative period has emerged. However, there are few studies about the difference of surgical outcomes according to the starting point of enteral feeding.

METHODS

We enrolled 117 cases that underwent LDLT since 2008 and divided them into two groups according to the starting point of enteral feeding after surgery (within 48hrs vs. after 72hrs), and reviewed surgical outcomes and perioperative morbidities retrospectively.

RESULTS

In this study, 50 patients had early enteral feeding (mean time 22.9 h) and 67 had late enteral feeding (mean time 82.3 h). Both groups were comparable in terms of demographics and operative details. Our results showed shorter hospital stay of ICU (4.9 vs. 6.8 day, $p=0.00$) and lower incidence of postoperative medical complications (20.0 vs. 52.2%, $p=0.00$) in early feeding group than late group. Median survival time was 23.3±14.1 months in early feeding group and there was no statistical difference in 1-, 3-, and 5-year survivals between two groups.

CONCLUSIONS

The early enteral feeding within 48hrs was associated with early postoperative recovery and reduced postoperative morbidities though it had no influence on survival rates. Therefore this retrospective study supports that the starting of early enteral feeding within 48hrs should be considered in PSLT patients.

Abstract # P-622

Living-Donor Liver Transplantation for Progressive Familial Intrahepatic Cholestasis. Izumi Kirino¹, Tomohide Hori², Hiroto Egawa³, Aya Miyagawa-Hashimoto⁴, Tohru Yorifuji⁶, Yukihide Yonekawa⁵, Shinji Uemoto^{1,5}. ¹Division of Hepato-Biliary-Pancreatic and Transplant Surgery, Department of Surgery, Kyoto University Hospital, Kyoto City, Kyoto, Japan; ²Department of Surgery, Mitsubishi Kyoto Hospital, Kyoto-City, Kyoto, Japan; ³Department of Surgery, Institute of Gastroenterology, Tokyo Women's Medical University, Tokyo, Japan; ⁴Department of Diagnostic Pathology, Kyoto University, Kyoto-City, Kyoto, Japan; ⁵Division of Pediatric Surgery, Department of Surgery, Kyoto University Hospital, Kyoto City, Kyoto, Japan; ⁶Department of Pediatrics, Kyoto University Hospital, Kyoto City, Kyoto, Japan

Background : Progressive familial intrahepatic cholestasis (PFIC) results in liver cirrhosis during the disease course, although the etiology includes unknown mechanisms. Some PFIC patients require liver transplantation (LT). Methods: In this study, 11 patients with PFIC type 1 (PFIC1) and 3 patients with PFIC type 2 (PFIC2) who underwent living-donor LT (LDLT) were evaluated.

Results : Digestive symptoms after LDLT were confirmed in 10 PFIC1 recipients (90.9%); 8 PFIC1 recipients showed steatosis after LDLT (72.7%), which began during the early postoperative period (71.5 ± 55.1 days). Seven of the eight steatosis-positive PFIC1 recipients (87.5%) showed a steatosis degree of C80%, which was complicated with steatohepatitis and resulted in fibrosis. Cirrhotic findings persisted in six PFIC1 recipients even after LDLT (54.5%), and three PFIC1 recipients finally died. The survival rates of the PFIC1 recipients at 5, 10, and 15 years were 90.9%, 72.7%, and 54.5%, respectively. In contrast, the PFIC2 recipients showed good courses and outcomes without any steatosis after LDLT.

Conclusions : The clinical courses and outcomes after LDLT are still not sufficient in PFIC1 recipients owing to steatosis/steatohepatitis and subsequent fibrosis, in contrast to PFIC2 recipients. PFIC2 is good indication for LDLT. PFIC1 patients require LT during the disease course; therefore, we suggest that the therapeutic strategies for PFIC1 patients, including the timing of LDLT, under the donor limitation should be reconsidered. The establishment of more advanced treatments for PFIC1 patients is required to improve the long-term prognosis of these patients.

Abstract # P-623

Liver Transplantation and Overlap Syndromes – A 10-Year Experience. D. Klintman^{1,2}, J. Bustamante^{1,3}, S. Kriese¹, M. Muñoz Tornero^{1,4}, I. Cadden⁵, N. McDougall⁵, G. Whitehouse¹, A. Quaglia¹, J.G. O'Grady¹, N.D. Heaton¹, A. Sanchez Fueyo¹, Ma Heneghan¹.

¹Institute for Liver Studies, King's College Hospital, London, United Kingdom; ²Skane University Hospital, Malmo, Sweden; ³Hospital Universitario Cruces, Baracaldo, Spain; ⁴Hospital Clínico Universitario Virgen de la Arrixaca, Murcia, Spain; ⁵Royal Victoria Hospital, Belfast, United Kingdom

Background: Patients with features of two autoimmune liver disorders, i.e. autoimmune hepatitis and primary biliary cirrhosis (AIH-PBC) or primary sclerosing cholangitis (AIH-PSC), are referred to as overlap syndromes (OLS), a group without standardised definitions or treatments. Some OLS patients undergo liver transplantation. Data on survival and immunological complications in post-transplant OLS patients are scarce.

Methods: In a retrospective, single-centre study of 14 patients with OLS transplanted from 2001 to 2011 we analysed survival, rejection, recurrence and biliary complications, and compared with "pure" AIH-patients (n=48) transplanted in the same time period. A combined diagnosis of AIH and PSC/PBC clinically and histologically (IAIHG or Paris criteria) was defined as OLS. Patients with pure AIH, PBC, PSC or early deaths (<90 days) were excluded. For statistics, Chi-2, Kruskal-Wallis and log-rank tests were used. Results: 9/14 patients were female. Mean follow-up was 4.5 years. 13/14 had AIH-PSC, 1/14 AIH-PBC. 9/14 had OLS prior to liver transplantation, whereas 5/14 were considered as pure AIH pre-transplant, but explant histology revealed OLS. 3-year survival was 100%. 7/14 had episodes of rejection, and 2 patients were re-transplanted for chronic rejection. 6/14 had recurrence, 5/6 of PSC, 4 of whom also had rejection. Interestingly, as 5/14 were unknown OLS at transplantation, 4/14 received DCD donor grafts. All of these developed biliary complications, compared with 1/10 in the DBD group (p=0.01). Survival, rates of rejection, recurrence and biliary complications were similar to the pure AIH group (p>0.05).

Conclusions: This study of patients transplanted with OLS displays excellent survival. The high rate of unexpected OLS in AIH transplants indicates that some patients with end-stage AIH may in fact have OLS. Main complications were rejection, recurrence and biliary strictures, which affected all patients with a DCD graft. Although limited by the small cohort, these findings indicate the importance of avoiding DCD donors not only in PSC patients but also in those with suspected OLS.

Abstract # P-624

Abdominal Multiple Organ Transplantation on Postoperative Nursing Care of Early Application of Immunosuppressant.

Xinchun Luo, Lihan Rui, Qiaoling Zeng. The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China

Objective to summarize 10 cases of early postoperative abdominal multiple organ transplantation application on observation and nursing of immunosuppressant.

Methods a system retrospective analysis was performed in January 2009 to July 2013 in our implementation with 10 cases of abdominal organ transplantation to summarize the application of immunosuppressant drug resistance after abdominal multiple organ transplantation rejection of nursing experience and methods.

Results Ten cases were recorded in 1 weeks, blood sugar returned to normal level, stop using insulin, patients' serum alanine aminotransferase, aspartate aminotransferase and indexes of total bilirubin 2 weeks after surgery to normal levels; Serum C peptide and insulin levels in 1 ~ 2 weeks reach the normal range, the recovery of postoperative patient general condition is good, except for 1 case appeared graft versus host disease and died.

Conclusion We think make proper use of immunosuppressive drugs, and observe the adverse reaction of the medicine and guide the correct medication, completes the rejection of observation are key points to improve the success rate on abdominal multiple organ transplantation.

Abstract # P-625

Good Outcome in Elderly Transplant Recipients: Experience from a High Volume Living Donor Liver Transplant Centre.

R. Mohanka, S. Saigal, N. Saraf, N. Choudhary, A. Rastogi, S. Goja, P. Balachandran, P. Bhangui, S. Ramchandra, P. Singla, R. Babu, G. Shetty, V. Raut, S. Thiagarajan, A. Soin. Medanta Liver Institute, Gurgaon, India

There is limited data on the outcome of Living donor liver transplant (LDLT) in elderly recipients whose risk of surgery may be compounded by age and co-morbidities.

Patients and Methods: LDLT data was retrospectively analyzed and compared between elderly (age ≥ 60 years) and younger adults (age < 60 years).

Between May 2006 to August 2013, 1192 adults underwent LDLT, out of which 151 were elderly (median age 62, range 60 – 78 years; (116 males, 35 females; mean weight 69.5 ± 12.4 kg; BMI 25.9 ± 4.3). Diabetes (n=55, 35.8%) and hypertension (n=42, 27.2%) were similar in 2 groups, but cardiac disease was significantly higher [n=11 (7.3%) vs. 3.1%, p = 0.01] in the elderly compared to younger adults. Eight of these had non-critical coronary lesions and 2 patients required PTCA before transplant. Common etiologies compared to non-elderly population showed similar distribution of HBV (n=21, 13.9% vs. 16.7%, p=0.38), significantly less alcoholic liver disease (n=23, 15.2% vs. 31.1%, p=0.00), and significantly more HCV (n=57, 37.7% vs. 28.4%, p=0.018), HCC (n=59, 39.1% vs. 17.7%, p=0.00) and NAFLD / Cryptogenic (n=59, 39.1% vs. 18.8%, p=0.00). CTP and MELD scores were 9.0 ± 2.3 and 18.6 ± 5.6, respectively. Median ICU and hospital stay were 5 and 17 days, respectively, similar to younger adults (p=ns). In post-operative period, 9 (5.9%) patients had bile leak, 2 of them required surgical revision to Roux-n-Y hepatico-jejunostomy and the rest were managed conservatively. Twenty six (17.22%) patients had biliary stricture, 25 of them had ERCP stenting. Two patients had hepatic artery thrombosis (HAT), out of which one required a re-transplant. Post-operatively, 35 patients had infections (1 fungal, 28 bacterial and 10 CMV). 5 year patient and graft survival were 78.1% and 77.5% respectively, which was comparable to younger adults (p=0.145).

Conclusion: LDLT can be done successfully in elderly recipients with outcomes comparable to non-elderly group. In elderly recipients etiologies of HCV, NAFLD and HCC are higher, while alcoholic liver disease is lower as compared to non-elderly group. Elderly recipients have a significantly higher pre-transplant cardiovascular morbidity with need of cardiac interventions and merit a thorough cardiac evaluation.

Abstract # P-626

Management of Extensive Non-tumorous Portal Vein Thrombosis in Adult Living Donor Liver Transplantation. Deok-Bog Moon, Sung-Gyu Lee, Chul-Soo Ahn, Shin Hwang, Ki-Hun Kim, Eol Choi, Ja-Hyun Kwon, Gil-Chun Park, Hyung-Woo Park, Yo-Han Park, Bo-Hyun Jung, Sung-Hwa Kang. *Hepato-Biliary Surgery and Liver Transplantation, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea*

(Background) Patent portal vein (PV) and adequate portal inflow is essential for successful living donor liver transplantation (LDLT). In extensive portal vein thrombosis (PVT) patients, however, complete PV thrombectomy is not feasible particularly at intrapancreatic portion, and subsequently portal flow steal through preexisting sizable collaterals or rethrombosis can occur. To overcome those problems, we introduced interruption of sizable collaterals and intraoperative cine-portogram (IOP), which is useful for diagnosis and treatment of residual PVT and sizable collaterals. **(Methods)** Fourteen percent of adult LDLT (188/1399) had PVT from February 2008 to December 2012 and were subdivided into Yerdel's grade 1,2,3, and 4 based on preoperative imaging and operative findings. Considering the severity of PVT and presence of sizable collaterals, the managements were followings: thrombectomy alone, additional PV plasty, PV stenting, interposition graft, or additional interruption of collaterals. **(Results)** The Yerdel's grade of PVT patients were 1 (42%), 2 (54%), 3 (3%), and 4 (1%). One hundred one (77%) patients underwent interruption of sizable collaterals. The most common management for PVT was thrombectomy alone in grade 1 and 2, thrombectomy plus PV stenting and/or ballooning in grade 3, and interposition graft in grade 4. In LDLT for PVT patients, one-year mortality was 9% and PV related complication occurred in 5%. The severity of PVT made no difference in the outcome. **(Conclusion)** Multi-disciplinary approaches including surgical correction of PVT, IOP, and interruption of sizable collaterals resulted in excellent outcome, and it was not affected by the severity of PVT.

Abstract # P-627

Outcome of High Risk Recipients in Living Donor Liver Transplantation - Choosing the Best of the Worst. N. Sachidananda, P. Balachandran Menon, Punit Singla, Sumana R. Kolar, Prashanth Bhangui, Sanjay Goja, Amit Rastogi, Ravi Mohanka, Neeraj Saraf, Sanjiv Saigal, Vijay Vohra, Arvinder Singh Soin. *Institute of Liver Transplantation and Regenerative Medicine, Medanta the Medicity, Gurgaon, Haryana, India*

BACKGROUND

The "no donor competition" situation in living donor liver transplantation (LDLT) may pressurize the transplant team into accepting higher risk recipients than for deceased donor transplants. However, all LDLT must justify the potential risk to the donor. We studied the impact of major preoperative risk factors on the outcome of LDLT, which would allow better selection of high risk recipients in the future.

MATERIAL/METHODS

300 LDLT recipients between April 2011 to August 2012 were analyzed. Pediatric, emergency, dual Lobe (n=1), combined Liver Kidney and re-transplants were excluded. Recipient age (>60years), BMI (>30), model of end-stage liver disease (MELD) score (>24), Renal compromise, abnormal chest x-ray in previous 2 weeks, Sepsis (fever>38°F, TLC>12,000 and positive culture in previous 2 weeks), cardiac disease (more than 30% coronary arterial block and on medical management) and performance status were the risk factors studied. Univariate and multivariate analysis was done for the above risk factors and also the effect of combination of these factors was looked into for short term mortality (3- month/in-hospital mortality).

RESULTS

The overall 1 year survival in the cohort was 88.5% with mean Age (49+10yrs), MELD (17+6), Bilirubin (5.2+6.5), leucocyte count (5.2+2.7), INR (1.5+0.2), creatinine(n=0.9+0.6) and albumin (2.9+0.69). On univariate analysis performance status (p<0.04) and renal function (p<0.0) were significant. On multivariate analysis significant influence was shown by Performance status (p<0.03, OR 2.6, CI 1.1-6.1). Presence of HRS as a sole factor was associated with 16/37 (43%) as compared to 21/215 (10%) 1 year mortality (p<0.0). The risk of mortality at 1 year increased with increasing factors- 0 and 1(11%),2 (15%), 3 (25%), 4 (60%),5 (100%). Presence of 1 or less high risk factors was associated with 18/165 (11%) and 2 or more had 19/87 (21%) 3 month mortality (p<0.01).

CONCLUSIONS

High risk recipients defined by one of the above factors fare worse after LDLT compared to good risk ones. Reduction of high risk factors to 3 or less prior to transplantation can optimize results.

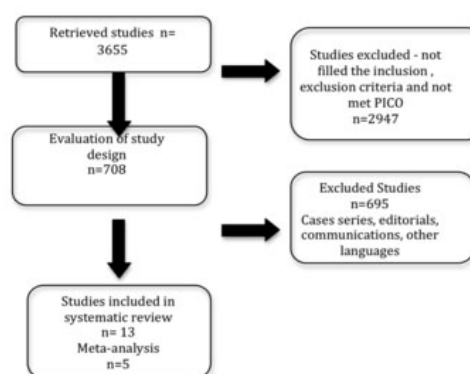
Abstract # P-628

Meta-Analysis on the Endoscopic Treatment of Liver Transplantation Biliary Stricture. Lucas S. Nacif, Wanderley M. Bernardo, Luca Bernardo, Wellington Andraus, Lucas Torres, Eleazar Chaib, Luiz C. D'Albuquerque, Fauze Maluf-Filho. *Gastroenterology, Liver and Gastrointestinal Transplant Division -University of São Paulo School of Medicine - LIM 37, Sao Paulo, Brazil*

Aim: Biliary strictures after liver transplantation (LT) are recognized as its Achilles' heel. The strictures are classified in anastomotic (ABS) and non anastomotic. The aim of this study was to review systematically the literature concerning ABS after LT and to organize a meta-analysis with the results. **Method:** A systematic review of the literature was performed on the management of ABS post-OLT. The Medline-PubMed, EMBASE, Scielo-LILACS, and Cochrane Databases were electronically searched. The search was completed in April 2013.

Results: No well-designed randomized controlled trial was found. Steps of articles selection.

Figure 1. Diagram of this systematic review showing the initial steps to select the articles and the included and excluded citations.



Most studies were retrospective or prospective comparisons in design. One study (86 patients) compared the endoscopic and the percutaneous accesses. The sustained clinical success rates were similar but the treatment duration was longer in the percutaneous group access. Two studies (56 patients) compared balloon dilation with balloon dilation and multiple plastic stents. There were no differences concerning sustained clinical success and complication rates.

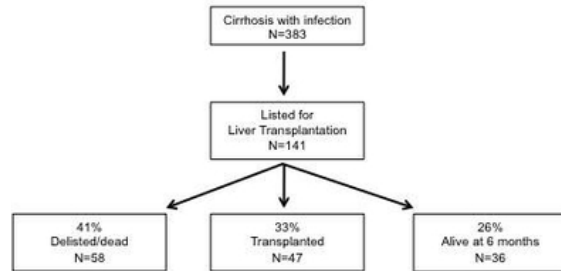
Conclusion: Whenever possible the endoscopic access is preferable compared to the percutaneous route. Balloon dilation is as effective as balloon dilation plus multiple plastic stenting for the resolution of the ABS. Well-designed randomized trials are still needed to compare balloon dilation versus multiple plastic stenting versus metallic stenting.

Abstract # P-629

The Risk of Delisting Or Death in Liver Transplant Candidates Increases Following Infections: Results from the NACSELD Consortium. J. G. O'Leary¹, J. S. Bajaj², F. Wong³, P. S. Kamath⁴, S. W. Biggins⁵, H. M. Patton⁶, M. B. Fallon⁷, G. Garcia-Tsao⁸, R. M. Subramanian⁹, B. J. Maliakkal¹⁰, R. Malik¹¹, L. R. Thacker², K. R. Reddy¹². ¹Baylor University Medical Center, TX, USA; ²Virginia Commonwealth University, VA, USA; ³University of Toronto, ON, Canada; ⁴Mayo Clinic, MN, USA; ⁵University of Colorado, CO, USA; ⁶UCSD, CA, USA; ⁷University of Texas Health Science, TX, USA; ⁸Yale University, CT, USA; ⁹Emory University, GA, USA; ¹⁰University of Rochester, NY, USA; ¹¹Beth Israel Deaconess, MA, USA; ¹²University of Pennsylvania, PA, USA

As MELD scores increase at liver transplant(LT), candidates are at risk for becoming too sick/dying while waiting. We aim to quantify the risk of delisting/death in cirrhotic patients awaiting LT following admission for an infection. **Methods:** NACSELD(North American Consortium for the Study of End-Stage Liver Disease) is a 17-center consortium of tertiary-care hepatology centers that prospectively enrolls infected cirrhotic patients. **Results:** Of the 383 patients evaluated, 141 were listed for LT. Patients' median age was 55, 58% were male, with a median MELD of 23. At 6-month

follow-up 41%(58/141) were delisted/died(Group A), 33%(47/141) were transplanted(Group B), and 26%(36/141) remain listed(Group C). The frequency and type of infection were similar among all 3 groups. MELD scores were highest in group a and lowest in group C (25, 24, 17, $p<0.001$). Group A also had the highest number of organ failures(3 or 4 organ failure Group A, B & C; 38, 11%, & 3% respectively, $p=0.003$). Organ failures were dominated by respiratory(40%, 15%, & 3% respectively, $p<0.001$) and circulatory failure(39%, 13%, 3%, $p<0.001$). Conclusions: Cirrhotic patients awaiting LT with infections have a 41% risk of delisting/death following admission for an infection, although the type of infection was no different among the groups. However, the number of organ failure was highly predictive of the risk for de-listing/death. Future strategies must focus on infection & organ failure prevention in listed cirrhotic patients.



Abstract # P-630

Initial Experience of Liver Transplantation in PNUYH. Sang Ho Bae², Young Mok Park¹, Kwang Ho Yang¹, Ki Myung Moon¹, Je Ho Ryu¹, Chong Woo Chu¹, Jeong Hee Kang³, Seo Yeon Oh¹.

¹Surgery, Pusan National University Yangsan Hospital, Yangsan, Republic of Korea; ²Surgery, Soonchunhyang University Hospital, Chunan, Republic of Korea; ³Organ Transplantation Center, Pusan National University Yangsan Hospital, Yangsan, Republic of Korea Introduction) Our team started liver transplantation(LT) program in a new hospital, Pusan National University Yangsan Hospital(PNUYH) in May 2010. Although beginning LT program has almost always accompanied by lots of trial and error and time consuming, we can overcome this problem through some efforts. Three of our five LT surgeons were trained in a major liver transplantation center in Korea for two to four years, and many faculties and nurses related to LT were also educated for one month in the same center. As a result we performed over 100 LTs for 3 years successfully.

Methods) From May 2010 to March 2013, 100 LTs performed in PNUYH were reviewed retrospectively.

Results) 62 cases of living donor LT(LDLT) and 38 cases of deceased donor LT(DDLT) were performed. All cases underwent without portosystemic shunt. We commonly used caudal middle hepatic vein preserving right lobe from May 2012. 21% of LDLT was carried out without transfusion and all donor operations were also performed with no transfusion. No living donor mortality was encountered and morbidity occurred in 6.5%. All donors recovered to their normal activity after discharge. 54% of recipients were combined with HCC and it was mainly related with hepatitis B(78%). Their one year survival rate was 94.2% and recurrence free survival was 83.5%. Recurrence rate was 5.3% in inner Milan criteria and 31.3% in above Milan criteria. 22.6% of LDLT recipients has MELD score over 20. Their one year survival rate was 81.8%. One recipient that had biliary cirrhosis developed hepatic artery thrombosis after LDLT. The patient underwent retransplantation and recovered well. Outflow problem occurred in 16.1% and biliary complication was accompanied in 19.4%.

Conclusion) Our team experienced many LT cases for relatively short period and early results were comparable with other major centers. It might be a result of dedicated efforts and excellent teamwork.

Abstract # P-631

An Experience of Liver Transplantation in Patients With Nodular Regenerative Hyperplasia. Venkata Rajanikanth Patcha, Elissaios Kontis, Yamen Jabri, Parthi Srinivasan, Andreas Prachalias, Krishna Menon, Wayel Jessum, Hector Vilca-Melendez, Kosh Agarwal, Abid Suddle, Varuna Aluvihare, Michael Heneghan, John O'Grady, Alberto Quaglia, Yoh Zen, Mohammed Rela, Nigel Heaton. Liver Transplant, Institute of Liver Studies, Kings College Hospital, London, United Kingdom

Background: Nodular regenerative hyperplasia (NRH) is a cause of non-cirrhotic portal hypertension. It can also lead to liver failure and may in rare cases require liver transplantation.

Aim: The aim of this study was to assess the experience and outcomes obtained with Liver transplantation for symptomatic NRH.

Patients and methods:

In this retrospective study from 1999 to 2013, we identified 13 patients with NRH who underwent liver transplant out of 2400 transplants. We retrieved data regarding all patients with NRH from liver histology database. We excluded patients with cirrhosis and NRH. We also excluded patients with NRH when the main indication for transplantation was end-stage liver disease not related to NRH (e.g. viral disease, Budd-Chiari syndrome). We studied the clinical characteristics, indications for transplantation, histology and survival of this group of patients.

Results: We identified 88 patients with NRH. 75 patients were excluded due to co-existing reasons for NRH (e.g. HCV, PBC, Budd-Chiari syndrome). 13 patients were identified with NRH who underwent liver transplant. Only a quarter had a pre-operative diagnosis of NRH. Mean age was 40 years (range from 7 to 66). Main clinical findings were ascites (77%), hepatic encephalopathy (61%) and oesophageal varices (69%). 6 patients had identifiable drug related causes for NRH, 6 had Portal Vein thrombosis, 2 had procoagulant disorders (protein S deficiency, factor 5 Leiden heterozygote) and 4 had associated Hepato- Pulmonary syndrome. 4 other patients had Rheumatoid arthritis, sarcoid, lymphoma and common variable immunodeficiency syndrome. Mean follow up after transplant was 6 years 3 months (range 2 -179 months). 5 year graft and patient survival rate was 90% and 76 % respectively. Two patients had recurrence of NRH (1 retransplanted, other died.)

Conclusion: Nodular regenerative hyperplasia is a rare indication for liver transplantation. Outcomes in the medium term are satisfactory.

Abstract # P-632

Towards a Predictive Score of Enhanced Recovery and Early Discharge from Hospital after Liver Transplantation (ERALT). Federico Piñero, Martín Fauda, Manuel Mendizabal, Ariel Gonzalez Campaña, Diego Arufe, Silvina Montal, Franco Nieves, Mariano Barreiro, Pía Raffà, Oscar Andriani, Marcelo Silva, Luis G. Podesta. Liver Unit, Hospital Universitario Austral, Pilar, Buenos Aires, Argentina

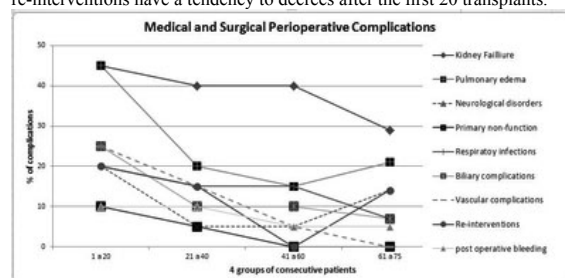
The impact of Enhanced recovery and early discharge following Liver Transplantation (ERALT) on short or long-term results is unknown. We sought to identify variables associated with ERALT and propose a Predictive Score. Patients and Methods: 226 consecutively transplanted adult patients were included; 36 patients (13.7%) with in-hospital mortality were excluded. ERALT=length of hospital stay ≤ 8 days. Proportional points from Odds ratios (OR, 95% CI) from multivariate logistic regression analysis were assessed to establish the ERALT Predictive Score. Results: 20 patients underwent ERALT (8.8%). Significant differences were observed between patients with/without ERALT: pre-LT Intensive Care Unit stay (0% vs 18%, $P=0.04$), MELD score (13.5 ± 8.6 vs 18.9 ± 9.8 , $P=0.02$), MELD exception points (40% vs 14%, $P=0.002$), pre-LT creatinine ≤ 0.7 mg/dl (60% vs 33%, $P=0.018$), pre-LT albumin ≥ 2.8 g/dl (75% vs 47%, $P=0.023$), pre-LT ascites (20% vs 45%, $P=0.039$), surgery duration < 4 hours (25% vs 4%, $P<0.0001$), < 5 units of blood products requirement (50% vs 14%, $P<0.0001$), early weaning from mechanical ventilatory support (90% vs 54%, $P=0.007$) and post-LT microbial infection (0% vs 36%, $P=0.001$). Similar acute cellular rejection, short-term re-hospitalization, and patient and graft survival rates were observed between patients with/without ERALT. A Predictive ERALT Score was calculated [0-7 points; AUROC of 0.77 (0.67 to 0.88, $P<0.0001$), 55% sensitivity and 82% specificity for a cut-off ≥ 3 points]. Parameters assigned points included: pre-LT creatinine ≤ 0.7 mg/dl OR 3.97 (1.35-11.65, $P=0.012$; 1 point), pre-LT albumin ≥ 2.8 g/dl OR 3.47 (1.31-9.16, $P=0.012$; 1 point), surgery time ≤ 4 hs OR 6.07 (1.56-23.57, $P=0.009$; 2 points), < 5 units of blood OR 3.92 (1.42-10.83, $P=0.008$; 1 point) and early weaning OR 6.46 (1.36-30.59, $P=0.019$;

2 points) (Figure 1). A prospective validation cohort was evaluated applying the ERA LT Score (n=33), AUROC of 0.74 (CI 0.56-0.91; P=0.02) (Figure 2). Overall LT costs were significantly lower in those patients with ERA LT (\$29,930 vs \$71,274; P<0.0001). Conclusions: The ERA LT Predictive Score may be prospectively implemented in order to reduce hospitalization costs after LT in low-income countries.

Abstract # P-633

Learning Curves Analysis of the Liver Transplant Program in Uruguay. Karina Rando, Jimena Prieto, Josemaria Menendez, Marcelo Valverde, Martín Abellieira, Jorge Castelli, Paola Scalone, Solange Gerona, Alejandro Leites, Julio Medina, Alejandro Ettlin, Gustavo Grecco, Victoria Mainardi, Adriana Roca, Martín Harguindeguy. *Unidad de Trasplante Hepático, Hospital Militar, Montevideo, Uruguay*

The minimal experience for liver transplant teams to be considered technically competent is not well established. Minimize the learning curve by training the team and international mentorship was a major objective of the Uruguayan program. The aim of this work is to describe the learning curves of our team and assess their effect in outcomes. Methods: A prospective database was searched to identify outcomes and mortality. A total of 79 transplants were performed since July 2009. Results: The 4 patients with acute liver failure died and 6 with non-acute liver failure. Considering those 6 deaths, 5 were in the perioperative period (6.7%) and 1 six month later (recurrence of malignancy). Seventy-five transplanted patients, excluding those with fulminant liver failure (4 patients), were analysed in 4 consecutive groups of 20, 20, 20 and 15 cases. MELD score average was similar in the 4 groups (21, 22, 20 and 17). In the first 40 patients perioperative mortality was 12.5% and in the last 35 patients it was 2.8%. The incidence of primary non-function was 4% (3 patients) and they were presented in the first 2 groups. Cold ischemia time, perioperative renal failure, respiratory infections, biliary complications, vascular complications and plasma transfusion decreased mildly and constantly. Postoperative pulmonary edema, neurological disorders and re-interventions have a tendency to decrease after the first 20 transplants.



Extubation in the operating room rate increased from 85% (1st group) to 93-95% (2nd, 3rd and 4th groups). Wound and CMV infection increased in the 3rd group and decreased in the last period accordingly with changes in prophylactic protocols. Length of hospitalisation, intensive care unit staying, surgical time and red cells transfusion remain stable. Conclusion: Even though, it was possible to minimize the learning curve, outcomes improved after the first 40 patients.

Abstract # P-634

Long Way To Go for Deceased Donor Liver Transplantation in India: Comparison of Outcomes of Living Donor and Deceased Donor Liver Transplantation from a Single Centre. Mettu S. Reddy, Akila Rajkumar, Manoj Shrivatsav, Rajesh Rajalingam, Joy Vargese, Thomas Cherian, Vivekanandan Shanmugham, Rajasekhar Perumalla, Olithselvan Olithselvan, Dinesh K. Jothimani, Mohamed Rela. *Institute of Liver Disease & Transplantation, Global Hospital, Chennai, Tamil Nadu, India*

Introduction

Progress in Deceased donor liver transplantation (DDLT) in India has been slow due to lack of an organized structure to facilitate organ donation. Our unit has been offering DDLT and LDLT for patients with ESLD since August 2009. We present our data of adult liver transplants and compare outcomes between DDLT and LDLT.

Methods

Data regarding all adult liver transplants (age>18 years) performed between Aug 2009 and Nov 2013 was analysed. Patient demographics, disease

severity, peri-operative morbidity and outcomes in the DDLT and LDLT cohorts were compared. Multivariate analysis of risk factors for recipient mortality was done.

Results

200 adult transplants were completed in the study period. There were 118 LDLT (59%) while 82 DDLT (41%). Median recipient age was 50 years (DDLT: 52 years, LDLT: 48 years, ns). Median MELD score at transplant was 17 (DDLT: 17, LDLT: 17, ns). Waiting times (DDLT: 145 days, LDLT: 43 days, p=0.01) and graft cold ischemia times (DDLT: 450min vs 75min, p<0.001) were significantly different. DDLT cohort had significantly higher red cell transfusion requirement (7 vs 5, p=0.002), primary non function (4.9% vs 0, p=0.018), initial poor function (26% vs 2%, p=0.01) and incidence of organ failure (25.6% vs 13.5%, p=0.033). Morbidity in the LDLT cohort was primarily related to biliary complications (18.9% vs 2.5%, p=0.001). The one-year survival was not statistically different (DDLT: 82.9%, LDLT: 90.7%, p=0.103). Multivariate analysis of in-hospital mortality identified massive transfusion (>10 units) as the common risk factor in both LDLT (p=0.012) and DDLT cohorts (p=0.018). In the DDLT cohort, patients receiving imported liver grafts had significantly higher mortality (p=0.005). Deceased donor transplantation with an out-of-city graft was the strongest independent predictor of mortality with an odds ratio of 4.67 (95% ci: 1.3,15.8).

Conclusions

Peri-operative morbidity is significantly higher in the DDLT cohort, more so for grafts imported from peripheral hospitals. Improvement in donor management, and better coordination of the organ recovery process is necessary to improve the utilization of liver grafts recovered from these donors.

Abstract # P-635

Negative Fluid Balance with CRRT during Orthotopic Liver Transplantation. Hyun Su Ri¹, Sang-Wook Shin¹, Chong Woo Chu², Je Ho Ryu², Ki Myung Moon², Kwang Ho Yang², Young Mok Park². ¹Anesthesia and Pain Medicine, Pusan National University Yangsan Hospital, Yangsan, Gyeongnam, Korea; ²Department of Surgery, Pusan National University Yangsan Hospital, Yangsan, Gyeongnam, Korea

Orthotopic liver transplantation (OLT) can be needed to liver cirrhotic patients accompanied with a hepatorenal syndrome. During the OLT, to maintain a volume of the patients strictly would be a challenge. Especially during a neohepatic stage, overloading of volume could cause a fatal outcome. If postreperfusion syndrome happens with CVP over 15 mmHg, active venesection is sometimes considered. Recently, continuous renal replacement therapy (CRRT) is used in patients with OLT candidate for renal support. CRRT has an advantage for hemodynamic stability and can be another solution for overloaded volume to be removed. This is a case presentation about fluid management of the hepatorenal syndrome patient with CRRT during OLT.

Abstract # P-636

Nurse Experience in Simultaneous Pancreas and Kidney Transplantation for Liver Transplant Recipients With Diabetes and Uremia. Lihan Rui, Qiaoling Zeng, Yingcui Liu. *The First Affiliated Hospital to Sun Yat-sen University, Guangzhou, China*

Objective To summarize the experience of managing patients undergoing simultaneous pancreas and kidney transplantation (SPK) after liver transplantation.

Methods The clinical data of two patients who received SPK more than 5 years after liver transplantation were retrospectively analyzed. Both of the two patients suffered from end stage uremia due to diabetic nephropathy and immunosuppressant's induced toxicity, we have summarized the managing and nursing experience.

Results SPK was successfully applied to these two patients without serious surgical complications such as pancreatitis, graft and pancreatic fistula, the immunosuppressive regimen were based on tacrolimus with ATG induction, MMF and steroids. In the second case, serum creatinine decreased to normal range within 1 week after the operation and then elevated continuously even he received empirical anti-rejection treatment, FK506 was tampered and rapamycin was used when the renal graft biopsy indicated drug toxicity, and creatinine decreased 3 weeks after the operation and recovered to normal range since 5 weeks post-transplant. Both of the two patients achieved euglycemia with insulin independence about 10 days after the operation. And now these two patients have been followed up for 36 and 9 months, the grafts function of liver, kidney and pancreas was normal.

Conclusions Immunologic reaction in patients undergoing simultaneous pancreas and kidney transplantation after liver transplantation seems more complex, nursing of the patients with graft rejection and monitoring the graft function will be important to improve the patients outcome.

Abstract # P-637

Hepatic Resection Versus Liver Transplantation in Treatment of HCC. Tarek Salah¹, Mohamed Wahab², Mohamed Morsy Shoubary³, Ahmed Mohamed Soutan⁴, Amr M. Yassen⁵, Mohamed Saadany⁶, Usama Shiha⁷. ¹Digestive Surgery, Gastroenterology Surgical Center, Mansoura, Dakahlia, Egypt; ²Digestive Surgery, Gastroenterology Surgical Center, Mansoura, Dakahlia, Egypt; ³Digestive Surgery, Gastroenterology Surgical Center, Mansoura, Dakahlia, Egypt; ⁴Digestive Surgery, Gastroenterology Surgical Center, Mansoura, Dakahlia, Egypt; ⁵Anesthesiology and Intensive Care, Gastroenterology Surgical Center, Mansoura, Dakahlia, Egypt; ⁶Hepatology and Gastroenterology, Gastroenterology Surgical Center, Mansoura, Dakahlia, Egypt; ⁷Radiology, Gastroenterology Surgical Center, Mansoura, Dakahlia, Egypt
Introduction: HCC is the third most common cause of cancer death. The median survival in unresectable cases is less than 4 month and under a year for untreated patients with less advanced disease. Liver resection or associated with high incidence of recurrence, Liver transplantation Is the most attractive therapeutic option because it remove both detectable and undetectable tumor nodules. Patient & Methods : From 2004 – 2012 (140 cases with HCC treated by resection, 78 cases the tumor was less than 6 cm) , 85 treated by LDLT with main age 45.9, /50Y, M/F 64/14, 5/80, Meld (M 9.3, 21.5) respectively .Results :Tumor size (<6 62, 75), tumor No (single 60 54) , AFP (M 637, 41) vascular invasion(21 %, 5 %) Flow up (M 17.2, 18.6M) hospital mortality was (5 %, 8%) survival was (65%, 89%) Recurrence (39%,5%). Conclusion: Liver resection for HCC is treatment of choice most of cases & liver transplantation may be the main line of treatment in selected cases of HCC.

Abstract # P-638

Referral Patterns, Adherence to AASLD Guidelines and Outcomes in Patients Referred for a Liver Transplant. Jayshri Shah, Ankur Shah, Vinay Kumaran. Hepatology and Liver Transplantation, Kokilaben D Ambani Hospital(KDAH), Mumbai, India; Liver Transplantation, KDAH, Mumbai, India; Liver Transplantation, KDAH, Mumbai, India

Background:

AASLD guidelines recommend, cirrhotic patients should be referred for liver transplantation (LT) at onset of first complication or hepatic dysfunction (CTP ≥ 7 ; MELD ≥ 10). Aim of this study was to analyse the referral source, adherence to AASLD guidelines and outcomes in patients referred for LT.

Methods

This prospective study was conducted at tertiary centre from Feb-Nov 13. Data was collected on patient characteristics, Childs Score, MELD, decompensation episodes (ascites, variceal bleed, encephalopathy) prior to referral with outcomes. Referral source identified as: General practitioners (GP), Internal medicine physicians (MD), liver specialists (LS), self.

Results:

Total 124 patients. (Male: Female-90:34, Median age 53) were referred for LT. After evaluation, patients were divided into 3 groups to assess outcomes
Group A- Too early for transplant (n=21)

Group B- Eligible for transplant (n=91) , these were further split into B1(had LT n=27, LDLT n=25, DDLT n=2), B2- 34 patients listed for DDLT. 9/34 switched to LDLT (condition deteriorated after 6 weeks on DDLT list) and 8/25 (35%) died on the waiting list. B3 (Needed LT but refused n=39).
Group C- Too sick to be transplanted. (n= 12)

All Group C patients (median MELD score 30, Childs score ≥ 10 and median decompensation episodes=4) and 57% Group B patients including 8 patients who died on waiting list and 9 who switched to LDLT (, median MELD =26, Childs score ≥ 10 median decompensation episodes =3) were very sick at time of initial referral. 24% of referrals (21 Group a, 9/91 Group B) adhered to AASLD guidelines. 14.5 % (18/124) patients referred were managed by LS.

Analysis of patients referred for liver transplant

	Group A (n=21)	Grp B1 (n=27)	Grp B2 (n=25)	Grp B3 (n=39)	Grp C (n=12)
MELD					
Range	10-13	12-30	11-30	10-30	26-34
Median	11	18	19	17	30
Mean	11	19.2	19.4	18.8	29.7
Childs Score					
A	3	0	1	2	0
B	18	7	9	24	0
C	0	20	15	13	12
Decompensation					
Episode					
Range	0-2	1-4	1-5	1-5	3-5
Median	1	2	3	3	4
Mean	1	2.1	2.4	2.3	3.9
Referral Source					
GP	1	2	5	12	8
MD	10	17	14	18	3
LS	3	6	3	5	1
Self	7	2	3	4	0

Conclusions:

Poor adherence to AASLD guidelines affects outcome of patients referred for LT. This is due to deficiencies at referral level. There is urgent need to educate doctors looking after patients with decompensated liver disease to improve timely access of patients to LT.

Abstract # P-639

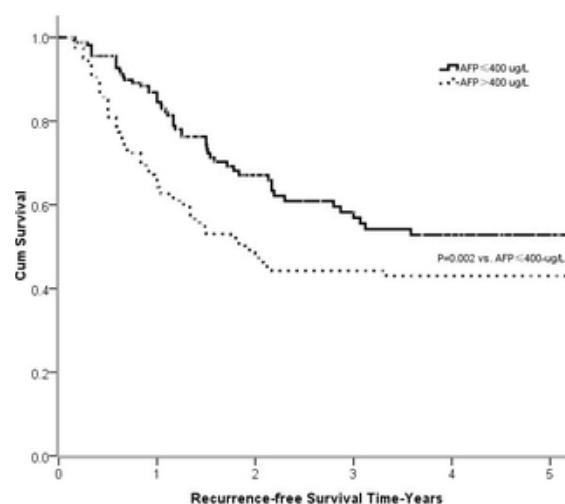
Preoperative Elevated Alpha Fetoprotein Increases Tumor Recurrence of Hepatocellular Carcinoma after Liver Transplantation. Guangqin Xiao, Shu Shen, Jiayin Yang, Lunan Yan. Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, China

Background: Whether elevated preoperative serum alpha-fetoprotein (AFP) has negative impact on prognosis of hepatocellular carcinoma (HCC) after liver transplantation (LT) has recently become a subject of debate. We aim to validate the effect of AFP on prognosis of hepatitis B virus related HCC after LT.

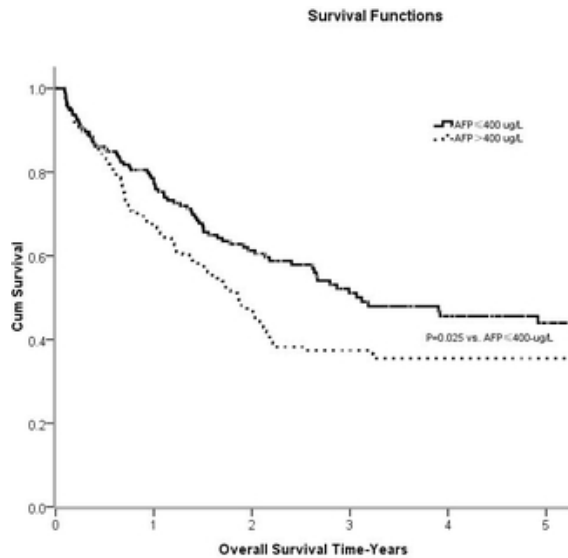
Methods: We divided the patients enrolled in this study into three groups by different AFP values (group A: AFP < 20 ug/L, group B: AFP 20–400 ug/L, group C: AFP > 400 ug/L). Chi-square test or Fisher's exact test were used to analyze the demographic and clinical variables of these three groups. Kaplan-Meier analysis was used to compare the recurrence-free survival (FRS) and overall survival (OS) of HCC. Univariate and multivariate COX regression analysis were used to analyze the significant predictors of HCC after LT.

Results: Of the included 348 patients, there were 85 cases in group A, 89 cases in group B and 174 cases in group C. It showed that there were significant difference in largest tumor size > 5cm (P < 0.001), total tumor size > 9cm (P < 0.001) and vascular invasion in these three groups. The 1-, 3- and 5-year DFS rates of patients with AFP < 400 ug/L vs. AFP > 400 ug/L were 86.9%, 58.2% and 52.8% vs. 66.4%, 44.2% and 43.0%, respectively (P = 0.002).

Survival Functions



The 1-, 3- and 5-year OS rates of patients with AFP < 400 ug/L vs. AFP > 400 ug/L were 78.5%, 51.1% and 44.0% vs. 67.6%, 37.4% and 35.5%, respectively (P = 0.025).



Univariate and multivariate analysis demonstrated that 3 factors, including AFP>400 (P=0.002), were significant predictors for tumor recurrence of HCC after LT.

Conclusions: It is shown that the higher elevated preoperative serum AFP had obviously adverse effect on prognosis of HBV related HCC after LT.

Abstract # P-640

Living Donor Liver Transplantation in Acute-on-Chronic Liver Failure- Selection, Timing and Outcome. P. Singla, N. Saraf, V. Velayutham, V. Raut, E. Kumaran, P. Bhangui, S. Ramachandra, B. Menon, S. Goja, A. Rastogi, R. Mohanka, N. Mohan, S. Saigal, A. Soin. *Medanta Liver Institute, Gurgaon, India*

Introduction:

Acute on chronic liver failure (ACLF) is an increasingly recognized entity resulting from acute deterioration of liver function in patients with underlying liver disease. There is little published data on role and outcome after Liver Transplantation (LT). Our aim was to analyse selection criteria, timing and outcome in ACLF patients after living donor liver transplantation (LDLT).

Patients and methods

ACLF was defined as acute hepatic insult (excluding sepsis and variceal bleed) manifesting as jaundice and coagulopathy, complicated within 4 weeks by ascites and/or encephalopathy in a patient with chronic liver disease (APASL, 2009). Patients were offered LT based on CTP and MELD score after optimizing those with sepsis and renal dysfunction. The study cohort were ACLF patients transplanted from September 2005 to June 2013. A non-transplant cohort of ACLF patients was also analysed.

Results

Of 32 patients (19 males) with ACLF who underwent LDLT, 21 (65%) were adults (mean age 41 years) and 11 (36%) children (mean age 9 years). Median CTP, MELD and PELD scores were 11 (9-13), 31 (21-40), and 35 (24-51) respectively. Causes of acute insult in adults were cryptogenic (11), medication (6), viral (3) and Wilson's (1); for chronic disease were cryptogenic (9), alcoholic (8), HBV (2), Wilson's and autoimmune (1 each). In children, causes were Wilson's (6), cryptogenic (4) and viral (1). Median "diagnosis to LT duration" was 9 days (1-26). Graft used in LDLT were right, left and left lateral in the ratio 22:5:5. Median ventilatory requirement, ICU and hospital stay were 1, 6 and 30 days. One month survival rate was 90%; commonest cause of mortality was sepsis.

Median follow up was 29 months, morbidity was 34% and actuarial survival at 5 years was 88%, which is comparable to patients undergoing LT for chronic liver disease and fulminant hepatic failure. There was no donor morbidity above Clavien grade 2, or mortality.

In the last 2 years, 8 patients with ACLF did not undergo LT due to lack of donors, despite being medically suitable. Of these, 5 (62%) expired within a month of diagnosis.

Conclusion: Early LDLT has excellent results in ACLF patients with high CTP, MELD/ PELD scores provided they are free of sepsis and renal dysfunction at time of transplantation. This group has a high mortality without transplantation.

Abstract # P-641

Quality of Life in Liver Transplant Candidates: Frailty May Be a Better Indicator Than Severity of Liver Disease. Angela E. Thelen, Jordan E. Derck, David C. Cron, Jeffrey F. Friedman, Ashley D. Gerebics, Michael J. Englesbe, Christopher J. Sonnenday.

Transplant Surgery, University of Michigan, Ann Arbor, MI, USA
End stage liver disease (ESLD) patients exhibit a diminished quality of life compared to the general population. While it is often assumed that severity of liver disease is associated with poor quality of life in ESLD patients, it has not been well studied. As part of a large prospective study of frailty in ESLD patients, we studied the association of frailty and quality of life.

In a prospective, single-center cohort study (N=542) we assessed frailty and quality of life in patients with ESLD referred for liver transplant. Frailty was measured on a scale from 0 to 5 by grip strength, gait speed, exhaustion, shrinkage, and physical activity, with scores ≥ 3 characterized as frail. Physical, mental, and overall quality of life scores ranging from 0 to 100 were assessed using SF-36. Pearson's correlation and multiple linear regression were used to identify variables associated with quality of life.

Quality of life was notably low in the study cohort (mean: physical=42.9 $\pm$ 24.4; mental=58.0 $\pm$ 23.6; overall=50.2 $\pm$ 22.3). Overall quality of life was moderately correlated with frailty ($r=-0.53$, $P<0.001$) and weakly correlated with MELD ($r=-0.20$, $P<0.001$). In multivariate analysis adjusted for demographic and clinical characteristics, frailty was significantly associated with physical (slope=-18.95, 95% CI=-22.88 to -15.03, $P<0.001$), mental (slope=-15.90, 95% CI=-19.77 to -12.04, $P<0.001$), and overall quality of life (slope=-16.67, 95% CI=-20.28 to -13.07, $P<0.001$). MELD dropped out of all models except overall quality of life ($P=0.057$). The figure displays a stepwise decrease in unadjusted overall quality of life by frailty score. The most frail patients had quality of life scores 2.2 times lower than the least frail patients ($P<0.001$). Diminished quality of life appears to be more significantly associated with frailty than severity of liver disease in ESLD patients. With further study, if frailty is shown to be a remediable condition, targeted programs may help decrease frailty and improve quality of life in ESLD patients.



Abstract # P-642

DIAMOND: Preserving Renal Function (RF) Over 24 Wks with Prolonged-Release Tac in De Novo LTx Pts by Baseline (BL) eGFR/MELD. G. Tisone¹, J. Klemmpnauer², W. Bechstein³, J. Pirenne⁴, S. Friman⁵, A. Zhao⁶, H. Isoniemi⁷, L. Rostaing⁸, U. Settmacher⁹, M. Brown¹⁰, N. Undre¹¹, P. Trunecka¹².

¹*Policlinico di Tor Vergata, Italy;* ²*Hannover Medical School, Germany;* ³*Goethe University Hospital and Clinics Frankfurt, Germany;* ⁴*University Hospitals Leuven, Belgium;* ⁵*Sahlgrenska University Hospital, Sweden;* ⁶*Vishnevsky Institute of Surgery, Russian Federation;* ⁷*Helsinki University Hospital, Finland;* ⁸*University Hospital Toulouse, France;* ⁹*University Hospital Jena, Germany;* ¹⁰*Astellas Pharma Inc, USA;* ¹¹*Astellas Pharma Europe Ltd, United Kingdom;* ¹²*Transplantcentre IKEM, Czech Republic*

Investigate the effect of BL eGFR/MELD on RF with Tac QD.

Arm 1 Tac QD (initial dose: 0.2mg/kg/day); Arm 2 Tac QD (0.15-0.175mg/kg/day)+bas; Arm 3 Tac QD (0.2mg/kg/day delayed to Day 5)+bas. All received MMF+1x bolus steroid only. Primary analyses: eGFR (MDRD4); sub-analyses: eGFR by BL eGFR<60/ $\geq$ 60ml/min/1.73m² and MELD $\leq$ 25/>25 (calculated retrospectively). Both FAS, Wk 24.

283, 287 and 274 in Arms 1-3. BL characteristics were comparable. Mean Tac QD trough levels were initially lower in Arm 2 vs 3, comparable by Day 30; Arm 3 delayed until Day 5, comparable by Day 14. Wk 24 eGFR Arms 2/3

vs 1: 76.4, 73.3 vs 67.4mL/min/1.73m² (p=0.001, 0.047). BL eGFR≥60mL/min/1.73m²: change to Wk 24 was less for Arm 2 vs 1 (p=0.0231). BL eGFR<60mL/min/1.73m²: RF was improved in Arm 2 vs 1 (p=0.0133; table). MELD≤25: change in eGFR was less in Arms 2/3 vs 1 (-24.1/-26.2 vs -33.6mL/min/1.73m²; p=0.0094, 0.048); MELD>25: numerically less in Arms 2/3 vs 1 (3.5/-4.4 vs -13.7mL/min/1.73m²; p=0.1569, 0.4427).

eGFR at BL/Wk 24 by eGFR≥0/<60mL/min/1.73m²

	eGFR<60mL/min/1.73m ²			eGFR<60mL/min/1.73m ²		
	Arm 1 (n=222)	Arm 2 (n=221)	Arm 3 (n=219)	Arm 1 (n=56)	Arm 2 (n=62)	Arm 3 (n=50)
BL, mean (SD)	103.9 (31.6)	104.6 (31.6)	101.2 (26.7)	41.2 (15.7)	36.3 (18.2)	40.0 (15.7)
Wk 24, mean (SD)	65.8 (31.6)	74.9 (36.1)	68.6 (33.4)	39.0 (29.9)	48.5 (34.6)	55.1 (25.9)
Change from BL, mean (SD)	-38.1 (37.8)	-29.7 (41.7)	-32.6 (36.9)	-2.2 (29.0)	12.1 (33.3)	15.1 (30.6)
P value (change from BL)						
	Arm 1 vs 2	Arm 1 vs 3	Arm 2 vs 3	Arm 1 vs 2	Arm 1 vs 3	Arm 2 vs 3
	0.0231	0.1372	0.4340	0.0133	0.0049	0.6227

Pts with missing data were excluded

At Wk 24, initial low-dose Tac QD (0.15–0.175mg/kg/day)+MMF+bas (without maintenance steroids) conferred a RF advantage regardless of BL RF vs the other arms. For eGFR<60mL/min/1.73m² at BL, both Arms 2/3 offered an advantage vs Arm 1.

DISCLOSURE: Klemmner, J.: Other, Astellas, Support, Novartis, Support, Roche, Support, BMS, Support, Genzyme, Support., Bechstein, W.: Other, Astellas, Honoraria, Astellas, Advisory boards., Friman, S.: Other, Astellas, Honoraria, Roche, Honoraria, BMS, Honoraria., Isoniemi, H.: Other, Astellas, Consulting fee and advisory boards, Roche, Advisory boards., Brown, M.: Employee, Astellas., Undre, N.: Employee, Astellas., Trunecka, P.: Other, Astellas, Advisory boards and consultancy agreements, Pfizer, Speaker honoraria.

Abstract # P-643

Impact of New Onset Comorbidities Following Liver Transplantation on Long-Term Survival. Chutwchai Tovikkai^{1,2}, Susan C. Charman^{1,3}, Raaj K. Praseedom^{2,4}, Alexander E. Gimson⁴, Jan van der Meulen^{1,3}. ¹Clinical Effectiveness Unit, Royal College of Surgeons of England, London, United Kingdom; ²Department of Surgery, University of Cambridge, Cambridge, United Kingdom; ³Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, United Kingdom; ⁴Liver Transplant Unit, Addenbrooke's Hospital, Cambridge, United Kingdom

Introduction

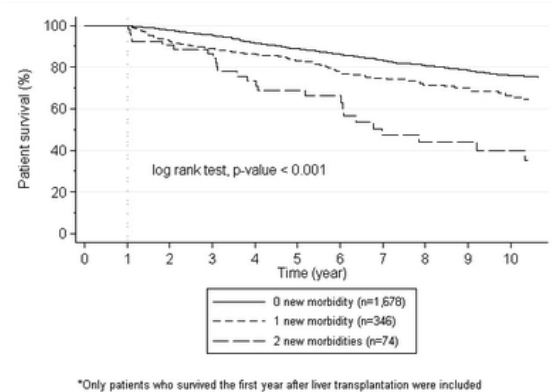
Long-term survival after liver transplantation has improved over the last decade. As a result, the prognostic significance of new onset comorbidities after liver transplantation has become increasingly important.

Methods

We analysed 3,827 adult patients who received an elective liver transplant between 1997 and 2010 in England as recorded in the UK Liver Transplant Audit database. Newly-developed comorbidities were identified through linkage with Hospital Episode Statistics, an administrative database capturing all English National Health Service hospital admissions. Post-transplant cumulative incidence of each comorbidity was estimated using Kaplan-Meier methods. We compared post-transplant survival according to the number of new comorbidities at 1 year after liver transplantation, in those patients who had no pre-transplant comorbidity and who survived the first year after transplantation.

Results

Chronic renal disease, diabetes mellitus and atherosclerosis were the three most common new comorbidities at 1 year (cumulative incidence of 10%, 7% and 5%, respectively). Of the 2,098 patients who had no comorbidity at the time of transplant, 21% developed one comorbidity and 4% developed at least two comorbidities within the first year after transplant. Patients who developed new comorbidities in the first year after transplant had significantly lower survival than those who did not (log rank test p<0.001). 10-year survival was 76%, 66% and 40% for patients with no, one and two new comorbidities, respectively.



Conclusion

The development of new comorbidities arising after liver transplantation has a significant impact on long-term survival. Patients who develop new comorbidities early after liver transplantation may benefit from more intensive clinical monitoring and management.

Abstract # P-644

Management of Infection and Selective Intestinal Decolonization of Carbapenem-Resistant Enterobacteriaceae in Liver Transplant Recipients. Anita Verma, Nigel Heaton, Marie O'Meara, John O'Grady, Anil Dhawan. *Institute of Liver studies, King's College Hospital, London, United Kingdom*

Objective: We reviewed the experience of single and combination antibiotic therapy for treatment of infections due to Carbapenem-Resistant Enterobacteriaceae (CRE) & to investigate if intestinal carriage of CRE can be eradicated in liver transplant recipients (LTR).

Methods: Active surveillance for CRE was started in September 2012 for pediatric & in May 2013 for adult LTR. Antibiotic choice was based on sensitivities for CRE & tested for synergy with combination of antibiotics.

Results: Fifteen LTR had CRE mainly *Klebsiella spp*: 11 Verona Integron metallo-beta-lactamase (VIM-4), 3 New Delhi metallo-beta-lactamase (NDM), 2 carbapenem-hydrolyzing oxacillinase (OXA). All CRE were resistant to ertapenem. CRE were sensitive to: 35% to meropenem, colistin (100%), tigecycline (50%) & fosfomycin (40%). Combination of colistin with rifampicin showed synergy for CRE in vitro & was used for LTR with mildly abnormal LFTs. Four patients had CRE bacteraemia: all treated using combination of colistin with high dose meropenem (2) or with fosfomycin (2). Seven patients had empirical therapy with IV colistin ± high dose meropenem (2, if MIC value was 4-16micgram/L) or rifampicin (2) or fosfomycin (2) or tigecycline (1).

Selective intestinal decolonization (SID): Eight patients had SID patients 1-6 had VIM & 6-8 had NDM (Table). Patients 1 & 2 single drug use oral colistin resulted in colistin resistance. Median duration for follow up was 4weeks (range 1-28weeks).

Table: Selective intestinal decontamination (SID) in post LTR with CRE

Patients	Age (Years) / Sex	Antimicrobials for SID x duration in days	Follow up period in weeks, CRE rectal or stool screen swabs (SS) negative (-ve) or positive (+ve)
1	1.2/M	Oral Colistin x 5	1, SS+ve
1	2/M	IV meropenem + oral fosfomycin x 10	24, SS-ve
2	4/M	Oral colistin x 7	1, SS+ve
2	4/M	IV high dose meropenem + fosfomycin x14	28, SS-ve
3	1.1/F	Oral colistin + IV colistin x10	12, SS+ve
4*	2/M	Oral (colistin+ rifampicin) x 10	24, SS-ve
5	2/F	Oral (colistin+Fosfomycin) x10	1, SS-ve
6	1.5/F	Oral (colistin+ rifampicin) x 10	2, SS-ve
7	18/M	Oral (colistin+ rifampicin) x 10	4 & SS-ve
8*	56/M	Oral (colistin+Fosfomycin) x 10	4 & SS -ve

Patients 4 & 8 had IV colistin

Conclusion: In this cohort of patients selection of combination of oral ± intravenous antibiotics therapy was very effective for infection & gut decolonisation of CRE.

Abstract # P-645

Association between Donor Liver LXR Gene Polymorphisms and Cholesterol Disarrangement after Liver Transplantation in a Chinese Han Population. Kai Wang, Xiao Xu, Qi Ling, Di Lu, Penghui Xiang, Chao Wang, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, Hangzhou, Zhejiang Province, China*

Backgrounds & Aims: Dyslipidemia is one of the most frequent and serious complications after liver transplantation (LT), which would lead to an increased risk of cardiovascular disease and mortality. It has been reported that liver x receptor (LXR) polymorphism plays an essential role in lipid metabolism, especially cholesterol. Moreover, donor liver contributes greatly to the regulation of blood lipid metabolism. Therefore, we aim to evaluate the association between donor LXR gene polymorphisms and dyslipidemia after LT.

Methods: a total of 136 adult patients undergoing primary LT in our center were included. Five single nucleotide polymorphisms (rs3758674, rs7120118, rs12221497, rs2279238, rs3136441), closely associated with dyslipidemia were selected from HapMap CHB database and previous reports. They were genotyped and analyzed in combination of clinical parameters.

Results: The incidence was 24.3% (33/136) and 34.6% (47/136) for hypertriglyceridemia, 12.5% (17/136) and 19.1% (26/136) for hypercholesterolemia, 50% (68/136) and 46.3% (63/136) for hypo-HDL-cholesterolemia at 1- and 3-month after LT, respectively. Compared to the wild type, the variant genotypes of donor rs12221497 were associated with a significantly higher prevalence of hypercholesterolemia (41.2% vs 16%, $P = 0.032$) and hypo-HDL-cholesterolemia (75% vs 42.5%, $P = 0.015$). In multivariate analysis, donor rs12221497 locus genetic variant (T/T+T/C vs. C/C) was identified as an independent risk factor of hypercholesterolemia (OR = 3.357, $P = 0.044$) and hypo-HDL-cholesterolemia (OR = 4.074, $P = 0.029$) after adjustment of recipient age (>55 yrs), body mass index (>25m/kg²) and blood tacrolimus levels (>10ng/ml).

Conclusions: Donor LXR rs12221497 polymorphism is closely associated with an increased risk of cholesterol disarrangement after LT and has a potential clinical value for the disease prediction.

Abstract # P-646

Efficacy of Post Liver Transplant Hepatitis B Booster Vaccination in Chronic Hepatitis B Recipients With Prior Immune Response. Tiffany C.L. Wong¹, James Y.Y. Fung², Kenneth S.H. Chok¹, Tan To Cheung¹, Albert C.Y. Chan¹, Jeff W.C. Dai¹, William Sharr¹, Simon H.Y. Tsang¹, Cindy K.Y. Cheung¹, See Ching Chan¹, Chung Mau Lo¹. *¹Surgery, The University of Hong Kong, Hong Kong, Hong Kong; ²Medicine, The University of Hong Kong, Hong Kong, Hong Kong*

Background

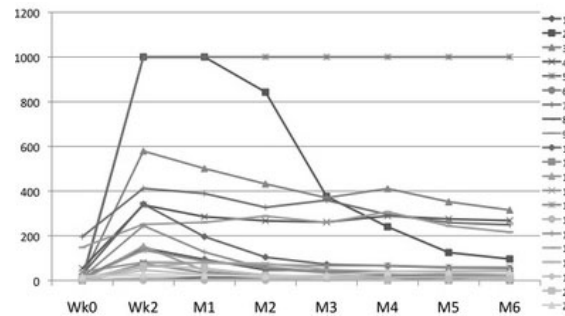
Previous study has shown that the presence of anti-HBs in HBV recipients after LT in the absence of HBIG and use of Pre-S containing HBV vaccine (Sci-B-VacTM), induced immune response in half of the patients. This study aims to determine the efficacy of booster vaccine in selected patients after LT.

Method

Patients who had LT for HBV with either; group 1) previous immune response from vaccination; 2) detected anti-HBs for >1 year after LT or 3) peak anti-HBs >100 IU/ml. All received intramuscular injection of double dose Sci-B-VacTM. The primary end point was production of anti-HBs >10 IU/L (from previous negative value) or 2-fold increase from baseline was considered positive response. HBV serologies & HBV specific immune responses were taken at baseline, day 14, month 1, 2, 3, 4, 5 & 6 afterwards.

Results

86 patients were recruited and 21 (24.4%) had responded. All five patients in group 1 responded, 7/45 (15.6%) in group 2 and 9/36 (25%) in group 3 responded ($p < 0.001$). Serial changes in anti-HBs in responders was shown in Figure 1.



Responder and non-responder were the same in terms of age, sex, blood group, type of LT and indication. Production of anti-HBs was also independent of e antigen status and HBV DNA level before LT but non-responders were more likely to have HBV mutant (21.5 vs. 0%, $p = 0.04$). Responders had significantly higher peak anti-HBs before booster (193 vs. 29 IU/ml, $p = 0.011$) and were less likely to have anti-HBs loss (57.1 vs. 81.5%, $p = 0.024$). Univariate analysis showed that anti-HBs loss and peak anti-HBs before booster vaccination, age of recipients and HBV immune donors were significant predictors while peak anti-HBs level before booster vaccination was the only significant predictors on multivariate analysis.

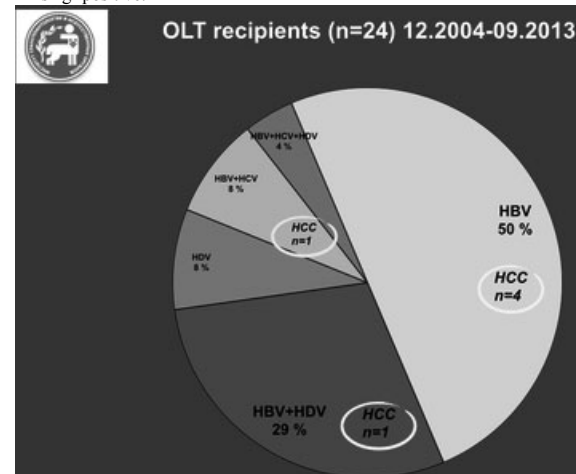
Conclusion

HBV vaccine has limited efficacy in patients after LT. Further studies are needed to identify who would benefit most from active immunization and to increase response rate.

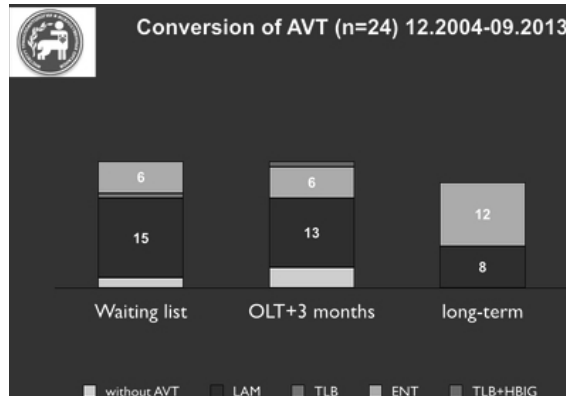
Abstract # P-647

Long - Term Therapy With NUC's in Liver Transplant Recipients. Ekaterina Yaroshenko, Maxim Kornilov, Yan Moysyuk. *Liver and Kidney Transplantation, Federal Research Center of Transplantology and Artificial Organs, Moscow, Russian Federation*

The prevalence of HBV in Russia is quite large: now days the estimated number of people infected with hepatitis B virus is 2.9 million, and the number of patients with chronic HBV is in the range from 300 to 600,000. Given the natural history of HBV- infection seems logical increase in the number of patients with cirrhosis in the outcome of HBV and HCC in the waiting lists transplant centers. From December 2004 to September 2013 in our center performed 170 OLT. 23 recipient before transplantation were HBsAg- positive.



Of the 20 recipients who determined HBV DNA was 12 HBeAg- negative. In the study group of recipients at the time of the waiting list were 17 % of HCC. Currently, 20 recipients are alive and have good graft function, 2 recipients died in early post-transplant period and cause of death is not associated with HBV, 1 recipient died at 8 months after OLT with a recurrence of HCC in a graft. The observation time after OLT - ranging from 2 days to 7.5 years. Results are presented below:



Results of AVT after OLT (n=20)

Medication	clearance HBV DNA	clearance HBsAg	conversion HBsAb	virologic breakthrough
LAM (8)	8	6	3	2
ENT (12)	12	12	8	1

All of our recipients have preserved renal function and receive therapy with NUC's in full dose. Experience of our center shows that long - term therapy with NUC's in patients with HBV before and after liver transplantation is not only effective and safe, but is the key to a long full life after liver transplantation.

Abstract # P-648

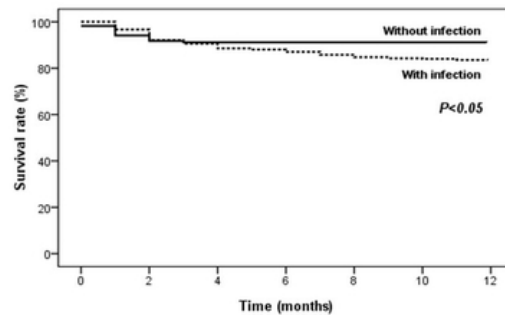
Microbial Epidemiology and Risk Factors for Infections after Liver Transplant Recipients. MangLi Zhang, Jun Xu, WeiLin Wang, Min Zhang, Yan Shen, Lin Zhou, Xiao Xu, Jian Wu, Li Zhuang, XiangYan Liu, ShuSen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China*
Introduction: Infection after liver transplantation (LT) is associated with significant morbidity and mortality. This study sought to identify the epidemiology and benefit for LT recipients. **Methods:** We retrospectively analyzed the frequency and characteristics of post-transplantation infections in 564 recipients, who underwent LT between January 1st, 2004 and December 31st, 2009 in our center, and evaluated the risk factors of post-transplantation infection. **Results:** Overall, 394 recipients got at least one kind of infections during the hospitalization after LT, morbidity 69.9%. Gram-positive bacteria, Gram-negative bacteria and fungal accounted for 28% (496), 57.1% (1011) and 14.9% (264). Kaplan-Meier curves of 1-year survival showed that recipients with infection had significantly lower cumulative survival rate than those without infection (82.7% versus 90.0%, $P < 0.01$). Multivariate analysis showed that age >60 years ($P=0.010$), severe hepatitis ($P=0.030$) and cadaveric donor ($P<0.001$) were independent risk factors for infection within hospitalization time after LT. **Conclusion:** Infection could be one of predictors for 1-year survival. We suggest more attention be paid to the infectious complications on recipients aged more than 60 years and those suffered from severe hepatitis.

Table 1. Multivariate risk factors of infection in liver transplantation recipients

Variable	P value	Odds Ratio	95% Confidence Interval
Age	0.010*	3.080	1.313-7.222
Hepatic carcinoma	0.002**	0.513	0.339-0.776
Severe hepatitis	0.030*	1.873	1.062-3.306
Donor	0.000**	2.860	1.848-4.427
Bile Leakage	0.014*	13.466	1.675-108.253

Re-LT, liver re-transplantation; * $P<0.05$; ** $P<0.01$.

Figure 2. Survival rates of patients with and without infection in the year following LT



Abstract # P-649

Prognostic Role of EpCAM in Patients With Hepatocellular Carcinoma after Liver Transplantation. Zhiyun Zheng, Li Zhao, Zhe Yang, Bingyi Lin, Sheng Gao, Zhou Lin, Shusen Zheng. *Department of Surgery, The First Affiliated Hospital, Zhejiang University, Hangzhou, Zhejiang, China*

Background: Hepatocellular carcinoma (HCC) is one of the most common devastating tumors worldwide with very poor prognosis. Accumulating evidence suggests that most HCC arise from liver cancer stem cells (LCSCs), which might be the reason of cancer relapse. LCSCs expressed diverse markers such as CD133, CD24, CD44, CD90, CD13, EpCAM. In this study, we investigated the prognostic role of these markers in HCC patients after liver transplantation (LT).

Methods: 161 HCC patients who received LT between 2003 and 2012 in our center were enrolled. We evaluated the mRNA expression of CD133, CD24, CD44, CD90, CD13, EpCAM in HCC tumor tissues using qRT-PCR. The mean values were used as the cutoff for these markers. The clinicopathological factors were tested using the Pearson χ^2 -test or Fisher exact test. Patient survival was analyzed by the Kaplan-Meier method and log-rank test. Cox regression was used for multivariate analysis of prognostic factors.

Results: This cohort comprised 13 female, 148 male, median age 49, mean follow-up time 32.9 months. The mean value for CD133, CD24, CD44, CD90, CD13, EpCAM mRNA expression were 2.45, 2.95, 2.96, 1.69, 4.07, 2.42. Correlation analysis between clinicopathologic factors and LCSC markers showed that expression of CD133 were significantly correlated with PVTT ($P=0.015$) and perioperative AFP ($P=0.047$). The expression of CD24 were significantly related with total tumor diameter ($P=0.049$) and AFP ($P=0.021$). CD90 expression was obviously related with PVTT ($P=0.034$). While the high expression of EpCAM was significantly relevant to multiple tumors ($P=0.039$), single nodule diameter ($P=0.018$), total tumor diameter ($P=0.002$), perioperative AFP ($P=0.002$). Upon survival univariate analysis, CD133 and EpCAM mRNA expression were correlated with an unfavorable recurrence-free survival (RFS, $P=0.001$ & $P<0.001$) and overall survival (OS, $P=0.028$ & $P=0.001$) as well as high CD24 related with poor RFS ($P=0.011$). Multivariate analysis revealed that high expression of EpCAM was independently correlated with RFS (HR, 1.94; 95% CI, 1.11-3.40; $P=0.021$) as well as high AFP ($P=0.014$), larger total tumor diameter ($P<0.001$), PVTT ($P=0.012$), poor differentiation ($P=0.008$). Larger single nodule diameter ($P<0.001$), PVTT ($P<0.001$), high AFP ($P=0.01$) were independently related with poor OS. **Conclusion:** LCSC markers are associated with HCC poor prognosis. Overexpression of EpCAM is independently correlated with RFS of HCC patients after LT.

Abstract # P-650

A Rare Complication of Upper Abdominal Organ Cluster Transplantation: Acute Granulocytic Leukemia. Jian Zhou, Xiaopeng Yuan, Weiqiang Ju, Ming Han, Chuanbao Chen, Xingyuan Jiao, Xiaoshun He. *Organ Transplantation Center, The First Affiliated Hospital, Sun Yat-Sen University, Guangzhou, China*
Objective: To explore the experience of diagnosis and treatment of patients with acute granulocytic leukemia after the upper abdominal organ cluster transplantation.

Methods: A total of 8 cases of upper abdominal organ cluster transplantation performed at organ transplantation center, the First Affiliated Hospital, Sun Yat-Sen University, from March 2009 to August 2012, the operative method was that after resection of original liver of recipient, but pancreas and whole digestive tract retained, and then the organ cluster including liver, pancreas and part of duodenum was transplanted in situ, and biliary and pancreatic drainage was performed by Roux-en-Y anastomosis or side to side anastomosis method between duodenum graft and the upper part of jejunum in recipient. Immunosuppression regimen consisted of methylprednisolone, anti-CD25 monoclonal antibody, tacrolimus (FK506) and mycophenolate mofetil (MMF). Only 1 patient with acute granulocytic leukemia, a retrospective clinical data of this patient was summarized.

Results: Liver function returned to normal on 10 days post-transplant, and good pancreas graft function was achieved, and after discontinuation of exogenous insulin glycemic was normal. 22 days of post-transplant, intractable pancytopenia was presented. After repeated bone marrow aspiration (not found the pathogeny in the first and second times), acute granulocytic leukemia, with M3 type, was diagnosed in the third time; and the fourth biopsy confirmed the diagnosis again. Genetic tests showed that AML1/ETO was positive. The patient discharged after treatment.

Conclusion: The incidence rate of acute granulocytic leukemia after the upper abdominal organ cluster transplantation was low, but severely. To improve the knowledge of this disease and repeated bone marrow aspiration for diagnosis is crucial for recovery.

Abstract # P-651

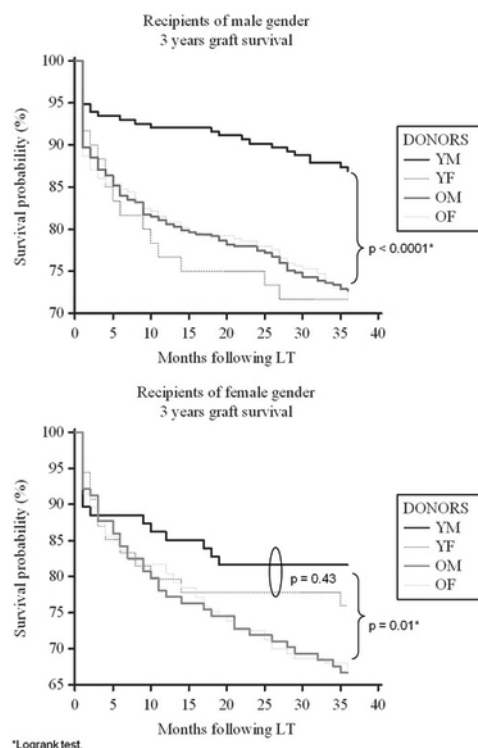
Donor/Recipient Gender Mismatch Modifies the Impact of Donor Age on Graft Survival Following Liver Transplantation.

Davide Bitetto¹, Silvia Pecere¹, Martina Gambato², Alberto Ferrarese², Luisa Pasulo¹, Maria Grazia Luca¹, Edoardo Poli³, Stefano Ginanni Corradini³, Umberto Baccarani⁴, Patrizia Burra², Pierluigi Toniutto⁴, Stefano Fagioli¹. ¹Gastroenterology and Transplant Hepatology, Papa Giovanni XXIII Hospital, Bergamo, Italy; ²S.S.D. Multivisceral Transplantation, Department of Surgical, Oncological and Gastroenterological Sciences, University of Padua, Padua, Italy; ³Department of Clinical Medicine, Division of Gastroenterology, Sapienza University of Rome, Rome, Italy; ⁴Liver Transplant Unit, University of Udine, Udine, Italy

Background and aim: the impact of donor age on graft survival is well known, while the role played by gender is less clear. The aim is to investigate possible interactions between donor age and gender.

Methods From years 2000 to 2010, 1409 consecutive liver transplanted patients (1000 males, median age 54 years) recruited from 4 Italian Centers were enrolled in the study. The outcome was expressed as 3 years graft survival and analyzed by time to event analysis.

Results Five hundred and twenty three (36.5%) patients underwent liver transplantation for hepatitis C virus (HCV) related liver disease, 834 (59.2%) received a graft from a male donor (median donor age 53 years, range 5-89). Overall 3 years graft survival was 74.2%. Donor age >40 years was significantly associated to graft loss for male (Logrank test, $p < 0.0001$) but not for female donors (Logrank test, $p = 0.56$). Donor age ≤ 40 , MELD score ≤ 18 and non-HCV etiology emerged as independent predictors of better graft survival for patients receiving a graft from a male but not for patients receiving a graft from a female donor. The same results were observed in HCV+ recipients. Donors were divided into 4 groups according to gender (F=female, M=male) and age (Y ≤ 40 years, O>40 years): grafts from younger female donors are associated to a better survival only when allocated to a female recipient.



*Logrank test.

Conclusions Donor age emerged as independent predictor of graft survival only with grafts from male donors while grafts from young female donors should be allocated only to a female recipient.

Abstract # P-652

External European Validation of a Multicenter Model for Donor-Recipient Matching in Liver Transplantation Based on Artificial Neural Networks.

Ruben Ciria¹, Maria Dolores Ayllon¹, Roberto Valente², Manuel Cruz-Ramirez³, Maria Perez-Ortiz³, Cesar Hervas³, Mohammed Rela⁴, John O'Grady⁴, Manuel de la Mata⁵, Nigel D. Heaton⁴, Javier Briceno¹. ¹Unit of Hepatobiliary Surgery and Liver Transplantation. IMIBIC. CIBERehd, Reina Sofia University Hospital, Cordoba, Spain; ²Department of Surgery, Royal Free Campus, UCL Medical School, London, United Kingdom; ³Department of Computer Science and Numerical Analysis, University of Cordoba, Cordoba, Spain; ⁴Institute of Liver Studies, King's College Hospital NHS Foundation Trust, London, United Kingdom; ⁵Unit of Hepatology and Liver Transplantation. IMIBIC. CIBERehd, Reina Sofia University Hospital, Cordoba, Spain

BACKGROUND/AIMS: Donor-recipient matching (D-Rm) remains a difficult skill. We designed a pioneer model based on artificial-neural networks (ANN) by a multicenter Spanish study (MADRE=Model for the Assignment of Donor and Recipient in Europe). The aim was to perform an external validation of MADRE with a high-volume European centre

METHODS: Retrospective analysis including 1437 D-R pairs (615-Spanish (11 hospitals) 2007-2008 and 822-British [King's College Hospital-London] 2002-2010). Two reciprocal models (training MADRE-testing King's and vice versa) were performed. A third combined model was also created. For each pair, 38 "a-priori" donor, recipient and surgical variables were collected. Two non-complementary 3-months and 1-year endpoint models of probability-of-graft-survival (CCR) and probability-of-non-graft-survival (MS) were developed. Randomisation was performed by a 10-fold. Comparisons with MELD, D-MELD, DRI, SOFT, P-SOFT and BAR were performed. WEKA machine was used for calculations.

RESULTS: From the 1437 D-R pairs, baseline significant differences among Spanish and King's pairs were observed in BMI (29.9 vs 32.6), HCV (24.7 vs 18.9), MELD (19.2 vs 18.6), donor-AST (55.4 vs 63.8), partial grafts (3.9% vs 9.1%) and cold ischaemia time (7.4 vs 8.8). Probability of 3-months and 1-year survival (CCR Model) was 90.28% and 87.5%, respectively. Probability of 3-months and 1-year not-survival (MS Model) was 64.29 and

61.34%, respectively. Both had excellent AUROC (0.824 and 0.793), being statistically higher than other scores. A D-Rm proposal was performed by the ANN.

CONCLUSIONS: Our ANN-based model of D-Rm is the most advanced tool to date. Improved outcomes avoiding human mistakes and subjectivity in D-Rm could be obtained by this technology.

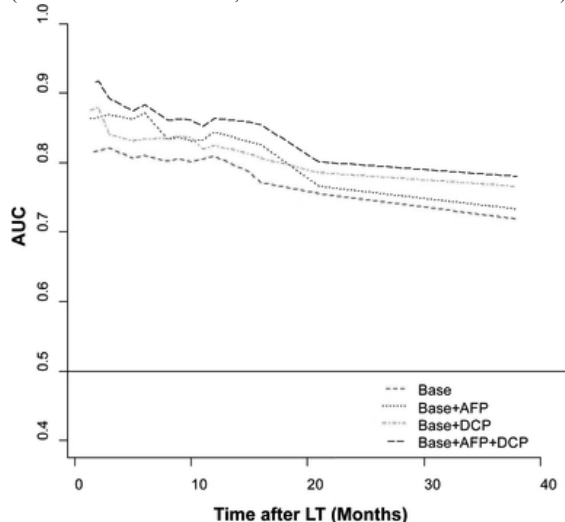
Abstract # P-653

Predictive Value of Pre-Transplant Serum Alpha-Fetoprotein and Des-Gamma-Carboxy Prothrombin Levels on Hepatocellular Carcinoma Recurrence after Liver Transplantation. Hyung Soon Lee¹, Dong Jin Joo^{1,2}, Gi Hong Choi^{1,2}, Dae Ryong Kang³, Juhan Lee^{1,2}, Myoung Soo Kim^{1,2}, Jin Sub Choi^{1,2}, Soon Il Kim^{1,2}. ¹Surgery, Yonsei University College of Medicine, Seoul, Korea; ²The Research Institute for Transplantation, Yonsei University College of Medicine, Seoul, Korea; ³Biostatistics Collaboration Unit, Yonsei University College of Medicine, Seoul, Korea

Background: This study investigated whether the combined use of pre-transplant serum alpha-fetoprotein (AFP) and des-gamma-carboxy prothrombin (DCP) levels improve predictive performance of the Milan criteria (MC) for hepatocellular carcinoma (HCC) recurrence after liver transplantation (LT).

Methods: We analyzed 162 patients that underwent LT for HCC between 2001 and 2012. We design the MC based predictive model for post-transplant HCC recurrence and this model incorporated pre-transplant serum AFP and DCP levels: Model 1 is base model incorporated AFP, model 2 is base model incorporated DCP and model 3 is base model incorporated AFP and DCP. The time-dependent receiver operating characteristics (ROC) curve analysis was used to compare predictive performance between each model. To identify prognostic factors for HCC recurrence, clinicopathologic variables were assessed by Cox-regression analysis.

Results: At a median follow-up of 23.5 months, 17 (10.5%) patients developed HCC recurrence. In the time-dependent ROC curve analysis, model 3 show significantly better predictive performance than base model (estimated difference = -0.069, 95% confidence interval = -0.159 to -0.007).



And pre-transplant AFP of 140 ng/mL and DCP of 65 mAU/mL were taken as a cut-off value in the time-dependent ROC curve analysis. Multivariate analysis showed AFP >140 ng/mL and/or DCP >65 mAU/mL and the presence of satellite nodule were associated with HCC recurrence.

Conclusion: Combined use of pre-transplant AFP and DCP levels are improved predictive performance of the MC. Thus, LT candidates with HCC can be assessed more accurately by adding pre-transplant AFP and DCP levels to the MC.

Abstract # P-654

Comparison between Living Donor Liver Transplantation Recipients Who Met the Milan and UCSF Criteria after Successful Down-Staging Therapies. Jianyong Lei, Lunan Yan, Wentao Wang. Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, Sichuan, China; Liver Transplantation Center, West China Hospital of Sichuan University, Chengdu, Sichuan, China

Aims: We attempted to find possible differences between the living donor liver transplantation (LDLT) patients who met the Milan criteria and those who met the UCSF criteria after accepting preoperative down-staging therapies. **Materials and Methods:** We performed a retrospective study of all 72 patients from January 2003 to March 2009 who were diagnosed with advanced hepatocellular carcinoma but accepted various down-staging therapies. Some patients met the Milan criteria (Group1), and some met the UCSF criteria (Group 2) but not the Milan criteria. We collected the data from the two groups and then compared the preoperative demographic data, down-staging therapies, intra-operative data from LDLT, and the recovery and complications after LDLT. Survival rates were compared using Kaplan-Meier analysis.

Results: Only 44 patients (61.1%) met the criteria for liver transplantation, 21 cases met the Milan criteria (Group1) and 23 cases met the UCSF criteria (Group 2) but not the Milan criteria. All of the 44 patients accepted right lobe living liver donor liver transplantation in our center. Most of the patients received only one down-staging treatment, and transcatheter arterial chemoembolization (TACE) was the most common down-staging therapy. Four patients suffered complications after down-staging therapies: intra-abdominal hemorrhage after right hepatectomy, upper gastrointestinal hemorrhage after TACE, biliary fistula after resection, and hand-foot syndrome after taking Sorafenib. All complications after LDLT, classified according to the Clavien-Dindo system, were compared within the two groups, and the calculated score of the complications in group 1 was 1.48, which was greater than that of group 2 (1.39), but this difference did not reach statistical significance ($P=0.865$). The 1-, 3-, and 5-year survival rates were 90.4%, 76.2%, and 71.4% in group 1 and 91.3%, 73.9%, and 69.6% in group 2, respectively ($P>0.05$). Seven patients (three in group 1 and four in group 2) had tumor recurrence after a median follow-up period of 72 months. **Conclusion:** Recipients who meet the Milan or UCSF criteria after accepting successful preoperative down-staging therapy in LDLT can achieve the same result.

Abstract # P-655

Nutrition Status Using Subjective Global Assessment (SGA) Independently Predicts Outcome of Patients Waiting for Living Donor Liver Transplant. R. Mohanka, S.K. Yadav, N. Bakshi, N. Saraf, P. Balachandran, S. Saigal, A. Rastogi, S. Goja, P. Bhangui, S. Ramchandra, P. Singla, A. Soin. Medanta Liver Institute, Gurgaon, Haryana, India

Malnutrition is common and important risk factor in patients with ESLD awaiting liver transplant (LT) but its assessment is confounded by ascites and low albumin levels being manifestations of liver disease itself.

Patients and Methods: Patients demographics, pre-operative clinical and biochemical parameters, nutritional status and outcomes (as hospital and ICU stay, sepsis and mortality) were recorded.

Results: 117 ESLD patients evaluated for LT between January 2013 and June 2013 were grouped into Normal, Mild-Moderate and Severe malnutrition. On SGA, history of significant weight loss, poor oral intake, functional impairment or ascites were the most common. Groups were comparable in age, sex, BMI, etiology of liver disease (except HCC patients, who were nutritionally better, $p=0.001$). Malnourished patients had significantly lower sodium ($p=0.003$) and higher bilirubin ($p=0.024$), CTP ($p=0.00$) and MELD ($p=0.00$) scores. While 93.75% of patients without malnutrition underwent LT, only 70.73% of those with severe malnutrition could undergo the same ($p=0.183$). They received similar right lobe grafts, of similar graft weight and GRWR but severely malnourished patients required more PRBC (Normal 4.5 ± 2.2 , Mild-Moderate 5.9 ± 3.8 , Severe 6.6 ± 3.3 , $p=0.138$) and FFP (Normal 2.3 ± 2.1 , Mild-Moderate 3.9 ± 3.5 , Severe 5.2 ± 3.3 , $p=0.019$) transfusion. ICU and hospital stay, graft function, biliary or vascular complications, rejection and CMV infection rate were similar. Severely malnourished patients had higher incidence of postop renal dysfunction ($p=0.03$), sepsis ($p=0.005$) and death due to sepsis ($p=0.017$).

On univariate analysis risk factors for mortality were pre-operative ascites ($p=0.023$), jaundice ($p=0.023$), SBP ($p=0.01$), nutritional status ($p=0.02$),

intra-operative FFP transfusion (p=0.01), post-operative renal dysfunction (p=0.00), sepsis (p=0.00), prolonged ICU (p=0.01) or hospital stay (p=0.00). On multivariate analysis nutritional status was the only independent predictor of mortality (p = 0.027, OR = 0.328, CI 0.122 – 0.880). Mortality in 3 groups were 6.3%, 25% and 41.5% respectively (p = 0.60), the difference was not statistically significant. Conclusion: Nutritional status measured with SGA independently predicts outcome of ESLD patients awaiting a liver transplant.

Abstract # P-656

Patients Maintained on Opioid Substitutes Undergoing Liver Transplantation: A Single Centre Experience. Huyen-Ly Nguyen-Adams¹, Ian Webzell¹, Deepak Joshi¹, James Bell², Abid Suddle¹, Varuna Aluvihare¹, Michael Heneghan¹, John O'Grady, Kosh Agarwal. ¹Hepatology, Institute of Liver Studies, King's College Hospital, London, United Kingdom; ²Alcohol and Substance Misuse, Maudsley Addiction Service, London, United Kingdom

Introduction: In the UK, patients with a history of illicit drug use are eligible for a liver transplant (LT) assessment.

Aims and methodology a retrospective audit of the experience of this group of patients.

Results: Tables 1 and 2 summarises the clinical details. All 11 patients had HCV related cirrhosis. Long term complications relate to liver graft decompensation secondary to HCV recurrence. The 1 and 5 year survival rates were 90.0% (9/10), and 66.7% (6/9) respectively.

Conclusions: Our experience suggests survival rates appear comparable in our cohort of patients compared to the overall survival rates at our centre.

Demographic data of the study population at OLT assessment.

Pt no.	Indication & HCV genotype/viral load	Age	Gender	Child Pugh	UKELD	MELD	Length IDU abstinence months
1	HCV, ALD, HBV, HDV	47	M	B	54	10	24
2	HCV (1a), ALD	53	M	B	51	11	8
3	HCV (3a 3.28E6), HBV	52	M	B	46	9	84
4	HCV (1b 3.28E6)	37	M	C	47	5	6
5	HCV (3a), ALD	46	M	B	52	11	144
6	HCV (1a 4.78E5), HIV	42	M	B	48	9	144
7	HCV (1a + 1b)	37	M	B	50	15	72
8	HCV (1a)	56	M	B	47	10	192
9	HCV, ALD	44	M	B	52	15	12
10	HCV (3a 5.80E5)	58	M	C	52	13	>120
11	HCV (4c/d 6.63E3)	37	M	C	61	20	60

OLT = Orthotopic liver transplant. HCV = hepatitis C virus. HBV = hepatitis B virus. ALD = alcohol liver disease. HDV = hepatitis D virus. HIV = human immunodeficiency virus. UKELD = United Kingdom model for end stage liver disease. MELD = model for end stage liver disease

Hospital admission, post operative complications, graft dysfunction and Patient survival

Patient no.	Duration LITU (days)	Hospital admissions (days)	Post operative complications	Graft dysfunction	Survival post LT until Nov 2012 (months)
1	2	36	Hepatic colectomy - corrective laparotomy PGF, Re-LT after 4 days. MOF died day 25	None	138
2	25	25		N/A	0.8 deceased
3	3	18	None	HCV recurrence	129
4	2	16	None	HCV recurrence	37 deceased
5	2	19	None	HCV recurrence	65 deceased
6	8	16	None	HCV recurrence	70
7	5	14	IAB - corrective laparotomy	HCV recurrence	118
8	2	26	None	HCV recurrence	31 deceased
9	1	15	None	None	60
10	14	91	Biliary stricture - stented	None	13
11	3	15	None	None	6

PGF = primary graft failure. MOF = multi-organ failure. IAB = intra-abdominal bleed. Re-LT = re liver transplant. HCV = hepatitis C virus

Abstract # P-657

Chronologic Changes of Explaned Liver Volume and the Use of Ursodeoxycholic Acid in Patients With End-Stage Primary Biliary Cirrhosis. Tomohiro Tanaka¹, Noriyo Yamashiki¹, Yasuhiko Sugawara², Sumihito Tamura², Minoru Nakamura³, Nobuhisa Akamatsu², Junichi Kaneko², Taku Aoki², Yshihiro Sakamoto², Kiyoshi Hasegawa², Norihiro Kokudo². ¹Organ Transplantation Service, The University of Tokyo Hospital, Tokyo, Japan; ²The Artificial Organ and Transplantation Division, Department of Surgery, The University of Tokyo, Graduate School of Medicine, Tokyo, Japan; ³Department of Hepatology, Nagasaki University Graduate School of Biomedical Sciences and Clinical Research Center, National Hospital Organization Nagasaki Medical Center, Nagasaki, Japan

Primary biliary cirrhosis (PBC) is a common indication for liver transplantation (LT). The clinical presentation of PBC at the time of LT may have changed, due to the long-term use of ursodeoxycholic acid (UDCA). The aim of this retrospective study was to investigate whether the clinical characteristics of LT recipients with PBC have changed over the years. Of all the 421 adults undergoing LT from 1997 to 2012 at our center, we included 85 recipients with PBC. They were divided into three groups by the year LT was performed; Group 1 (1997-2001, n=29), Group 2 (2002-2005, n=29) and Group 3 (2006-2012, n=27). There were no significant differences in gender, recipient age, serum total bilirubin, PT-INR, MELD score, updated Mayo risk score for PBC, or liver-related complications except for esophageal varices (EV) among the 3 groups: patients in Group 1 were complicated with EV less frequently than others (p=0.019). In older cases, the ratio of explanted liver volume to standard liver volume (ELV/SLV) was significantly higher (p=0.03), and the duration of pre-LT UDCA treatment was significantly shorter (p=0.001). Significant correlation between the duration of UDCA treatment and ELV/SLV was observed (r2=0.151, p=0.001). In conclusion, recent LT patients were characterized by more frequent portal hypertension and more severe liver atrophy, with longer UDCA therapy prior to LT, which might have prevented the somewhat rapid progression of liver failure characterized by hepatomegaly with insignificant fibrosis or portal hypertension.

Abstract # P-658

Factors Influencing Unsuccessful Donation of 46 Potential Solid Organ Donors. Xiaoping Wang¹, Min Hang¹, Xiaopeng Yuan¹, Xingyuan Jiao¹, Jian Zhou¹, Xiaoshun He¹, Yanna Gao¹, Min Gao². ¹Organ Transplant Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, Guangdong, China; ²Red Cross Society of China Shenzhen Branch, Shenzhen, Guangdong, China

Objective: To explore factors associated with the unsuccessful donation of potential solid organ donors.

Method: Data collection via chart reviews, interviews with doctor in charge or organ procurement organization (OPO) staff, and face-to-face interviews with family for all donor-eligible deaths at 27 hospitals 46 potential solid organ donors in Guangdong province from February 2011 and August 2013. Results: The unsuccessful factors associated with the patients themselves accounting for 43.5%: potential donors sudden death, organ failure gradually; Factors associated with the hospitals 15.2%: improper therapy, do not work together with OPO; Factors associated with family members accounting for 32.5%: Family members claim to meet with the receptors, demanding financial compensation for donation by family, inconsistent understanding of the severity and prognosis of patient and can't reach the same view of donation.

Conclusions: Organ donation education is not just needed to public, but to hospital administrators and hospital staffs. Specific steps could be taken by doctors and OPO staff to maximize the opportunity to persuade families to donate their relatives' organs and to protect the potential donor solid organ function before donation.

Table 1 Summary of influencing factors for unsuccessful donation

Influencing factors	Cases(n=46)	Percentage(%)
1.Potential donors sudden death, OPO can not arrive promptly	15	32.6
2.Organ failure gradually because of the process of donation is too complex and so long	5	10.9
3.Local hospital disagrees to provide procurement room, Potential donor soon die	3	6.5
4.Improper therapy to protect organ function in local hospital	4	8.7
5.Family members claim to meet with the receptors	3	6.5
6.Family members regret to donations before implementation donation (Volunteer Book of Human Organ Donation consent form have been signed)	5	10.9
7.All Family were injured at the same time, ethical procedures can not be achieved	2	4.3
8.Demanding financial compensation for donation by family	3	6.5
9.Inconsistent understanding of the severity and prognosis of patient, can not reach the same view of donation	2	4.3
10.Potential donor death involved in criminal cases, police disagree to donation by crime detection needs	4	8.7

Abstract # P-659

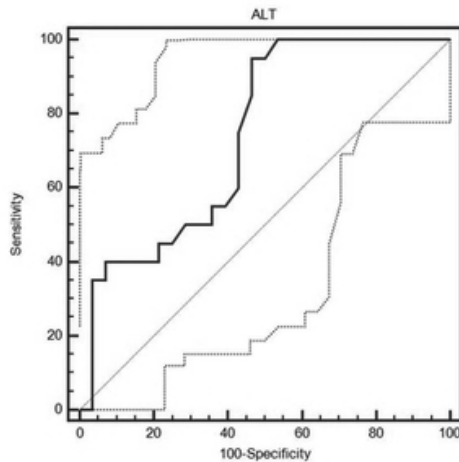
Risk Factors Analysis of Early Graft Dysfunction and Posttransplant Complications after Liver Transplantation from Deceased Organ Donation at a Single Chinese Organ Transplant Center. Qiang Zhao, Zhiyong Guo, Xiaoshun He, Weiqiang Ju, Dongping Wang. *Organ Transplant, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, Guangdong, China*

Objective: To analyze of the occurrence of early graft dysfunction (EAD) and complication after liver transplantation from deceased organ donation and to reveal their risk factors.

Method: We retrospectively analyzed 49 cases of liver transplantation from July 2011 to March 2013 in the First Affiliated Hospital of Sun Yat-sen University of China. Of all 49 corresponding donor, 3 were China Category I donors (Organ Donation after Brain Death), 25 were China Category II donors (Organ Donation after Cardiac Death), and 24 were China Category III donors (Organ Donation after Brain Death followed by Cardiac Death). We selected 45 related variables from donors, 6 surgery-related variables and 9 variables from recipients that may affect EAD and the occurrence of hepatic artery thrombosis. EAD was defined as the presence of one or more of the following previously defined postoperative laboratory analyses reflective of liver injury and function: TBIL $\geq 10\text{mg/dL}$ ($171\mu\text{mol/L}$) on day 7, international normalized ratio ≥ 1.6 on day 7, and AST or ALT $>2000\text{ IU/L}$ within the first 7 days. Postoperative arterial thrombosis was diagnosed by hepatic arteriography.

Result: The occurrence rates of EAD after liver transplantation was 40.8%. Through multivariate analysis, we found that donor serum ALT $>200\text{U/L}$ and serum chloride $>115\text{mmol/L}$ were independent risk factors for occurrence of EAD.

Postoperative arterial thrombosis complication rate was 10.2%. Donor serum potassium level can well predict postoperative hepatic arterial thrombosis. When serum potassium $>5.5\text{mmol/L}$, the diagnostic sensitivity and specificity were 80.0% and 94.6%, respectively.



ROC Curve of donor serum potassium predicts occurrence of postoperative arterial thrombosis

Conclusion: Donor serum ALT $>200\text{U/L}$ and serum chloride $>115\text{mmol/L}$ were independent risk factors for occurrence of EAD. Donor serum potassium $>5.5\text{mmol/L}$ may well predict postoperative hepatic arterial thrombosis.

Abstract # P-660

MTOR Inhibitors and Longitudinal Growth of Pediatric Liver Transplant Recipients. Cigdem Arikian^{1,2}, Gulay Aksu¹, Senol Kafa¹, Murat Zeytinlu¹, Murat Kilic¹. *¹Izmir Kent Hospital Organ Transplantation Center, Izmir, Turkey; ²Near East University Pediatric Gastroenterology&Hepatology, Nicosia, Cyprus*

Inhibitors of mammalian target of rapamycin (mTOR) such as sirolimus and everolimus (EVR) are potent immunosuppressants that inhibit the interleukin-2-stimulated T-cell proliferation pathway, in which mTOR is the central component, and the growth factor-driven proliferation of both hematopoietic and nonhematopoietic cells.

Methods: Prepubertal children on a 6 months steroid-free maintenance immunosuppressive regimen consisting of everolimus or sirolimus (m-tor) in conjunction with low-dose tacrolimus (Tac)(n=16) were compared to a matched cohort of 6 months steroid-free patients on a standard dose Tac(n=90). Patient who had chronic renal disease excluded from study. Standard anthropometry was performed at 3-month intervals. For calculation of age- and gender-related SDS for height and height velocity (SDS values) the Turkish Longitudinal Study was used as a reference. Results are expressed as mean $\pm$ SDS. Univariate comparisons of continuous variables between two groups were performed using paired t-test for normally distributed data. Differences in means with a two-tailed $P < 0.05$ were considered as statistically significant.

Results: 88 prepubertal children under 5 year age who survived more than 1 year included into the study. Mean age was 4.2 ± 2.6 yr. Median follow up 32 months(24-42). Growth velocity at 1 and 2 year in the mtor group was comparable with the Tac group (table1). The change in height SD score in the mtor group was 0.53 ± 0.41 SDS compared to 0.65 ± 0.5 SDS in the Tac group ($P = 0.06$).

Abstract # P-661

Transplantation for Liver Tumors in Children: Our Experience. Guillermo Cervio, Diego Aredes, Esteban Halac, Marcelo Dip, Luis Rojas, Roxana Martinotto, Andrea Bosaleh, Maria Davilla, Oscar Imventarza. *Hospital Nacional de Pediatría Juan P Garrahan, Ciudad de Buenos Aires, Argentina*

Hepatoblastoma (HBL) and hepatocellular carcinoma (HCC) are the most common primary liver cancers in children. Recent advances in management of pediatric liver cancer have improved disease-specific survival. **Objective:** To review our experience with childhood liver malignancy transplanted (LTx) from January 2005 to November 2013 at the Garrahan Hospital in Argentina. **MATERIALS AND METHODS:** Retrospective chart review of patients less than 18 years transplanted for malignant liver tumors. **Results:**

23 patients were LTx. Median age at diagnosis 6.4 years (r:1-17), 15 patients were HBL (65.22%) and 8 were HCC (34.78%). The actuarial patient survival for HBL group at one and five years was 80% and for HCC 87.5% and 50% respectively. Only four patients with HCC in cirrhotic livers are alive and tumor free. The median follow-up was 31.6 months (0 to 68) for HBL group and 21.2 months (0-50 months) for HCC group. Conclusion: OLT is a good therapeutic modality for children with irresectable HBL and HCC in cirrhotic liver. More data are necessary for non-cirrhotic HCC.

Abstract # P-662

Successful Abdominal Closure in Pediatric Liver Transplantation Using a Step Wise Reduced Silastic Patch. Uta Herden, Enke Grabhorn, Andrea Briem-Richter, Bjoern Nashan, Lutz Fischer. *University Medical Center Hamburg-Eppendorf, Hamburg, Germany*

Introduction

Based on a lack of size matched donors most children undergoing liver transplantation (LTx) receive a technical variant graft from adult donors, resulting in a large-for-size situation especially in smaller children. To avoid complications of further graft reduction (e.g. monosegmental LTx) or complications of an oversized liver graft (e.g. reduced graft perfusion, elevated intraabdominal pressure) we use an interim mesh. Here we describe our technique of step wise abdominal closure by a silastic mesh.

Methods

Retrospective analysis of our prospective LTx database with review of all surgical reports from 2003 – 2012. Transplantations were divided based on primary abdominal closure versus usage of a silastic mesh.

Results

Overall 298 pediatric LTx were performed, thereof 23 LTx were excluded from the study (1 intraoperative death; 22 combined liver-kidney transplantations). Primary closure was possible after 187/275(68%) LTx, whereas after 88/275(32%) LTx closure was performed using a patch. Decision about usage and size of the patch (size trimmed) was guided by doppler ultrasound (DU) (single investigator; DU after reperfusion and abdominal closure, guided by systolic peak flow, resistance index, maximum portal flow). DU-guided operative reduction of the patch was performed every 3 to 4 days. Successful patch removal with definitive closure could be achieved in all children after a median of 2 revisions (range 1-14), after median 6 days (range 1-67 days) with no abdominal hernia development long-term (median follow-up 89mo). Children with patch were significantly younger 0.7(0-14.9) versus 2.8(0-15.9) years and lighter 7(2-35) versus 12(3-62)kg and had higher GRWR 4.4(1-12.5) versus 2.8(0.7-12)% compared to children with primary closure(all $p<0.001$). Comparing donor age, weight, height, graft weight or kind of graft there was no significant difference. There was no significant difference in the graft (1-/5-y 78.3/71.5% versus 86.2/68.4%) or patient survival (1-/5-y 94.6/90.5% versus 95.1/90%) between children with or without patch ($p=0.449/1$).

Conclusion

Successful abdominal closure in pediatric LTx using a silastic mesh with step-wise reduction could be achieved without further graft modifying surgery even in children with very large-for-size grafts.

Abstract # P-663

Hepatic Artery Thrombosis after Pediatric Liver Transplantation – Description of a High Volume Transplant Center and Long-Term Follow-Up. Uta Herden, Enke Grabhorn, Andrea Briem-Richter, Knut Helmke, Jochen Hermann, Bjoern Nashan, Lutz Fischer. *University Medical Center Hamburg-Eppendorf, Hamburg, Germany*

Introduction

Hepatic artery thrombosis (HAT) is a serious complication after pediatric liver transplantation (LTx) mostly resulting in early graft loss and re-transplantation. The aim of our study is to analyze risk factors, treatment algorithms and long-term outcome.

Methods

We analyzed all pediatric LTx between 2000 and 2012 documented in a prospective data base with special regard to children with HAT.

Results

423 pediatric LTx were performed, thereof 20 suffered from an early HAT (median onset 2 days, range 0-11days after LTx). Multivariate analysis revealed none of the following patient characteristics as risk factor for HAT compared with children without HAT (age 3.5±4.5 versus 4.1±4.6 years, weight 12.6±9.5 versus 15±12.9 kg, living/deceased LTx 10/90 versus 24/76,

primary/re-LTx 85/15 versus 78/22). HAT was diagnosed in all children based on Doppler ultrasound (performed daily by a single investigator) showing marginal or absent arterial flow. 3 children were re-transplanted without further intervention. The remaining 17 children underwent either one (n=15) or two (n=2) operative revisions of the hepatic artery (successful in 7 children). Overall, 13 children (65%) underwent early re-LTx after a median of 8 days (range 2-28 days). Of the remaining children, 3 were re-transplanted during long-term follow-up for chronic rejection after 25, 27, 48 month. In 4 children the graft is well functioning 3, 6, 10, 13 years after initial LTx. Patient survival was not compromised by HAT resulting in comparable patient survival in children with or without thrombosis (1-/5-/10-year-survival 95/95/95 versus 95.3/91.7/91.7%;Log Rank test $p=0.635$).

Conclusion

Frequent ultrasound examination after pediatric LTx for early diagnosis of HAT and operative management with immediate operative revision and early re-LTx resulted in long-term patient survival comparable to patients without HAT.

Abstract # P-664

Sequential Living Donor Kidney and Liver Transplantation for Type I Primary Hyperoxaluria: A Case Report. Dong-Sik Kim, Young-Dong Yu, Sung-Won Jung, Sung-Ock Suh. *Division of HBP Surgery & Liver Transplantation, Korea University Medical Center, Seoul, Korea*

Primary hyperoxaluria is an inherited inborn error of metabolism and is transmitted as an autosomal recessive trait. Type I primary hyperoxaluria (PH1) is the most common form of primary hyperoxaluria and is characterized by a defect of alanine glyoxylate aminotransferase (AGT). Deficiency or absence of this enzyme results in high levels of oxalate. Excretion in the urine, produces oxalate stone, and leads to end-stage renal disease (ESRD), usually in childhood. Isolated kidney transplantation (KT) for treatment of ESRD secondary to PH1 is insufficient because the enzymatic liver defect causing the hyperoxaluria is not corrected. In contrast, liver transplantation (LT) corrects the recipient's PH1 enzymatic defect. We report a case where sequential living donor kidney and liver transplantation was performed for a child with type I primary hyperoxaluria. A nine-year-old patient diagnosed with chronic kidney disease was admitted to our hospital. The patient was diagnosed with bilateral nephrocalcinosis since age 4 and had received treatment for urinary tract infection. Due to deterioration of kidney function, he received peritoneal dialysis. After suspecting primary hyperoxaluria, urine oxalate levels were checked and gene study was performed. The study revealed mutation in the AGT gene. After receiving kidney transplantation, living donor liver transplantation was performed after 6 months. He received a left lobe graft from his father and the graft-to-recipient weight ratio (GRWR) was 1.08. The patient was treated for acute rejection with steroid pulse therapy on the ninth postoperative day. After normalization of liver function tests, he was discharged on the 22nd postoperative day. Although urine oxalate levels are still increased, serum BUN and creatinine levels are normal at 7 months after liver transplantation. Type I primary hyperoxaluria can be treated with sequential living donor kidney and liver transplantation.

Abstract # P-665

Ductal Plate Malformations and Bile Cysts in Ex-Plants of Children With Biliary Atresia. Priya Ramachandran^{1,2}, Naresh P. Shanmugam¹, Mukul Vij¹, Mohamed Rela¹. ¹*Institute of Liver Disease and Transplantation, Global Hospitals, Chennai, Tamilnadu, India;* ²*Pediatric Surgery, CHILDS Trust Medical Research Foundation, 12 a Nageswara Rd, Chennai, Tamilnadu, India*

Purpose: Ductal Plate Malformations (DPM) and Bile cysts in the liver have been shown to adversely affect the outcome of a Kasai Portoenterostomy (KPE) in Biliary Atresia (BA). We studied the association of DPM (which is the persistence of fetal ductal arrays) with bile cysts /lakes (occurring due to a necro- inflammatory process in obstructed and dilated ducts) in the ex-plants of children with Biliary Atresia

Methods: All case records of children who underwent orthotopic liver transplant (OLT) in our institute over a 3year period (2011 -2013) was reviewed for demographic and clinical data. All ex-plant specimens were studied using routine stains (hematoxylin and eosin) and special stains (copper and collagen) as well as immunostaining with CK 19, a marker for ducts. Statistical correlation was done using Graph pad Prism 5 software.

Results: 30 children underwent OLT for BA (median age 12 months). All children had a prior Kasai Portoenterostomy (KPE) except 2 in whom the

diagnosis was missed. In all children, routine staining showed micronodular cirrhosis, ductopenia and bile plugs. Special stains for copper showed Grade 1 - 2 copper deposits. Mason's trichrome stain (for collagen) showed grade 5- 6 fibrosis (Ishak score). Bile lakes and cyst was seen in 56% of children (n=17). Ductal plate malformations (DPM) was seen in 53% (n=16) of children. DPM positivity was significantly associated ($p<0.001$) with a need for transplantation at a younger age (median age 12 months) compared to children with no DPM who were transplanted at a median age of 24 months. DPM as well as bile cysts and lakes were seen in 13 children who had a previous KPE and this association was significant ($p<0.008$). Ex-plants from 2 children who underwent primary transplantation also had DPM's and bile cysts/lakes.

Conclusion:

1. Children with DPM arrays in the liver needed transplantation at an earlier age.
2. In the presence of DPM in the liver, there was a significantly increased occurrence of bile lakes and cysts.
3. The incidence of DPM and bile cysts and lakes in ex-plant livers was higher than previously reported in biopsies of children undergoing KPE (50% and 40% respectively)
4. The pathogenesis of disease progression in BA is likely to involve an embryological as well as an ongoing inflammatory process.

Abstract # P-666

ABO Incompatible Living Donor Liver Transplantation in Pediatric Patients. Ko Hun Seo, Jin Min Cho, Seak Hee Oh, Kyung Mo Kim. *Asan Medical Center Children's Hospital, Seoul, Korea; Asan Medical Center Children's Hospital, Seoul, Korea; Asan Medical Center Children's Hospital, Seoul, Korea*

Background

Pediatric ABO-incompatible (ABOi) living donor liver transplantation (LDLT) is associated with a high risk of graft failure due to antibody-mediated humoral rejection. The aim of the study is to investigate the long-term outcome of ABO-incompatible LDLT in children.

Method

We retrospectively analyzed the medical records of 13 ABO-incompatible pediatric patients who underwent LDLT as Asan Medical Center between January 1996 and December 2011. The drug regimen for immunosuppression consisted of steroid, tacrolimus, and mycophenolate mofetil.

Result

The mean age of recipients was 3.9 years. Indications for LT in these 13 patients were biliary atresia (n=5), ALF (n=4), retransplantation (n=3), and congenital hepatic fibrosis (n=1). Two patients were administered with preoperative rituximab once and nine had preoperative plasma exchange. No splenectomy was performed. Six patients had postoperative plasma exchange due to high isoagglutinin titer. Neither antibody mediated nor hyperacute rejections were observed, while six patients had recurrent episodes of acute cellular rejection. Overall mortality was 38.5%. The cumulative survival probabilities of patient at 1st and 5th year were 81.3% and 61.3%, respectively, and the corresponding findings for graft survivals were 81.3% and 61.3%, which were significantly lower than those of ABO-compatible LDLT.

Conclusion

The long-term outcome of ABOi-LDLT protocol was not tolerable in our series. Although the protocols for ABOi transplantation have been evolving, new strategies to prevent chronic graft injury in ABOi-LDLT are also needed.

Abstract # P-667

Pediatric Liver Transplantation: Gazi University Experience. Hakan Sozen¹, Billur Demirogullari², Gokhan Yagci³, Sinan Sari⁴, Odul Egritas⁴, Buket Dalgic⁴, Aydin Dalgic¹. ¹Transplantation, Gazi University, Ankara, Turkey; ²Pediatric Surgery, Gazi University, Ankara, Turkey; ³General Surgery, GATA Medical School, Ankara, Turkey; ⁴Pediatric Gastroenterology, Gazi University, Ankara, Turkey

Liver transplantation(LT) has been very successful in treating children with end-stage liver disease(ESLD), and offers the opportunity for a long healthy life. **Material and Methods:** Totally 26 pediatric liver transplantations were performed to 24 children, since 2006 at Gazi University Transplantation Center/Ankara/Turkey. Data retrospectively collected from patient charts and hospital files. **Results:** Among 26 pediatric LTs, 14 recipients were boys and 12 were girls. Ten out of 24 LTs were done from deceased donor, 16 were done from living donor(LDLT). Median age of the recipient 5 years old (5 months

old- 16 yo). Fourteen out of 16 living LTs were done from 1st degree relatives, remaining two were from second and third degree relatives respectively. Reason for LTs were fulminant liver(n=6), trisomonia(n=4), cryptogenic cirrhosis(n=4),biliary atresia(n=3),PFIC(n=3),Wilson(n=2), neonatal hepatitis (n=1), α 1 anti-trypsin deficiency (n=1) respectively. Two re-transplantations required due to HAT and HVT. Totally 9 (34%) surgical complications encountered during follow-up: vascular (n=3), biliary(n=3), other(n=3). As vascular complication: HAT(n=2) and hepatic vein thrombosis(HVT) (n=1). Biliary complication:biliary stenosis(n=2), biliary leak(n=1) and as others; post surgical bleeding(n=2), spontaneous small bowel perforation (n=1). One of the HAT case was required re-transplantation, after retransplantation patient died due to sepsis on PO10. Other HAT case successfully solved by conventional radiology using stents without any problem. HVT occurred in LDLT. Thrombosis detected mid-intraparanchimal graft left vein. Retransplantation successfully performed at PO1. One of the postsurgical bleeding case was occurred from the Roux-Y anastomosis and required anastomosis revision, after the surgery, patient did well. Other bleeding case was solved with medical treatment. Spontaneous bowel perforation diagnosed at the PO10 day. Surgery was performed successfully. Totally 5(19%) patients died during median 79 days(66-2475 days); hepatic artery thrombosis(n=1), DIC(n=1), small for size syndrome(n=1), sepsis(n=1), unknown(n=1) respectively. **Conclusion:** Pediatric liver transplantation is a challenging and rewarding field with continued improvements in patient and graft survival.

Abstract # P-668

Parenteral Nutrition Supplementation in Children With Biliary Atresia Awaiting Liver Transplantation. Robert S. Venick^{1,2}, Sue V. McDiarmid^{1,2}, Marjorie Guerra¹, Susan Feist², Laurie Reyen¹, Laura J. Wozniak¹, Jorge H. Vargas¹, Douglas G. Farmer², Ronald W. Busuttil². ¹Pediatrics, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA; ²Surgery, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA

Background: Biliary atresia is among the leading causes of chronic cholestasis and liver transplantation (LTx) in pediatrics. Children with BA are prone to malabsorption of enteral calories, and increased energy expenditure. Ensuing malnutrition can put these patients at higher risk of poor outcomes pre and post-LTx.

Methods: This retrospective study aimed to describe a large, single center's experience with parenteral nutrition (PN) supplementation for children with BA awaiting LTx, and to identify the impact PN use may have on outcomes. Methods: All recipients < 18 y/o who underwent LTx for BA between 2004-2013 were included. Height, weight, and PELD scores were compared at listing and at LTx for those children who received PN vs. those who did not. Complications of PN were analyzed as were patient and graft survival. Results: 65 of the 186 transplants performed during this time were for BA (35%). 26 of the 65 children with BA received pre-LTx PN for a mean of 4.1 months. Indications for PN were malnutrition and intractable ascites. Mean PN calories at time of LTx were: 69+/-18 kcal/kg/day. Comparison of the two groups is indicated below (Table 1). A positive trend was seen in height and weight Z-scores from listing to LTx for children on PN. 5 of 26 (19%) patients on PN experienced a single central line associated blood stream infection successfully treated with IV antibiotics.

Conclusions: As one of the only analyses of its type, this study demonstrates that PN improves the nutritional status of malnourished infants and toddlers with BA awaiting LTx, and contributes to the achievement of post-LTx outcomes comparable to older children.

Table 1

Variable	Patients on PN (n=26)	Patients NOT on PN (n=39)	(p-value)
Age at Listing (months)	7.8±4.4	42.8±56.0	0.001
Weight at Listing (kg)	6.6±1.8	13.7±11.7	0.0006
Height at Listing (cm)	63±6	81±21	0.0005
PELD Score at Listing	12.3±8.6	11.3±10.4	0.67
Duration on PN (months)	4.1±4.0	NA	
Waiting Time (months)	6.9±8.0	10.2±11.1	0.20
Weight at LTx (kg)	8.5±2.0	17.8±14.6	0.001
Height at LTx (cm)	70±8	95±34	0.0003
PELD Score at LTx	19.9±7.5	17.7±16.1	0.33
1/5 Year Graft Survival%	77 / 77	83 / 80	0.76
1/5 Year Patient Survival%	94 / 94	88 / 88	0.41

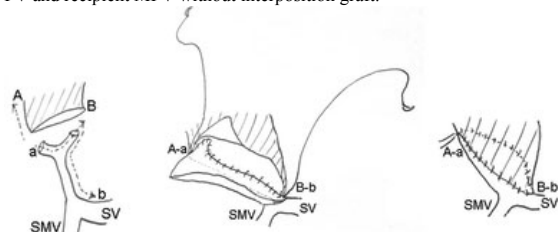
Abstract # P-669

Novel Technique of Portal Vein Reconstruction in Pediatric Liver Transplantation with Portal Vein Hypoplasia. Nam-Joon Yi¹, Jeong-Moo Lee¹, Suk-Won Suh¹, YoungRok Choi¹, Kwang-Woong Lee¹, Kyoung-Suk Suh¹, Ung Sik Jin², Chul-Woo Jung³.

¹Surgery, Seoul National University College of Medicine, Seoul, Korea; ²Plastic and Reconstructive Surgery, Seoul National University College of Medicine, Seoul, Korea; ³Anesthesiology and Pain Medicine, Seoul National University College of Medicine, Seoul, Korea

Background. Children with portal vein (PV) hypoplasia (≤ 4 mm in diameter) represent a challenge for liver transplantation (LT). A variety of techniques including an interposition conduit or patch-plasty have been used to overcome size mismatch in PV reconstruction of these patients. We simplified a PV reconstruction technique without interposition graft in children with PV hypoplasia.

Methods. Since 2012, consecutive 7 pediatric recipients (median age; 8 months, 4 males) with PV hypoplasia underwent LTs (living donor LTs in 5, split LT in 3) due to biliary atresia. The median pre-transplant maximum main PV (MPV) diameter on the contrast CT scans was 2.89 (range, 1.66-3.69) mm. Direct anastomosis was made in elliptoid appearance between donor left PV and recipient MPV without interposition graft.



The MPV diameters and flow rates were serially measured on Doppler ultrasonography or contrast CT scans at 1-, 3-, and 12-month after transplantation.

Results. All grafts and patients were survived. PV problem was not detected during a median follow-up of 436 (370-556) days. The post-transplant MPV diameter was 8.28 (range, 6.82-10.1) mm at one month and 8.70 (range, 7.90-11.60) mm at 12 months after LT.

Conclusion. This direct elliptoid anastomosis is simple and its short-term results are encouraging in pediatric LT with PV hypoplasia. PV patency should be closely monitored during long-term follow-up.

Abstract # P-670

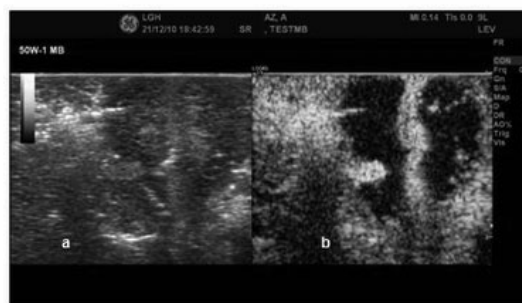
Contrast-Enhanced Ultrasound Provides Better Assessment of the Microwave Ablations in an Ex Vivo Perfused Liver Model. Ahmed Alzarar¹, Wen Yuan Chung¹, Bruno Morgan², Kevin West³, Ashley Dennison¹, David Lloyd¹. ¹Hepatobiliary Surgery, University Hospitals of Leicester, Leicester, United Kingdom; ²Radiology, University Hospitals of Leicester, Leicester, United Kingdom; ³Histopathology, University Hospitals of Leicester, Leicester, United Kingdom

Background:

Microwave ablation (MWA) under different imaging guidance is a new technique for treating liver malignancies. Our study demonstrates the use of contrast-enhanced ultrasound (CEUS) in the assessment of the ablation zone in an ex vivo perfused porcine liver model.

Material and methods: Five ex vivo porcine liver models were used. MWA ablations were created with three powers (50W, 70W, 90W). Dimensions of the ablations were measured on morphology, gray-ultrasound (US) and CEUS. Biopsies from the ablated areas were taken for histology. ANOVA test was used to analyse data. quantification of contrast agents was done with a specific software.

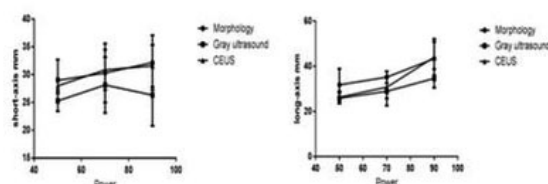
Results: Better demarcation of the lesion with CEUS.



Lesion dimensions correlated on morphology & CEUS when compared with gray-US with a significant difference ($P=0.0001$) in the long axis of the ablation, and a significant difference in the lesion size between powers ($P=0.0064$). There was no difference in the short-axis on morphology, gray-US and CEUS, but there was a significant difference in the lesion size between powers ($P=0.0306$). On histology, a significant difference in the width of the transitional zone (TZ) was noticed between powers 50W and 90W ($P=0.015$).

Figure 2A

Figure 2B



Conclusion: CEUS reflects actual lesion size. This characteristic can be implemented in clinical practice, especially when immediate evaluation of a lesion is required during treatment to achieve its complete destruction in situ, avoiding further intervention afterwards, saving time and reducing cost without compromising patient safety.

Abstract # P-671

Evaluation of ¹¹C-Acetate and ¹⁸F-FDG PET Scan With Contrast CT on Pathological and Prognosis Prediction in HCC Patients before Liver Transplantation- A Single-Institute-Experience. Tan To Cheung¹, See Ching Chan¹, Garret C.L. Ho², Kenneth S.H. Chok¹, Albert Chan¹, William Sharr¹, Siromg Chan², Ronnie Poon¹, Sheung Tat Fan¹, Chung Mau Lo¹. ¹Surgery, The University of Hong Kong Queen Mary Hospital, Hong Kong, Hong Kong; ²Nuclear Medicine, the Hong Kong Sanatorium and Hospital, Hong Kong, Hong Kong

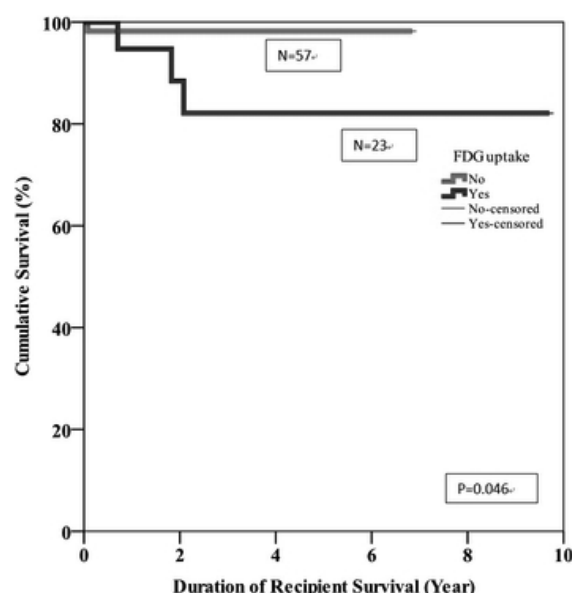
Background: The sensitivity of contrast CT scan and MRI for HCC staging is far from satisfactory. We investigated whether contrast computed tomography (CT) together with position emission tomography (PET) using two tracers, ¹¹C-acetate and ¹⁸F-FDG, provides a more accurate staging by comparing directly to the liver explants.

Method: Data of 80 HCC patients having the dual-tracer PET together with contrast CT before surgery between January 2004 and October 2013 were reviewed. 26 underwent deceased donor liver transplantation and 54 underwent live donor liver transplantation. Results of preoperative HCC staging were compared with pathological results after surgery.

Results:

Total 124 tumours were identified. The median tumour number were 1 (1-4) and the median size was 3.5cm (0.3-8.0). The overall accurate predication of final pathology in terms of UCSF criteria by contrast CT scan alone was 40/76 (52.6%), by FDG alone was 19/76 (25.0%), by C acetate alone 59/76 (77.6%) and by overall combination of 3 assessment was 60/76 (78.9%) ($p<0.0001$). From the pathological examination, there were 5 tumours <1 cm, the sensitivity by contrast CT scan alone, by FDG alone, by C acetate alone and by overall combination of 3 assessment were 0/9 (0%), 1/9 (11.1%), 1/9 (11.1%) and 1/9 (11.1%) respectively ($p=0.779$). For tumour range from 1-2cm, the respective sensitivity was 22/45 (48.9%), 4/45 (8.9%), 31/45 (68.9%) and 34/45 (75.6%) respectively ($p<0.0001$). For tumour >2 cm the respective sensitivity was 44/68 (64.7%), 23/68 (33.8%), 54/68 (79.4%) and 59/68 (86.8%) respectively ($p<0.0001$).

23 (29.1%) patients were FDG-avid and their overall survival rates were significantly lower. ($P<0.05$).



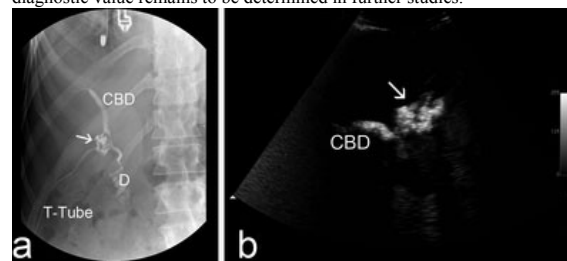
Conclusion: Dual tracer PET/CT has very high accuracy in HCC predictions. It may also provide prognostic indicators for patient receiving liver transplant.

Abstract # P-672

Contrast Enhanced Ultrasonic Cholangiography Via T-Tube Following Liver Transplantation.

Sascha S. Chopra¹, Daniel Seehofer¹, Christian Grieser², Peter Neuhaus¹, Timm Denecke². ¹Department of General, Visceral and Transplantsurgery, Charité Campus Virchow Clinic, Berlin, Germany; ²Department of Radiology, Charité Campus Virchow Clinic, Berlin, Germany

The objective was to evaluate contrast enhanced ultrasound (CEUS) based cholangiography compared to conventional radiography as a reference method in patients after liver transplantation. Contrast agents were administered through T-tubes, which were placed during the operation. Twelve patients with side-to-side choledocho-choledochostomy and standardized intraoperative T-tube placement were investigated on the 5th postoperative day (POD 5) with both techniques. All images were digitally acquired and assessed in consensus by two investigators regarding complete anatomic visualization, depiction of pathology (e.g. delayed contrast outflow, stenosis, leakage) and general image quality. CEUS cholangiography showed comparable results in the detection of biliary pathology and overall image quality. Regarding the visualization of the extrahepatic bile duct CEUS produced limited results in 6 patients. In conclusion, CEUS cholangiography via T-tube represents a potential bedside test for visualization of intrahepatic bile ducts of transplanted livers; its diagnostic value remains to be determined in further studies.



Abstract # P-673

A Specimen Quality Analysis between Interventional Radiology and Gastroenterology from a Single Center.

Maura O'Neil², Sean Kumer¹, Marc Heronemus¹, Timothy Schmitt¹, Beenish Ahmed¹, Philip Johnson¹, Steven Lemons¹, Ryan Taylor¹, Zach Collins¹, Richard Gilroy¹. ¹Transplantation, University of Kansas Medical Center, Kansas City, KS, USA; ²Pathology, University of Kansas Medical Center, Kansas City, KS, USA

Introduction: Liver biopsies are an essential diagnostic tool post-transplant to evaluate disease recurrence and possible rejection episodes. It has been shown that small biopsy size compromises the ability to accurately diagnose and stage disease. Interventional Radiology (IR) and Gastroenterology (GI) are both utilized for liver transplant biopsies; however, the size (diameter and length) of specimens submitted to pathology may differ. This study evaluates the diagnostic utility of specimens provided by each group.

Methods: A retrospective study of 300 consecutive patients at a single center undergoing liver biopsies from May 2013 to August 2013 was performed. Attending physician, resident, location of service, and hospital admissions post biopsy were recorded. Laboratory values, diagnosis, number of portal tracts, and specimen length, width and diameter were documented. Specimen size was then analyzed between IR and GI. Statistical analysis was done using paired T-tests.

Results: Of the 300 liver biopsies performed, 102 were liver transplant biopsies and of these 60 were performed by IR (59%) and 42 by GI. Laboratory value averages from IR and GI prior to liver biopsies: AST 127.8 & 38.8 U/L, ALT 138.8 & 44.7 U/L and Alk Phos 361.0 U/L & 121.2 U/L, respectively. PT and liver enzyme values were significantly higher prior to biopsies performed in IR than biopsies performed in GI (p-value < .001). Average specimen size from IR and GI: Length 1.39 & 1.35 cm, Width 0.33 & 0.27 cm, and Diameter 0.10 & 0.13 cm, respectively. The width of IR biopsy specimens was significantly wider than GI biopsy specimens (p-value .049). Average number of portal tracts for IR and GI: 17.20 & 11.42 (p-value .09). The number of post IR biopsy hospital admissions was trending towards significant compared to post GI biopsy hospital admissions.

Conclusion: Both GI and IR produce specimens significant for interpretation, although IR provided on average larger specimens with more portal tracts. Associated with IR was an increased trend towards hospitalization post biopsy, likely due to illness severity. Further studies are required in this area.

Abstract # P-674

Measurement of Hepatic Vascular Arrival Times at Immediate Post-Transplantation Period Using Contrast Enhanced Ultrasonography.

Woo Kyoung Jeong¹, Ji Hye Min¹, Won Jae Lee¹, Kyoung Won Kim². ¹Radiology, Samsung Medical Center, Seoul, Korea; ²Radiology, Asan Medical Center, Seoul, Korea

Purpose: To explore a median values of hepatic vascular [hepatic arterial (HA), portal venous (PV), and hepatic venous (HV)] arrival times (HVATs) at the first post-operative day in the patients with following liver transplantation and to investigate the clinical implication of HVATs for estimation of the presence of vascular complication of transplanted liver

Materials and Methods: We explored 35 consecutive patients (M:F=32:3; mean age, 52.6 years) who underwent liver transplantation from March to July 2013. Contrast enhanced ultrasonography was performed at the first postoperative day to estimate the vascular complication of liver transplantation using Sonovue and a video clip of contrast US imaging per patient was recorded. For investigation of arrival time, two radiologists reviewed the video clips without information about the patients, and explored the time at which microbubbles reached to hepatic artery, portal vein and hepatic vein.

Results: Median hepatic arrival times of the patients without vascular complication were as followings: HA, 11 seconds; PV, 13 seconds; and HV, 17 seconds. Median differences between arrival times were as followings: PV-HA, 2 seconds; HV-PV, 4 seconds; and HV-HA, 6 seconds. In a patient with markedly decreased portal inflow due to a large portacaval shunt, PV-HA was slightly prolonged, and a patient who underwent angioplasty for HV stenosis showed that both PV-HA and HV and HA were prolonged. A patient with hepatic arterial thrombosis showed that PV inflow was detected firstly because HA inflow was not present.

Conclusion: Median values of HVATs were consistent in the patients without hepatic vascular complications. HVATs may be useful parameters for estimation of the presence of vascular complication following liver transplantation.

Abstract # P-675

Diagnostic Efficiency of CT Perfusion Imaging for Detection of the Cirrhosis-Associated Hepatocellular Carcinoma in Patients With Liver Transplant Candidates. Mecit Kantarci¹, Berhan Pirmoglu¹, Leyla Karaca¹, Aylin Okur¹, Bulent Aydinli², Betul Gundogdu³. ¹Radiology, Ataturk University School of Medicine, Erzurum, Turkey; ²General Surgery, Ataturk University School of Medicine, Erzurum, Turkey; ³Pathology, Ataturk University School of Medicine, Erzurum, Turkey

Objective: The purpose of this study was to determine the diagnostic value of computed tomography (CT) perfusion imaging for differentiating cirrhosis-associated hepatocellular carcinoma (HCC) in patients with liver transplant candidates.

Materials and methods: Twenty-one patients with liver transplant candidates and 41 focal liver lesions with suspected diagnosis using ultrasonography or assessment of the clinical and laboratory findings underwent CT perfusion imaging by using a second-generation 256-slice CT scanner. 12 healthy LDLT recipients composed the control group. Perfusion CT imaging is a novel application revealing a quantitative map of tissue perfusion with parameters such as the blood flow (BF), blood volume (BV), mean arterial liver perfusion (ALP), portal liver perfusion (PLP) and hepatic perfusion index (HPI). The colored functional maps were formed for BV, BF, ALP, PLP, and HPI. We compared the mean perfusion parameters of the affected tumoral areas and the normal liver parenchyma.

Results: Hepatic lesions were verified by results of percutaneous biopsies (n=32, 78.1% HCC lesions; n=9, 21.9% metastasis) and obtained from pathologically elevated α -fetoprotein (AFP) values (>196 ng/ml) (n = 32 lesions). Compared with the normal liver parenchyma, although PVP and BV were significantly lower, ALP, HPI and BF were higher in the affected vascular territory region than in the normal liver parenchyma (p<0.05). We also obtained the kinetic time – contrast enhancement pattern curves that were characteristic for HCC. This curve has a drop in parenchymal density after initial upstroke, indicating contrast washout (a rapid initial rise, followed by a drop-off with time (washout) in the 40-60th seconds).

Abstract # P-676

Interventional Therapy of Recurrent Tumor after Liver Transplantation for HCC. Jun-Hui Sun, Yue-Lin Zhang, Chun-Hui Nie, Guan-Hui Zhou, Shu-Sen Zheng. *Hepatobiliary and Pancreatic Intervention Center, Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, The First Affiliated Hospital, College of Medicine, Zhejiang University, Hangzhou, Zhejiang, China*

Objective To evaluate the clinical value of transcatheter arterial chemoembolization (TACE)-based interventional therapy in treatment of recurrent tumor after liver transplantation for HCC.

Method. The patients included 22 male cases, 15 female cases, age 29–62 Y, mean age 43 Y. Orthotopic liver transplantation(OLT) 34 cases, living donor liver transplantation(LDLT) 3 case. HCC were confirmed by imaging diagnosis and postoperative pathologic examination before liver transplantation. Simple intrahepatic liver cancer recurrence 29 cases, with pulmonary metastasis 8 cases. The number of intrahepatic lesions in 29 patients was 85. The average diameter of tumors was 2.8 cm. Most intrahepatic recurrence of liver cancer were multiple(25/29), Average 4.0 lesions/patient confirmed by imaging or needle biopsy, and no indication for surgery. TACE therapy was performed for treatment of intrahepatic recurrence of liver cancer. Embolization suspension was consisted of 50 mg/m2 of doxorubicin hydrochloride, 130 mg/m2 of oxaliplatin, and 2 ~ 20ml of iodized-oil. Catheter was guided from femoral artery and superselectively placed into the feeding arteries for selective embolization. Patients with lung metastasis underwent bronchial artery infusion chemotherapy simultaneously. Result TACE therapy was performed successfully for 55 times and BAI were performed successfully for 12 times. The DSA findings: demonstrated the recurrent tumors' blood supply was relatively not abundant compared with primary HCC. Intrapulmonary DSA showed multiple nodules stain in the lung, and part of the bronchial artery enlargement. Related liver and kidney toxicity or other serious complications were not found. Survival rate after treatment were 3 months/100 %, 6 months/85. 7 %, and 12 months/67. 8 %. Conclusion Transcatheter arterial chemoembolization-based interventional therapy is an effective treatment of recurrent tumor after liver transplantation for HCC.

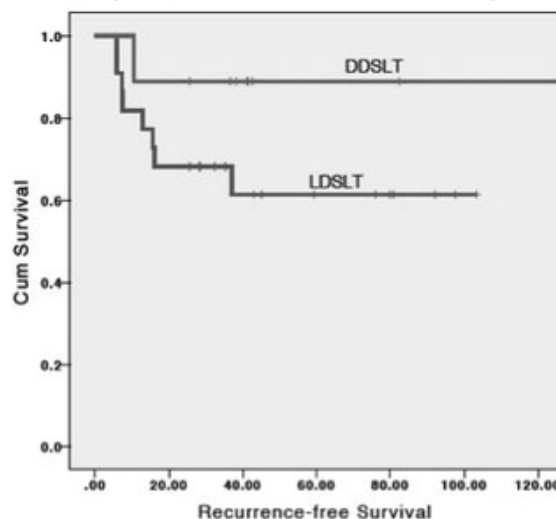
Abstract # P-677

Impact of Graft Type on the Survival Outcome of Salvage Liver Transplantation for Recurrent Hepatocellular Carcinoma. Albert Chan, See Ching Chan, Kenneth Chok, Tan To Cheung, Chung Mau Lo. *Department of Surgery, The University of Hong Kong, Hong Kong, Hong Kong*

Aim: To evaluate the prognostic influence of graft type on salvage liver transplantation (SLT) for recurrent hepatocellular carcinoma (HCC)

Methods: A retrospective analysis of 31 patients who underwent SLT for tumor recurrence after primary surgical treatment for HCC between year 2000-2011 was conducted. All the primary tumors were within UCSF criteria. Survival analysis was conducted by Kaplan-Meier methods and compared between groups by log-rank test. P-value < 0.05 was considered significant. Results:

A total of 22 patients received living-related SLT (LDSLT) and the remaining 9 patients received cadaveric-related SLT (DDSLT). 10 patients (LDSLT: n=7; DDSLT: n=3) underwent hepatectomy and 21 patients (LDSLT: n=15, DDSLT: n=6) received radiofrequency ablation as primary treatment for HCC prior to SLT. 11 patients (LDSLT:n=9 vs. DDSLT:n=2, p=0.324) underwent SLT for recurrence beyond the UCSF criteria. 5 patients in each group received TACE as bridging treatment. LDSLT patients were significantly younger (age 53 vs. 58, p=0.046)) and had higher AFP levels (187.1 vs. 30.5ng/ml, p = 0.006) at first diagnosis of HCC than DDSLT patients. There was no significant difference with regard to primary tumor size (2.5 vs. 2.5cm), time to recurrence after primary treatment (15 vs. 8 months), recurrent tumor size (4.0 vs. 4.0cm) and number (n=2 vs. 2), and serum AFP level at recurrence (27.5 vs. 5.0ng/ml) between the two groups. The 1-, 3- and 5-year recurrence-free survival rates for LDSLT were 81.8%, 61.4% and 61.4%; and the corresponding survival rates for DDSLT were all 88.9% (p = 0.176).



Conclusion

Our study showed that both LDSLT and DDSLT attained satisfactory long-term survival benefit. Although statistically insignificant, DDSLT appeared to have a more favorable oncological outcome than LDSLT. Further studies with larger cohort are warranted to elucidate this issue.

Abstract # P-678

Prevalence of Donor Specific Antibodies in Liver Transplantation Recipients With Unexplained Liver Graft Abnormalities Is Significantly Higher Than in Control Groups. Ainaad Ghandir¹, Marynnovick Carmagnat², Elie Serge Zafrani¹, Françoise Roudot Thoraval¹, Philippe Mavrier¹, Monika Hurtova¹, Ariane Mallat¹, Dominique Desvaux¹, Cyrille Feray¹, Caroline Suberbielle², Christophe Duvoux¹. ¹Liver Transplant Unit and Laboratory of Histopathology, Henri Mondor Hospital Paris Est University France, Creteil, France; ²Laboratory of Histocompatibility, Saint Louis Hospital Paris, Paris, France

Introduction :

Antibody-mediated rejection is well-defined after kidney transplantation but remains controversial after liver transplantation.

Aim: to investigate the role of donor-specific-antibodies(DSA) in liver transplant recipients with long-term liver graft dysfunction.

Patient and method:

- Consecutive LT recipients between January and December 2012
- Reference group G0:
- Unexplained graft dysfunction/significant liver fibrosis by Fibroscan®
- Excluded: ischemic cholangiopathy, HBV, HCV, HEV post LT infections, autoimmune hepatitis.
- Control groups:
- G1: primary LT, normal liver function tests (LFT)
- G2: primary LT, abnormal LFT
- G4: HCV postLT

Patients tested for DSA (results in MFI)

Prevalence of DSA and MFI were compared between reference and control groups.

Results :

91pts (males: 67): 22 patients with unexplained LFT abnormalities (G0), 31,19, 3,16, pts in G1,G2,G3,G4 investigated 9.6yrs after LT. 14(18.7%) pts had been retransplanted. Anti HLA class I and class II antibodies were found in 86 and 100% in G0, and in 60 and 69% in G1-G4, respectively (p<0.001). DSA were found in 95.5% in G0, anti class II in all cases, median MFI 9916 and in 50.9 % in G1-G4, median MFI 3443 (p <0.001).

Prevalences of DSA in G1, G3 and G4 were 45.2, 52.6 and 68.8% respectively (NS)

Conclusion:

Prevalence of DSA is extremely high(95%) and significantly higher than in control groups(50%) in patients with unexplained liver graft dysfunction on the long term.

In HCV positive pts, the prevalence of DSA was also found high and raises the issue of HCV as a contributor to anti-HLA sensitization.

Abstract # P-679

Tuberculosis in Liver Transplant Recipients-Experience from a South Indian Liver Transplant Center. Arikichenin Olithselvan, Vivekanan Shanmugam, Mukul Vij, Naresh Shanmugam, Gomathy Narasiman, Rajsekar Perumalla, Srinivas Reddy, Joy Vargese, Dinesh Jothimani, Mohamed Rela. *Liver Disease and Transplantation, Global Hospitals and Health City, Chennai, India* BACKGROUND: Tuberculosis continues to be a global scourge and India accounts for one-fifth (21%) of the global disease burden. It is estimated that about 40% of Indian population is infected with TB-bacillus. Tuberculosis is a serious disease in liver transplant recipients (LTR). Data on post-liver transplantation tuberculosis from high-burden countries is scant

AIMS: To describe the prevalence of tuberculosis in LTRs from a high prevalence area and to analyze the risk factors for development of post-liver transplant tuberculosis.

METHODS: Retrospective review of our computerized database and case-control study of identified cases with tuberculosis and age-matched LTRs without tuberculosis

RESULTS: The overall prevalence of tuberculosis in LTRs was comparable to the prevalence of tuberculosis in LTRs from low-prevalence countries (5/214, 2.3%). A low-rate of Interferon-γ release assays (IGRAs) testing prior to liver transplant was observed (68/214, 31%). Most patients were screened clinically and using chest radiography alone prior to transplant. Tuberculosis developed variably, within a median of 72 (IQR 534) days post transplantation. Presentation was mostly extra-pulmonary and/or disseminated (4/5, 80%). When cases with post-transplant tuberculosis were compared with matched healthy LTRs, the presence of unexplained granulomas in explants (2/5, 40%, p=0.01) was the only factor associated with the development of tuberculosis. When all explants showing granulomas were reviewed, tuberculosis (52.9%) remained the most common cause; however, in almost half (47.1%), other attributable causes were found. Patients were treated with a standard daily regimen for a median of 12 (IQR 7.5) months. Post-transplant tuberculosis was associated with high mortality (2/5, 40%)

CONCLUSION: We observed a low prevalence of tuberculosis in LTRs in a high-prevalence region. The presence of granulomas suggestive of tuberculosis in liver explants warrants isoniazid prophylaxis in the absence of disease. Post-liver transplant tuberculosis is associated with high mortality. The role of routine IGRA-testing and isoniazid prophylaxis in a high-prevalence setting needs to be urgently studied.

Abstract # P-680

Severe Steatosis As the Initial Histologic Manifestation of Early Recurrent Hepatitis C. Neeraj Saraf¹, Narender S. Choudhary¹, Sanjiv Saigal¹, Dheeraj Gautam², Ravi Mohanka¹, Amit Rastogi¹, Sanjay Goja¹, P. Balachandran Menon¹, Arvinder S. Soin¹. ¹Medanta Liver Institute, Medanta, The Medicity, Gurgaon, Haryana, India; ²Department of Histopathology, Medanta, The Medicity, Gurgaon, India

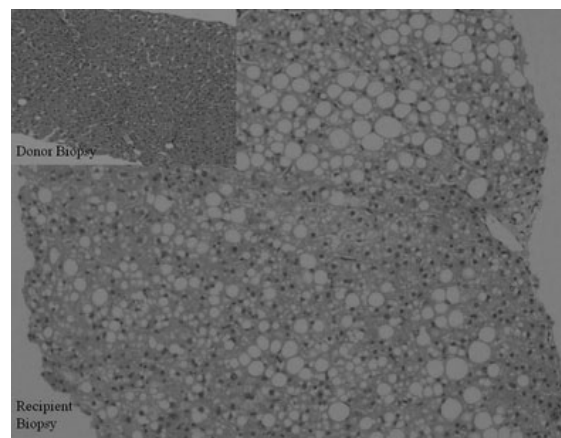
Background: Steatosis is common in recurrent hepatitis C; however, the extent of involvement is generally minimal to mild. Severe steatosis as an initial histologic presentation of hepatitis C recurrence is rare.

Methods: From Jan 2002 to Nov 2013, 1349 patients underwent living donor liver transplantation, 359 patients were transplanted for hepatitis C. Liver biopsy was done as a protocol or in patients with deranged liver function tests after exclusion of other causes. Patients with histological recurrence (n=104) were assessed for severe steatosis as presenting feature retrospectively.

Results: Five patients (4.8%) had severe steatosis with portal and lobular lymphocytic inflammation suggestive of hepatitis C recurrence. All of these patients had no features of metabolic syndrome post-transplantation (no diabetes or hypertension, normal lipid profile, body mass index (25.2±3.7kg/m²). No patient had any history of alcohol. All patients had early recurrence of hepatitis C, mean transplant to biopsy interval was 2.4±0.8 months. Immunosuppression therapy consisted of Tac, MMF and tapering steroids. Three patients received treatment of whom 2 had treatment failure. Donors of all patients had a normal liver biopsy prior to transplantation (intraoperative /preoperative). Characteristics of individual patients are shown in table 1.

Patient characteristics

S. No	Age, sex	HCV RNA IU/ml at time of liver biopsy	Genotype	Steatosis %	Treatment response
1	56 M	3707298	1	80	stopped at 12 weeks
2	54 F	10542310	3	80	stopped at 12 weeks
3	58 M	1345526	3	60	RNA negative at 4 and 12 weeks
4	64 M	1858181	3	70	Plan for treatment
5	62 F	23004712	3	70	Plan for treatment



Conclusion: Severe steatosis is a unique and uncommon presenting feature of recurrent hepatitis C presenting as early graft dysfunction following LDLT and can occur in both genotype 1 and 3. Recognition of this phenomenon is important and confirmation with viral markers is necessary to provide optimal treatment.

Abstract # P-681

Indolent T-Lymphoblastic Proliferation (iT-LBP) in Hepatocellular Carcinoma (HCC): A Novel Prognostic Marker? Mei Kong¹, Jimin Liu^{1,3}, Xiaodong Teng¹, Hongtian Yao¹, Ming Zhao², Chaozhe Jiang¹, Zhaoming Wang¹. ¹Department of Pathology, The First Affiliated Hospital of Zhejiang University, Hangzhou, Zhejiang, China; ²Department of Pathology, Ningbo Yinzhou Second Hospital, Ningbo, Zhejiang, China; ³Department of Pathology and Molecular Medicine, McMaster University, Hamilton, ON, Canada

Background: Indolent T-lymphoblastic proliferation (iT-LBP) is a new and rare entity. It was first reported in 1999 as recurrent lymphoid masses in oropharyngeal region. There were only 10 reported cases in the literature.

The first case of iT-LBP - HCC was reported from our center in 2006. Six additional HCC with accompanied iT-LBP were identified. The aim of the study was to describe the clinicopathological features of iT-LBP in HCC and to further explore its possible value as a prognostic marker for HCC patients. Materials and Methods: All six patients, from 2009 to 2012, had hepatic segmentectomy. Specimens were routinely processed for hematoxylin and eosin stains, immunohistochemical stains, and polymerase chain reaction (PCR) analysis for T-cell receptor gene rearrangement.

Results: There were 4 male and 2 female patients, aging from 40 to 62 year old. All were HBV positive and 4 cases expressed high serum AFP.

Most tumors were solitary and measuring 1.5 cm to 3.5 cm. All HCCs were moderately differentiated and mixed with numerous small lymphocytes. The lymphocytes were in clusters, sheets or ill-defined follicles. The ill-defined follicles were composed of lymphocytes with onion-skin appearance, interspersed by hyalinized stroma.

All HCC cells were diffusely positive for HepPar1. 3/6 HCC cases were positive for AFP. TdT positive lymphocytes were dispersed among HCC cells or present in small clusters and at the periphery of the ill-defined follicles. These TdT positive lymphocytes also expressed T cell markers and high Ki67 expression.

No clonal gene rearrangement was detected.

All patients were alive and free of lymphoproliferative disorders after a follow-up from 7-43 month. However, 3/6 HCC patients developed recurrence.

Conclusions: iT-LBP is a unique pathological entity, which often involves organs capable of resuming their extramedullary hematopoiesis. In this study, iT-LBP was identified in all 6 HCC cases. 50% of these patients developed intrahepatic recurrence, which suggests iT-LBP may be used as a prognostic marker for HCC patients. However, a large scaled study with a long term follow up is needed to further validate the hypothesis.

Abstract # P-682

Abnormal Hemostatic Function One Year after Orthotopic Liver Transplantation Can Be Fully Attributed To Endothelial Cell Activation. Freeha Arshad¹, Jelle Adelmeijer¹, Hans Blokzijl², Aad P. van den Berg², Robert J. Porte¹, Ton Lisman¹. ¹*Surgery, University Medical Center Groningen, Groningen, Netherlands;* ²*Gastroenterology, University Medical Center Groningen, Groningen, Netherlands*

Background: The long-term risk for thrombotic and vascular disease is elevated in liver transplant recipients compared to the general population. Several laboratory studies have provided evidence for a hypercoagulable state in patients with chronic liver disease during and directly after orthotopic liver transplantation. It is yet unknown whether this hypercoagulable state persist in the long term after in liver transplant recipients.

Aim: To investigate the hemostatic status of the liver transplant recipient one year after orthotopic liver transplantation.

Methods: We collected clinical data and blood samples of 15 patients with a normal functioning graft one year after orthotopic liver transplantation and of 30 healthy volunteers. We performed various assays to assess the status of primary and secondary hemostasis, as well as the fibrinolytic system.

Results: Patients one year after orthotopic liver transplantation appeared to have a hyperreactive primary hemostatic system, as evidenced by significantly higher levels of von Willebrand factor and soluble P-selectin compared to controls. Thrombin generation, as measured by the endogenous thrombin potential, was decreased in patients as compared to controls both in presence and absence of thrombomodulin (natural activator of the anticoagulant protein C pathway). Decreased thrombin generation potential was associated with increased levels of antithrombin and tissue factor pathway inhibitor. Plasma fibrinolytic potential was significantly decreased in patients compared to controls and correlated inversely with levels of plasminogen activator inhibitor-1.

Conclusion: Despite restoration of liver function, the hemostatic system of patients one year after orthotopic liver transplantation remains abnormal. Specifically, we found elevated levels of von Willebrand factor and decreased fibrinolytic potential may. These hypercoagulable changes appear to be (at least partly) compensated for by a decreased capacity to generate thrombin as a result of elevated levels of tissue factor pathway inhibitor and antithrombin. Elevation of both pro- and antihemostatic proteins found in this study are presumably linked to endothelial cell activation by immunosuppressive drugs.

Abstract # P-683

Living Donor Liver Transplantation With Total Vascular Exclusion: A Bloodless Alternative. Bulent Aydinli¹, Gurkan Ozturk¹, Unal Aydin², Nazim Dogan³, Ilker Ince³, Sukru Arslan¹, Sabri Selcuk Atamanalp¹, Ercan Korkut¹, Bunyami Ozogul¹.

¹*General Surgery and Transplantation Center, Ataturk University, Erzurum, Turkey;* ²*General Surgery, Izmir University, Izmir, Turkey;* ³*Anesthesiology, Ataturk University, Erzurum, Turkey*

Introduction

The piggy-back operation is commonly employed for both living and cadaveric liver transplantation. Especially, in living liver transplantation it is important to preserve the inferior vena cava (IVC). This technique however has some disadvantages including bleeding and long operation time. We presented herein our experience living donor liver transplantation with total vascular exclusion.

Patients and methods

Between May 2008 and December 2013 a total of 49 living donor liver transplantations were performed in our clinic, Ataturk University Organ Transplantation Center. The records of all patients were retrospectively investigated. Operation times, blood loss and duration of total vascular exclusion were noted.

Operative procedure

We performed all our living donor procedures with total vascular exclusion. At first step of this procedure the hilar structures (hepatic artery, portal vein, bile duct) are isolated and the connective tissue of the hepatoduodenal ligament is cleared. The IVC is freed from its posterior attachments so that it can be possible to cross clamp above the renal veins and just inferior the diaphragm and the right adrenal vein is ligated and divided. After the first preparation, dissection and ligation of the hepatic artery with appropriate length and the portal vein is also dissected and clamped. After dissection of the portal hilum, the inferior vena cava is cross-clamped at suprarenal and infra-diaphragmatic level. The liver is removed by leaving the IVC back. After completion of hepatic venous and portal venous anastomoses the cross-clamp is revealed.

Results

We performed 48 living donor liver transplants (LDLT) between November 2009 and December 2013. The mean total operation time was 351 (240-620) minutes. Mean total vascular exclusion time was 60.7 (35-120) minutes. Mean blood loss was 549,8 cc (200-2500).

Conclusion

Total hepatectomy with total vascular exclusion is a safe modality. It not only shortens the operation time but also decreases blood loss and thereby blood transfusions. Direct vision of the IVC ensures a large opening for the anastomosis of the right hepatic vein.

Abstract # P-684

Is Living Donor Liver Transplantation an Alternative for Patients With Non-Resectable Hepatic Alveolar Echinococcosis.

Bulent Aydinli¹, Gurkan Ozturk¹, Sabri Selcuk Atamanalp¹, Sukru Arslan¹, Ercan Korkut¹, Abdullah Kisaoglu¹, Aysenur Dostbil², Nazim Dogan², Kemalettin Ozden³, Omer Yilmaz⁴, Nesrin Gursan⁵, Mecit Kantarci⁶, Onder Tan⁷. ¹*Ataturk University, Department of General Surgery and Organ Transplantation Center, Erzurum, Turkey;* ²*Ataturk University, Department of Anesthesiology, Erzurum, Turkey;* ³*Ataturk University, Infectious Diseases, Erzurum, Turkey;* ⁴*Ataturk University, Department of Gastroenterology, Erzurum, Turkey;* ⁵*Ataturk University, Department of Pathology, Erzurum, Turkey;* ⁶*Ataturk University, Department of Radiology, Erzurum, Turkey;* ⁷*Ataturk University, Department of Plastic and Reconstructive Surgery, Erzurum, Turkey*

Alveolar Echinococcosis (AE) is a chronic and serious parasitic infection caused by the agent Echinococcus multilocularis (EM). Liver transplantation (LT) should be accepted as a life-saving treatment of choice in patients with AE for whom there is no other medical or surgical treatment options.

Herein, we present our LT experience in HAE treated with LT. A total of 18 patients with HAE were treated with LT. There were 10 males and 8 females patients. Thirteen patients underwent living and 5 deceased donor. Mean age was 41.6 (13-65). PNM stage was P4N1M0 for all patients. Indications for LT were recurrent cholangitis(11), biliary invasion(7), Budd-Chiari syndrome(5), portal hypertension(5), hilar invasion(11) and broncho-biliary fistula(1). Some patients had 2 or 3 co-existing indications for LT. Mean MELD score was 16.7. Mean hospitalization time was 30.3 days. Mean

follow up time was 7.6 months (3-28 months). Four patients underwent IVC revision, 1 patient had right pulmonary basal, diaphragm and IVC resection. In 2 patients diaphragmatic defect was replaced with polypropylene mesh.



Four patients died (2 *Clebsiella* sepsis, 1 small-for-size, one intracranial hemorrhage) at the postoperative follow-up. Concordantly, we want to emphasize that LDLT can be applied with confidence in these patients, even though some technical limitations.

Abstract # P-685

The Impact of Consecutive Liver Transplant Operations Started Within 12 Hours on Graft and Patient Survival – Do We Get It Right? Mayank Bhandari, Moustafa Mourad, Hynek Mergental, John Isaac, Paolo Muiresan, Simon Bramhall, Darius Mirza, Thamara Perera. *The Liver Unit, Queen Elizabeth Hospital, Birmingham, United Kingdom*

The impact of surgical transplant team fatigue on patient outcomes has not been previously studied. In order to assess the relationship of multiple liver transplants performed in a 12 hour period to patient outcome, we analyzed the impact of consecutive liver transplant operations on graft and patient survival. Aim: To analyze the effects of consecutive liver transplant (LT) operations performed in a 12 hr period as a proxy for surgical team workload and to analyze its impact on patient outcome.

Methods: A total of 311 (18.6%) of 1671 LT were performed consecutively (i.e. two or more liver transplant surgeries performed within a defined 12 hour period) during the year 2000 -2012. The outcome data of this consecutive LT group was compared with solitary LT performed during the same study period. The outcome data was also analysed within the consecutive LT group. Results: There were no preoperative clinical differences (age, sex, BMI, indication for transplantation, MELD score and waiting time) between solitary LT and consecutive LT groups. The donor characteristics were also evenly matched. Post-operative complications, biliary (16% vs. 20%) and early HAT (2.1% vs. 1.3%) were not significantly different. The incidence of post-operative bleeding and primary non-function were similar (1% and 1.3%) in both groups. There were no significant differences in graft ($p=0.219$) and overall ($p=0.485$) patient survival. On analysis within the consecutive transplant group, the findings were similar with no significant difference in graft and overall survival.

Conclusion: In the era of cadaveric organ shortage and transplant surgeons having no influence in the timing of organ donation process, facilitating multiple LT operations is safe and has no adverse effects on patient outcomes and safety.

Abstract # P-686

A Rare Case of Refractory Ascites Following Liver Transplantation: Report of a Case. Sacit Coban¹, Fahrettin Yildiz¹, Murat Taner Gulsen², Vahap Saricicek³, Nurullah Aksoy⁴. ¹*Solid Organ Transplantation, Gaziantep University Medical Faculty, Gaziantep, Turkey;* ²*Gastroenterology and Hepatology, Gaziantep University Medical Faculty, Gaziantep, Turkey;* ³*Anesthesiology and Reanimation, Gaziantep University Medical Faculty, Gaziantep, Turkey;* ⁴*General Surgery, Gaziantep University Medical Faculty, Gaziantep, Turkey*

Introduction: We present a case of a 34-year-old man who underwent liver transplantation for cryptogenic cirrhosis and developed refractory ascites on postoperative day 22.

Method: Following a prolonged work-up we could not find the cause of the ascites. The laboratory tests including liver enzymes were within normal

ranges. In this patient, infectious causes such as CMV and *tbc* were ruled out. On radiologic tests, computed tomography (CT) scan demonstrated marked ascites (Figure 1) with normal flow in VCI, Portal vein and Hepatic artery.



Doppler sonography of liver demonstrated normal doppler waveforms in these vessels. Liver biopsy was performed on postoperative day 25. Biopsy showed no pathologic findings. Radiological and biochemical tests did not reveal renal pathology. Serum-ascites albumin gradient revealed a low gradient indicating ascites of non-portal hypertensive etiology and total protein of ascites fluid was 2.8 g/dL. The ascite fluid culture was negative.

Results:

We started medical treatment of furosemid and spiranolakton. On postoperative day 45 the ascites was changed from severe to mild sonographically. With the continuation of treatment on postoperative day 60 the ascites were resolved. We stopped the medical treatment of furosemid and spiranolakton.

Conclusion: Now the patient is on postoperative 9th month with no ascites.

Abstract # P-687

Liver Proposed for Splitting in a Situation of Multiple Vascular Anomalies. Francesco D'Amico, Riccardo Boetto, Alessandra Bertacco, Domenico Bassi, Enrico Gringeri, Alessandro Vitale, Francesco Tuci, Umberto Cillo. *HPB Surgery and Liver Transplantation Unit, Padova University, Padova, Italy*

Introduction: This video/slides evidenced all the step that the donor equipe has faced during a procurement of a Liver for transplant from a DBD donor, in consideration that the liver was proposed for splitting.

Method: We will show the methods the surgical technique and the radiological findings during the harvest that has obligated at the end the chief of the liver team to abort the procedure of splitting and harvest the whole liver, in consideration of the vascular anomalies.

Results: During the video/slides we will show step by step all the decision that the liver team has considered, in accord with the team of the left segments, to go on with the splitting and the solution adopted.

Conclusion: As reported in literature the arterial reconstruction at the back table in a situation of vascular anomalies for splitting, has a high incidence of thrombosis, in particular if associated with portal and supra hepatic vein reconstruction or abnormal outflow.

Abstract # P-688

Nursing of Combined Pancreas and Kidney Transplantation during Perioperative Period after Liver Transplantation. Qiujiang Dou, Quan Qian, Furu Zhang, Haidan Ye. *Organ Transplantation Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China*

Objective: To investigate nursing of combined pancreas and kidney transplantation during perioperative period after liver transplantation.

Methods: The clinical data of combined pancreas and kidney transplantation after liver transplantation in 2 cases was retrospectively reviewed, and the experience of nursing was summarized.

Results: Pancreatic function in 2 patients after operation were normal, and blood glucose decreased to normal on postoperative 10 days without insulin therapy. Renal function returned to normal on postoperative one week, but serum creatinine increased progressively in second case after postoperative one week, and did not obviously decreased after immunosuppression treatment, and then conducted renal biopsy, indicating renal injury attributed to drug. After transferring FK506 to rapamycin, the renal function recovered step by step. At present, 2 patients were respectively followed up for 42 months and 15 months, with the normal function of liver, kidney and pancreas.

Conclusion: It was safe to conclude that combined pancreas and kidney transplantation in liver recipients was practical. Enhancing perioperative nursing care can effectively improve the recover of pancreas, renal function and simultaneously maintain the stable function of liver.

Abstract # P-689

Nursing Care of Patients Complicated With Diabetic Ketoacidosis after Liver Transplantation. Qiujiang Dou, Yingcui Liu, Bing Chen, Haidan Ye. *Organ Transplantation Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China*

Objective: To investigate the nursing care of patients complicated with diabetic ketoacidosis (DKA) after liver transplantation.

Methods: A retrospective analysis of 603 cases performed liver transplantation in our hospital from July 2006 to November 2013, only 1 case with DKA, the clinical data and nursing was summarized.

Results: The incidence rate of DKA after liver transplantation in this study was 1.66 %. After active treatment and nursing, symptoms of DKA in this patient was corrected, the blood sugar decreasing to normal, and the patient was successfully discharged after 14 days. Conclusion: The incidence rate of DKA after liver transplantation was rarely low, but in critical condition. Close observation of changes in condition, early and accurate diagnosis and treatment, and to strengthen the comprehensive nursing care was the key to successfully cure patients.

Abstract # P-690

Orthotopic Liver Transplantation for Polycystic Liver Disease.

Ming Han, Xiaoping Wang, Xiaopeng Yuan, Jian Zhou, Xiaoshun He. *Organ Transplantation Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, Guangdong, China*

Objective: To investigate the effect and experience of liver transplantation on polycystic liver disease. Methods: Nine polycystic cases subject to OLT from 2004 to 2012 were reviewed in The First Affiliated Hospital of Sun Yat-sen University. The datas of MELD score liver-kidney function and the amount of blood transfusion and loss during operation and the total time of operation and anhepatic phase and the postoperative complications survival time are summarized. Results: The average MELD is (16±9), and 5 cases suffered with polycystic kidney. Except one with cirrhosis, the other 8 cases had obvious liver functional lesion and bad quality of life. 7 had obvious abdominal distension and 3 cases needed dialysis. The average amount of blood transfusion was (1800±1600)ml, and loss was (3500±2600)ml. The average time of operation was (7.2±1.5)h, and anhepatic phase was (52.7±15.4)min. Three cases died from multiple organ failure by abdominal bleeding and acute rejection and circulatory failure respectively. All of the left 6 cases had been survived over one years, and the longest has been 8 years. The one-and-two year survival rates of this group are 77.8% and 66.7% respectively. Conclusions: OLT has been the effective therapy for polycystic liver diseases. Compared with other diseases, there is longer time of operation and more blood loss and more difficult for surgical skills, but favorable prognosis.

Abstract # P-691

Re-Adaptation of Full-Right-or-Full-Left Split Liver Grafts in an Allocation Network. Hermien Hartog¹, Anya Adair², Andrew Butler³, Carla Lloyd⁴, Khalid Sharif², Darius Mirza¹, Tamara Perera¹, John Isaac¹, Paolo Muiesan¹. ¹Liver Unit, Queen Elizabeth Hospital, Birmingham, United Kingdom; ²Scottish Liver Transplant Unit, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom; ³Department of Surgery, Addenbrooke's Hospital, Cambridge, United Kingdom; ⁴Liver Unit, Birmingham Children's Hospital, Birmingham, United Kingdom

Adolescent or small adult patients with bodyweight 30-60 kg on the waiting list for a liver transplant are disadvantaged due to severe shortage of size-matched grafts. Use of full-right-or-full-left split liver grafts (FRFLSL) may equalize opportunities on the waiting list for these patients. However, concerns of increased risks of complications for recipients of FRFLSL in comparison to the recipients of a whole graft has discouraged wide adaptation of FRFLSL in allocation programmes. After establishment of a functional living donor liver programme we have re-adapted the use of FRFLSL in selected patients/donors. We report our pilot results.

From 2011 onwards, FRFLSL procedure was performed in four deceased donor liver grafts, one graft was split in-situ. Seven split grafts were transplanted, one full-right split graft was not transplanted due to logistics.

50% of grafts were shared within regional allocation network. Recipients were 3 paediatric (Age 12-15yr, weight 33-39kg) and 4 adult patients (Age 24-69yr, weight 43-81kg) patients. Combined liver-kidney transplant was performed in 3 patients. Time on the waiting list had been 5-658 days. Cold ischaemia times ranged from 6:10 – 15:25hr.

Two patients died in the post-operative course (80-110 days post-transplant); due to aspergillosis-associated intracranial hemorrhage in one and due to ischaemic cholangiopathy with abdominal sepsis in the other. Both these patients had sustained bile leaks which were managed with drain/PTC insertion. One of these patients also developed thrombosis of reconstructed middle hepatic vein.

Five patients recovered well after a hospital stay of 14-56 days and, apart from Clavien-Dindo grade 2 complications unrelated to FRFLSL, experienced no graft-related complications. In conclusion, FRFLSL is a technically feasible option for recipients with bodyweight between 30-60 kg. Increased risk of complications should be balanced against the risk of prolonged waiting for a size-matched whole graft. A living donor liver programme provides the technical expertise to (re-)establish FRFLSL use.

Abstract # P-692

Unusual Migration of Ringed Polytetrafluoroethylene Middle Hepatic Vein Graft into the Stomach in a Patient Undergone Living Donor Liver Transplantation. Sung-Hwa Kang, Shin Hwang, Sung-Gyu Lee, Eol Choi, Jae-Hyun Kwon. *Division of Hepatobiliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center, Seoul, Korea*

Large vein allografts are suitable for middle hepatic vein (MHV) reconstruction, but their supply is often limited. We have presented that ringed polytetrafluoroethylene (PTFE) grafts combined with small allograft patches showed high patency rates comparable to those of iliac vein grafts; thus, they can be used for MHV reconstruction when other sizable vessel allografts are not available. No serious complication related to the use of PTFE graft was reported yet. We recently experienced a case of unusual migration of ringed PTFE graft into the stomach among more than 300 patients who underwent living donor liver transplantation (LDLT) using a modified right lobe graft with PTFE graft. The patient was a 48-year-old male with hepatitis B virus-associated liver cirrhosis and model for end-stage liver disease score of 16. The patient recovered uneventfully and discharged after 2 weeks. On computed tomography follow-up at 6 months, the PTFE graft was partially buried into the stomach wall, implicating unusual migration and penetration into the stomach.



The PTFE graft was occluded with partial filling of luminal air. At this time, the patient complained of any specific symptoms. Gastrofibroscopy revealed the PTFE graft was freely exposed into the gastric lumen.



Laparotomy was performed and the PTFE graft was removed. The perforated gastric wall was primarily repaired. The patient recovered uneventfully. Through this case, we suggest that it is necessary to closely monitor the PTFE graft because any unexpected complication can happen after LDLT.

Abstract # P-693

Bile Duct Complications Following Living Donor Liver Transplantation By Beginner Using Right Liver Graft. Jong Man Kim, Jin Yong Choi, Seunghwan Lee, Wontae Cho, Choon Hyuck D. Kwon, Jae-Won Joh, Suk-Koo Lee. *Department of Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea*

Backgrounds: Biliary strictures and bile leaks account for the majority of biliary complications after living donor liver transplantation (LDLT). Bile duct complications delay recovery from transplant, reduce quality of life, and may reduce the function and long-term survival of the allograft. The aim of this study is to examine differences in biliary complications between senior and junior surgeon as beginner in bile duct reconstruction after LDLT using a right liver graft, and to identify risk factors for biliary stricture.

Methods: We retrospectively reviewed the medical records of one hundred and thirty-six patients who underwent LDLT to identify patients who developed biliary complications.

Results: The senior surgeon performed 102 surgeries and the junior surgeon performed 34 surgeries. The proportion of patients with biliary stricture was similar between senior and junior surgeon (27.5% vs. 26.5%; $P=0.911$). However, the incidence of biliary leakage was higher for the junior surgeon than the senior surgeon (23.5% vs. 2.9%; $P=0.001$). The number of percutaneous drainages was higher for the junior surgeon than the senior surgeon due to the junior surgeon's high leakage rate. When the junior surgeon performed bile duct anastomosis, biliary leakage occurred in seven patients between the eleventh and twentieth cases. However, biliary leakage occurred to only one case thereafter. The 1-year and 2-year biliary stricture-free rates were 75.7% and 67.5%, respectively. Multivariate analysis showed that I-tube insertion, decreased the model for end-stage liver disease (MELD) score, and increased donor hospitalization were predisposing factors for biliary stricture.

Conclusion: The bile duct reconstruction of surgeon who was beginner in LDLT using right lobe grafts should be cautiously monitored and observed by a senior surgeon until the junior surgeon had performed 20 cases, due to junior surgeon's high incidence of biliary leakage in junior surgeon compared to that of senior surgeon who has experienced bile duct reconstructions in LDLT.

Abstract # P-694

A Safe and Reproducible Technique for Performing the Hepatic Arterial Anastomosis in Living Donor Liver Transplantation: the "W" Technique. Vinay Kumaran, Sorabh Kapoor, Barun Nath, Ankur J. Shah, Tushar Pawar, Vibha Varma. *Liver Transplant and HPB Surgery, Kokilaben Dhirubhai Ambani Hospital and Research Center, Mumbai, Maharashtra, India*

Background: We report a safe and reproducible technique for performing the hepatic arterial anastomosis in living donor liver transplants.

Patients and Methods: We reviewed a prospectively maintained database of all living donor liver transplants at Sir Ganga Ram Hospital, New Delhi, India and at Kokilaben Dhirubhai Ambani Hospital, Mumbai, India.

In the "W" technique, anterior and posterior sutures are placed in the arteries

inside-out using 7.0 polypropylene. The arteries are rotated and the right side of the arteries sutured first. The middle suture is placed first and the loop of suture inside the artery is drawn out between the lips of the arteries and clipped along with the ends of the suture. This everts and stretches out the edges of the arteries allowing 1-2 sutures to be accurately placed between the central "W" stitch and the corner stitch. The sutures on the right side are tied and the arteries rotated to the right side and the process repeated on the other side. The number of sutures varies from 8 to 12 depending on the diameter of the arteries. We found that this technique could be safely used, both by experienced surgeons as well as those performing hepatic arterial anastomosis for the first time using 2.5 x magnifying loupes.

Results: From January 2002 to June 2010, 564 living donor liver transplants were performed at Sir Ganga Ram Hospital. The hepatic artery anastomoses were performed without the "W" technique. Of these, 518 were adult-to-adult liver transplants while 46 were adult-to-pediatric transplants. Microsurgical reconstruction was required in 10 recipients. Hepatic artery thrombosis occurred in 7 adults and one child (1.3% and 2.1% respectively).

From July 2010 onwards, the "W" technique was used for 115 adult and 11 pediatric living donor liver transplants. Two microvascular reconstructions were required. There was 1 hepatic artery thrombosis (0.7%) in an adult recipient with sepsis who was on vasopressors. This patient had simultaneous thrombosis of the portal vein suggesting that a low flow state and perhaps a transient hypercoagulable state might have contributed to the thrombosis. **Conclusion:** the "W" technique is a safe and reproducible technique for performance of hepatic arterial reconstruction in living donor liver transplants.

Abstract # P-695

Treatment Experience of Fully Covered Self-Expandable Metal Stents in Biliary Stricture after Liver Transplantation. Qiyong Li, Yunsheng Qin, Fuchun Yang, Jing Jin, Kangjie Chen, Shusen Zheng. *Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang Province, China*

Background: Anastomotic stricture of bile duct is the most frequent biliary complications after liver transplantation. The usual approach for the treatment of Anastomotic stricture by ERCP involves the temporary placement of multiple plastic stents for a period of up to 1 year. The stents are exchanged every 3 months to minimize the risk of stent occlusion and cholangitis and frequent ERCPs were needed. Fully covered self-expandable metal stents has been reported for treating anastomotic strictures after liver transplantation. It can be placed temporary with a larger caliber and almost always be removed endoscopically because the coating of the stents prevents tissue ingrowth into the stent mesh.

Methods: Fully covered Wallflex stent (Boston Scientific, USA), and fully covered Niti-S ComVi stent (Taewoong Medical, Korea) were used to treat anastomotic strictures after liver transplantation in our hospital from July 2011 to February 2013. Stents were placement according to ordinary method and be removed after 6-9 months by biopsy forceps. Patients were followed up.

Results: Seven patients with anastomotic stricture after liver transplantation were treated with fully covered metal stents. Five stents was placed across the stricture and with the end inside bile duct without obvious migrating. Two cases with stent across the papillae, were found that the stents migrated into bile duct. Total bilirubin and cholangiographic findings were recovered in six patients. One case with unfitted caliber between stent and bile duct occurred cholangitis and liver abscess. The stent was retrieved after two weeks.

Conclusions: Fully covered metal stent can be placed inside the bile duct and be removed by biopsy forceps guided by guide wire safely. The efficacy of fully covered metal stent is satisfactory. The stent caliber should be fit to the bile duct, especially upstream bile duct to avoid injury to bile duct by excessive radial force of stent.

Abstract # P-696

Pediatric Simultaneous Liver-Kidney Transplantation from One Living Donor. Sergey S. Gautier, Artem R. Monakhov, Olga M. Tsurulnikova, Yan G. Moisuk, Khizri M. Khizroev. *Abdominal Surgery and Transplantation, Federal Research Center of Transplantology and Artificial Organs named after V.I. Shumakov, Moscow, Russian Federation*

Purpose: to review the patients pool, surgical technique and outcomes of simultaneous liver-kidney transplantation (SLKT) from a one living donor in pediatric recipients.

Methods: Since 2003, 8 patients (7 boys and 1 girl) have underwent SLKT from one living related donor. Median age was 8 years old (from 3 to 17). Weight children was from 10 to 45 kg. The indications for Tx were autosomal recessive polycystic disease in combination with congenital hepatic fibrosis or Caroly's disease in 7 cases and Allagile's syndrome associated with kidney hypoplasia in 1 case. All patients had end-stage renal failure with GFR less than 30. Two patients received peritoneal dialysis, three patients received hemodialysis and two patients were dialysis-free before transplantation. Right lobe and kidney were used in 4 patients, left lobe and kidney were used in 1 patients, left lateral sector and kidney were used in 2 cases. Procurement of right donor's kidney was performed in four cases. Procurement of left donor's kidney was used in 4 cases. Bilateral nephrectomy was performed in all cases to prevent the risk of infection and malignancy. Surgical technique of implantation of a donor kidney was determined intraoperative. In particular, it depended on the size of the abdominal cavity and the diameter of the aorta and iliac vessels. For revascularization of renal graft aorta and inferior caval vein was used in two cases, common iliac artery and vein in four cases and in two cases we used external iliac artery and the common iliac vein. For immunosuppression we used tacrolimus, MMF and low-dose methylprednisolone.

Results: all patients are alive and free of dialysis. The follow up was from fifty days to ten years. Kidney retransplantation from a deceased donor was required in one case due to a kidney transplant arterial thrombosis.

No complications were observed in donors. All donors survived the surgery and returned to former way of life and professional activity. They didn't demonstrate any disturbances of liver and kidney function during follow up. **Conclusion:** SLKT from one living donor is a safety and effective procedure for donors and children with end-stage liver disease complicated by end-stage renal failure.

Abstract # P-697

How to Restore Portal Flow Using Pericholedochal Varix in Adult Living Donor Liver Transplantation for Complete Portal Vein Thrombosis Patients. Deok-Bog Moon, Sung-Gyu Lee, Shin Hwang, Ki-Hun Kim, Chul-Soo Ahn, Tae-Yong Ha, Gi-Won Song, Dong-Hwan Jung, Gil-Chun Park, Sung-Hwa Kang, Bo-Hyun Jung, Wan-Jun Kim, Min-Ho Shin, Young-In Yun. *Hepato-Biliary Surgery and Liver Transplantation, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea*

(Background). If most of the splanchnic venous blood drains into large pericholedochal varix through the peripancreatic collateral, large pericholedochal varix can be used for portal inflow to the transplanted liver and also relieve recipient's portal hypertension. To date, however, there has been no successful report using pericholedochal varix in liver transplantation.

(Methods) At our institution, 4 patients among 2166 adult LDLT recipients (Jan. 2006 –May. 2013) had totally obstructed portal vein and co-existing large pericholedochal varix without large amount of ascites. Pericholedochal varix was the only available portal inflow securing successful LDLT in 2 patients, and was also alternative inflow for superior mesenteric vein in another 2 patients. The surgical strategies are followings: (a) dissection of hepatic hilum to isolate left hepatic artery using for arterial reconstruction of implanted right lobe graft, (b) en-mass clamping of the undissected remaining hilum if we can leave adequate length of stump from the clamping site, and then hilum is divided, (c) delay the donor hepatectomy until the feasibility of the recipient operation is confirmed. **(Results)** From divided hepatic hilum under clamp, more than 1 cm caliber pericholedochal varix was obtained from single, or more than two varix through venoplasty. Paper-thin varix walls were re-enforced with bisected saphenous vein in 3 patients but was not necessary in 1 patient due to enlarged and thickened wall. Donor portal vein was fenced in funnel shape at the bench for safe and easy anastomosis with plastied choledochal varix. Implantation and postoperative recovery were uneventful. Currently, all the recipients are doing well without portal hypertension related complications. **(Conclusion)** Enlarged pericholedochal varix can be successfully used for portal inflow of adult LDLT in patients with totally obliterated portal vein.

Abstract # P-698

Development of Massive IVC Thrombus Due To the Ligation of Large Porto-Systemic Shunt during Deceased Donor Liver Transplantation. Yasuhiro Ogura¹, Hideya Kamei¹, Masatoshi Ishigami², Yasuharu Onishi¹. ¹*Transplantation Surgery, Nagoya University Hospital, Nagoya City, Aichi Prefecture, Japan;* ²*Gastroenterology, Nagoya University Hospital, Nagoya City, Aichi Prefecture, Japan*

Background:

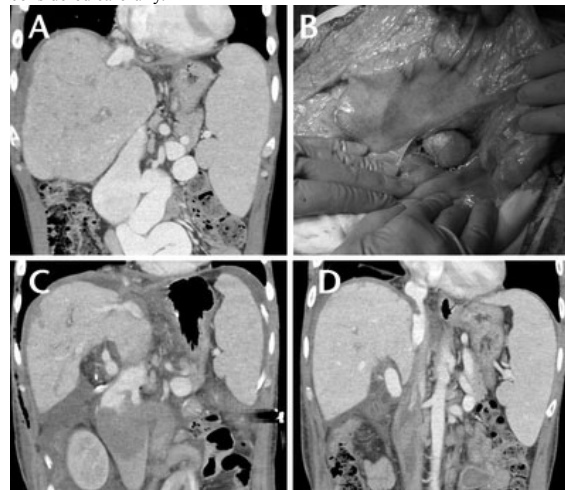
IVC thrombus is very rare complication after liver transplantation, and it can be a lethal complication in a transplant recipient. Although this complication is usually related to technical problems associated with the vascular anastomosis, we report the case of IVC thrombus developed from the ligated porto-systemic shunt.

Case Report:

This 35-year-old man had been listed on deceased liver transplantation (DDLT) list due to primary sclerosing cholangitis for more than 3 years. During his waiting period, his collateral vessel developed enormously. Enhanced CT scan at 4 months prior to his DDLT demonstrated huge inferior mesenteric vein (IMV) collateral draining into infra-renal IVC directly [figure 1A]. DDLT procedures were performed using Piggyback technique, and interposition vein graft for portal reconstruction. To obtain good portal flow, dilated IMV was ligated [figure 1B]. Immediate graft function was excellent, but on POD#1, US study revealed thrombus at infra-hepatic IVC, which was confirmed by CT scan [figure 1C]. This thrombus, originated from IMV collateral, extended into IVC. For surgical removal, total hepatic vascular exclusion was required, which was considered as contraindication in our case. We selected anticoagulation therapy, such as urokinase, heparin, and AT-III administration. Thrombus could not be successfully treated, but his general condition recovered gradually. His impaired renal function improved slowly and spontaneously. To avoid pulmonary embolism, he was restricted to bed rest for one month after DDLT, but rehabilitation was effective to recover his activities of daily living. He discharged from hospital on POD#77. He is in good condition without any symptom related to his IVC thrombus so far [figure 1D].

Conclusion:

It is necessary to ligate large porto-systemic shunt to obtain an adequate portal flow during liver transplantation. However, to avoid thrombus extension to major vessels, position of large collateral ligation should be considered carefully.



Abstract # P-699

Budd Chiari Syndrome: Transplantation and Beyond. Shishir Pareek, Subash Gupta, Neerav Goyal, Manav Wadhawan, Sandeep Vohra. *Centre for Liver and Biliary Sciences, IAH, New Delhi, Delhi, India*

Introduction: Budd Chiari syndrome presents as a spectrum of vascular disease requiring liver transplantation as well as innovative techniques to establish inflow and outflow. With a vast experience in Living Related Liver Transplantation we looked into our data to share our experience in managing these patient.

Materials and Method: At our centre we follow the stepwise protocol with anticoagulation, vascular intervention and finally liver transplantation for cirrhotic liver.

All the patient undergo work-up for pro-coagulant state (protein C, S; Leiden V, antithrombin III, anticardiolipin, antiphospholipid, Homocysteine assessment) along with screening for myeloproliferative disease (JAK-2 mutation) and CT liver angio gram.

Results : Pre-operatively out of 12 patients we transplanted 4 had protein C and S deficiency.

Indication of transplantation was Hepato-pulmonary syndrome, blocked MHV stent and Cirrhosis.

All patient underwent surgery by abdominal approach with *porta dissection and ligation first technique*.

The operative time as well as the blood loss was higher as compared to controls requiring meticulous control of the collaterals.

Five patient had portal vein thrombosis in addition to outflow obstruction requiring portal vein thrombectomy.

Liver was explanted in all cases with individually clamping the hepatic veins and dividing them without the need for caval clamping.

Associated thrombus in the inferior venacava was dealt with Thrombectomy, Thrombectomy and dilatation of the venacava, Cavotomy and interposition onlay graft to restore the lumen (7cm long and 1.5 cm wide circumferential Gortex graft around 180 degrees)

In one case spontaneous recanalisation of the Inferior venacava was observed.

Post-operatively all the patients receive heparin for 2 weeks and are overlapped with Warfarin anticoagulation and all are doing well with median survival of 23 months

Patients with protein C/S deficiency are off anticoagulation after 6 months of anticoagulation once the normal level of the deficient protein are ascertained rest of the patient are on Warfarin anticoagulation.

Two patient required balloon dilatation of outflow tract due to non compliance of anticoagulation

Conclusion:

Liver transplantation for Budd chiari syndrome is feasible by innovative inflow and outflow restorative technique.

Selected patient can be managed off anticoagulation.

Non-compliant patient can be managed with invasive radiological interventions.

Abstract # P-700

New Surgical Procedure, Splenic Devascularization Is an Alternative Procedure To Splenectomy in Patient With Hypersplenism Secondary To Liver Cirrhosis. Gilchun Park, Sunggyu Lee, Deokbok Moon, Chulsoo Ahn, Taeyong Ha. *Surgery, Asan Medical Center, Seoul, Korea*

Hypersplenism is a common clinical manifestation in patients with liver cirrhosis. Splenectomy can be performed simultaneously during liver transplantation in patients with end-stage liver diseases complicated by hypersplenism. However, several complications after splenectomy often occur. For example, there are bleeding, pancreatic leakage, and splenic venous thrombosis, etc. To avoid these complications, we considered splenic devascularization which means blocking the inflow of spleen. This procedure includes splenic artery ligation, and cutoff of the short gastric artery. From Aug. 2013 to present, we performed 10 cases of splenic devascularization. The hematologic parameters and liver function were evaluated before and after that procedure. Postoperatively, 100% of the patients with splenic devascularization had a complete response in terms of platelet and leukocyte counts. The mean follow-up period was 2 months. To date, no death has been reported. the data are sparse with regard to its long-term outcomes, including hematologic response and liver function after the surgery. This study investigated patients with hypersplenism secondary to liver cirrhosis. Splenic devascularization can be considered instead of the splenectomy. But long term outcomes of this procedure must be followed up.

Abstract # P-701

Biliary Reconstructions Using Intraductal Stenting and Complications in 100 Liver Transplantations Performed in a Single Center for 3 Yr. Jeho Ryu¹, Chongwoo Chu¹, Kwangho Yang¹, Kimyung Moon¹, Youngmok Park¹, Jeonghee Kang², Seoyeon Oh². ¹*Surgery, Pusan National University Yangsan Hospital, Yangsan, Republic of Korea;* ²*Organ Transplantation Center, Pusan National University Yangsan Hospital, Yansan, Republic of Korea*

Introduction: Biliary complication(BC) remains a major source of morbidity after liver transplantation. We present BC incidence, risk factors after biliary reconstruction using intraductal stenting in 100 adult liver transplantations. **Method:** From May 2010 to April 2013, we performed 100 cases adult liver transplantations(38 DDLT and 62 LDLT). LDLT used all right liver graft. The mean follow-up period was 11.8 months.

Biliary reconstruction without T-tube in DDLT included duct-to-duct anastomosis(DD, n=37), Hepaticojejunostomy(HJ, n=1).

Biliary reconstruction in LDLT included single DD(n=46), double DD(n=9), single HJ(n=2), double HJ(n=4), and combined DD and HJ(n=1).

Results: There was no BC in 38 DDLT. There was no BC in HJ. There was no anastomotic bile leak. There were 12 episodes of anastomotic strictures in 62 LDLT. Anastomotic stricture occurred over 20 months. Most strictures were successfully treated using radiological intervention. Cumulative 1-yr biliary complication rate was 16.36%. When LDLT with single biliary reconstructions were grouped according to graft duct size and type of biliary reconstruction, DD involving a small sized duct(less than 4mm in diameter) was found to be a BC risk factor(P=0.025), whereas HJ involving such duct sizes was not found to be a BC risk factor(P=0.15).

Conclusion: Close follow up for BC appears necessary for at least the first 2 yr after LDLT. In DDLT, biliary reconstruction using intraductal stenting without T-tube is technically feasible and safe. HJ appears a better choice than DD for LDLT involving a small sized duct(less than 4mm in diameter).

Abstract # P-702

Influence of Back Table Portal and Arterial Flushing with HTK and Tacrolimus on the Incidence of Liver Graft Dysfunction.

Aliaksei E. Shcherba¹, Andrew F. Minou², Denis J. Efimov¹, Sergey V. Korotkov¹, Olga A. Lebedz³, Alexander M. Dzyadko², Ala Karytka⁴, Evgeni O. Santotski², Oleg O. Rumo¹. ¹*Division of Transplantology, RSPC for Organ and Tissue Transplantation, Minsk, Belarus;* ²*Division of Intensive Care and Anesthesiology, RSPC for Organ and Tissue Transplantation, Minsk, Belarus;* ³*Department of Histology, Pathology Bureau, Minsk, Belarus;* ⁴*Cell Biotechnology Laboratory, RSPC for Organ and Tissue Transplantation, Minsk, Belarus*

It has been shown that Tacrolimus possesses the activity to suppress inflammation and immune response in the transplanted liver on a genome-wide basis (Kristo I., Transpl Int.2011).

The purpose of the study was to evaluate the possibility of back-table liver flushing with high exposure to tacrolimus to attenuate the early allograft dysfunction (EAD).

Methods. A prospective randomized study was conducted (ClinicalTrials.gov Identifier: NCT01887171, not yet completed).

In the intervention group (24 pts) 1000 ml of HTK solution containing 20 ng/ml Tacrolimus was given at back-table through intraportal (gravity pressure 40 cm) and intraarterial infusion (pressure 40-50 mm Hg) followed by intraportal infusion of 200 ml 5% solution of Albumin containing 20 ng/ml Tacrolimus (gravity pressure 40 cm). No Tacrolimus was added in the control group (27 pts).

Study was restricted to LTs using classic technique with sequential portal-arterial reperfusion.

Primary Outcome Measures: EAD (Olthoff KM, Liver Transpl. 2010)

Secondary Outcome Measures: postreperfusion hyperfibrinolysis diagnosed by Thromboelastometry at 15 min and 2h after portal reperfusion, ischemic reperfusion injury at 2h after portal reperfusion.

Average data are shown as Median.

Groups were similar (main vs control) in steatosis (10 vs 7), ballooning (40 vs 30) of liver grafts, donor age (45,5 vs 37,5), warm ischemia time (52,5 vs 50) and total ischemia time (450 vs 451).

Results. The rate of EAD was significantly lower in main group compared to control (3/24 vs 11/27;p=0,03). There was a tendency towards lower AST (1042 vs 1392;p=0,3) and ALT (643 vs 811;p=0,3) during first postop day and significant decrease of AST on second day (467 vs 662;p=0,04) in main group.

There was no difference in hyperfibrinolysis rate (2/24 vs 5/27; $p=0.4$) and prevalence of moderate to severe IRI on postreperfusion biopsy (9/24 vs 13/27; $p=0.4$).

Conclusion. Preliminary data show that back-table liver flushing with high exposure to Tacrolimus may contribute to lower EAD incidence.

Abstract # P-703

A Retained Surgical Gauze 30 Years after Laparotomy. Miaoda Shen^{1,2}, Jian Xu^{1,2}, Min Zhang^{1,2}, Shusen Zheng^{1,2}. ¹Department of Hepatobiliary Surgery, First Affiliated Hospital of Zhejiang University, Hangzhou, China; ²Key Lab of Combined Multi-organ Transplantation, Hangzhou, China

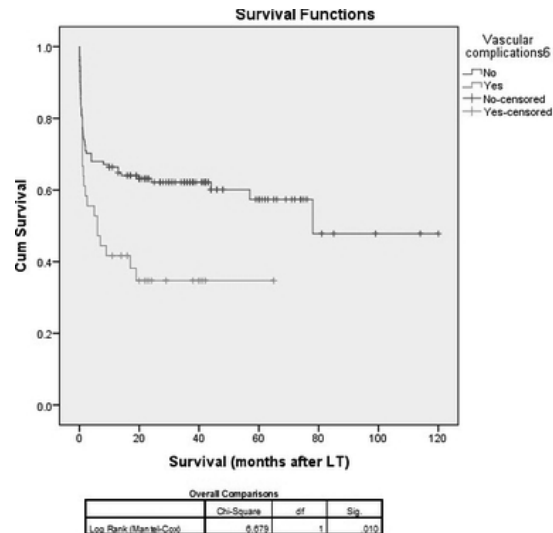
BACKGROUND: Gossypiboma, the term for retained surgical gauze, is frequently underreported. Diagnosis can be difficult, mostly because of low clinical suspicion. The presentation may be acute or relatively delayed. **CASE:** A 64-year-old female presented with chronic hepatic pain. She had a history of laparotomy 30 years prior. Her work-up included a computed tomography (CT) scan of the abdomen and pelvis, which showed a huge hepatic cystic mass. Then she was scheduled for exploratory laparotomy with suspected diagnosis of hepatic carcinoma. During the surgery, a retained sponge with surrounding fibrosis was found and removed. Subsequently, the diagnosis of gossypiboma was made.

CONCLUSION: Gossypibomas are rare, mostly asymptomatic, and difficult to diagnose. Particularly, chronic cases do not show specific clinical and radiological signs for differential diagnosis. Patients may be inadvertently informed that masses might be malignant and may undergo unnecessarily invasive investigations. It should be included in the differential diagnosis of soft-tissue masses detected in patients with a history of a prior operation.

Abstract # P-704

Vascular Complications after Adult to Adult Living Donor Liver Transplantation: Single Center Experience. Emad Hamdy Salem¹, Ahmed Elshawadfy Sherif², Hosam Solymann³, Mohammed Elwarraky⁴, Khaled AbouElela⁵, Tarek Ibraheem⁶, Koichi Tanaka⁷. ¹Hepatobiliary and Liver Transplantation, National Liver Institute, Menoufiya University, Shebei Elkoum, Egypt; ²Hepatobiliary and Liver Transplantation, National Liver Institute, Menoufiya University, Shebei Elkoum, Egypt; ³Hepatobiliary and Liver Transplantation, National Liver Institute, Menoufiya University, Shebei Elkoum, Egypt; ⁴Radiology, National Liver Institute, Menoufiya University, Shebei Elkoum, Egypt; ⁵Hepatobiliary and Liver Transplantation, National Liver Institute, Menoufiya University, Shebei Elkoum, Egypt; ⁶Hepatobiliary and Liver Transplantation, National Liver Institute, Menoufiya University, Shebei Elkoum, Egypt; ⁷Liver Transplantation, Kobe International Frontier Medical Center, Kobe City, Japan

Objectives: Vascular complications (VC) after living donor liver transplantation (LDLT) are one of the most feared problems that result in graft and patient loss. The aim of this study was to assess the incidence, treatment, and outcome of vascular complications of patients after adult to adult LDLT in a single Egyptian center. **Methods:** Between April 2003 and February 2013, we performed 167 adult to adult LDLT. The overall male/female ratio was 147/20. We retrospectively identified and analyzed vascular complications in recipients. **Results:** The overall incidence of VC was 21.6% ($n=36$) and individually HA thrombosis 3.6% ($n=6$), HA stenosis 10.2% ($n=17$), HA injury 0.6% ($n=1$), PV thrombosis 4.8% ($n=8$), PV stenosis 0.6% ($n=1$), HV thrombosis 0.6% ($n=1$), HV stenosis 0.6% ($n=1$) and IVC tear 0.6% ($n=1$). 12/36 (33.3%) patients died as a direct result of the vascular complications. The overall 1-, 3-, 5- and 7-year survival rates in our series were 61.1%, 56.9%, 56.3% and 55.1% respectively. The 1-, 3-, 5- and 7-year survival rates in patients with and without VC were 41.7%, 36.1%, 36.1% and 66.4%, 62.6%, 61.8% and 60.3% respectively. **Conclusion:** Vascular complications were associated with significant reduction in survival in our study, so prevention and proper treatment of them is required to achieve better survival among patients undergoing LDLT.



Abstract # P-705

Portal Vein Rescue during Living Donor Liver Transplantation in a Patient With Previous Splenectomy and Mesocaval Shunt. T. Y. Tamang, P. Singla, A. N. Rastogi, J. John, S. K. Ramachandran, P. V. Bhangu, B. Menon, S. Goja, N. Saraf, R. Mohanka, S. Saigal, S. Baijal, A. S. Soin. Medanta Institute of Liver Transplantation and Regenerative Medicine, Medanta The Medicity, Sector-38, Gurgaon, Haryana, India

Introduction

Adequate flow through the portal vein (PV) is necessary for a successful living donor liver transplantation (LDLT). Diversion of blood through collaterals and shunts can reduce blood to the neo-liver. We encountered a case with history of splenectomy and mesocaval shunt, which technically challenged adequate flow through the PV, during a LDLT.

Materials

Fifty five years old gentlemen with history of splenectomy 40 years ago (for unknown reasons) and mesocaval shunt 25 years ago for failed endotherapy of recurrent hematemesis presented to us with Child's C cirrhosis. At presentation, he had recurrent gum bleeding and recurrent hepatic encephalopathy. His doppler revealed a patent mesocaval shunt and a partially thrombosed portal vein.

During LDLT, portal flow was low, which improved after ligation of the coronary vein. Donor right PV was anastomosed with the recipient main PV using a cryopreserved extension graft. Post implantation doppler revealed a low portal flow (100ml/min) and a thrombus at the anastomosis. It was successfully removed using a Fogarty catheter. However, it re-thrombosed. A PV anastomosis with a wider interposition graft was done again. But, these methods did not increase the flow.

A possibility of steal through the mesocaval shunt was confirmed by significant improvement of the flow with finger occlusion of the shunt. However, ligation of the shunt was unsuccessful due to dense adhesions around the old shunt. After discussion with the interventional radiologist, it was planned to occlude the caval end of the shunt using a covered IVC stent. Angiogram confirmed steal through the mesocaval shunt. A covered stent graft (36x36 x45 mm) was deployed in the cava while preserving renal veins and other branches. Post stenting angiogram revealed good flow in the PV and complete closure of the mesocaval shunt. Doppler also confirmed increase in PV velocity to 106 cm/sec and flow to 1.1 L/min. Postoperatively, the PV flow and velocity continued to be good. At 9 months from the surgery, the patient has a good graft function.

Conclusion

Previous mesocaval shunt may lead to inadequate portal vein inflow during liver transplantation. Covered caval stent across the shunt may establish an adequate portal flow.

Abstract # P-706

Results of Endovascular Therapy of Hepatic Artery Stenosis after Liver Transplantation. M. Rajakannu¹, S. Awad¹, K. Araki¹, R. Adam^{1,2,3}, D. Cherqui^{1,2,3}, A. Sa Cunha^{1,2,3}, D. Samuel^{1,2,3}, M. Lewin^{1,2,3}, D. Castaing^{1,2,3}, E. Vibert^{1,2,3}. ¹AP-HP Hopital Paul Brousse, Villejuif, France; ²Univ Paris-Sud, Villejuif, France; ³Inserm, Villejuif, France

Hepatic artery stenosis (HAS) is the cause of hepatic artery thrombosis (HAT) after liver transplantation (LT) which can lead ischemic cholangitis. Endovascular treatment by percutaneous transluminal angioplasty (PTA) + stenting has been used as primary treatment of HAS except in patients with very early HAS before postoperative day (POD) 7. Aim of this study was to evaluate the results of this endovascular strategy and to identify predictive factors for treatment failure.

Methods.

All adult patients (pts) transplanted from 2006 and 2012 in our department and treated by PTA + stenting for HAS were reviewed. Our policy was a systematic daily measurement of arterial resistive index and CT scan on POD 7 to detect HAS. Patients with more than 50% and/or symptomatic HAS were treated by endovascular approach. ReLT for ischemic cholangitis was considered as treatment failure of endovascular strategy. Univariate analysis on the pre-angioplasty data (including biliary complications) was done to identify the predictive factors for treatment failure.

Results.

During the study period of 6 years, 870 LT were done including 103(12%) partial liver grafts (34 LDLT, 69 split liver grafts). Thirty (3.5%) pts (30 men and 10 women with mean age of 43 + 14 years) with HAS had an attempt of endovascular treatment. PTA was done in 27(90%) patients with dilatation + stenting in 23 pts and dilatation in 4 pts. The PTA could not be completed in 3(10%) pts because of complication in 1 pt (arterial dissection). Median follow-up was 18.5 months (range 3 – 68 months) with median 2 year arterial patency rate of 75% including 5 pts retreated for restenosis. After endovascular treatment, ischemic cholangitis was diagnosed in 7(23%) pts with 6 pts being retransplanted and 1 patient on the waiting list. The hepatic artery anastomosis was patent in 2 of these pts. At last follow-up, 27(90%) pts were alive. No patient died as a consequence of PTA and or biliary ischemia. No risk factors for PTA failure could be identified.

Conclusion.

Endovascular therapy for HAS after LT conserves arterial patency in 2/3 of the treated pts. This strategy seems to have no negative impact on survival, even in pts with failure of this strategy. No predictive factors for treatment failure could be identified notably the presence of biliary complications at the time of PTA.

Abstract # P-707

Comparison of J-Shaped Incision and Mercedes Incision for Liver Transplantation. Julio C. Wiederkehr^{1,2}, Mauro R. Igreja¹, Nelson Gonçalves¹, Marcelo S. Noga¹, Amanda P. Sequinel¹, Ana L. Sampaio¹, Gabrielle P. Montemazzo¹, Henrique A. Wiederkehr¹, Matheus P. Wassen¹. ¹Liver Transplantation, Hospital Santa Isabel, Blumenau, Santa Catarina, Brazil; ²Surgery, Universidade Federal do Parana, Curitiba, Parana, Brazil

Wound-related and incision-related complications such as wound infections and incisional hernias are common after liver transplantation. Advances in surgical, anesthesiological, critical care, and immunological innovations have led to a dramatic reduction in postoperative morbidity and mortality. Orthotopic liver transplant (OLT) has been first described with traditionally Mercedes type incision. Less traumatic J shaped incision has been used more frequently. In our program started its activities in 2002, with more than 300 case performed until the beginning of the study. After September 2011, orthotopic liver transplantation (OLT) was performed using J-shaped (J) incision routinely, switching from a previous Mercedes (M) incision. We analyzed retrospectively 110 consecutive patients submitted to OLT in our institution from November 2010 to December 2012. We compared the incidence for surgical site infection (SSI), incisional hernia, and overall satisfaction. Fifty patients submitted to OLT using J-shaped incision were compared to recent previous 60 patients with M incision. Age, sex distribution, indication for OLT, and MELD score were similar in both groups. Three patients in the J group developed SSI, 6%, while 13, 21.6%, patients in the M group developed SSI (p=0.02). Incisional hernia was observed in 9 patients in the J group, 18%, compared with 22 patients in M group, 36.6% (p=0.03). Regarding overall satisfaction with the results of the incision, 48 patients, 96%, in J group gave the highest score, while in the M group, 45 patients, 75%, attributed the highest score for the questionnaire. After we

have decided to switch from Mercedes type incision to J-shaped incision, OLT was feasible in all patients with this incision. When refraining to incise rectus muscularis on both sides, we provide a less traumatic incision, which leads to fewer complications postoperatively. Our results suggest that a J-shaped incision is preferred to other incisions for OLT.

Abstract # P-708

Hepatic Ischemic Preconditioning Attenuates Pulmonary Injury after Small-for-Size Liver Transplantation in Rats. Qinlong Liu, Hasibur Rehman, Yasodha Krishnasamy, John Lemasters, Zhi Zhong. Medical University of South Carolina, Charleston, USA

Background & Aim: Pulmonary complications after liver transplantation (LT) frequently lead to mortality. We showed previously that acute pulmonary injury increased after small-for-size LT. Here we investigated whether hepatic ischemic preconditioning (IP), which improves survival after small-for-size LT, attenuated acute pulmonary injury. **Methods:** The portal vein and hepatic artery were clamped for 9 min. Livers were harvested 5 min after releasing the clamp, reduced to 50% of original size ex vivo, and implanted into recipients of the same or about twice the donor body weight, resulting in half-size (HSG) and quarter-size liver grafts (QSG), respectively. Lungs and liver grafts were harvested at 5, 18 and 38 h after LT. **Results:** ALT release and liver necrosis were higher after transplantation of QSG than full-size grafts (FSG) and HSG. 5-BrdU incorporation and proliferating cell nuclear antigen expression increased in HSG but were suppressed in QSG, verifying more severe liver injury and suppressed liver regeneration in QSG. IP attenuated liver injury and enhanced QSG regeneration. After LT hepatic inflammatory cytokines IL-1 and TNF α mRNAs increased 3.9- and 8.2-fold, respectively, in QSG. Adhesion molecule ICAM-1 expression in the lung was also markedly higher in QSG recipients. IP decreased hepatic TNF α and IL-1 mRNAs by 43% and 34%, respectively, and markedly inhibited pulmonary ICAM-1 expression. Pulmonary pathological alterations were minimal at 5-18 h after LT but became overt at 38 h. Alveolar septal walls thickened with increased cellularity as neutrophils and monocytes/macrophage infiltrated into alveolar septa and alveolar spaces in the lungs of QSG recipients at 38 h. In contrast, these alterations were mild in the lungs of FSG and HSG recipients. IP decreased alveolar septal wall thickening by 62%, monocyte/macrophage infiltration by 49% and neutrophil infiltration by 84% in the lungs of QSG recipients. TUNEL-positive vascular endothelial/alveolar epithelial cells were 12-fold higher in the lungs of QSG recipients than in FSG recipients. IP blunted apoptosis markedly in the lungs of QSG recipients. **Conclusions:** Toxic cytokine formation in failing small-for-size grafts leads to adhesion molecule expression, leukocyte infiltration and injury in the lung. IP prevents toxic cytokine formation in small-for-size grafts, thus attenuating acute pulmonary injury (NIDDK).

Abstract # P-709

Long-Term Efficacy of Simultaneous Pancreas and Kidney Transplantation in Liver Transplant Recipient. Jian Zhou, Linwei Wu, Weiqiang Ju, Ming Han, Xiaoping Wang, Chuanbao Chen, Xingyuan Jiao, Xiaoshun He. Organ Transplant Center, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China

Objective: To investigate the long-term clinical effect of simultaneous pancreas and kidney transplantation in liver transplant recipient for treatment of diabetes and renal failure. **Methods:** A retrospective summary of clinical data of 2 cases performed simultaneous pancreas kidney transplantation after liver transplantation. The operative method was that kidney graft was firstly transplanted in the left iliac fossa; and then pancreas transplantation, placed in the right iliac fossa. Pancreatic drainage was achieved by side to side anastomosis between duodenum graft and jejunum in recipient. Immunosuppression regimen consisted of methylprednisolone, IL-2 monoclonal antibody, tacrolimus (FK506) and mycophenolate mofetil (MMF) in case one, case two with antithymocyte globulin, methylprednisolone, FK506 and MMF.

Results: Normal function of pancreas transplanted in all 2 patients at 10 days post-transplant was presented, and blood sugar dropped to normal without insulin therapy. The function of kidney recovered to normal at 1 week after operation, but creatinine in case 2 after 1 week post-transplant had gradually increased. Renal biopsy examination showed injury of kidney induced by drugs, after transferring FK506 to rapamycin, and the function of kidney was recovered. At present, 2 patients were followed up for 42 months and 15 months respectively, and the functions of liver, kidney and pancreas transplanted in recipient were normal.

Conclusion: Performing simultaneous pancreas and kidney transplantation in liver transplant recipient was safe and feasible. Quadruple immunosuppression can obtain good function of grafts, and long-term survival of grafts and recipient could be achieved.

Abstract # LB-40

Predictors and Outcomes of Acute on Chronic Liver Failure in Patients with Biliary Atresia. Thaddaeus May¹, Sanjiv Harpavat¹, Girish Hiremath¹, Charles Ho², Ross Pepper², Jacob Smith², Jesal Shah², Ross Shepherd¹. ¹Department of Gastroenterology, Hepatology, and Nutrition, Baylor College of Medicine, Houston, TX, USA; ²Department of Gastroenterology, Hepatology, and Nutrition, Texas Children's Hospital, Houston, TX, USA

Background

Acute on chronic liver failure (ACLF) is a serious complication in infants with biliary atresia, (BA). However, to date, ACLF has been poorly studied in this population. This study aims to better characterize ACLF in patients with BA, in order to predict which patients are at risk for ACLF and poor outcomes.

Methods

Medical records of patients with BA listed for liver transplantation (LT) at Texas Children's Hospital between 2007-2013 were examined retrospectively. Patients in the ACLF group were those who met UNOS criteria for status IB listing. ACLF patients were compared with non-ACLF patients for demographic, anthropometric, and laboratory differences.

Results

Of 68 patients with BA listed for LT, 14 (21%) developed ACLF. ACLF patients were more likely to have a higher total bilirubin (mean 18.9±11.3 mg/dL vs. 9.0±7.3 mg/dL, p<0.0001) and INR (mean 1.71 ±0.48 vs. 1.4 ±0.44, P<0.01) at the time of listing for LT. Subjects who developed ACLF also had significantly higher mortality before LT (57% vs. 0%, p<0.01). There was no significant correlation between the development of ACLF and prior portoenterostomy, age at listing, weight z-scores at listing, albumin at listing, or wait list time.

Risk Factors for ACLF in BA

	ACLF	non-ACLF	p-value, (1 sided 2 sample t-test & Fisher's exact)
Hx of HPE	10 (71%)	38 (70%)	1.0
Age at listing, days	226 (±91.5)	295 (±214.6)	0.24
Wait list time, days	66.2 (±50.2)	96.7 (±88.6)	0.22
Weight for length z score	0.289 (±1.45)	0.11 (±1.18)	0.146
Albumin	3.136 (±0.445)	3.065 (±0.568)	p: 0.333
Total Bilirubin	18.9 (±11.275)	9.004 (±7.266)	0.00008
INR	1.714 (±0.48)	1.396 (±1.395)	0.01
Death before LT	57%	0%	<0.001

Conclusions

Development of ACLF correlates with high total bilirubin and INR at time of LT listing, as well as higher risk of death while waiting for LT. Interestingly, ACLF does not correlate with other variables used to calculate the Pediatric End Stage Liver Disease score, such as albumin, age, and weight z-scores. Our results suggest that patients with high total bilirubin and INR levels should be managed aggressively, to ensure a timely transplant and avoid risks associated with ACLF.

Abstract # LB-41

AB0 Incompatible Liver Transplantation for Fulminant Liver Failure – Single Centre Experience. Jiri Froncek¹, Libor Janousek¹, Martin Oliverius¹, Milos Kucera¹, Eva Kieslichova², Ondrej Viklicky³, Pavel Trunecka⁴. ¹Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic; ²Department of Anesthesia and Intensive Care, Institute for Clinical and Experimental Medicine, Prague, Czech Republic; ³Nephrology Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic; ⁴Transplant Centre, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

Introduction:

The AB0-incompatible liver transplantation (LTx) is alternative method which can be used for some patients with fulminant hepatic failure (FHF), in some countries it is used even for elective transplants. For overcoming the blood group barrier various techniques can be used. We report our experience with AB0i LTx for fulminant liver failure patients.

Methods:

Czech Republic is country with 10 million inhabitants and some 200 deceased donors per year. At our institution we perform over 80 liver transplants every year, we did 87 LTx in 2013, our LTx program counts over 1000 LTx since 1995. To increase the chance for survival, in some of the fulminant liver failure cases we used the AB0i graft. In first 6 cases we used plasma-exchange, in last one non-specific immuno-adsorption.

Results:

In total 7 patients received AB0i liver graft, 2/7 received hemiliver, 2/7 died shortly after the LTx, none due to the the incompatibility-related problems, 1/7 was re-transplanted 16.POD, 5/7 patients are alive with well functioning graft. The last case was full split liver for two adults because two FHF patients occurred at the same time, both these two patients (husband and wife) are alive and well.

year	sex	age	FHF diagnosis	graft size	survival	cause
2008	F	35	Wilson	full	died 8. POD	MOF
2009	M	48	HBV	full	alive	
2009	F	49	HBV	full	alive	
2011	F	22	cryptogenic	left lobe	alive	
2011	F	48	PBC	full	alive	
2011	F	44	autoimmune	full	died 57. POD	pancreatitis
2013	F	35	mushroom poison	full left lobe/split	aliver	

Conclusions:

In the country with limited number of liver grafts per year, which can not get grafts from abroad for fulminant cases, the AB0i liver transplantation is justified in FLF setting. Such technique gives reasonable chance for survival, the final outcome depends on severity of the FHF as well as primary diagnosis. Both aphoretic as well as plasma-based techniques can be used with success to overcome the AB0i barrier. Both full size and hemiliver grafts can be used for transplant, including full split liver grafts.

Abstract # LB-42

Survival Outcomes Following Orthotopic Liver Transplantation Using the Balance of Risk Score (BAR) in a Transplant Center in Chile. Jean P. Bächler¹, Juan F. Guerra², Alejandra Cancino³, Javier Méndez⁴, Carlos Benítez³, Rodrigo Wolff³, Rosa M. Perez³, Nicolás Janufe², Jorge Martínez². ¹Department of Digestive Surgery, Hospital Clínico Pontificia Universidad Católica de Chile, Santiago, Chile; ²Department of Digestive Surgery and Liver Transplant Program, Hospital Clínico Pontificia Universidad Católica de Chile, Santiago, Chile; ³Department Gastroenterology and Liver Transplant Program, Hospital Clínico Pontificia Universidad Católica de Chile, Santiago, Chile; ⁴Coordinadora Nacional de Trasplante, Ministerio de Salud, Santiago, Chile

Background: Nowadays, most of liver transplant candidates are prioritized by their highest model for end-stage liver disease (MELD) score, due to its accuracy to predict mortality on the waiting list. However, several transplant centers are reporting that the "sickest first" policy would decrease long-term survival after orthotopic liver transplantation (OLT). In this context, a recent multicentric study validated a score that combines 6 key independent donor and recipient factors, in order to improve graft allocation in liver transplantation.

Objective: To evaluate the impact of recipient characteristics assessed by MELD score, donor and graft factors by DRI (Donor Risk Index) score and both by BAR (Balance of Risk Score) on long-term survival after OLT in a Transplant Center in Chile.

Methods: A Retrospective study was designed, using clinical data from OLT performed between January 2003 and August 2013 in our Institution. MELD, DRI and BAR scores at transplantation were calculated for each procedure. Survival analysis for each score was performed using Kaplan Meier curves and Log-rank test. Results were considered significant at a p-value of <0.05 Results: During the study period a total of 144 transplant procedures were performed in 138 patients, 63% male with a median age of 58 years old (16-71). Recipients with a MELD score at transplantation ≤ 15 and > 15 had a 5 year-survival rate of 71% and 70%, respectively (p = 0.39). Graft/donor DRI score ≤ 1.4 showed a better 5 year-survival after transplant (76%) compared to a > 1.4 score (64%), although it was not statistically significant (p=0.24). Unlike MELD or DRI, BAR score predicted accurately 5-year survival following OLT (≤ 15 = 76% vs. > 15 = 40%; p < 0,001)

Conclusions: The BAR score could help determine in real time the fitter candidates for OLT in our Center and together with MELD, better quantify survival benefit for individual transplant procedures.

Abstract # LB-43

Treatments of Hepatocellular Carcinoma Recurrence After Liver Transplantation: A Single Center Experience. Nicola de'Angelis, Alexis Laurent, Daniel Azoualy. *Department of General Surgery and Liver Transplantation, Henri Mondor Hospital, Creteil, France*

AIM

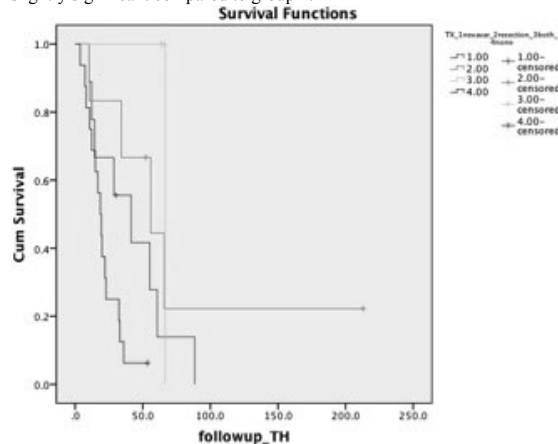
The efficacy of the available treatments for hepatocellular carcinoma (HCC) recurrence after liver transplantation (LT) has been a subject of debate. Literature reviews show an improved survival for patients who undergo surgical resection of their recurrence site, and for patients treated by VEGF inhibitor (sorafenib) compared to supportive care (SC). The aim of the study is to evaluate and compare the efficacy of those treatments in our cohort of LT patient for HCC.

METHODS

Data of patients who had HCC recurrence after LT for HCC from 1989 to 2014 were retrospectively retrieved from a single center population (Henri Mondor Hospital, Department of General Surgery and Liver Transplantation, Paris).

RESULTS

Thirty-four patients over 355 LT for HCC (9.4%) had HCC recurrence. Four groups were identified: 9 patients who received sorafenib (group 1); 6 patients who underwent surgical resection (group 2); 3 patients receiving both treatments (surgical resection followed by sorafenib after unresectable progression-group 3). Survival rates of these groups were compared to those receiving SC (16 patients, group 4) of the pre-sorafenib era or presenting untreatable disease. Overall mortality (OM) was 88.9% over a mean follow up of 38.2 months. Patients of group 2 showed an improved survival, with an OM of 66.7% and a survival rate at 1, 3 and 5 years from recurrence of 66.6%, 16.6% and 16.6% respectively, as compared with group 1 (OM: 88.9%, 1, 3 and 5 year survival of 55.5%, 11.1%, and 0% respectively) and group 4 (OM 93.8%, 1, 3, 5 year survival of 31.2%, 0% and 0% respectively). Group 3 showed a better survival compared to the other groups (OM: 33.3%, survival 100% at 1 year), but due to small sample size, this study group resulted only slightly significant compared to group 4.



CONCLUSION

Treatment of HCC recurrence after LT is challenging; in our series, evidence suggests an improved outcome for patients treated by surgical resection compared to patients receiving sorafenib, or to patients receiving SC. A synergic action of surgery and sorafenib in improving survival may be preconized.

Abstract # LB-44

A Prospective Study On Conversion From Twice- To Once-Daily Tacrolimus With a Four Years Follow Up: Efficacy, Safety, Adherence and Quality of Life Evaluation in Liver Transplant Recipients. Luca Toti, Tommaso M. Manzia, Fazzolari Laura, Camilli Silvia, Sforza Daniele, Tisone Giuseppe. *U.O.C. Chirurgia dei Trapianti, University of Rome - Tor Vergata, Rome, Italy*

Background: Simplifying the therapeutic strategy after liver transplantation (LTx) can be a good way to improve adherence and to prevent acute organ rejection and late graft loss.

Material and methods: Conversion from twice-daily to once-daily tacrolimus was proposed in 92 adult LTx recipients (median age, 54 [20-75] years), receiving Tacrolimus BID in double or monotherapy from at least 6 months.

Conversion was based on 1:1 proportion. Follow-up was at least 48 months. Liver and kidney function were recorded the conversion-day and 1, 3, 6, 12, 24, 36 and 48 months afterward. For determining adherence and quality of life a questionnaire was submitted to all the patients before and after conversion. Results: Mean Tacrolimus levels were decreased at 1 month after conversion, if compared to baseline, in 76% ($p < 0.0003$); levels raised again after 6 months but then stable till the end of four years follow-up. Non-inferiority of tacrolimus QD against BID was demonstrated with a relative difference in AST, ALT, lipids pattern and creatinine plasma levels and estimated glomerular filtration rate (GFR) at 1, 3, 6, 12, 24, 36 and 48 months controls. Glycemia levels were statistically lower 36 months after conversion and confirmed at 48 months ($p < 0.05$). Adherence improved in 56% of the recipients and 91% of them declared an improvement in terms of quality of life after conversion.

Discussion: A drug conversion 1:1 from a twice-daily to a once daily prolonged release drug improves patients' quality of life and reveals its efficacy and safety for liver and kidney function with a significant improvement in terms of glycemia. The initial decreases in tacrolimus levels do not affect graft and patient survival.

Abstract # LB-45

Strategies and Outcomes of Liver Transplantation in Patients with Portal Vein Thromboses. Akira Mori, Taku Iida, Junji Iwasaki, Toshimi Kaido, Hideaki Okajima, Shinji Uemoto. *Hepatobiliary-pancreatic Surgery and Transplantation, Graduate School of Medicine, Kyoto University, Kyoto, Japan*

Portal vein thrombosis (PVT) is a common complication of end-stage liver cirrhosis. Liver transplantation (LT) used to be contraindicated in patients with PVT, but with the advent of innovative surgical techniques in deceased donor liver transplantation (DDLT) this is no longer the case. However, there is limited literature describing systematic treatment strategies in living donor liver transplantation (LDLT) and outcomes in patients with PVT. We introduced the LT strategy described herein between April 2006 and December 2011, with mostly living donors, in adult PVT patients while considering the following factors: the extent/localization of the thrombus, hemodynamics, intraoperative control of the portal vein pressure, and post surgical management of additional complications. PVT was found in 53 (18%) of 297 consecutive adult LT cases that were classified to 48 of 282 LDLT cases and 5 of 15 DDLT. Our preferred treatment for PVT consisted of a thrombectomy/thromboendovenectomy and a simple anastomosis. Alternative surgical techniques included replaced graft, jump grafts, reno-portal anastomoses or reconstructions with left gastric veins using vein grafts according to PVT grade by Yerdel.

PV Reconstruction According to PVT Grade

Grade	Procedure
I	TB
II	TB, RG
III	TB, RG, JG
IV	RP, CV

Grade: Yerdel classification of PVT, TB: thrombectomy, RG: replaced graft, JG: jump graft, RP: reno-portal anastomosis, CV: anastomosis with collateral vein.

Living donor LT present additional challenges in difficulty to determine appropriate vein grafts in comparison to deceased donors. Post-transplant PV complications occurred in 9 (17%) of 53 cases; namely 5 cases of re-thrombosis and 4 cases of portal vein stenosis, which were treated by surgery, anticoagulant therapy and/or interventional radiology. Post-transplant survival rates of patients with PVT at both one year and 5 years were comparable to a PVT-free cohort (1 year; 83% vs. 77%, 5 year; 79% vs. 73%). Our excellent survival rates in LT patients with PVT could be attributed to our liver transplantation treatment strategies, which included surgical techniques, diligent follow-ups, and timely treatments of post-operative complications to maximize portal vein patency.

Abstract # LB-46

Single Center Respective Cohort Study of Liver Transplantation and Medical Treatment for Hepatitis B Cirrhosis. Jinyan Zhang, Zhaowen Wang, Fan Zhang, Zhihai Peng. *Liver Transplant Department, Shanghai Jiaotong University Affiliated 1st People's Hospital, Shanghai, China*

Objective: We aim to determine the difference in outcomes between hepatitis B (HBV) cirrhosis patients who accept liver transplantation or medical treatment, and construct the waiting list for liver transplantation of HBV cirrhosis. Methods: A total of 345 HBV cirrhosis patients less than 65 years old were identified from our database records. 243 patients accepted

medical treatment(MT), and 102 patients underwent liver transplantation(LT) between 2007.1.1-2012.12.31 in Shanghai Jiaotong University Affiliated First People's Hospital. All patients were retrospectively followed up to 2013.12.31. Patients' age, sex, total bilirubin, serum creatinine, prothrombin time, INR, ascites, hepatic encephalopathy and esophageal varices bleeding (EVB) of all patients were used as evaluation index. Results: Although the liver function of the patients before operation in Liver Transplant group was significant worse than that in Medical Treatment group($P<0.01$), the overall survival rate was much higher in LT group($P<0.01$). The 1,2,3,5 years survival rate of MT group was 63.9%, 58.4%, 52.6%, 51.1% respectively, while that of liver transplantation group was 85.4%, 81.63%, 81.63%, 81.63% respectively($P<0.0001$). The survival rate and liver function of patients with The Model for End-Stage Liver Disease (MELD) ≤ 14 in both two groups had no significant difference ($P>0.103$). However, the patients with MELD ≥ 15 in LT group showed a better result ($P<0.029$). Conclusion: As the same as other studies in western countries, patients with MELD ≤ 14 also can be excluded from the liver transplantation waitlist. However, our results did not demonstrate that the medical treatment would better than liver transplant in these HBV cirrhosis patients.

Abstract # LB-47

Hepatocellular Carcinoma Patient Extended Waiting Times for Liver Transplantation: Clinical and Financial Implications.

Hoylan Fernandez, Giuliano Testa, Ali Dabous, Robert Goldstein, Goran Klintmalm. *Abdominal Transplant Surgery, Baylor University Medical Center, Dallas, TX, USA*

Purpose:

In light of the increasing waiting times for deceased donor transplantation (LT) for patients with HCC meeting UNOS MELD criteria, and equivalent recurrence and survival rates to that of living donor transplantation (LDLT), we propose that LDLT is a medical and financially savvy alternative to LT in HCC patients.

Methods:

An institutional retrospective review of the database between 3 time periods, 2002-2010, 2011-2012 and 2013, was conducted to determine HCC patients (pts) waiting times to LT, and changes in MELD exception point over time. We also conducted a financial analysis of institutional costs related to office visits, diagnostic testing, and imaging during LT waiting period as opposed to LDLT pathways.

Conclusion:

The number of pts on the LT list has steadily declined between 2002 and 2013. Number of listed pts with HCC have significantly decreased in comparison to those without HCC ($p<0.001$). Preoperative MELD score ($p=0.001$), and days on the waiting list ($p=0.003$) have all increased during the 3 periods. Median time on the LT list was 258 days in 2013 compared to 43 days in the 2002-2010 period. Financial cost for listed HCC pts has also significantly increased, with increasing wait list times. Hospital charges including office visits, diagnostic labs and imaging have increased nearly 300% with the increasing median time spent on the list.

Table 1. Analysis of Hospital Charges for HCC Patients on the Liver Transplant Waitlist

Time Period	Median Days on List	% Increase in Hospital Charges	Mean Days on List	% Increase in Hospital Charges
2002-2010	43	-	231.62	-
2011-2012	177.5	197%	406.12	161%
2013	258.0	297%	523.45	226%

This increase in charges does not include any hospitalizations, or interventions required during this time period. Median time to LDLT in our institution is <60 days.

Waiting times to LT for HCC pts have steadily increased, resulting in higher MELD scores at LT. Consequently, institutional costs have increased as a result of increased patient testing, office visits, and associated medical treatments. LDLT is a valid alternative to LT, providing early treatment with equal results at a significantly lower cost.

Abstract # LB-48

Living Related Donor Liver Transplantation with Atrio-Caval Anastomosis of Inferior Vena Cava Graft Stored in Deep-Freeze for Budd-Chiari Syndrome: A Case Report.

Faik Yaylak, Volkan Ince, Bora Barut, Bulent Unal, Mehmet Kilic, Sezai Yilmaz. *Liver Transplantation Institute, Inonu University, Medical School, Malatya, Turkey*

INTRODUCTION

Budd-Chiari syndrome (BCS) is defined as the occlusion of major hepatic veins (HV) and retro hepatic inferior vena cava (IVC). This rare clinical condition sometimes requires inferior vena cava resection and reconstruction due to the fibrosis and occlusion of the IVC for the treatment of BCS with living related donor liver transplantation (LDLT). Here we present the anastomosis of IVC graft, stored in deep-freeze, to right atrium for caval replacement in a case with BCS, who were treated with LDLT.

CASE

A 15 years-old boy with a MELD score eight was scheduled for living donor liver transplantation for chronic liver disease and BCS. Preoperative Doppler USG has demonstrated a normal portal vein. A partial obstruction in vena cava was observed with complete obstruction of the hepatic veins due to thrombosis. In addition, extensive ascites was observed. A right lobe was donated by the mother.

During recipient operation extensive ascites was observed. Total hepatectomy was performed for the congested and granular liver with preservation of retro hepatic IVC. IVC was observed to be fibrotic and occluded. The supra and infra segments of IVC was clamped. Distal clamping was superior to renal veins below and proximal clamping was at the level of right atrium. IVC segment between the clamps was fully mobilized and resected. Reconstruction was performed with stored in deep-freeze IVC graft. The atrio-caval and cava-caval anastomosis were performed. Right hepatic vein of the right liver graft was anastomosed end-to side to the IVC graft. Recipient procedures were completed. Postoperative course was uneventful. Postoperative control imaging has demonstrated patent IVC graft, hepatic vein and hepatic artery.

CONCLUSION

In our experience in this case thrombosis was extended up to the right atrium. Thus, resection of supra hepatic cava was needed. So IVC reconstruction was performed.

This case underlines the importance of the perquisites for surgical treatment of Budd-Chiari syndrome with living donor liver transplantation. An extended resection of cava up to the right atrium and advanced vascular reconstruction techniques with grafts or prosthesis may be required. Thus, a transplant surgeon with advanced vascular reconstruction experience is essential to manage such patients.

Abstract # LB-49

Collateral Circulation after Late Term Hepatic Artery Thrombosis.

Kemal Baris Sarici¹, Volkan Ince¹, Fatih Ozdemir¹, Ilknur Varol³, Ramazan Kutlu², Ayşe Selimoglu³, Sezai Yilmaz¹.

¹Department of Surgery, Institute of Liver Transplantation, Malatya, Turkey; ²Department of Radiology, Institute of Liver Transplantation, Malatya, Turkey; ³Department of Pediatrics, Institute of Liver Transplantation, Malatya, Turkey

Introduction

Hepatic artery thrombosis(HAT) is an important complication with the mortality rate of 11-35 % and also it can be the cause of graft loss after liver transplantation either at early(<4 week) or late (>4 week) term. Pediatric patients with a small diameter of hepatic artery, atherosclerotic grafts at advanced age(marginal donors) and grafts with anatomic variations requiring complicated reconstructions have the highest risk for HAT.

Late term HAT has two types of clinical progression; first type progresses with bilioma, ischemia, hepatic abscess formation, septic complications and graft failure. Retransplantation after management of septic complications is the only treatment option for this group. Second type is the asymptomatic progression by collateral circulation.

We report a three years old girl developing late term HAT after living donor liver transplantation due to fulminant hepatic failure. She was asymptomatic by collateral circulation which fills the main branch of hepatic artery in the liver.

Case Report

A three years old girl complaining with fulminant hepatitis A received living related liver transplantation with segment 2-3 liver graft from her mother uneventfully. Postoperative vascular integrity of the graft was established by Doppler ultrasound daily and we observed that hepatic artery anastomosis was patent but the resistive index was low (0.40) and also it had a delay

in systolic upstroke. Biliary complications, occurred at postoperative first month, such as bilioma and bile leak, which were managed by percutaneous drainage of bilioma and stent replacement internally. During this period hepatic artery thrombosis was not observed. Although there was not any biliary complication, complete occlusion of hepatic artery was observed at third month after operation, on control dynamic liver tomography. Angiography assessment of hepatic confirmed the same findings with tomography. Patient was asymptomatic and she was monitored closely. The patient has been living uneventfully at postoperative 9th month.

Conclusion

Late HAT has occurred in our three years old girl patient and she has been living uneventfully due to collateral vessels through the intrahepatic main branch of hepatic artery.

Abstract # LB-50

Evaluation of Quality of Life of Donors After Hepatectomy for Living Donor Liver Transplantation – A Prospective Study.

Piyush Kumar Sinha¹, Kishore G.S. Bharathy, Senthil Kumar, Viniyendra Pamecha. *HPB Surgery and Liver Transplantation, Institute of Liver and Biliary Sciences, New Delhi, Delhi, India*

Introduction/background

Health related quality of life measurement is an important aspect of donor recovery. There is lack of prospective data. We present a longitudinal study evaluating HRQOL of donors after hepatectomy for LDLT.

Patients and Methods

This prospective study, in a teaching hospital in India, examined 52 subjects who underwent donor hepatectomy (March 2012 -August 2013). We investigated the change in QOL of donors at different time points, their predictors and the willingness to undergo donation process again. Participants were administered the WHOQOL brief instrument and the pre-donation motivation and concern questionnaires at various time points: predonation, at 1 week and at 1,3,6,12 months post donation. Post donation they were given a questionnaire on willingness to undergo the donation process again. Prospective donors who could not undergo donation process were taken as control group. Donors and controls had similar baseline QOL. Twenty patients completed 12 month questionnaire while 44 patients completed 6 month questionnaire. The donors whose recipients died were less likely to continue with the study (n=8). Physical and psychological domain scores decreased significantly after donation (1 week; 1 month; 3 months) while social relations and environment health scores increased at 3 months after donation. All scores reached baseline after 12 months.

Quality of life parameters at different time points compared to predonation

	Predonation	1 week	1 month	3 month	6 month	1 year
Physical health	93.4±5.5	57.1±8.9 (p<0.001)	70.6±11.5 (p<0.001)	86.8±8.5 (p=0.003)	p=NS	p=NS
Psychological	94.6±5.7	85.9±11.3 (p=0.003)	p=NS	96.5±3 (p=0.03)	98.6±2.6 (p=0.01)	p=NS
Social relationships	94.2±6	p=NS	97.1±4.5 (p=0.04)	98.5±3.7 (p=0.02)	98.6±2.5 (p=0.01)	p=NS
Environment	95.7±4.8	p=NS	p=NS	98.8±3.7 (p=0.01)	p=NS	p=NS

About 36% of donors were hesitant about undergoing the donation process again. If given an opportunity, donors of patients having alcoholic liver disease or acute liver failure (30% recipient mortality in ALF) were significantly less willing to undergo the donation process again.

Conclusion

There is transient but significant change in quality of life after donor hepatectomy with the parameters returning to baseline after 12 months. The attitude of donors to the process of donation was affected by recipient etiology and outcome.

Abstract # LB-51

Quantity and Mode Intraoperative Calcium Replacement and Outcomes in Liver Transplant Recipients.

Jana Hudcova¹, Tomas Cvrk¹, Michael Kaufman¹, Robin Ruthazer², Roman Schumann². ¹Lahey Clinic, Burlington, USA; ²Tufts Medical Center, Boston, USA

Introduction:

We examined the quantity and mode of calcium supplementation and possible effect on outcomes.

Methods:

Data of all patients undergoing LT during a 3.75 years were analyzed. Combined liver/kidney, fulminant hepatic failure and re-transplantations were excluded. Data collected: demographics, first intraoperative ionized calcium (1stCa_{ionop}), first PACU Ca (1stCa_{PACU}), and mode of intraoperative

Ca administration. Massive Ca replacement was defined as cumulative bolus administration ≥10g or ≥8g when simultaneous calcium chloride replacement by infusion (any rate) occurred. Outcomes examined: prolonged intubation (Ti≥2days), prolonged PACU/SICU (≥2days or death day 0-1) and hospital (HOS >10 days or death day 0-10) stays, 30-day mortality, primary graft failure (PGF), and 90-days readmissions. Chi-square test was used to analyze outcomes. Data are in means±SD; p<0.05 is significant.

Results:

Data of 98 live donor, and 77 deceased donor LT recipients (n=175, 76.6 % ♂), were included. The mean age, BMI and MELD scores were 52.8±9.7 years, 28.8±5.5 kg/m² and 17±8, respectively.

The 1stCa_{ionop} was 1.14±0.09 mmol/L and the 1stCa_{PACU} was 1.47±0.57 mmol/L. Outcomes summary is shown in Table 1.

Table 1

Ti≥2days*	PACU/SICU≥2days*	HOS>10days**	30 day mortality	PGF	90 days readmissions***
34/175	82/175	87/175	11/175	6/175	49/158

*includes death day 0,1; **includes death days 0-10; ***excludes in-hospital deaths

Mode of intraoperative Ca administration is displayed in Table 2.

Table 2

Mode of Ca administration	% (n)
None	1.1 (2/175)
Bolus	10.3 (18/175)
Infusion	23.0 (40/175)
Bolus and infusion	64.6 (113/175)
Unknown	1.1 (2/175)

Massive intraop Ca administration occurred in 13(7.5%) patients and was associated with significantly longer Ti (p=0.0011), PACU/SICU (p=0.0006), and HOS (p=0.0414) stays. There was no difference in 30d mortality, PGF, and 90d readmission rate between patients with or without massive intraoperative Ca replacement.

Discussion:

Ca levels increased during LT surgery. The majority of patients (64.6%) in this cohort received Ca replacement in a combination of boluses and infusion. Massive Ca administration was identified in 13 patients and those patients had worse short term outcomes. The reasons for this finding are unclear, likely multifactorial and require further analysis to determine if Ca supplementation is a modifiable risk factor for poor outcomes following LT.

Abstract # LB-52

First Report of Over 100 Living Donor Liver Transplants in a Public Sector Hospital in India.

Viniyendra Pamecha¹, Senthil Kumar¹, Kishore G.S. Bharathy¹, Tushar Kanti Chattopadhyay¹, Piyush Kumar Sinha¹, Chandrakant Pandey², Seema Alam³, Amar Mukund⁴, Shiv Kumar Sarin³. ¹Department of HPB Surgery and Liver Transplantation, Institute of Liver and Biliary Sciences, New Delhi, Delhi, India; ²Department of Anaesthesia, Institute of Liver and Biliary Sciences, New Delhi, Delhi, India; ³Department of Hepatology, Institute of Liver and Biliary Sciences, New Delhi, Delhi, India; ⁴Department of Radiology, Institute of Liver and Biliary Sciences, New Delhi, Delhi, India

Introduction: Public sector hospitals are the mainstay of health care for the vast majority of the population in India. Living donor liver transplantation (LDLT), is the predominant modality of LT and there is no other successful LDLT program in a public sector hospital, currently in India. We herein present our initial experience.

Methods: Analysis of prospectively collected data on 125 patients who had LT between March 2010 and February 2014, in a HPB Surgery and Liver Transplant Unit in a teaching hospital. Among 125 liver transplants (119 LDLT; 6DDLTL), 111 were adult and 14 pediatric. Overall, 86 were elective for chronic liver disease (CLD), while 39 (31%) were emergency (16 ACLF and 23 ALF). Of the 14 pediatric recipients (13 LDLT), 9 had ALF. Alcoholic (n=41) and cryptogenic liver disease (n=22) were the commonest etiologies for CLD; 7 patients had HCC (5 Milan; 2 UCSF criteria). About 37% of CLD patients had a MELD-Na >25. About 14% had biliary complications. Hepatic artery thrombosis occurred in 8%. All but one were salvaged successfully (thrombolysis:3;surgical:6). For the entire cohort, the in-hospital mortality was 20% and major morbidity rate was 35%. The overall survival for CLD (86%) and ACLF patients (81%) was better than for ALF (57%). An era effect was noticed with a tendency to better results with time, when comparing procedures done before 2013 to those done in 2013: In hospital mortality (27% vs 6.5%); HAT (9% vs 6.5%); biliary complications (14 % vs 8.6%); donor morbidity (23% vs 2%). Of the 119 live donors (51 men), the mean age was 33 (range 18-48yrs). About 85% of the grafts were right lobe grafts, (72% without middle hepatic vein). The transfusion rate was

7%. Major complication rate ($\geq$ Clavien-Dindo IIB) was seen in 4% (bile leak:2; IVC obstruction:1; upper limb compartment syndrome:1; fatal pulmonary embolism:1).

Conclusion: With increasing experience, good results with LDLT can be achieved in a public sector setting in India.

Abstract # LB-53

Split Liver Transplantation Including Full Split for Fulminant Liver Failure: Single Centre Experience. Jiri Fronek¹, Libor Janousek¹, Martin Oliverius¹, Milos Kucera¹, Pavel Trunecka². ¹*Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic;* ²*Transplantcentre, Institute for Clinical and Experimental Medicine, Prague, Czech Republic*

Background:

Split liver transplantation can help with organ shortage and serve some of the small adults and pediatric recipients. There are some 200 DBD donors in Czech every year, very few pediatric grafts available. Until 2011, majority of the pediatric recipients used to wait for pediatric graft, only few received reduced graft. Because of that, the pediatric recipients used to stay on the waiting list for very long, some for many months, some died while waiting.

Methods:

Retrospective analysis of 10 split liver procedures performed at our institution. Initial experience with split liver at our institution in 1998 included two classical splits and three transplants, two pediatric recipients died from graft dysfunction early after the the transplant, one adult lived for 6 years. One classical split was done in 2009, both recipients are alive. Split liver program has been set up at our unit in 2013, it is compulsory to split every single graft within criteria since.

Results:

There were 7 split liver procedures performed in 2013, of those 6 classical for child and adult, one full for 2 adults. All split procedures we performed in vivo. All recipients except one child are alive and well, all the 13/14 recipients developed prompt graft function. Some 4 had biliary leak, treated with stent placement in 1 case, 3 healed spontaneously. In one case we did full split for two fulminant liver failure patients, husband and wife who poisoned themselves by mistake with mushroom amanita phalloides. One of the recipients was AB0i on top of that, developed biliary leak, the original choledocho-choledocho anastomosis was converted to hepaticojejunostomy one week after the transplant. During 2013 the average waiting time for pediatric recipients has changed from 271 down to 13 days. There is only one child listed for transplantation nowadays.

Conclusions:

Split liver transplantation has been introduced as program at our institution quite late. It helped to decrease significantly the waiting time for pediatric transplant, it may help to avoid deaths on the waiting list as well. Even full split liver for two adults is duable, in case of two fulminant liver failure patients it served both successfully.

Aandahl, E.M.	P-257	Aksu, G.	P-457, P-660	Annu, J.	P-255
Abback, P.	O-32	Aksungur, N.	P-78	Anthony, T.	P-154, P-333
Abback, P.-S.	P-475	Akyildiz, M.	P-84, P-217	Antoine, C.	P-180
Abbott, D.E.	P-423	Akyuz, F.	P-140	Antonelli, B.	P-520
Abd Elwahab, M.	P-93	Al Hasan, I.	P-596, P-597	Antonini, T.M.	O-119, P-60, P-146
Abdebbebi, H.B.	P-33	Alam, S.	LB-52	Antunez, I.	P-218
Abdel Wahab, M.	P-493	Alamo, J.M.	P-283	Anwar, N.	P-423
Abdelaal, A.	O-19, P-536	Alamo-Martinez, J.M.	P-225, P-523	Aoki, T.	O-18, P-402, P-657
Abdel-Aziz, O.	P-399	Alazab, D.	P-555	Aoyagi, T.	O-72, P-568
Abdelfattah, M.R.	P-427	AlBahili, H.	P-195, P-427, P-556	Ara, C.	LB-35, P-55, P-156
Abdelhakam, S.	P-536	Albahili, H.M.	P-359	Araki, K.	P-706
Abdelhalim, E.	P-565	Alban, D.	P-11	Aramoonie, A.	P-486
AbdelMaksoud, A.	P-399	Albayrak, A.	P-468	Araujo, R.L.C.	P-360
Abdel-Maksoud, A.	P-62	Alberto, B.	P-321	Aredes, D.	P-661
Abdel-Razek, W.	P-555	Alfaro, I.	O-61	Arenga, G.	O-124
Abe, Y.	O-13, P-104, P-531	Algohary, A.	P-427, P-556	Ariceta, G.	P-194
Abellieira, M.	P-633	AlGoufi, T.	P-195, P-427	Arikan, C.	O-50, P-457, P-660
Aboeisha, H.	P-62	AlGoufi, T.T.	P-359	Arlan, S.	P-210
Abou El Ella, K.A.	P-77	AlHussaini, H.	P-195	Armstrong, M.	O-82
Abou El-Ella, K.	P-90, P-232	Ali, M.	P-447	Arora, A.	P-96, P-330, P-535
Abou Niaj, A.	P-188, P-609	Alkorashy, E.	P-399	Arrese, M.	O-8
Aboueisha, H.	P-565	Allam, N.	P-315, P-555	Arrieta, W.	P-187
AbouElela, K.	P-704	Allan, R.	P-169	Arshad, F.	O-59, P-238, P-682
Aboul Fetouh, F.	O-19	Allard, M.	O-140	Arslan, S.	P-78, P-448,
Aboulfetouh, F.M.	O-83	Alli, A.	P-435		P-468, P-683, P-684
Abrado, M.	P-248, P-249, P-416	Almeda, J.	P-463	Arterburn, S.	O-71, O-137
Abuelkasem, E.	O-85, P-14	Almeida, M.D.	O-28, O-94, P-588	Artis, T.	P-320
Adachy, T.	P-324, P-573	Almohalla Alvarez, C.	P-163, P-511	Arufe, D.	P-632
Adair, A.	P-152, P-417, P-691	Almohalla, C.	P-306	Asham, E.	O-25, O-26
Adam, R.	O-36, O-119, P-81, P-121,	Aloysius, M.	O-69, O-122, P-54	Asham, E.H.	O-30, O-105, P-405
	P-146, P-209, P-592, P-706	Alper, M.	P-457	Ashish, B.	P-527
Addala, P.K.	P-495	Alqahtani, B.	P-427	Aslan, S.	P-320
Adelmeijer, J.	P-682	Alsalah, F.	LB-21	Asonuma, K.	P-95
Aderinto, A.	P-442	Alsebaey, A.	P-162, P-232, P-315	Asrani, S.K.	P-415
Adeyi, O.A.	P-204	AlSebayel, M.	P-195	Asselah, T.	O-70
Afdhal, N.	O-70, O-137	AlSebayel, M.I.	P-359, P-427	Astudillo, P.	P-608
Agarwal, K.	LB-9, P-142, P-533,	Alshagrani, M.	P-427	Astudillo, P.E.	P-137
	P-598, P-631, P-656	Alshazly, M.	P-399	Atamanalp, S.S.	P-683, P-684
Agarwal, S.	LB-20, P-322, P-595	Alsina, A.	P-310	Ates, M.	P-55
Aggarwal, S.	P-1	Alsuwat, K.	P-315	Athale, A.	P-164, P-425, P-521, P-598
Agnes, S.	O-9	Altaca, G.	P-217	Atienza, H.	P-554
Agostini, A.	P-352	Aluffi, A.	P-193	Atkinson, C.	P-525
Agrawal, P.	O-54, P-159	Aluvihare, V.	P-142, P-598, P-631, P-656	Attia, M.	P-291, P-525
Aguero, L.	P-134	Álvarez, D.	P-123	Au, K.-P.	P-124
Aguilar, J.C.	P-137, P-608	Alzaraa, A.	P-670	Aucejo, F.	LB-6, O-130
Aguilera, V.	O-64, O-67, O-102, P-61,	Ameen, M.	P-93	Audebert, C.	O-140
	P-101, P-123, P-205, P-367, P-519	Amer, H.	P-63	Auzinger, G.	O-117, P-142, P-598
Aguirre-Jaime, A.	P-368	Amin, S.	O-43	Avitzur, Y.	P-430
Agustina, J.D.	P-187	Amiot, B.	O-115	Avolio, A.W.	P-106, P-135, P-581
Ahislakioglu, A.	P-448	Amo Alonso, R.	P-163	Awad, S.	P-706
Ahmad, N.	P-291, P-525	Amoroso, A.	O-66	Aydin, C.	P-5, P-6, P-58, P-228, P-396
Ahmed, A.	P-297, P-409	Amouyal, G.	O-116	Aydin, U.	P-683
Ahmed, B.	P-673	Amouyal, P.	O-116	Aydinli, B.	P-78, P-210, P-439, P-440,
Ahn, C.	P-460, P-700	Anand, N.V.	P-564		P-448, P-468, P-675, P-683, P-684
Ahn, C.S.	P-376	Andag, R.	O-15	Ayllon, M.D.	P-652
Ahn, C.-S.	P-105, P-166, P-311, P-356,	Anders, M.	O-101, P-111	Aziz, A.	P-232
	P-385, P-561, P-626, P-697	Anderton, S.	P-510	Aziz, A.M.	P-77
Ahn, K.S.	P-122, P-438	Andrade, D.	P-212	Azoualy, D.	LB-43
Aigner, F.	P-606	Andrade, K.R.	P-70	Azoulay, D.	O-36, P-81
Ajani, C.	P-230	Andraus, W.	O-40, P-70, P-109, P-360,	Babu, R.	P-197, P-625
Akamastu, N.	P-402		P-377, P-422, P-478, P-628	Baccarani, U.	O-9, P-121, P-651
Akamatsu, N.	O-18, P-657	Andrea, B.	P-187	Bachellier, P.	P-121
Akarca, U.S.	P-147, P-404	Andreani, P.	P-81	Bächler, J.P.	LB-42
Akhaladze, D.G.	O-58	Andreoli, A.	O-91	Bacilio, W.	P-213
Aksel, F.	P-169	Andriani, O.	O-101, P-632	Badee, B.	P-219
Aksoy, N.	P-686	Aneja, S.	LB-37, P-1	Bae, S.H.	P-469, P-630
		Anetsberger, A.	LB-23	Bae, S.I.	P-279, P-313

Bahaa, M.	O-19, P-136, P-536	Bergmann, G.B.	O-48	Bora, G.	O-24, P-470, P-595
Bai, X.	O-74, P-582	Berloco, P.B.	P-530	Borgnia, D.	P-187
Baia, C.E.S.	P-211	Bermejo-Martín, J.F.	P-511	Bosaleh, A.	P-661
Baijal, S.	O-17, O-54, P-159, P-705	Bermello, C.	P-248, P-249, P-416	Bosch, J.	O-61, O-109, P-27
Baisi, B.	P-168	Bermudo, R.	P-500	Botea, F.	P-178, P-361
Bajaj, J.S.	P-629	Bernal, C.	P-283	Boudjema, K.	P-121
Bakshi, N.	P-655	Bernal, W.	O-117, P-598	Boudon, M.	O-120
Bal, C.	P-58	Bernal-Bellido, C.	P-126, P-225, P-523	Boylan, J.	LB-34
Balachandran, M.	O-33, O-121, P-94	Bernard, D.	O-45	Bozorgzadeh, A.	P-288
Balachandran, P.	P-80, P-625, P-655	Bernardo, L.	P-628	Bradley, J.A.	P-68
Balakrishnan, D.	O-75, P-197	Bernardo, W.M.	P-628	Braga, R.P.	P-211
Balbi, E.	P-336	Bernhardt, P.	P-542	Braithwaite, A.	P-205
Balduzzi, A.	O-92	Bernsmeier, A.	P-79, P-503	Braithwaite, A.M.	P-61, P-519
Balfour, A.	P-428	Bertacco, A.	O-9, P-299, P-687	Bramhall, S.	LB-3, LB-16, P-378, P-685
Baliellas, C.	O-53, P-307, P-584	Bertinetto, F.	O-66	Brandl, A.	P-449
Ballarin, R.	P-168, P-548	Bertuzzo, V.R.	O-92, P-160	Brandt-Sarif, T.	O-138
Balust, J.	O-87, P-128	Besisik, F.	P-140	Bras, P.	P-488
Balzano, E.	O-124	Beuers, U.	O-2	Brasil, I.R.C.	P-65
Balzer, S.	O-15	Bezinover, D.	P-44	Brasoveanu, V.	P-178, P-361, P-616
Bang, J.-B.	P-462	Bhalla, S.	P-585	Braun, F.	P-79, P-503
Baños, I.	P-341	Bhalotra, S.	P-246, P-253	Brechot, C.	O-116
Barakat, E.	P-536	Bhandari, M.	P-685	Briceno, J.	P-652
Baran, B.	P-140	Bhangui, P.	O-17, O-54, O-60, P-80, P-81, P-159, P-253, P-338, P-381, P-600, P-625, P-627, P-640, P-655	Briem-Richter, A.	P-662, P-663
Barbero Klem, F.	P-501	Bhangui, P.V.	P-332, P-705	Brige, P.	P-323
Barbier, L.	P-233, P-323	Bharathan, A.	P-51, P-353, P-432	Brister, N.	P-239
Bárcena, R.	P-126	Bharathan, V.	P-197	Broering, D.	P-195, P-556
Bargellini, I.	P-342, P-575	Bharathy, K.G.S.	LB-36, LB-39, LB-50, LB-52	Broering, D.C.	P-359, P-427
Barnabas, A.	P-142	Bharthar, A.	O-21	Broniszczak, D.	P-348
Barnes, M.	P-56	Bhattacharya, R.	P-421	Brown, Jr., R.	O-137
Barreiro, M.	P-632	Bhattacharya, S.	O-73	Brown, Jr., R.S.	O-71
Barrera, M.	P-368	Bhoori, S.	P-537	Brown, M.	P-125, P-642
Barros Schelotto, P.	P-446, P-539	Bhoy, T.	P-127, P-375	Brown, R.S.	O-62
Bartels, M.	O-11	Biçakcioglu, M.	P-5	Bruce, D.	P-45
Bartolozzi, C.	P-342, P-575, P-576	Biebl, M.	P-606	Bruguera, M.	O-113
Barut, B.	LB-48	Biggins, S.W.	P-629	Brunati, A.M.	P-260
Bashuda, H.	O-72	Bilbao, I.	P-66, P-212, P-306, P-370, P-607	Brunet, M.	O-63
Baskiran, A.	P-55, P-58, P-88, P-156, P-397, P-559	Binita, K.	P-430	Bruno, M.J.	P-340
Bassi, D.	P-579, P-687	Birau, S.	O-15	Bruno, S.	P-321
Basu, P.P.	O-69, O-122, P-54, P-298	Bismuth, M.	P-543	Brusa, R.	P-135, P-305
Bate, R.	P-152	Bitetto, D.	P-532, P-537, P-577, P-651	Bucur, P.	O-140, P-209
Batra, R.K.	P-550	Bizouard, G.	O-91	Bueno-Requena, P.	P-511
Baumert, T.F.	O-138	Blasi, A.	O-87, P-128	Bughrara, N.	P-601
Baxter, S.I.	LB-2	Blé, M.	P-101	Burdelski, M.	P-195, P-427
Bayindir, Y.	P-5	Blokdzijl, H.	P-682	Burdelski, M.M.	P-359
Bayly, P.	O-42	Boberg, K.M.	P-179	Burnside, W.S.	O-42
Baz, H.	O-83	Blobner, M.	LB-23	Burra, P.	O-91, P-299, P-305, P-532, P-537, P-651
Bazaraa, S.	P-219	Boesmueller, C.	P-606	Burroughs, A.	P-540
Bechstein, W.	P-121, P-125, P-642	Boetto, R.	P-579, P-687	Burroughs, A.K.	P-309
Beck, J.	O-15	Bo-Göran, E.	P-169	Busciaova, M.	P-510
Beckebaum, S.	P-220	Bohne, F.	LB-8	Busquets, E.	P-194
Becker, T.	P-79, P-503	Bohorquez, H.	P-45	Busquets, J.	O-53, P-307, P-584
Befeler, A.	O-137	Bohra, G.	LB-20, P-322	Bustamante, J.	P-129, P-234, P-306, P-471, P-623
Behnke, M.	P-151, P-295	Boin, I.	P-271	Busuttil, R.W.	P-31, P-256, P-266, P-410, P-517, P-668
Bejaoui, M.	P-20, P-33, P-258	Boin, I.F.S.F.	P-177, P-259, P-263, P-362, P-602	Butler, A.	O-6, P-691
Belghiti, J.	O-118, P-121	Boktour, M.	O-26, O-105, P-442	Byunggon, N.	P-382, P-383
Belguiti, J.	P-233	Boktour, M.R.	O-30, P-405	Caccamo, L.	O-57
Bell, J.	P-656	Bomfati, F.	P-48	Cadden, I.	P-129, P-623
Belli, L.	P-532, P-537	Bonaccorsi-Riani, E.	LB-8, O-113	Caicedo, L.	P-310
Beltran, J.	O-87, P-128	Bonadio, I.	P-316	Calil, I.L.	P-422
Ben Abdennebi, H.	P-20, P-258	Bonham, C.A.	P-297	Calleja, J.L.	O-70
Benítez, C.	LB-8, LB-42, O-8	Bonhomme-Faivre, L.	P-60	Calmus, Y.	O-45
Benlloch, S.	O-67, P-61, P-101, P-205, P-519	Bonsignore, P.	P-566	Calvo, J.	P-98, P-248, P-249, P-416, P-567
Berardi, G.	P-316				
Berenguer, M.	O-64, O-67, O-102, P-61, P-101, P-123, P-205, P-367, P-519				

Cambra, F.	P-98, P-248, P-249, P-416, P-567	Chaib, E.	P-628	Cheng, Y.F.	P-83
Cameron, A.M.	O-111, P-551	Chaman, J.C.	P-213	Cheng, Y.-F.	P-198, P-433, P-437
Cameron, D.	LB-2	Chan, A.	P-131, P-671, P-677	Cheon, S.U.	P-227
Campacci, T.C.	P-259	Chan, A.C.Y.	O-97, P-46, P-115, P-597, P-646	Cherian, P.T.	P-527
Campani, D.	P-342, P-575, P-576	Chan, C.Y.A.	LB-15, P-444	Cherian, T.	P-634
Campos Junior, I.D.	P-362, P-602	Chan, E.Y.	P-421	Cherqui, D.	P-592, P-706
Campos, I.	P-370	Chan, K.-M.	P-443	Cheung, C.K.Y.	P-646
Campos-Varela, I.	O-38, O-62	Chan, S.	P-326, P-671	Cheung, T.T.	LB-15, O-97, P-46, P-115, P-131, P-444, P-646, P-671, P-677
Cancino, A.	LB-42	Chan, S.C.	LB-15, P-46, P-115, P-131, P-444, P-597, P-646, P-671, P-677	Chiang, H.J.	P-83
Candelari, R.	P-352	Chan, S.-C.	O-97, P-124	Chiang, H.W.	P-83
Cao Alvira, R.	P-218	Chand, R.	P-322	Chimienti, S.N.	P-288
Cao, L.	P-574	Chandrasekhar, V.	P-153	Chinnakotla, S.	P-241, P-552
Cappelli, G.	P-168	Chang, P.	O-138	Chio, E.	P-356
Caralt, M.	P-66, P-212, P-370, P-607	Chang, S.-H.	P-603	Chiu, K.-W.	P-207
Carbonell, N.	O-116	Chang, W.-T.	P-148, P-214	Chiu, Y.-C.	O-55
Carbonez, K.	P-426	Chapman, W.	P-310	Cho, B.H.	P-279, P-313
Cárdenas, A.	P-86	Charbel, S.	O-52	Cho, J.M.	P-189, P-666
Cardoso, A.R.	P-177	Charco, R.	P-66, P-194, P-212, P-370, P-607	Cho, W.	O-139, P-91, P-190, P-325, P-387, P-604, P-693
Carenco, C.	P-543	Charlton, E.	P-200	Cho, W.H.	P-122, P-438
Carmagnat, M.	P-678	Charlton, M.	O-70, O-71, O-138	Choi, D.L.	P-215, P-453
Carmody, I.	P-45	Charlton, M.R.	P-301	Choi, E.	P-105, P-166, P-216, P-222, P-311, P-385, P-626, P-692
Carmona Auriolos, J.	P-13, P-490	Charman, S.C.	P-643	Choi, G.H.	LB-32, P-149, P-346, P-653
Carneiro D'Albuquerque, L.A.	P-70, P-377, P-478	Chasiotis, D.	P-521	Choi, G.-S.	P-467, P-605
Carrai, P.	O-124, P-576	Chattopadhyay, T.K.	LB-39, LB-52	Choi, H.-J.	P-23, P-132, P-268
Carraro, A.	P-130, P-260	Chaudhary, A.	P-96, P-330	Choi, I.S.	P-227
Carrasco, F.A.	P-213	Chaudhary, N.	O-20	Choi, J.	P-325
Carrera, E.	P-137	Chaudhary, S.	P-502	Choi, J.S.	LB-32, P-149, P-346, P-653
Carrilho, F.J.	P-109, P-478	Chavin, K.	O-11	Choi, J.Y.	O-139, P-91, P-190, P-604, P-693
Carrión, J.A.	O-61	Chawla, S.	P-1	Choi, N.-K.	P-363
Carter, B.	O-49	Chellappa, S.	P-257	Choi, S.J.N.	P-22, P-262, P-505
Carter, V.	P-371	Chen, B.	P-689	Choi, Y.	O-3, O-44, O-99, O-100, P-110, P-317, P-327, P-331, P-513, P-534, P-546, P-571, P-586, P-669
Cartiera, K.	P-578	Chen, C.	P-184, P-236, P-237, P-474, P-650, P-709	Chok, K.	P-677
Cartin-Ceba, R.	O-79	Chen, C.-C.	P-424	Chok, K.S.H.	O-97, P-115, P-131, P-597, P-646, P-671
Caruy, C.A.A.	P-177	Chen, C.L.	P-64, P-83	Chok, S.H.	P-46
Carvalho Da Silva, M.M.	P-259	Chen, C.-L.	O-16, O-55, P-17, P-82, P-198, P-207, P-240, P-247, P-379, P-424, P-433, P-437, P-447, P-583	Chok, S.-H.	P-124
Casals, G.	O-63	Chen, D.	LB-25, LB-33, P-267	Chok, S.H.K.	LB-15, P-444
Casas, A.M.	P-30	Chen, G.	LB-25, P-455	Chong, A.	P-41
Cascales, P.	P-587	Chen, G.-H.	P-38, P-120, P-139, P-175, P-593	Choon Hyuck, K.D.	P-382, P-383
Caso, O.	P-98, P-248, P-249, P-416	Chen, J.-S.	P-214	Chopra, S.S.	P-672
Caso, O.M.	P-567	Chen, K.	P-340, P-695	Chou, H.-S.	P-443
Cassenote, A.	P-377	Chen, K.-J.	P-235	Choudhary, N.	P-625
Castaing, D.	O-36, O-119, O-140, P-81, P-146, P-209, P-592, P-706	Chen, L.	P-455	Choudhary, N.S.	O-103, P-100, P-302, P-318, P-329, P-680
Castell, J.V.	P-24	Chen, M.	O-114, P-497	Chu, C.	P-701
Castellaneta, A.	O-106	Chen, P.	P-451	Chu, C.W.	P-319, P-469, P-630, P-635
Castelli, J.	P-633	Chen, S.	P-270	Chuang, S.-C.	P-214
Castellote, J.	P-584	Chen, T.	P-312	Chun, K.	P-454
Castells, L.	O-138, P-66, P-370, P-607	Chen, T.-Y.	P-198, P-437	Chun Han, N.T.	P-590
Castillo, J.	P-394	Chen, W.	O-74, P-582	Chung, R.T.	O-137
Castro Santa, E.	P-580	Chen, W.-C.	P-442	Chung, S.Y.	P-22, P-262, P-505
Castro, V.	P-368	Chen, X.	P-36, P-40, P-498, P-499	Ciacio, O.	P-209
Castroagudín, J.	P-306	Chen, Y.	P-21, P-102, P-261, P-304, P-339, P-452, P-496	Cicinnati, V.R.	P-220
Catalano, G.	LB-3, O-124, P-576	Chen, Y.-J.	P-73	Cierpka, L.	P-465
Cauchy, F.	O-36	Chen, Y.-L.	P-92	Cillo, U.	O-9, O-35, O-91, P-299, P-305, P-537, P-541, P-579, P-687
Cautero, N.	P-168, P-548	Cheng, Z.	P-118, P-357	Cintorino, D.	P-566
Cazenave, L.	O-140	Cheng, C.-H.	P-443	Ciria, R.	P-652
Çelik, R.M.	P-6	Cheng, J.	O-134	Ciscar Belles, A.	P-164
Centonze, L.	O-57, P-520	Cheng, K.-W.	P-17, P-240, P-247	Ciscar, A.	P-521
Cepeda, C.	P-283	Cheng, L.	P-118, P-357, P-526		
Cerban, R.	P-616	Cheng, S.	P-56, P-274, P-486		
Cereiño, R.	P-500				
Cervio, G.	P-187, P-661				
Césaretti, M.	O-118				
Cescon, M.	O-92, P-135, P-160, P-541				
Ceulemans, L.J.	O-39, P-450				

Cisneros, E.	P-341	D'Alessandro, A.	P-428	Delefosse, D.	P-475
Cisneros, L.E.	P-528	D'Amico, F.	P-299, P-687	Della Guardia, B.	O-94, P-588
Citores, M.J.	P-341	D'Amico, F.E.	P-579	Della-Guardia, B.	O-28
Clapuyt, P.	P-426	D'Amico, G.	P-168	Delriviere, L.	P-414
Claudia, S.	P-187	D'Antiga, L.	P-193	Delvart, V.	P-121
Clauss, H.	P-150	da Costa Sardinha, L.A.	P-395	Dembo, G.A.	O-84
Clavien, P.-A.	O-108	da Silva, A.	P-271	Dembowska-Baginska, B.	P-348
Cleres, M.	P-539	da Silva, A.M.O.	P-263	Demetris, A.J.	O-47
Clevenger, B.	O-82, P-242	Dabbous, H.	O-19, P-155	Demir, K.	P-140
Coban, S.	P-473, P-686	Dabbous, H.M.	P-536	Demirogullari, B.	P-401, P-570, P-667
Cobo, C.	P-249, P-416	Dabora, A.	P-51	den Hartigh, J.	O-12
Codeluppi, M.	P-168	Dabrowski, F.	P-133	Denecke, C.	P-606
Coffey, J.	O-129	Dahlqvist, G.	O-120	Denecke, T.	P-672
Cohen, A.J.	P-45	Dai, J.W.C.	P-115, P-646	Deng, J.	P-366
Cohen, J.	P-475	Dai, W.C.	P-46	Deng, S.	P-612
Coilly, A.	O-64, O-119,	Dai, W.-C.	O-97, P-124	Deng, Y.-N.	P-38
	O-120, O-138, P-60	Dalgic, A.	P-401, P-570, P-667	Denning, J.	O-70, O-71, O-137, O-138
Colak, A.	P-210	Dalgic, B.	P-401, P-667	Dennison, A.	P-670
Coledan, M.	O-9	Danan, G.	P-543	Derck, J.E.	P-138, P-641
Coletti, L.	O-124, P-342, P-575, P-576	Danet, C.	P-146	Descalzi, V.	P-446, P-539
Colle, I.	P-316	Danger, R.	O-110, O-113	DeSimone, P.	O-124
Colledan, M.	P-121, P-193	Daniele, S.	LB-44	Desvaux, D.	P-678
Collins, H.	O-113		P-364	Determann, C.	P-3
Collins, Z.	P-673	Dannhorn, E.	P-540	Devarbhavi, H.	P-328
Colombo, M.	LB-9	Dar, F.S.	P-365, P-553	DeVito, C.	LB-4
Concejero, A.	P-424	Darwish, D.	P-442	Dey, R.	P-74
Concejero, A.M.	O-16, P-82	Dave, R.	P-525	Dhaliwal, M.	O-121, P-57
Concepcion, W.	P-409	David, G.	P-430	Dharmesh, M.K.	P-527
Concia, E.	P-130	David, G.R.	P-481	Dhawan, A.	O-4, O-43, O-51,
Conlon, N.	LB-34	Davilla, M.	P-661		P-49, P-428, P-501, P-644
Conti, F.	O-36, O-45	Davor, R.	P-398	Dhillon, A.P.	P-309
Corbett, C.	P-378	Dawei, C.	LB-22	Dhir, A.	LB-21, LB-24, P-476
Cordero, P.	P-308	Dayangac, M.	O-41, P-84, P-217	Di Benedetto, F.	P-168, P-548
Corno, V.	P-193	de Boer, M.T.	P-238, P-285	Di Carlo, A.	P-72, P-150,
Cortes, M.	O-127, P-24, P-37,	de Bruin, R.W.F.	O-126		P-239, P-479, P-545
	P-39, P-186, P-425, P-521	De Carlis, L.	O-9, O-10, P-67, P-135	Di Leo, A.	P-135
Cotoi, C.	O-43, P-49	de Carvalho, C.A.	P-408	Di Maira, T.	P-367
Cottam, S.	O-136, P-488	de Fátima Santana Ferreira Boin, I.	P-395	Di Paolo, D.	P-532
Coussios, C.C.	O-1	De Feo, T.	P-532	Diago, T.	LB-6, O-130
Covarrubias, N.	P-554	De Feo, T.M.	P-537	Díaz, B.	P-554
Crawford, M.	O-52	De Giorgio, M.	P-577	Díaz, C.	P-368
Cremonini, G.	O-51	De Guglielmo, M.E.	P-85, P-134,	Díaz, D.	P-368
Crescentini, F.	P-211		P-243, P-554	Díaz, J.C.	P-394
Crespo, G.	O-61, O-63, P-306	De Hemptinne, B.	P-316	Díaz Martínez, A.	P-13, P-490
Cron, D.C.	P-138, P-641	de Jonge, J.	O-126, P-276	Dickerman, R.	P-486
Croome, K.P.	O-129	de Knecht, R.J.	P-301	Dierkhising, R.	O-29
Crowe, L.	LB-4	de la Cruz Lombardo, J.	LB-12	Dillon, J.L.	P-369
Cruz Jr, R.J.	P-422	de la Fuente, S.	P-341	DiLorenzo, A.	P-12
Cruz, A.	P-491	De la Mata, M.	P-123, P-306, P-652	Dima, S.O.	LB-11, P-15
Cruz-Ramirez, M.	P-652	De la Peña, J.	P-587	Ding, C.	O-93, O-96, P-274
Cucchetti, A.	O-92, P-160	de la Serna, S.	O-53, P-66, P-212, P-607	Ding, G.	P-591
Cuenca, A.B.	P-341	de Magnée, C.	P-426	Ding, Y.	P-25, P-275,
Cuervas-Mons, V.	P-126, P-306, P-341	de Mare-Bredemeijer, E.	O-2		P-277, P-516, P-549
Cueva, R.	P-458	De Martin, E.	P-299	Diniz, M.A.	O-40
Cuffy, M.	P-423	de Paula, F.T.M.	P-65	Dip, M.	P-187, P-661
Cui, G.	P-36	De Ruvo, N.	P-168, P-548	Dirican, A.	P-55
Currie, I.S.	LB-26	de Santibañes, E.	O-101, P-111	Disli, O.M.	P-6
Curry, M.P.	O-71, O-137	De Simone, P.	O-10, O-141, P-135,	Dissegna, D.	P-305
Cvrk, T.	LB-1, LB-51		P-305, P-310, P-342,	Diwan, T.S.	P-423
Czerwinski, J.	P-364		P-541, P-575, P-576	Dobkowski, W.	LB-24, P-476
D'Ambrosio, C.	O-91	De Wolf, A.M.	P-2, P-254	Dodge, J.	P-400
Dabous, A.	LB-47	DeAngelis, M.	P-430	Dodge, J.L.	O-38
Dai, W.C.J.	LB-15	de'Angelis, N.	LB-43	Dogan, N.	P-683, P-684
Dalal, A.	LB-18	Defazio, D.	P-486	Doganay, L.	O-50, P-457
D'Albuquerque, L.A.C.	O-40,	Del Gaudio, M.	O-92, P-160	Dogar, A.W.	P-365, P-553
	P-360, P-422	del Rio Martin, J.V.	P-218	Dokmak, S.	O-118
D'Albuquerque, L.C.	P-109, P-628	Del Valle, D.	P-85, P-134	Domingo, J.C.	P-500

Dominguez, E.	P-56	Elia, E.	P-16	Faraj, W.	P-188, P-609
Donataccio, M.	P-130	Elias-Miró, M.	P-32, P-500	Farajov, R.	O-50, P-457
Donati, D.	P-135, P-305	Elkelani, M.Z.	P-219	Farid, N.	P-219
Donato, F.	P-305, P-532, P-537	El-Korashy, E.Z.	P-62	Farinati, F.	O-35
Dondero, F.	O-32, O-81, O-118, P-233, P-475	Ellango, A.P.	P-9	Farmer, D.G.	O-73, P-256, P-668
Dondossola, D.	O-57	Elmaleh, A.	P-81	Fasola, C.	P-486
Dong Kyu, O.	P-382, P-383	Elmeteini, M.	P-536	Fathy, M.	O-19, P-536
Dong, G.	O-10, O-11, O-141, P-67, P-310	El-Meteini, M.	P-136, P-155	Fauda, M.	P-632
Donmez, R.	P-320	El-Mikkawy, A.A.E.-A.	P-136	Faure, S.	P-543
Dopazo, C.	P-66, P-212, P-370, P-607	Elmonayeri, M.	P-536	Fawzy, I.	P-155, P-536
Doria, C.	P-16	Elmorshidy, M.A.	P-493	Fayyad, A.	P-195
Dorn, H.	P-608	Elmorsy, Y.E.	P-219	Fayyaz, S.	P-32
Dorn, H.F.	P-137	Elsadany, M.	P-493	Fecteau, A.	P-430
dos Santos, D.	P-271	Elsarraf, W.R.	P-493	Feist, S.	P-668
dos Santos, D.C.	P-263	Elshazly, M.	P-565, P-610	Felga, G.E.	O-94, P-588
Dostbil, A.	P-78, P-448, P-684	EL-Shazly, M.	P-62	Felga, G.E.G.	O-28
Dou, L.	O-107, P-42	Elsheikh, Y.M.	P-359	Feng, S.	O-47
Dou, Q.	P-455, P-688, P-689	Elsheikh, Y.M.	P-427, P-556	Fenkel, J.M.	O-137
Drago, C.	P-408, P-472	Elwarraky, M.	P-704	Feray, C.	P-678
Drasdo, D.	O-140	Emir, C.A.	P-473	Ferguson, J.W.	O-132
Droc, G.	P-361, P-616	Emond, J.C.	P-596	Fernandez, H.	LB-47
Du, C.	O-93, O-134, P-174	Emre, S.	P-578	Fernandez, J.	O-87
Du, Q.	P-42	Enani, F.	P-219	Fernandez, J.-C.	P-458
Duarte, I.	O-8	Enderica-Gonzalez, S.	P-137, P-608	Fernandez, J.R.	P-234, P-471
Duca, A.	P-341	Eng, H.-L.	P-447	Fernández Aguilar, J.L.	LB-12
Ducatti, L.	P-70, P-478	Englesbe, M.J.	P-138, P-641	Fernández Garda, R.	P-245
Duclos, J.	P-81	Enosawa, S.	P-273	Fernández Villanueva, J.R.	P-245
Duclos-Vallee, J.C.	O-64, P-60, P-300	Ercolani, G.	O-92, P-160	Fernández-Simón, A.	P-86
Dudek, K.	P-141, P-388	Erdil, N.	P-6	Fernando, E.	P-458
Dueland, S.	O-76, P-345, P-354, P-589	Erdogan, Y.	O-41, P-84	Fernando, P.	P-321
Duman, S.	P-147	Erensoy, S.	P-404	Fernando, R.	P-321
Dumitriu, D.	P-426	Ericzon, B.	P-121	Ferrarese, A.	P-651
Dundar, H.Z.	P-4, P-199, P-244	Ericzon, B.-G.	P-428, P-485	Ferrer Vizoso, E.	P-245
Dunn, M.	P-3	Ersoz, G.	P-147, P-404	Ferretti, G.	P-530
Dunn, W.	P-344	Ertl, M.	P-7	Filippi, C.	O-4, P-501
Duny, Y.	P-543	Escamilla, N.	P-341	Filipponi, F.	O-124, P-342, P-575, P-576
Duraj, F.	P-169	Escobedo, M.	P-308	Findlay, J.	P-373
Durand, F.	O-81, O-116, O-118	Esmat, G.	P-62, P-399, P-610	Firpi, R.J.	P-542
Dutkowski, P.	O-108	Esmeraldo, R.M.	P-65	Fischer, L.	O-10, O-11, O-141, P-67, P-303, P-428, P-662, P-663
Duvoux, C.	P-67, P-542, P-678	Esquivel, C.	P-409	Fisher, J.	P-508
Duygu, O.	P-457	Ester, C.	P-616	Fisher, R.A.	P-151
Dyson, J.K.	P-371	Ettlin, A.	P-633	Fishman, D.	O-49
Dzyadzko, A.M.	P-487, P-702	Ettore, G.M.	O-91	Fitzpatrick, E.	P-501
Ebadah, H.	P-536	Eunmi, G.	P-382, P-383	Flores, E.	O-125
Echeverri, J.	P-370	Eurin, M.	O-81	Flores, L.F.	P-86
Economou, A.	LB-30	Evangelista, A.S.	O-28	Folch-Puy, E.	P-20, P-33, P-258
Efimov, D.J.	P-487, P-702	Everson, G.	O-70, O-137	Fondevila, C.	O-87, O-125, O-131, P-27, P-86
Egawa, H.	P-372, P-622	Evirgen, S.	P-140	Fong, K.	P-414
Egberts, J.H.	P-503	Fabregat, J.	O-53, P-306, P-307, P-584	Fontana, R.	O-71
Eghesad, B.	LB-6, O-130	Fagioli, S.	O-91, P-135, P-305, P-532, P-537, P-541, P-577, P-651	Fontana, R.J.	O-138
Egritas, O.	P-401, P-667	Fahrbach, T.	P-436	Forman, L.M.	O-62
Eguchi, S.	LB-17, P-324, P-573	Fairbanks, L.	P-49	Fornoni, G.	O-57, P-520
Ehsan, N.	P-555	Fairfield, C.J.	O-7	Forns, X.	LB-9, O-61, O-63, O-70, O-71, O-137, O-138
Ekong, U.	O-47	Faitot, F.	P-592	Forsythe, J.R.L.	O-6
El Metani, M.	P-93	Faivre, J.	O-116	Fosby, B.	P-179
El Meteini, M.	O-19	Faiyad, A.I.	P-359	Foss, A.	P-345, P-354, P-589
El Mouhadi, S.	LB-28	Fakih, N.	P-98, P-248, P-249, P-416, P-567	Foss, A.E.	O-76, P-179, P-466
Elamir, M.	P-62, P-399, P-610	Falletti, E.	P-532	Foster, S.	P-56
Elankumaran, K.	O-33	Fallon, M.B.	P-629	Francisco, H.	P-321
Elbaz, T.	P-565	Fan, H.	LB-13, O-14	Francos, C.	O-118
ElGarem, N.	P-610	Fan, J.	LB-25, LB-33, LB-38	Franke, A.	P-179
El-Garem, N.	P-62, P-399	Fan, Q.	P-172	Freeman, M.L.	P-552
Elgindy, H.E.	P-493	Fan, S.T.	P-131, P-671	Freitas, D.B.P.	P-65
Elhajj Fuleihan, G.	P-188	Fang, C.	P-456	Fridell, J.A.	P-287
		Farahat, O.	O-83		

Friedman, J.F.	P-138, P-641	Gedik, E.	P-5, P-6	Gordon-Burroughs, S.	O-26
Friend, P.J.	O-1	Geerts, A.	P-316	Gordon-Smith, J.	P-417
Friess, H.	LB-10	Gehrau, R.C.	O-104, P-524	Goss, J.	O-49, P-428
Friman, S.	P-125, P-642	Geier, S.	P-34, P-264, P-509	Goto, H.	P-617
Fronek, J.	LB-41, LB-53	Geller, D.A.	O-106, O-107, P-42	Goto, R.	O-72, P-568
Frunza, M.	P-458	Gelli, M.	P-209	Gottschild, D.	LB-10, P-349
Fu, B.-S.	P-120, P-139	Gelu-Simeon, M.	O-119	Gouda, B.P.	O-20
Fu, Z.	P-591	Geng, L.	O-34, P-26, P-59,	Gouw, A.S.H.	O-112, P-48, P-285
Fu, Z.-R.	P-41		P-265, P-366, P-574	Govil, S.	O-21, P-51, P-99, P-432, P-619
Fuggle, S.	P-39	Geng, W.	P-326, P-343, P-507	Govindaraju, P.	P-557
Fujiki, M.	LB-6, O-130	Genyk, Y.	P-463	Goyal, D.	P-431
Fujiyoshi, M.	P-568	George, J.	O-17, P-80, P-159	Goyal, N.	LB-20, O-24, P-87, P-97,
Fung, J.	LB-6, O-10, O-11,	Gerebics, A.D.	P-138, P-641		P-322, P-406, P-470, P-538,
	O-97, O-130, O-141	Gerken, G.	O-116		P-557, P-558, P-569, P-595, P-699
Fung, J.Y.Y.	P-46, P-115, P-131, P-646	Gerona, S.	P-111, P-633	Grabhorn, E.	P-662, P-663
Fung, Y.Y.J.	LB-15, P-444	Ghandir, A.	P-678	Gracia-Sancho, J.	O-109, P-27,
Furlan, V.	P-60	Ghanekar, A.	P-430		P-32, P-500
Furukawa, H.	P-568	Gheorghe, L.	P-616	Graf, R.	O-108
Fusco, G.	P-233	Ghinolfi, D.	O-124, P-342, P-576	Graham, A.	P-417
Fuster, J.	P-86	Ghobrial, M.R.	O-26, O-105	Grant, D.R.	O-129
Fuster, M.	P-587	Ghobrial, R.M.	O-25, O-30, P-405	Grant, M.M.	P-492
Gaber, A.O.	O-25, O-26, O-30, O-105	Gibbs, P.	P-68	Grant, W.J.	P-182
Gabriel, O.C.	O-6	Gil, E.	P-91, P-604	Grat, K.	P-141, P-388
Gabriel, Z.	P-321	Gil, O.	O-101, P-111	Grat, M.	P-141, P-388
Gadano, A.	O-101, P-111	Gilroy, R.	O-71, P-200, P-206,	Grazi, G.L.	P-542
Gadjradj, P.	O-2		P-293, P-344, P-435,	Graziadei, I.	P-106, P-581
Gaedcke, J.	O-15		P-436, P-445, P-611, P-673	Grecco, G.	P-633
Gaffuri, G.	P-577	Gimson, A.E.	P-643	Green, V.	P-142
Gagniard, B.	P-543	Ginanni Corradini, S.	P-532, P-651	Greg, N.	P-169
Galante, A.	O-68	Giovagnoni, A.	P-352	Gregoire, E.	P-323
Galati, J.	O-25	Giovanni, B.	P-230	Gridelli, B.G.	P-566
Galeota Lanza, A.	P-135	Giráldez Vázquez, E.	P-245	Grieser, C.	P-672
Gallo de Moraes, A.	O-79	Girmita, A.	O-47	Gringeri, E.	P-579, P-687
GamalElDeen, H.	P-610	Gitman, M.	O-80, P-477	Grompe, M.	P-508
Gambato, M.	O-61, O-63, O-91, P-651	Giuseppe, T.	LB-44	Gruttadauria, S.	P-566
Ganapathi, I.S.	P-590	Gkretsi, V.	LB-30	Gruz, F.	P-539
Gane, E.	LB-9, O-70, O-71, O-137	Glorioso, J.	O-115, P-508	Grzelak, I.	P-141, P-388
Ganier, D.	O-80, P-477	Glover, T.E.	P-68	Gu, J.	O-114
Ganschow, R.	P-428	Godoy, M.	P-408, P-472	Guarisco, R.	P-541
Gantxegi, A.	P-212	Goja, S.	O-17, O-20, O-33, O-54, O-60,	Guchelaar, H.-J.	O-12
Gao, F.	O-34, P-31, P-118,		O-103, O-121, P-80, P-100, P-159,	Gude Sampedro, F.	P-245
	P-266, P-357, P-517		P-289, P-302, P-318, P-329, P-332,	Guerra, J.F.	LB-42, O-8
Gao, M.	P-658		P-337, P-338, P-381, P-564, P-625,	Guerra, M.	P-668
Gao, S.	P-515, P-649		P-627, P-640, P-655, P-680, P-705	Guha, R.	O-136
Gao, Y.	P-658	Gokturk, S.	P-140	Guilera, M.	P-306
Garces, J.	P-137	Goldstein, R.	LB-47, P-154	Guimaraes, V.B.F.	P-65
Garcia, C.	P-218	Goldstein, R.M.	P-333	Guixé-Muntet, S.	P-27, P-500
García, M.	O-64, O-67, O-102,	Gomez, I.	P-521	Guizzetti, M.	P-193
	P-61, P-205, P-519	Gómez, M.	P-306	Gulcu, B.	P-4
García-Bernardo, C.	P-458	Gomez-Bravo, M.A.	P-126, P-225,	Guler, N.	O-41, P-84, P-217
			P-283, P-523	Gulsen, M.T.	P-473, P-686
García Pajares, F.	P-163, P-511	Gonçalves, N.	P-408, P-472, P-707	Gundogdu, B.	O-98, P-675
García Sesma, A.	P-98, P-567	Gondolesi, G.	P-446, P-539	Gunneson, T.J.	P-373
García-Eliz, M.	P-101	Gondra, L.	P-194	Gunsar, F.	P-147, P-404
García-Pagán, J.C.	O-109, P-27	Gonzalez, A.	P-308	Gunson, B.K.	O-132
García-Sesma, A.	P-248, P-249, P-416	González, M.d.R.	P-587	Gunther, R.	P-79
García-Tsao, G.	P-629	Gonzalez, P.	P-446	Guo, F.	LB-33
García-Valdecasas, J.C.	O-87, O-125,	Gonzalez Campaña, A.	P-632	Guo, W.	P-312, P-591
	O-131, P-86, P-128	González Grande, R.	LB-12	Guo, Z.	O-65, O-114, P-47, P-52,
Garrido, S.	P-368	Gonzalez-Castillo, A.	P-307		P-69, P-143, P-176, P-236,
Gasbarrini, A.	P-532	González-Diéguez, M.L.	P-306		P-282, P-284, P-314, P-374,
Gastaca, M.	P-234, P-471	Gonzalez-Pinto, I.M.	P-458		P-384, P-407, P-459, P-474,
Gautam, D.	P-80, P-302, P-318,	Gopalakrishnan, U.	O-75, P-197		P-497, P-522, P-544, P-612, P-659
	P-338, P-600, P-680	Gopasetty, M.	P-201, P-495	Gupta, A.	O-136, P-611
Gautam, P.L.	P-476	Gordon Burroughs, S.	O-25, O-30,	Gupta, M.	P-375, P-502
Gautier, S.S.	P-696		O-105, P-103, P-405	Gupta, N.	P-246, P-253
Gautier, S.V.	O-58, P-196				
Gayat, E.	O-32	Gordon, F.	O-137		

Author Index

Gupta, S.	LB-20, LB-31, LB-37, O-24, O-86, P-1, P-74, P-87, P-97, P-322, P-406, P-470, P-538, P-557, P-558, P-569, P-595, P-699	He, X.	O-65, O-114, P-21, P-28, P-47, P-52, P-69, P-102, P-143, P-176, P-184, P-221, P-236, P-237, P-261, P-282, P-284, P-304, P-314, P-339, P-347, P-374, P-384, P-407, P-452, P-459, P-474, P-496, P-497, P-522, P-544, P-612, P-614, P-650, P-658, P-659, P-690, P-709	Hori, T.	P-622
Gurakar, A.	P-601	Healey, A.	P-369	Hoshino, K.	O-13
Gursan, N.	P-684	Heaton, N.	LB-7, O-1, O-51, O-117, O-127, P-29, P-37, P-39, P-49, P-164, P-186, P-425, P-504, P-521, P-533, P-598, P-631, P-644	Hosny, A.	P-62, P-399, P-565, P-610
Gurvitz, S.L.	P-12			Hosny, K.A.	P-565
Guven, K.	P-320			Hotta, R.	P-512
Ha, H.S.	P-560			Hotter, G.	P-258
Ha, T.	P-700			Hov, J.R.	P-179
Ha, T.Y.	P-376			Howie, S.	P-510
Ha, T.-Y.	P-105, P-166, P-311, P-356, P-385, P-561, P-697			Hrehoret, D.	P-616
Habersetzer, F.	O-138	Heaton, N.D.	LB-5, P-129, P-623, P-652	Hsu, C.-N.	P-379
Habib, A.	P-56	Heedfeld, V.	O-126	Hsu, H.-W.	P-437
Habib, I.	O-126	Hegab, B.	P-427	Hu, A.	P-28, P-347, P-452
Haddad, L.	P-70, P-360, P-377, P-478	Hegazy, O.A.	P-77	Hu, Q.	O-74
Haddad, L.B.	P-422	Heimbach, J.K.	P-301	Hu, R.-H.	O-56, P-529
Haddad, L.B.P.	O-40	Heinze, T.	P-503	Hu, T.-H.	P-207, P-433
Hagness, M.	O-76, P-257, P-345, P-354, P-589	Heits, N.	P-79	Hu, Z.	P-173, P-292, P-358, P-380, P-390, P-411, P-615
Haim-Boukoba, S.	P-60	Heits, N.G.	P-503	Huang, C.	LB-14
Halac, E.	P-187, P-661	Helmke, K.	P-663	Huang, C.-J.	P-17, P-240, P-247
Hale, A.	P-291	Hemmerich, L.	P-252	Huang, J.	LB-19, P-312
Halff, G.	P-463	Heneghan, M.	O-117, P-129, P-142, P-521, P-623, P-631, P-656	Huang, L.	LB-25, LB-38
Hammad, N.	P-219	Heneghan, M.A.	O-127	Huang, T.L.	P-83
Hammel, L.L.	P-7	Henley, M.	P-242	Huang, T.-L.	P-198, P-437
Han, D.D.	LB-13	Heper, Y.	P-4	Huang, X.	P-37, P-39, P-164
Han, D.-D.	O-14	Herborn, J.	P-2	Huang, Y.	P-312
Han, D.H.	P-149, P-346	Herborn, J.C.	P-8	Hudcova, J.	LB-1, LB-51
Han, J.H.	O-89, P-351, P-613, P-621	Herden, U.	P-662, P-663	Hudson, M.	P-371
Han, M.	P-221, P-237, P-284, P-384, P-407, P-474, P-650, P-690, P-709	Hermann, J.	P-663	Hughes, R.D.	O-4, P-501
Han, Y.S.	P-215, P-453	Hernandez Rivera, P.	P-218	Huh, I.Y.	P-489
Hang, M.	P-184, P-658	Hernandez-Alejandro, R.	O-129	Hunter, S.	P-136
Hansen, B.E.	P-301	Heronemus, M.	P-200, P-206, P-293, P-344, P-435, P-445, P-611, P-673	Huo, T.-L.	O-35
Hao, J.	P-71	Herrero, A.	P-543	Hurtova, M.	P-678
Hardwigsen, J.	P-323	Herrero, I.	P-123, P-306	Hüsing, A.	P-220
Harguindeguy, M.	P-633	Hertel, P.	O-49	Hussein Khalil, A.	P-565
Harle, C.	P-476	Hervas, C.	P-652	Hutchins, J.L.	P-241
Harpavat, S.	LB-40, O-49	Hesketh, E.	P-510	Hwang, G.-S.	P-10, P-250, P-480, P-483
Harrison, E.M.	O-7, P-417	Hessheimer, A.	O-87	Hwang, J.S.	P-438
Hartog, H.	P-378, P-691	Hessheimer, A.J.	O-125, O-131	Hwang, S.	P-105, P-166, P-222, P-311, P-356, P-376, P-385, P-441, P-460, P-560, P-561, P-626, P-692, P-697
Hasanin, A.	O-19	Hewitt, Jr, W.R.	P-550	Hyung Hwan, M.	P-383
Hasegawa, K.	P-402, P-657	Hibi, T.	P-104, P-531	Iacob, S.	P-361, P-616
Hashimoto, K.	LB-6, O-130	Hickey, R.	P-508	Ibarra, J.	P-394
Hassan Shah, N.U.I.	P-365, P-553	Hidaka, M.	LB-17, P-324, P-573	Ibis, M.	P-401
Hassan, M.	P-219	Hidalgo, E.	P-291, P-525	Ibraheem, T.	P-704
Hassan, M.A.	P-552	Hide, D.	O-109, P-27	Ibrahim, A.	P-555
Hassan, Z.-U.	P-12	Himes, R.	O-49	Ibrahim, A.D.	P-422
Hatanaka, K.	O-72	Hiremath, G.	LB-40, O-49	Ibrahim, T.	P-90
Hatano, M.	P-403, P-618	Ho, C.	LB-40	Ichai, P.	O-116, O-119, O-120
Hatayama, N.	P-273	Ho, C.-M.	P-529	Ide, K.	O-135, P-113
Hatipoglu, S.	P-88, P-559	Ho, G.C.L.	P-671	Iemmolo, R.M.	P-532
Haugaa, H.	O-48, O-115, P-296	Ho, M.-C.	P-529	Iglesias, V.	P-511
Haug, X.	P-29	Ho, P.	O-52	Ignacio, H.	P-321
Hayashida, S.	P-95	Ho, W.	LB-26	Igreja, M.R.	P-408, P-472, P-707
Haydar, A.	P-188, P-609	Hogan, B.	P-158	Iida, T.	LB-45
He, E.	P-53	Hogg, F.	P-142	Ijzermans, J.	O-126, P-276
He, Q.	LB-13, O-14	Holland, B.	P-463	Ilahe, A.	P-611
		Holówko, W.	P-141, P-388	Ilyas, H.A.	P-553
		Holroyd, D.	O-1	Imadome, K.-I.	P-191
		Honda, M.	P-95	Imventarza, O.	P-661
		Honda, T.	P-617	Ince, I.	P-683
		Hong, G.	O-99, P-534, P-546	Ince, V.	LB-35, LB-48, LB-49, P-19, P-156, P-397
		Hong, J.J.	P-560	Innes, A.A.	LB-2
		Hong, T.H.	O-89, P-351, P-613, P-621	Inomata, K.	P-104
				Inomata, Y.	P-95
				Inoue, H.	P-403, P-618

Inoue, Y.	P-324	Jiménez, C.	P-98, P-248, P-249,	Kalatzaki, K.	LB-30
Ionescu, M.I.	P-178, P-361		P-306, P-416, P-567	Kaliemoorthy, I.	O-86, P-9, P-51
Ireland, H.	P-417	Jimenez, P.	P-212	Kalicinski, P.	P-75
Isaac, J.	LB-3, LB-16,	Jiménez, W.	O-63	Kalicinski, P.J.	O-46, P-348
	P-378, P-685, P-691	Jiménez Pérez, M.	LB-12	Kalinowski, P.	P-112
Iscimen, R.	P-4, P-244	Jiménez-Casto, M.	P-500	Kalthoff, H.	P-503
Ishigami, M.	P-617, P-698	Jiménez-Castro, M.B.	P-32 Jin, J.	Kamath, P.S.	P-629
Ishiyama, K.	O-90, O-135, P-113		P-695	Kamei, H.	P-145, P-617, P-698
Ishizu, Y.	P-617	Jin, U.S.	P-669	Kamel, S.	P-63
Isik, B.	LB-35, P-5, P-397	Jinsoo, R.	P-382, P-383	Kamiyama, T.	O-72
Ismail, H.	O-46, P-75, P-348	JinYong, C.	P-382, P-383	Kanaparthi, S.	O-47
Iso, Y.	P-563	Jitraruch, S.	O-4, P-49, P-501	Kandaswamy, R.	P-241, P-552
Isoniemi, H.	P-125, P-169, P-642	Jochmans, I.	O-126	Kaneko, J.	P-402, P-657
Isse, K.	O-47	Joh, J.-W.	O-139, P-91, P-190,	Kaneku, H.	O-128
Itano, O.	O-13, P-104, P-531		P-325, P-387, P-604, P-693	Kang, D.R.	P-653
Ito, E.	P-403, P-618	John, J.	P-705	Kang, H.G.	O-44
Iwasaki, J.	LB-45	Johnson, B.	P-373	Kang, J.	P-701
Jabbour, S.	P-188, P-609	Johnson, D.	P-239, P-479	Kang, J.H.	P-630
Jabiry-Zieniewicz, Z.	P-133	Johnson, P.	P-200, P-435, P-436, P-673	Kang, K.J.	P-122, P-438
Jabri, Y.	P-29, P-37, P-164, P-533, P-631	Jolly, A.	P-246, P-253	Kang, S.	P-460
Jacquelin, C.	P-180	Joly, A.	O-17, P-159	Kang, S.-H.	P-105, P-166, P-222, P-356,
Jae Berm, P.	P-382, P-383	Jones, N.	P-430		P-385, P-626, P-692, P-697
Jaekel, E.	O-110	Jones, R.	P-11	Kang, Y.	P-16
Jae-Won, J.	P-382, P-383	Jong Man, K.	P-382, P-383	Kantarci, M.	O-98, P-439, P-440,
Jain, A.	P-34, P-72, P-150, P-239,	Joo, D.J.	LB-32, P-149, P-653		P-448, P-675, P-684
	P-264, P-479, P-509, P-545	Jordan, S.	P-303	Kanzow, P.	O-15, P-290
Jain, S.	P-381	Joseph, D.	O-52	Kaplan, B.	P-611
Jakabowski, A.	P-369	Joshi, D.	P-656	Kapoor, S.	P-202, P-328, P-335,
Jamot, L.	O-116	Jothamani, D.	O-123, P-89, P-99, P-153,		P-386, P-562, P-694
Jang, B.K.	P-122		P-208, P-420, P-619, P-679	Karabulut, E.	P-228
Jang, D.-M.	P-250, P-480	Jothamani, D.K.	P-634	Karaca, C.	P-140
Jang, J.J.	O-99	Joyner, M.	P-373	Karaca, L.	P-675
Janicki, P.K.	P-44	Ju, D.J.	P-346	Karachristos, A.	P-34, P-72, P-150,
Jankowska, I.	P-75	Ju, M.K.	P-149, P-346		P-239, P-264, P-479, P-509, P-545
Janny, S.	P-475	Ju, W.	O-65, O-114, P-52, P-69, P-102,	Karakas, S.	P-396
Janousek, L.	LB-41, LB-53		P-143, P-176, P-236, P-237, P-282,	Karam, V.	P-121, P-146, P-209, P-300
Janssen, H.L.A.	P-340		P-284, P-304, P-339, P-374, P-384,	Karasu, Z.	P-147, P-404
Januszkiewicz, A.	P-485		P-407, P-459, P-497, P-544, P-612,	Kargi, A.	P-320
Jarufe, N.	LB-42, O-8		P-650, P-659, P-709	Karimian, N.	O-112, P-48, P-285
Jaschke, W.	P-449	Julka, K.	P-64	Karkra, S.	O-121, P-57, P-94, P-431
Jassem, W.	LB-7, O-1, O-127, P-29, P-30,	Jung, B.	P-460	Karlsen, T.H.	P-169, P-179, P-466
	P-37, P-39, P-49, P-142, P-164,	Jung, B.-H.	P-105, P-166, P-356,	Karsidag, T.	P-320
	P-504, P-521, P-533, P-598		P-385, P-626, P-697	Karytka, A.	P-702
Jassem, W.M.	LB-5	Jung, C.-W.	P-669	Kasahara, M.	P-191, P-434
Jasseron, C.	P-180	Jung, D.	P-460	Kassis, N.	O-119
Jawan, B.	P-17, P-240, P-247	Jung, D.H.	P-376	Katariya, N.N.	P-550
Jayanthi, V.	P-183	Jung, D.-H.	P-105, P-166, P-311,	Kathenkamp, K.	P-349
Jayanti, S.	P-255		P-356, P-385, P-561, P-697	Kato, M.	P-563
Jeffrey, G.	P-414	Jung, J.P.	P-223	Kato, T.	P-85, P-134, P-243, P-554
Jennings, L.	O-31, P-415	Jung, S.-M.	P-483	Katsahian, S.	O-91
Jennings, L.W.	O-128	Jung, S.W.	P-461	Katsuki, Y.	O-13, P-104
Jeon, I.-G.	P-483	Jung, S.-W.	P-664	Kaufman, M.	LB-1, LB-51
Jeon, J.Y.	P-223	Jung, Y.S.	P-165	Kavafyan, J.	O-81
Jeong, W.K.	P-441, P-674	Junge, G.	O-10, O-11, O-141,	Kawagishi, N.	P-286
Jeremy, H.	P-510		P-67, P-310, P-428	Kaya, E.	P-4, P-199, P-244
Jessum, W.	P-631	Junior, R.F.	P-336	Kayaalp, C.	P-5, P-55, P-58,
Ji, H.	P-31, P-266, P-517	Junwei, F.	LB-22		P-88, P-228, P-559
Jia, J.	P-144, P-265, P-267, P-270	Justo, I.	P-98, P-248,	Kaymakoglu, S.	P-140
Jiang, C.	P-681		P-249, P-416, P-567	Kazemier, G.	O-126
Jiang, J.	P-36, P-267, P-498, P-499	Kabar, I.	P-220	Ke, Q.	O-34, P-594
Jiang, L.	P-144, P-270	Kadohisa, M.	P-95	Kelly, D.	O-130
Jiang, W.	O-34	Kadry, Z.	P-44	Kerber, J.	P-503
Jiang, Z.	P-280, P-281	Kafa, S.	P-660	Kerestury, M.	P-239
Jiao, C.	LB-14	Kageyama, S.	P-403, P-618	Khakhar, A.	P-201, P-495
Jiao, X.	P-184, P-236, P-237, P-407,	Kaido, T.	LB-45	Khalife, M.	P-188, P-609
	P-474, P-650, P-658, P-709	Kaiser, G.M.	O-10, P-67	Khan, N.A.	P-365, P-553
		Kaiser, T.E.	P-423	Khetani, N.	P-16

Khillan, K.	P-535	Klintmalm, G.	LB-47, P-154, P-415	Kupiec-Weglinski, J.W.	P-31,
Khizroev, K.M.	P-696	Klintmalm, G.B.	O-128, P-333		P-266, P-517
Khorsandi, S.	P-29, P-425, P-533	Klintman, D.	P-129, P-623	Küpper, B.	P-349
Khorsandi, S.E.	P-49, P-186, P-504, P-521	Kluge, P.	P-348	Kuroda, T.	O-13
Khoury, G.	P-188, P-609	Kluger, M.	P-481	Kuroki, T.	LB-17, P-324, P-573
Khoy-Ear, L.	O-32, O-81, P-475	Klune, J.R.	P-42	Kushihata, F.	P-403, P-618
Kieslichova, E.	LB-41	Kluwe, J.	P-303	Kutlu, R.	LB-35, LB-49, P-6
Kilic, M.	LB-48, O-50, P-457, P-660	Knezevic, I.	P-398	Kutluturk, K.	P-228
Kim, A.	P-482, P-578	Ko, J.S.	P-484	Kvalheim, G.	O-95
Kim, B.-W.	P-462	Ko, W.-C.	P-73	Kwekkeboom, J.	O-2, P-340
Kim, D.G.	O-89, P-351, P-613, P-621	Kobayashi, T.	O-135	Kwo, P.	O-71
Kim, D.-G.	P-23, P-268	Koc, S.	LB-35, P-55	Kwon, C.H.D.	O-139, P-91, P-190,
Kim, D.J.	P-223	Koca, E.	P-19		P-325, P-387, P-604, P-693
Kim, D.-S.	P-461, P-664	Kohaut, J.	O-45	Kwon, J.H.	P-166, P-216, P-438
Kim, D.Y.	P-429	Kohl, M.	P-79	Kwon, J.-H.	P-105, P-222, P-311,
Kim, E.Y.	O-89, P-351, P-613, P-621	Kokudo, N.	O-18, P-402, P-657		P-356, P-385, P-626, P-692
Kim, G.	P-484	Kolar, S.	O-54	Kymberly, W.D.	P-373
Kim, H.	O-3, O-99, P-317, P-534, P-546	Kolar, S.R.	P-627	Kyo Won, L.	P-382, P-383
Kim, H.J.	P-429, P-441, P-505	Kollmar, O.	O-15, P-121, P-290	Kyu-Sung, C.	P-383
Kim, H.T.	P-122, P-438	Komatsu, S.	LB-28	Labib, D.	O-83
Kim, H.-Y.	O-44	Koneru, B.	O-11, P-463	Lacotte, S.	LB-4, O-133
Kim, I.O.	P-560	Kong, M.	P-681	Ladie, D.	O-104
Kim, J.	P-463	Koning, L.	P-301	Laghens, R.	P-446
Kim, J.A.	P-189	Kontis, E.	LB-7, O-127, P-164,	Lahoz, A.	P-24
Kim, J.M.	O-139, P-91, P-190, P-325,		P-186, P-521, P-598, P-631	Lai, J.C.	O-62
	P-387, P-604, P-693	Korashy, E.E.	P-565	Lai, M.	P-107
Kim, J.S.	P-223	Korkut, E.	P-78, P-210, P-448, P-683	Lai, P.	P-34, P-264
Kim, J.-W.	O-44, P-10, P-250, P-480	Kornasiewicz, O.	P-388	Lai, Q.	O-124, P-106, P-342,
Kim, K.	P-460	Kornberg, A.	LB-10, P-349		P-530, P-580, P-581
Kim, K.H.	P-376	Kornilov, M.	P-117, P-464, P-647	Lake, J.R.	P-241, P-552
Kim, K.-H.	P-105, P-166, P-311,	Korotkov, S.V.	P-702	Lalee, M.P.	P-211
	P-356, P-385, P-626, P-697	Kosciesza, A.	P-348	Lalwani, S.	P-127, P-226, P-294, P-335,
Kim, K.M.	P-189, P-429, P-666	Koshizuka, Y.	P-568		P-375, P-535, P-585, P-599
Kim, K.W.	P-441, P-620, P-674	Kosmoliaptsis, V.	P-68	Lang, M.	O-68, P-303
Kim, M.S.	LB-32, P-149, P-346, P-653	Kostopoulou, F.	LB-30	Langnas, A.	P-182
Kim, O.-K.	P-317	Kosuge, T.	P-563	Larrey, D.	P-543
Kim, P.	P-154	Kota, V.	P-51	Larrey, D.G.	O-116
Kim, P.T.	O-128	Kou, J.T.	LB-13	Lasheen, H.Z.	P-90
Kim, P.T.W.	P-333	Kou, J.-T.	O-14	Lau, K.	P-72, P-150, P-239,
Kim, R.	LB-6	Kow, W.C.A.	O-37		P-479, P-545
Kim, S.H.	LB-32, O-22,	Kowalczyk, R.	P-133	Laura, F.	LB-44
	P-149, P-181, P-346	Krasnodebski, M.	P-112	Laurence, J.M.	P-430
Kim, S.-H.	P-10, P-224, P-480	Krawczyk, M.	P-112, P-121,	Laurent, A.	LB-43
Kim, S.I.	LB-32, P-149, P-346, P-653		P-141, P-388	Lauro, R.	O-57
Kim, S.-J.	P-23, P-268	Kriese, S.	P-129, P-623	Law, J.H.	O-37
Kim, S.-K.	P-10, P-250, P-480	Krishnan, R.	P-495	Lazaro, J.L.	P-66, P-212, P-370, P-607
Kim, S.Y.	P-441	Krishnasamy, Y.	O-77, P-518, P-708	Le Treut, Y.P.	P-323
Kim, T.S.	P-165	Krkut, E.	P-684	Lebedz, O.A.	P-702
Kim, T.-S.	P-122	Krol, R.	P-465	Ledezma, J.L.	P-243
Kim, W.-J.	P-105, P-166, P-697	Kron, P.	O-108	Lee, A.	LB-26
Kim, W.R.	O-29, P-415	Krowka, M.J.	O-79	Lee, A.J.	LB-26
Kim, Y.	P-334	Kubal, C.A.	P-287	Lee, A.-L.	P-149
Kim, Y.H.	P-122, P-438	Kubota, K.	P-563	Lee, B.A.	P-483
Kim, Y.-K.	O-22, P-181, P-224	Kucera, M.	LB-41, LB-53	Lee, C.-H.	P-529
Kimura, S.	O-106, O-107, P-42	Kucera, T.J.	P-18	Lee, G.	P-486
Kin Yong, S.C.	P-590	Kudale, S.	P-57	Lee, H.	P-482
King, E.	P-551	Kulkarni, S.	P-334	Lee, H.-M.	P-480
Kirino, I.	P-622	Kumar, M.	P-599	Lee, H.S.	P-653
Kisaoglu, A.	P-684	Kumar, S.	LB-36, LB-39, LB-50, LB-52	Lee, H.W.	O-44, O-99,
Kita, J.	P-563	Kumaran, E.	P-640		P-317, P-534, P-546
Kitagawa, Y.	O-13, P-104, P-531	Kumaran, V.	P-127, P-202, P-226, P-328,	Lee, H.-W.	O-3
Kitago, M.	O-13, P-104, P-531		P-335, P-375, P-386, P-502,	Lee, J.	O-44, P-441, P-546, P-653
Kitasato, A.	P-324, P-573		P-562, P-599, P-638, P-694	Lee, J.G.	LB-32, P-346
Kivett, V.	O-138	Kumer, S.	P-293, P-435, P-445, P-673	Lee, J.H.	P-346
Kizrak, Y.	P-439, P-440	Kuo, A.	O-137	Lee, J.J.	LB-32, P-149, P-346
Klempnauer, J.	P-121, P-125, P-642	Kuo, K.-K.	P-214	Lee, J.-J.	P-73
Kleuser, B.	P-32	Kuo, P.-C.	P-148		

Lee, J.-M.	O-3, O-44, O-100, P-110, P-317, P-331, P-513, P-571, P-669	Li, Q.	P-497, P-695	Lo, C.M.	LB-15, P-46, P-115, P-131, P-272, P-444, P-597, P-646, P-671, P-677
Lee, J.S.	P-441	Li, Q.-Y.	P-235		
Lee, K.	O-99, P-534	Li, Q.Z.	LB-27	Lo, C.-M.	O-97, P-124
Lee, K.-J.	P-95	Li, X.	LB-14, P-269, P-326	Lo, R.	O-97
Lee, K.-T.	P-148, P-214	Li, X.L.	LB-13	Locatelli, L.	P-193
Lee, K.W.	P-604	Li, Z.	LB-25, P-47, P-292, P-358, P-390, P-411, P-615	Lohia, P.	LB-20, P-74, P-322
Lee, K.-W.	O-3, O-44, O-99, O-100, P-110, P-190, P-317, P-327, P-331, P-513, P-534, P-546, P-571, P-586, P-669	Liang, C.	O-74, P-582	Lohse, A.	P-303
		Liang, T.	O-74, P-582	Lohse, A.W.	O-68
		Liao, M.	LB-19	Loinaz, C.	P-98, P-248, P-249, P-416, P-567
Lee, M.	P-251	Liaquat, A.	P-365, P-553		
Lee, P.-H.	P-529	Lien, B.	P-466	Londoño, M.C.	LB-8, O-61, O-110
Lee, S.	O-139, P-10, P-91, P-190, P-223, P-325, P-387, P-460, P-480, P-693, P-700	Ligocka, J.	P-141	Longhi, M.S.	O-4
		Lillegard, J.	P-508	Lopes, L.D.	P-422
		Lim, B.L.K.	O-37	Lopez Andujar, R.	P-101, P-367
Lee, S.-A.	P-181, P-224	Lim, H.	P-484	Lorenzoni, G.	P-342, P-575
Lee, S.D.	O-22, P-181	Lim, K.C.	P-560	Loss, G.E.	P-45
Lee, S.-D.	P-224	Lima, C.	P-478	Lotfy, M.	P-162
Lee, S.G.	P-376	Limongi, V.	P-263, P-271	Lourenço de Camargo	
Lee, S.-G.	P-105, P-157, P-166, P-222, P-311, P-356, P-385, P-441, P-561, P-620, P-626, P-692, P-697	Lin, B.	P-59, P-649	Bittencourt, Z.Z.	P-395
Lee, S.H.	O-89, P-149, P-351, P-604, P-613, P-621	Lin, C.C.	P-83	Loza Vargas, A.	P-163
		Lin, C.-C.	O-55, P-82, P-92, P-207, P-424, P-447, P-583	Lozada, C.	P-134
		Lin, G.	P-50	Lozano, J.J.	LB-8, O-110
Lee, S.J.	P-441	Lin, J.	O-65, P-384, P-459	Lu, D.	O-34, O-88, P-506, P-514, P-645
Lee, S.K.	P-216	Lin, J.-C.	P-73	Lu, H.	P-36
Lee, S.-K.	O-139, P-91, P-190, P-325, P-387, P-484, P-604, P-693	Lin, P.-Y.	P-92	Lu, S.Y.	O-85
		Lin, Q.	P-514	Lu, Z.	O-5
		Lin, T.-L.	P-447, P-583	Luca', M.G.	P-577, P-651
Lee, W.-C.	P-443	Lin, T.-S.	O-55, P-583	Lucena, I.E.G.	P-65
Lee, W.-F.	P-447, P-583	Lin, Y.-H.	O-55, P-207, P-447, P-583	Lucianetti, A.	P-193
Lee, W.J.	P-674	Lin, Z.	LB-22, P-174, P-649	Luis, L.	P-321
Lee, Y.	P-181, P-224	Lindeberg Lindvet, M.	P-485	Luis, R.	P-187
Lee, Y.-H.	O-35	Line, P.D.	P-179	Luo, L.	LB-19
Legeai, C.	P-180	Line, P.-D.	O-76, O-95, P-345, P-354, P-589	Luo, L.-X.	LB-29
Legido-Quigley, C.	P-30			Luo, W.	P-21, P-102, P-261, P-339, P-452, P-496
Lehec, S.	O-4	Ling, Q.	O-34, O-88, P-391, P-594, P-645	Luo, X.	P-624
Lehec, S.C.	P-501			Luong, T.V.	P-309
Lei, J.	P-350, P-389, P-418, P-654	Ling, S.	P-430	Lupo, A.	P-260
Leites, A.	P-633	Lipowics, A.	O-129	Lupo, F.	P-547
Leithead, J.A.	O-132	Lirio, R.A.	P-182	Lütgehetmann, M.	O-68, P-303
Leiting, J.	P-241, P-552	Lisman, T.	O-59, O-112, P-48, P-238, P-285, P-682	Lv, Z.	O-93, O-134, P-174
Lemasters, J.	O-77, P-518, P-708			Ma, Y.	P-21, P-29, P-37, P-39, P-164, P-221, P-261, P-326, P-343, P-419, P-496, P-507
Lemons, S.	P-200, P-436, P-673	Liu, C.-L.	P-73		
Lens, S.	O-61	Liu, F.	P-108		
Leonardi, G.	O-124	Liu, H.	P-269, P-326	Mabrouk, M.	P-136
Lerman, A.	O-29	Liu, J.	P-76, P-326, P-681	Macedo, E.	P-478
Leroy, V.	O-116	Liu, Q.	P-518, P-708	Madanur, M.	P-425
Lerut, J.	P-106, P-580, P-581	Liu, S.-F.	P-379	Madanur, M.A.	LB-5
Letierce, A.	O-120	Liu, T.-P.	P-73	Madhavan, K.	P-590
Leung, D.	O-49	Liu, W.	P-38	Maeso, C.	P-368
Leuvenink, H.G.D.	P-285	Liu, X.	P-269, P-326, P-343, P-648	Maggi, U.	O-57, P-520
Levent, A.	P-439	Liu, Y.	P-31, P-50, P-53, P-118, P-161, P-170, P-171, P-172, P-266, P-357, P-392, P-393, P-517, P-636, P-689	Magini, G.	O-91, P-577
Levy, G.A.	P-542			Magistroni, P.	O-66
Levy, M.	P-154			Magra, E.	P-230
Levy, M.F.	P-333	Liu, Y.-W.	O-55, P-82, P-207, P-447, P-583	Maheshwari, S.	P-202, P-328, P-562
Lewandowski, Z.	P-141, P-388			Mahmoud, I.	O-19
Lewin, M.	P-706	Liu, Z.	LB-29	Mahmoud, S.	P-44
Li Petri, S.	P-566	Liver Transplant Advisory	P-180	Mainardi, V.	P-633
Li, B.	O-23, P-108	Llàcer-Millán, E.	P-587	Majerovic, M.	P-398
Li, C.	P-269, P-326, P-343, P-507	Llado, L.	O-53, P-307, P-584	Majno, P.E.	O-133
Li, C.W.	P-83	Lloyd, C.	P-691	Malara, G.	O-82
Li, C.X.	P-272	Lloyd, D.	P-670	Malavé, H.	P-134
Li, F.	P-69, P-544	Lo, C.	P-269, P-292, P-326, P-343, P-507	Malbouisson, L.M.	P-478
Li, H.	LB-27, O-23, P-120, P-593			Maliakkal, B.J.	P-629
Li, J.	LB-25, P-144, P-270			Malik, R.	P-629
Li, P.	LB-13, O-14			Malizos, K.	LB-30

Author Index

Malkowski, P.	P-364	Massip-Salcedo, M.	P-32, P-500	Metselaar, H.J.	O-2, O-10, O-11,
Mallat, A.	P-678	Masson, S.	P-371		O-126, P-67, P-276, P-340
Mallavazi, M.	P-491	Mastai, R.	P-111	Meyns, B.	O-39
Mallett, S.	P-242	Mataarranz, A.	P-234, P-471	Michael, O.	P-169
Mallett, S.V.	O-82	Mathivanan, K.	P-201	Miglioresi, L.	O-91, P-532
Maloo, M.	P-34, P-72, P-150, P-239,	Mathurin, P.	O-116	Milan, Z.	P-488
	P-264, P-479, P-509, P-545	Matsuda, A.	P-109	Millán, O.	O-63
Maluf, D.G.	O-104, P-524	Matsumoto, T.	P-563	Miller, C.	LB-6, O-130
Maluf-Filho, F.	P-628	Matsuno, N.	P-273	Min, J.H.	P-674
Man, K.	P-269, P-272, P-326,	Matsuoka, K.	P-191	Mincarelli, C.	P-352
	P-340, P-343, P-507	Matsuoka, L.	P-463	Minou, A.F.	P-487, P-702
Manakkat Vijay, G.	P-37	Matta, B.M.	O-107	Miquel, R.	O-61
Manas, D.M.	P-371	Mauro, S.	P-230	Mir, J.	P-24
Mancham, S.	O-2	Mavier, P.	P-678	Miraglia, R.	P-566
Mancini, A.	P-27	May, C.	P-378	Miranda, J.P.	P-394
Mandolesi, A.	P-352	May, T.	LB-40	Miras, M.	P-306, P-587
Manenti, F.	O-91	Mazza, E.	P-547	Mirza, D.	LB-3, LB-16,
Mangalick, K.	P-552	Mazzi, R.	P-130		P-378, P-685, P-691
Mangla, K.	P-502	McCall, P.	P-251	Miserachs, M.	P-194
Mangla, V.	P-127, P-226, P-294,	McCaughan, G.	O-11, O-52, O-70	Mishra, S.K.	O-103
	P-375, P-535, P-585	McCormack, L.	O-101	Mithal, A.	O-103
Mangus, R.S.	P-287	McDiarmid, S.V.	O-73, P-668	Mitry, R.R.	O-4, P-501
Manin, C.B.	P-70	McDougall, N.	P-129, P-623	Miyagawa-Hashimoto, A.	P-622
Manns, M.	LB-9	McFadden, R.	O-25	Miyagi, S.	P-286
Manns, M.P.	O-71, O-110, O-116	McFadden, R.S.	O-26, O-30,	Miyar, A.	P-458
Manousou, P.	P-309		O-105, P-405	Miyasaka, M.	P-434
Manrique, A.	P-98, P-248,	McHutchison, J.	LB-9	Mizumoto, T.	P-403, P-618
	P-249, P-416, P-567	McHutchison, J.G.	O-70, O-71,	Mocchegiani, F.	P-352
Mantilla, O.A.	P-213		O-137, O-138	Moes, D.J.A.R.	O-12
Mantion, G.	P-121	McKenna, G.	P-154, P-333	Mogawer, S.	P-62, P-399
Mantry, P.	P-56	McKeown, D.	P-3	Mohamed Ilias, M.S.	O-21, P-99
Manzia, T.M.	LB-44	McNair, L.	O-70, O-71, O-137	Mohamed, Z.U.	O-117, P-488
Mao, S.	O-115, P-508	McNicol, L.	P-11, P-251	Mohan, N.	O-60, O-121, P-57,
Marcacuzco Q, A.A.	P-567	Medina, E.	P-243		P-94, P-431, P-640
Marcacuzco, A.	P-248, P-249, P-416	Medina, J.	P-633	Mohan, S.	P-527
Marcacuzco, A.A.	P-98	Megawer, S.	P-610	Mohaniya, D.	P-502
Marciano, S.	O-101, P-111	Mehta, N.	P-294, P-335,	Mohanka, R.	O-17, O-20, O-33, O-54,
Maria, D.	P-187		P-375, P-502, P-599		O-60, O-103, O-121, P-80,
Marín, D.	P-85, P-134, P-243, P-554	Mehta, N.N.	P-127, P-226, P-535, P-585		P-94, P-100, P-159, P-167, P-289,
Marin, E.	P-528	Mei, M.F.T.	P-602		P-302, P-318, P-329, P-332, P-337,
Marin, L.M.	P-283	Meineri, M.	P-481		P-338, P-381, P-564, P-625, P-627,
Marin-Gomez, L.M.	P-225, P-523	Mejia, A.	P-56, P-486		P-640, P-655, P-680, P-705
Marini, E.	P-193	Melada, E.	P-520	Moisuk, Y.G.	P-696
Mariño, Z.	O-61	Melendez, H.V.	LB-5, LB-7	Mokhtar, A.	O-83
Marins, L.V.	O-28	Melum, E.	P-179	Monakhov, A.R.	P-696
Markiewicz-Kijewska, M.	O-46, P-75	Mendes-Braz, M.	P-32, P-500	Monbaliu, D.	O-39, O-126, P-450
Markmann, J.F.	O-112	Méndez, J.	LB-42	Moniaux, N.	O-116
Maroni, L.	O-2, P-160	Méndez, N.	P-528	Monsour Jr, H.P.	O-26, O-105
Maroso, F.	P-230	Mendizabal, M.	P-111, P-632	Monsour, H.	O-25
Marquez, M.	O-129, P-204	Menendez, J.	P-111, P-633	Monsour, H.P.	O-30, P-405
Marrone, G.	O-109	Meng, X.	P-281	Monsour, Jr., H.P.	P-442
Marshall, A.	P-540	Mennini, G.	P-305	Montal, S.	P-632
Martay, K.	O-84	Menon, B.	O-17, O-54, P-159, P-289,	Montalti, R.	O-91, P-352
Martínez, J.	LB-42, O-8		P-332, P-337, P-338,	Montejo, M.	P-234, P-471
Martinez, M.	O-110, O-113		P-381, P-564, P-640, P-705	Montemezzo, G.P.	P-707
Martinez-Indart, L.	P-234, P-471	Menon, K.	LB-5, O-127, P-598, P-631	Montin, U.	P-130, P-260
Martinez-Llordella, M.	LB-8, O-113	Menon, K.V.	LB-7	Moon, D.	P-460, P-700
Martinez-Palli, G.	O-87, O-131, P-128	Menon, K.V.N.	LB-6	Moon, D.B.	P-216, P-376
Martinitto, R.	P-661	Menon, P.B.	O-20, O-60, O-103, P-100,	Moon, D.-B.	P-105, P-311, P-356,
Martins, P.	O-112		P-302, P-318, P-329, P-627, P-680		P-385, P-561, P-626, P-697
Martins, P.N.	P-288	Menon, R.N.	O-75, P-197	Moon, H.	P-325
Marwan, I.	P-77	Menten, R.	P-426	Moon, H.H.	P-91, P-190
Marwan, I.K.	P-93	Mentha, G.	LB-4, O-133	Moon, J.I.	P-227, P-467, P-605
Mas, V.R.	O-104, P-524	Mercer, D.F.	P-182	Moon, K.	P-701
Maschmeier, M.	P-220	Mergental, H.	LB-3, LB-16, P-378, P-685	Moon, K.M.	P-319, P-469, P-630, P-635
Masola, V.	P-260	Merli, M.	P-532	Moon, Y.-J.	P-10
Massie, A.	O-27	Mescoli, C.	P-579	Moonka, D.	O-137

Morabito, V.	P-530	Napetti, S.	P-152	Oh, S.H.	P-189, P-429, P-666
Mora-Esteves, C.	P-463	Narang, A.	O-49	Oh, S.Y.	P-630
Moreau, R.	O-81	Narashiman, G.	P-192, P-420	Ohdan, H.	O-90, O-135,
Moreira, L.P.	P-336	Narasiman, G.	P-208, P-679		P-113, P-412, P-512
Moreiras, C.	P-370	Narasimhan, G.	O-21, P-51, P-89,	Ohira, M.	O-90, O-135, P-113, P-412
Morel, P.	LB-4		P-99, P-153, P-432	Ohnishi, L.	P-478
Morelli, M.C.	O-92, P-532	Narvaez, I.	P-306	Ohuchi, N.	P-286
Moreno, A.	P-306	Nascimento Fernandes, M.E.	P-395	Okajima, H.	LB-45
Moreno, E.	P-248, P-249, P-416	Nashan, B.	O-68, P-303, P-662, P-663	Oksenberg, D.	P-394
Moreno, R.	P-528	Nastase, A.	LB-11	Okumura, K.	O-72
Mörrer, O.	O-15	Nath, B.	P-202, P-328, P-335,	Okur, A.	P-675
Morgan, B.	P-670		P-386, P-562, P-694	Oldani, G.	LB-4
Mori, A.	LB-45	Navarro, B.	P-327, P-586	Olgun, N.	O-50
Mori, S.	P-563	Navarro, J.L.	P-587	Olin, P.B.M.	P-296
Moriarty, P.	P-206	Navasa, M.	O-61, O-63	Olithselvan, A.	O-21, O-123, P-89,
Morrison, S.	LB-21, LB-24	Nayeem, M.	LB-20, P-322		P-99, P-153, P-208, P-679
Moss, A.A.	P-550	Nazario, H.	P-56	Olithselvan, J.	P-420
Mostafa, I.	O-19, P-136	Nemec, P.	P-121	Olithselvan, O.	P-634
Mou, L.	P-414	Neri, D.	P-299	Oliveira da Silva, A.M.	P-259
Mourad, M.	LB-16, P-685	Neuhaus, P.	P-121, P-672	Oliveira, C.C.	P-377
Movahedi, B.	P-288	Nevens, F.	O-10, O-39, P-67, P-450	Oliverius, M.	LB-41, LB-53
Moysyuk, Y.	P-117, P-464, P-647	Ng, I.O.L.	O-97	Olson, J.	P-293
Mpei, E.S.	LB-30	Ng, K.T.P.	P-272, P-326, P-343, P-507	Olyae, M.	P-435
Mubarak, A.	P-56	Ng, V.	P-430	Omar, D.	P-565
Muesan, P.	LB-3, LB-16, O-6,	Nguyen, D.	P-12	Omar, K.	P-219
	O-132, P-121,	Nguyen, T.	P-31	Onaca, N.	P-154, P-333
	P-378, P-685, P-691	Nguyen-Adams, H.-L.	P-656	Onen, Z.	P-457
Muir, A.J.	O-71	Nicolau, R.	O-80, P-477	Ong, J.H.	LB-26
Mukerji, A.	P-34, P-72, P-264, P-509	Nicolini, D.	P-352	Oniscu, G.C.	P-152
Mukhtar, A.	O-19	Nie, C.-H.	P-676	Onishi, Y.	P-145, P-617, P-698
Mukund, A.	LB-52	Nievas, F.	P-632	Ono, S.K.	P-109
Mulligan, D.	P-334	Nikunj, G.	P-255	Onoe, T.	O-135
Mulligan, D.C.	P-550	Nishida, S.	O-90	Op den Dries, S.	O-112, P-48, P-285
Muneeb, M.	P-344, P-436, P-611	Nogara, M.S.	P-408, P-472, P-707	Orallo, P.	P-18, P-252
Muñoz, J.	O-125	Noh, M.S.	P-489	Orci, L.	LB-4
Muñoz, L.E.	P-308, P-528	Nolte, J.	O-25	Orci, L.A.	O-133
Muñoz, M.R.	P-528	Norero, B.	O-8	Ormeci, A.	P-140
Muñoz Conejero, E.	P-163, P-511	Nosaka, S.	P-434	Orozco Ganem, F.	O-101, P-111
Muñoz Tornero, M.	P-129, P-623	Nossaman, B.	O-80, P-477	Ortiz de Urbina, J.	P-126
Murase, N.	O-106	Notarpaolo, A.	O-91	Ortiz-de-Urbina, J.	P-234, P-471
Murkerji, A.	P-545	Novelli, G.	P-530	Oscar, I.	P-187
Murokawa, T.	P-95	Novelli, S.	P-530	Osman, S.	P-155
Murray, J.M.	P-359	Ntzani, E.E.	P-68	Osorio, F.	P-486
Murray, S.	P-158	Nundy, S.	P-127, P-226, P-294, P-335,	Ostojia-Chyzynska, A.	O-46
Murugan, N.	P-495		P-375, P-502, P-535, P-585, P-599	Otan, E.	P-5, P-6, P-58, P-228, P-396
Mut, D.	P-404	Nyberg, S.	O-115, P-508	Otero, A.	P-126, P-306
Muthamizh, G.	O-123	Nyckowski, P.	P-141, P-388	Otto, G.	P-106, P-581
Na, B.	O-139, P-325, P-604	O'Beirne, J.	P-158, P-309, P-540	Ou, G.	P-312
Na, G.H.	O-89, P-351, P-621	O'Grady, J.	P-644	Ou, S.-Y.	P-198, P-437
Nabil, A.	P-565	O'Grady, J.	LB-7, O-127, P-142, P-521,	Ou, Y.	P-314
Nacif, L.S.	P-70, P-109, P-422, P-628		P-631, P-652, P-656	Oude Elferink, R.	O-2
Nadim, M.	P-415	O'Grady, J.G.	P-129, P-623	Oura, T.	O-72
Naeem, M.	P-595	O'Leary, J.	O-137	Ozcelik, A.	P-84
Næss, S.	P-179	O'Leary, J.G.	O-62, O-128, P-629	Ozdemir, F.	LB-35, LB-49, P-156, P-397
Nagatsu, A.	O-72	O'Meara, M.	P-644	Ozden, I.	P-140
Nah, Y.W.	P-489	O'Neil, M.	P-344, P-435, P-445, P-673	Ozden, K.	P-448, P-468, P-684
Naini, B.	O-73	Obadan, I.E.	P-288	Ozkalemkas, F.	P-244
Naito, M.	P-273	Obara, H.	O-13, P-273, P-531	Ozogul, B.	P-683
Najnigier, B.	P-141, P-388	Obayah, G.	O-19	Ozturk, G.	O-98, P-78, P-210, P-448,
Nakamura, M.	P-657	Oellerich, M.	O-15, P-290		P-468, P-683, P-684
Nakano, N.	P-191	Oellinger, R.	P-449	Ozturk, N.	P-78
Nakatsuka, M.	P-151, P-295	Oezcelik, A.	O-41	Pablo, M.-C.	P-321
Nakazawa, A.	P-191	Ogul, H.	P-440	Paci, M.	P-566
Nakhoul, N.	P-188	Ogura, Y.	P-145, P-617, P-698	Padilla, P.M.	P-213
Nalpas, B.	O-116	Oh, D.K.	O-139, P-604	Padillo, F.J.	P-283
Nam, C.W.	P-489	Oh, M.	P-484	Padillo-Ruiz, F.J.	P-225, P-523
Namgung, J.M.	P-429	Oh, S.	P-701	Pagano, D.	P-566

Pageaux, G.P.	P-543	Pearce, B.	P-11	Ponziani, F.R.	P-532
Palaniappan, K.	P-51, P-192, P-229, P-353, P-420, P-432	Pearse, B.	P-251	Poon, R.	P-671
Palomares, I.	P-234, P-471	Pecere, S.	P-532, P-577, P-651	Popescu, I.	P-178, P-361, P-616
Paluszkiewicz, R.	P-141, P-388	Pecora, R.A.	P-422	Popescu, M.	LB-11, P-15
Pamecha, V.	LB-36, LB-39, LB-50, LB-52	Pecoraro, J.	P-446	Poptsov, V.N.	P-196
Pan, F.	LB-13	Pelaez, N.	O-53, P-307, P-584	Porrás, F.	P-225
Pan, G.	LB-19	Pellegrini, S.	O-92	Porrero, B.	P-458
Pan, J.	O-5	Pelletier, S.	P-524	Porte, R.J.	O-59, O-112, P-48, P-238, P-285, P-682
Pan, L.T.T.	O-37	Peñas Herrero, I.	P-163	Portero, J.	P-368
Pan, Q.	P-340	Peng, C.	P-43, P-274	Potula, R.	P-509
Pan, T.	P-515	Peng, X.	LB-25	Powell, J.	P-3
Pandey, C.	LB-52	Peng, Z.	LB-25, LB-33, LB-38, LB-46	Powell, J.J.	O-7
Pandit, U.	P-463	Penninga, L.	O-7	Poyato, A.	P-126
Pang, N.Q.	O-37	Peppelenbosch, M.P.	P-340	Prachalias, A.	LB-5, LB-7, O-127, P-37, P-39, P-49, P-164, P-504, P-521, P-533, P-598, P-631
Pantanali, C.A.	P-360	Pepper, R.	LB-40 Peralta, C. P-32, P-500	Prachlias, A.	P-29
Pantazi, E.	P-20, P-33, P-258	Perdigao, F.	LB-28, O-36, O-45, P-233	Praet, M.	P-316
Paone, G.	O-57	Pereira, A.	P-128	Prasad, R.	P-525
Papathanasiou, I.	LB-30	Perek, D.	P-348	Praseedom, R.K.	P-643
Pareek, S.	P-322	Perera, T.	LB-3, LB-16, O-6, P-378, P-685, P-691	Prashant, B.	O-33
Pareekh, S.	LB-20	Perez, E.	P-308	Pratschke, J.	P-121, P-449, P-606
Pareek, S.	P-595, P-699	Pérez, R.M.	LB-42, O-8	Prem, G.V.	P-255
Parekh, H.	P-264	Pérez Moreno, J.	P-13	Premkumar, G.V.	P-246, P-253
Pareja, E.	P-24	Pérez Villarejo, G.J.	P-13, P-490	Premuzic, M.	P-398
Parekh, H.	P-34, P-509	Perez-Ortiz, M.	P-652	Prieto Castillo, M.	P-126
Parikh, A.	P-463	Périer, A.	O-81	Prieto, J.	P-633
Parisi, I.	P-309	Perissinotto, E.	P-579	Prieto, M.	O-64, O-67, O-102, O-138, P-61, P-101, P-123, P-205, P-234, P-367, P-471, P-519
Park, B.H.	P-279	Perkins, J.D.	P-421	Pruett, T.L.	P-241, P-552
Park, G.	P-700	Perumalla, R.	P-153, P-192, P-208, P-634, P-679	Puchades, L.	P-367
Park, G.C.	P-376	Pervaz, M.	P-365, P-553	Pugliese, F.	P-530
Park, G.-C.	P-105, P-166, P-311, P-356, P-561, P-626, P-697	Pestana, E.	P-85, P-134, P-243, P-554	Pulitano, C.	O-52
Park, H.-W.	P-105, P-626	Peyton, P.	P-251	Punit, S.	O-33
Park, J.-I.	P-157, P-620	Phoolchund, A.	P-158	Puppi, J.	O-43
Park, M.-S.	P-35, P-110, P-534, P-546	Picatto, P.	P-458	Pustavoitau, A.	O-27, P-601
Park, S.E.	P-489	Picciotto, A.	P-537	Qi, X.	P-326, P-343
Park, S.-J.	O-22	Pietrareanu, C.	P-616	Qian, Q.	P-688
Park, T.J.	P-122	Pietrzak, B.	P-133	Qian, Z.	P-358
Park, Y.	P-701	Pillai, P.	P-251	Qin, H.	LB-19
Park, Y.-H.	P-105, P-311, P-626	Pinelli, D.	P-193	Qin, S.	LB-25
Park, Y.K.	P-462	Piñero, F.	O-101, P-111, P-632	Qin, Y.	P-231, P-695
Park, Y.M.	P-319, P-469, P-630, P-635	Pinheiro, R.S.	P-109, P-422, P-580	Qin, Y.-S.	P-235
Parrilla, P.	P-587	Pinna, A.D.	O-92, P-160	Qiu, M.	P-374
Parthasarathi, G.	P-322	Pinzani, M.	P-309	Qu, E.-Z.	P-175
Passigato, N.	P-537	Piplani, T.	O-54, O-60, P-338, P-600	Qu, W.	P-53
Pastrana, R.	P-218	Pirenne, J.	O-39, O-126, P-125, P-450, P-642	Quaglia, A.	LB-7, O-43, P-129, P-164, P-623, P-631
Pasulo, L.	P-577, P-651	Pirimoglu, B.	O-98, P-439, P-440, P-675	Querishi, M.O.	P-365, P-553
Patch, D.	P-309, P-540	Pirotte, T.	P-426	Quillin, R.C.	P-423
Patcha, V.R.	P-521, P-533, P-631	Pischke, S.	O-48, O-68	Quintela, E.	P-211
Patel, D.	P-414, P-417	Pisegna, J.	P-266	Quintero, J.	P-194
Paterno, F.	P-423	Pistol-Tanase, C.	LB-11	Quintini, C.	LB-6, O-130
Pathak, A.	P-479	Pittau, G.	P-209	Quiros-Tejeira, R.E.	P-182
Pathak, S.	P-291	Planinsic, R.M.	O-85, P-14	Radosevich, D.M.	P-241, P-552
Patkowski, W.	P-141, P-388	Platto, M.	P-193	Radwan, S.	P-219
Patron-Lozano, R.	P-578	Plevak, M.	O-29	Rafecas, A.	O-53, P-307, P-584
Patrono, D.	P-230, P-547	Podesta, L.	O-101	Raffa, P.	P-632
Patton, H.M.	P-629	Podesta, L.G.	P-632	Raffa, S.	P-539
Patula, R.	P-34	Polacco, M.	P-579	Raghavendra, Y.B.	P-80
Paugam, C.	O-118	Polat, K.Y.	P-320	Raghunathan, V.	O-121, P-57
Paugam-Burtz, C.	O-32, O-81, P-475	Poli, E.	P-651	Rahaman, M.	O-69, P-298
Paul, A.	P-121	Pollard, S.	P-525	Raina, R.	LB-31
Pawar, T.	P-694	Polywka, S.	O-68, P-303	Raina, V.	P-289
Pawar, T.T.	P-328	Pompeu Piza Vicentine, F.	LB-28	Rajakannu, M.	P-706
Pawlicki, J.	P-465	Poniachik, J.	P-394		
Pawlowska, J.	P-348	Pons, J.A.	P-587		
Payne, W.D.	P-552				

Rajakumar, A.	O-86, P-9	Ren, J.	P-175	Rummo, O.O.	P-487
Rajalingam, R.	P-153, P-192, P-432, P-634	Ren, Z.	P-36, P-267, P-498	Rumo, O.O.	P-702
Rajaraman, A.	O-25	Renato, R.	P-230	Russel, S.	P-601
Rajesh, K.	O-21	Rendina, M.	P-532	Ruthazer, R.	LB-1, LB-51
Rajkumar, A.	P-634	Renner, E.	P-369	Ryu, H.	P-482
Rajoriya, N.	O-132	Renner, E.L.	P-542	Ryu, J.	P-701
Ralley, F.	P-476	Reyen, L.	P-668	Ryu, J.H.	P-319, P-469, P-630, P-635
Ramachandra, S.	O-17, P-159, P-640	Rezende, M.B.	O-28, O-94, P-588	Sa Cunha, A.	P-209, P-592, P-706
Ramachandran, P.	P-665	Rhew, H.Y.	P-165	Saab, S.	LB-9
Ramachandran, S.	P-381	Rhu, J.	P-91, P-604	Saad, Y.	P-63
Ramachandran, S.K.	P-332, P-705	Ri, H.S.	P-635	Saadany, M.	P-637
Ramallo, F.S.	P-32	Richards, J.	P-510	Sabar, I.	P-300
Ramamoorthy, S.	P-44	Rico Juri, J.M.	P-580	Sachdeva, M.	P-599
Ramamurthy, A.	P-201, P-495	Rico, L.	P-511	Sachidananda, N.	P-627
Ramaswamy, V.	P-96, P-330	Ricotta, C.	P-566	Saeed, H.	O-19
Ramchandra, S.	P-625, P-655	Rim, H.	P-165	Saffioti, F.	P-309
Ramírez, P.	P-587	Rimola, A.	LB-8, P-33, O-110, O-113	Sagharian, B.	P-188
Ramirez Cabrera, C.	O-101	Rioja, P.	P-248, P-249, P-416	Saharia, A.	O-25, O-26, O-30, O-105, P-405
Ramirez Morales, R.	O-9	Rivas, P.	P-85, P-134, P-243, P-554	Sahin, A.U.	P-199
Ramkiran, C.	P-527	Rizza, G.	O-66	Sahin, T.	P-19
Ramos, E.	O-53, P-307, P-584	Robert, O.	P-606	Said, M.	P-62, P-63, P-399, P-610
Ramos-Prol, A.	O-102	Robles, R.	P-587	Saigal, S.	O-20, O-33, O-54, O-60, O-103, P-80, P-100, P-167, P-289, P-302, P-318, P-329, P-332, P-338, P-381, P-600, P-625, P-627, P-640, P-655, P-680, P-705
Randle, L.	O-6	Roca, A.	P-633	Sakai, H.	O-135
Rando, K.	P-633	Rocha Filho, J.A.	P-360	Sakai, T.	O-85, P-14
Rando Muñoz, F.J.	LB-12	Rocha-Santos, V.	P-422	Sakamoto, S.	P-191, P-434
Ranjan, P.	P-585, P-599	Rodés, J.	P-32, P-500	Sakamoto, Y.	O-18, P-402, P-657
Rastogi, A.	O-17, O-20, O-33, O-54, O-60, O-103, O-121, P-80, P-94, P-100, P-159, P-289, P-302, P-318, P-329, P-338, P-381, P-564, P-625, P-627, P-640, P-655, P-680	Rodrigo, J.	P-306	Sakisaka, S.	P-372
Rastogi, A.N.	P-332, P-337, P-705	Rodrigo López, J.M.	LB-12	Sakr, M.	P-536
Rather, S.A.	P-87, P-97	Rodríguez, A.	O-113	Sala, A.	P-134
Rauer, B.	O-10, O-11, P-67, P-310, P-542	Rodríguez, C.	P-85, P-134, P-243, P-554	Salah, A.	P-62, P-399, P-565, P-610
Raut, V.	P-289, P-625, P-640	Rodríguez, J.	P-86	Salah, M.	O-83
Ravaoli, M.	O-92, P-160	Rodríguez, O.	P-194	Salah, T.	P-493, P-637
Ravichandra, R.	P-527	Rodríguez-Davalos, M.	P-334	Salcedo, M.	P-126, P-306
Ravikumar, R.	O-1	Rodríguez-Davalos, M.I.	P-578	Saleh, Y.	P-427
Rawat, S.	P-96, P-330	Rodríguez-García, M.	P-126	Salehi, S.	P-504
Ray, R.	LB-20, P-322, P-470	Rodríguez-Medina, B.	O-102, P-123	Salem, E.H.	P-90, P-162, P-232, P-704
Rdzanek, L.	P-112	Rodysill, B.	O-115	Saliba, F.	O-10, O-119, O-120, O-141, P-67, P-146, P-209, P-310
Rebel, A.	P-12	Rogiers, X.	P-310	Salih, M.	P-365
Reddy, K.R.	P-629	Rojas, L.	P-661	Salizzoni, M.	O-9, O-66, P-135, P-547
Reddy, K.S.	P-550	Rolland, P.H.	P-323	Salloum, C.	P-81
Reddy, M.S.	O-86, P-9, P-51, P-634	Romagnoli, R.	O-66, P-537, P-547	Saltiel, C.	P-243
Reddy, R.	O-70	Romero Ávila, P.	P-490	Salvalaggio, P.R.	O-94, P-588
Reddy, S.	O-21, P-89, P-99, P-153, P-183, P-208, P-229, P-432, P-619, P-679	Rondon, C.F.	P-213	Salvalaggio, P.R.O.	O-28
Reding, R.	P-426	Roque-Afonso, A.M.	P-60	Sampaio, A.L.	P-707
Reed, E.F.	O-73	Rorarius, J.	P-606	Samuel, D.	O-36, O-64, O-71, O-116, O-119, O-120, P-60, P-121, P-146, P-209, P-300, P-592, P-706
Refaie, R.	O-19	Roselló-Catafau, J.	P-20, P-33, P-258	Sanabria, R.	P-98, P-248, P-249, P-416
Reggiani, P.	O-57	Rosi, S.	P-305	Sanabria, R.M.	P-567
Rehman, H.	O-77, P-518, P-708	Rossi, G.	O-9, O-57, P-520	Sanchez Antolin, G.	P-163, P-511
Reichert, B.	P-79	Rossi, M.	P-106, P-121, P-530, P-581	Sánchez Bueno, F.	P-587
Reichman, T.	P-45	Rostaing, L.	P-125, P-642	Sanchez Fueyo, A.	O-110, P-129, P-623
Rekdal, Ø.	O-95	Rota, R.	P-584	Sanchez Ocaña, R.	P-511
Rela, M.	LB-7, O-21, O-86, O-123, P-9, P-39, P-51, P-89, P-99, P-153, P-183, P-186, P-192, P-208, P-229, P-353, P-365, P-420, P-432, P-521, P-553, P-619, P-631, P-634, P-652, P-665, P-679	Rubbia-Brandt, L.	LB-4	Sanchez, C.	P-308
Rela, M.S.	LB-5	Rubin, A.	O-64, O-67, O-102, P-61, P-101, P-123, P-205, P-306, P-367, P-519	Sanchez-Antolin, G.	P-126
Rela, S.M.	P-527	Rudler, M.	O-116	Sanchez-Fueyo, A.	O-113, P-598
Remiszewski, P.	P-141, P-388	Rugge, M.	P-579	Sanghoon, L.	P-383
		Rui, L.	P-161, P-171, P-392, P-393, P-624, P-636	Sanhceez-Fueyo, A.	LB-8
		Ruiz, Á.	O-125, O-131	Sanjuan, F.	P-367
		Ruiz, I.	O-120	Santos Santamarta, F.	P-511
		Ruiz, P.	O-61, O-63, P-234, P-471	Santotski, E.O.	P-702
		Ruiz, R.	P-154, P-333		
		Rummo, O.	P-121		

Santoyo Santoyo, J.	LB-12	Serra, V.	P-168, P-548	Shiraki, T.	P-563
Sapisochin, G.	P-212, P-370, P-607	Serrano, C.	O-8	Shoreim, H.A.	P-77
Saracino, G.	P-415	Serrano, J.	P-283	Shoubary, M.M.	P-637
Saracino, L.	O-9	Serrano, T.	P-123, P-126, P-306, P-584	Shrivastav, M.	P-192
Saraf, N.	O-20, O-33, O-54, O-60, O-103, P-80, P-100, P-167, P-289, P-302, P-318, P-329, P-332, P-337, P-381, P-625, P-627, P-640, P-655, P-680, P-705	Serrano-Diaz-Canedo, J.	P-225, P-523	Shrivatsav, M.	P-51, P-634
Saraff, N.	P-338	Servian, D.C.M.	P-177	Shrivatva, T.	P-1
Saran, R.K.	P-535	Seshadri, A.K.	LB-36	Siddachari, R.	LB-20
Saraste, L.	P-485	Settmacher, U.	P-125, P-642	Siddachari, R.C.	P-569
Sari, S.	P-401, P-667	Seung Hwan, L.	P-383	Siddiqui, I.	P-204
Sarici, K.B.	LB-49	Shackel, N.	O-52	Silva, M.	O-101, P-111, P-632
Saricicek, V.	P-473, P-686	Shagrani, M.	P-195	Silvana, O.	P-446
Sarin, S.K.	LB-39, LB-52	Shagrani, M.A.	P-359	Silvera, A.	P-308
Sarkar, M.	P-400	Shah, A.	P-335, P-638	Silvestri, A.	P-342, P-575, P-576
Sarkut, P.T.	P-4, P-199, P-244	Shah, A.J.	P-202, P-328, P-386, P-562, P-694	Silvia, C.	LB-44
Sasaki, K.	P-434	Shah, J.	LB-40, P-202, P-328, P-638	Simoes, C.M.	P-491
Sasturkar, S.	LB-36	Shah, N.J.	O-69, O-122, P-54, P-298	Sin, M.-H.	P-166
Sasturkar, S.V.	LB-39	Shah, S.A.	P-423	Sin, S.-L.	P-124
Sato, N.	O-72	Shakeban, H.	LB-34	Singanayagam, A.	P-533
Satoh, K.	P-286	Shamseddine, A.	P-188, P-609	Singer, A.L.	O-111
Satorres, C.	O-67, O-102, P-123	Shankar, J.	P-246	Singh, B.	P-527
Scalera, I.	LB-3, LB-16	Shankar, N.	LB-37	Sinha, P.K.	LB-36, LB-50, LB-52
Scalone, P.	P-633	Shanmugam, N.	P-99, P-153, P-192, P-208, P-432, P-679	Singhal, A.	P-423
Scatton, O.	LB-28, O-36, O-45, P-233	Shanmugam, N.P.	P-665	Singla, P.	O-17, O-54, O-60, P-80, P-159, P-332, P-381, P-625, P-627, P-640, P-655, P-705
Schiano, T.	O-137	Shanmugam, V.	O-21, P-99, P-208, P-229, P-432, P-679	Sips, C.	P-428
Schielke, A.	O-36, O-45	Shanmugham, V.	P-353, P-420, P-634	Siriki, R.	O-69, P-298
Schiff, E.	O-137	Sharif, K.	P-691	Slits, F.	LB-4
Schilsky, M.	P-578	Sharma, A.	P-585	Slotta, J.E.	O-15, P-290
Schirm, F.	P-542	Sharma, K.	P-74	Smeets, P.	P-316
Schlegel, A.	O-108	Sharma, R.	P-29, P-37, P-164, P-533	Smith, C.	O-77
Schmidt, H.H.	P-220	Sharr, W.	P-115, P-131, P-646, P-671	Smith, J.	LB-40
Schmitt, T.	P-200, P-206, P-293, P-344, P-435, P-445, P-611, P-673	Sharr, W.W.	LB-15, O-97, P-46, P-124, P-444	Soin, A.	O-17, O-54, O-121, P-57, P-94, P-159, P-625, P-640, P-655
Schmitz, J.	O-15	Shcherba, A.E.	P-487, P-702	Soin, A.S.	O-20, O-33, O-60, O-103, P-80, P-100, P-167, P-289, P-302, P-318, P-329, P-332, P-337, P-338, P-381, P-564, P-600, P-627, P-680, P-705
Schneeberger, S.	P-449, P-606	Sheha, U.M.	P-493	Soldani, F.	P-130
Schnellmann, R.	P-518	Shen, J.	LB-14	Solheim, J.M.	O-76, P-345, P-354
Scholz, T.	P-466	Shen, M.	P-703	Solheim, J.M.A.	P-589
Schumann, R.	LB-1, LB-51	Shen, S.	P-116, P-639	Soliman, H.E.-D.	P-90
Schütz, E.	O-15, P-290	Shen, T.	P-50, P-413	Solyman, H.	P-704
Schwarz, L.	O-36	Shen, X.-D.	P-31, P-266, P-517	Song, G.W.	P-376, P-429
Schwende, H.	O-141	Shen, Y.	O-34, P-50, P-648	Song, G.-W.	P-105, P-166, P-311, P-356, P-385, P-441, P-561, P-697
Scott, H.	P-179	Shepherd, R.	LB-40, O-49	Song, I.	P-454
Scovotti, J.C.	O-78	Sher, L.	P-463	Song, J.	P-116
Scurrah, N.	P-251	Sherif, A.E.	P-704	Song, P.	P-278
Seal, J.B.	O-129, P-430	Shetty, G.	P-625	Song, S.-H.	P-317
Sebagh, M.	O-119, O-140, P-60, P-209	Shevchenko, O.P.	P-196	Song, X.	P-256
Secanella, L.	O-53, P-307, P-584	Shi, J.-H.	O-95	Soni, S.	P-96, P-330
Sedgewick, J.	P-488	Shi, X.	P-591	Sonnenday, C.J.	P-138, P-641
Seehofer, D.	P-672	Shi, Y.	LB-25, O-77	Soong, D.	O-4
Seema, B.	P-255	Shigeta, T.	P-434	Soong, W.	P-2, P-254
Segev, D.	O-27	Shih, T.-H.	P-17, P-240, P-247	Soppe, C.	O-47
Segev, D.L.	P-551	Shiha, U.	P-637	Soriano, A.	P-368
Sehgal, S.	P-337	Shimamura, T.	O-72, P-568	Soubrane, O.	LB-28, O-36, O-45, P-233
Sekar, K.	O-80	Shimizu, S.	O-135, P-412, P-512	Soultan, A.M.	P-637
Selimoglu, A.	LB-49	Shimoda, M.	P-563	Sousa-Martin, J.M.	P-523
Selzner, M.	O-129	Shimozono, E.	P-177	Souza, L.	O-43
Selzner, N.	P-204, P-369	Shin, D.H.	P-165	Soyama, A.	LB-17, P-324, P-573
Sen, A.	P-30	Shin, H.	P-181, P-224	Soyer, O.	P-140
Seo, K.H.	P-666	Shin, H.S.	P-165	Soza, A.	O-8
Seo, S.H.	P-132	Shin, M.-H.	P-311, P-697	Sozbilen, M.	P-147, P-404
Sepulveda, A.	LB-28, O-45, P-233	Shin, O.O.	P-132	Sozen, H.	P-401, P-570, P-667
Sequinel, A.P.	P-707	Shin, S.-W.	P-635		
Serpa, F.	P-608	Shin, W.-J.	P-250, P-483		
Serpa, F.I.	P-137	Shinoda, M.	O-13, P-104, P-531		
		Shin-Seok, Y.	P-383		

Spada, M.	P-566	Swen, J.J.	O-12	Thiagarajan, S.	P-625
Spak, C.	O-31	Swieszkowska, E.	P-348	Thiessen, C.	P-334
Speziale, A.	O-141	Symonds, W.T.	O-70, O-71,	Thompson, J.A.	P-552
Sprengers, D.	P-340		O-137, O-138	Thomson, A.W.	O-106, O-107, P-42
Srinivasa, P.	O-127	Szymczak, M.	O-46	Thomson, E.M.	LB-2
Srinivasan, P.	LB-5, LB-7, P-37, P-49, P-164, P-504, P-521, P-598, P-631	Taburet, A.M.	P-60	Thorburn, D.	P-309, P-540
Srinivasan, T.	P-167	Tachtatzis, P.	P-291	Thorsen, T.	P-169
Srinivasan, V.	O-123	Taha, M.	P-90, P-232	Thrum, K.	LB-10
Srinivassan, P.	P-29, P-533	Taha, M.B.	P-77	Tian, Y.	LB-14, P-275, P-277, P-516, P-549
Srivatsav, M.	P-89, P-432	Tahara, H.	O-135, P-113	Tiao, M.-M.	P-433
Stafford, A.	LB-5, P-425	Tai, Q.	P-497	Tibaldi, E.	P-260
Stafford, A.T.	LB-7	Takada, Y.	P-403, P-618	Tincani, G.	O-124, P-576
Steadman, R.H.	O-78, P-410	Takahashi, T.	P-568	Tisi Baña, M.	P-111
Steinbruck, K.	P-336	Takai, A.	P-403, P-618	Tisone, G.	P-106, P-121, P-125, P-541, P-581, P-642
Stephen, W.	P-510	Takatsuki, M.	LB-17, P-324, P-573	Tiwari, A.	P-289
Sterneck, M.	O-68, P-303	Takeda, I.	P-286	Tobiasch, M.	LB-23
Stohl, W.	P-497	Takeichi, T.	P-95	Todo, S.	O-72, P-568
Story, D.	P-11, P-251	Takeyama, Y.	P-372	Togashi, J.	P-402
Straaten, T.	O-12	Tamang, T.Y.	P-332, P-705	Tohyama, T.	P-403, P-618
Strausbauch, M.	P-508	Tamura, S.	P-402, P-657	Tokat, Y.	O-41, P-84, P-217
Stravitz, R.T.	O-62	Tan, A.	LB-6	Tolenaar, D.	O-2
Strypstein, S.	O-39	Tan, O.	P-684	Tom, C.	P-183
Stucchi, R.	P-271	Tanabe, M.	P-531	Tomé, S.	P-126
Stucchi, R.S.B.	P-263, P-362, P-602	Tanaka, K.	P-90, P-219, P-704	Tomescu, D.	LB-11, P-178, P-616
Su, W.-L.	P-214	Tanaka, K.A.	O-85, P-14	Tomescu, D.R.	P-15
Suarez, G.	P-283	Tanaka, M.	P-104	Tomlinson, J.	P-378
Suarez, J.J.	P-137, P-608	Tanaka, T.	P-657	Tonello, B.F.F.	P-491
Suarez, M.J.	P-234, P-471	Tanaka, Y.	O-135, P-113, P-512	Toniutto, P.	P-532, P-537, P-651
Suárez Muñoz, M.A.	LB-12	Tandoi, F.	O-66, P-230, P-547	Tønnessen, T.I.	O-48
Suarez-Artacho, G.	P-225, P-523	Tang, H.	LB-25	Toogood, G.	P-525
Suberbielle, C.	P-678	Tang, J.	P-43	Topal, N.B.	P-199
Subramanian, N.	LB-31	Tang, S.	P-265	Toprak, H.I.	P-5, P-19
Subramanian, R.M.	P-629	Tang, X.	P-366	Torrás, J.	O-53, P-307, P-584
Subramniam, N.	LB-37	Taniguchi, M.	P-568	Torres, L.	P-628
Suchonska, B.	P-133	Tanimine, N.	P-113	Toso, C.	LB-4, O-133
Suddle, A.	LB-7, P-142, P-598, P-631, P-656	Tapuria, N.	P-186	Toti, L.	LB-44
Sudhindran, S.	O-75, P-197	Tarantino, G.	P-168, P-548	Toussaint, A.	O-32, O-81, P-475
Suganya, L.	P-183	Tartaglia, D.	O-124	Tovikkai, C.	P-643
Sugawara, Y.	O-18, P-402, P-657	Tashiro, H.	O-135	Traherne, J.	P-179
Sugita, J.	O-72	Tashiro, T.	P-113	Trautwein, C.	O-116
Suh, J.L.	O-104, P-524	Taskén, K.	P-257	Trevisani, F.	O-35
Suh, K.-S.	O-3, O-44, O-99, O-100, P-110, P-317, P-327, P-331, P-513, P-534, P-546, P-571, P-572, P-586, P-669	Tassinari, D.	O-124	Troisi, R.I.	P-316
Suh, S.O.	P-461	Taubert, R.	O-110	Trommello, A.	P-16
Suh, S.-O.	P-664	Taurá, P.	O-87, O-125, O-131, P-128	Trotter, J.	P-415
Suh, S.-W.	O-3, O-44, O-99, O-100, P-110, P-317, P-331, P-513, P-534, P-571, P-669	Taylor, R.	P-206, P-673	Trotter, J.F.	O-31, O-62, P-333
Suk-Koo, L.	P-383	Tchao, N.	O-47	Trowsdale, J.	P-179
Sultan, A.M.	P-493	Tector, J.A.	P-287	Trunecka, P.	LB-41, LB-53, P-121, P-125, P-642
Sumana, K.R.	O-60, P-80	Tedeschi, U.	P-260	Tsang, H.Y.S.	LB-15
Sumana, R.K.	O-33	Tedschi, U.	P-130	Tsang, L.-C.	P-437
Sun, J.-H.	P-676	Teicher, E.	P-60	Tsang, L.L.-C.	P-198
Sun, L.	P-53	Teissere, J.	O-46	Tsang, S.H.Y.	P-115, P-646
Sun, X.	LB-25	Teissere, J.	P-75, P-348	Tsezou, A.	LB-30
Sun, Z.	O-111	Teisseyre, M.	P-75	Tsirulnikova, I.E.	P-196
Sung Joo, K.	P-383	Teng, F.	P-591	Tsirulnikova, O.M.	P-196, P-696
Suphathamwit, A.	LB-24	Teng, M.	LB-25	Tsochatzis, E.	P-309
Susskind, B.M.	O-128	Teng, X.	P-681	Tsolis, K.	LB-30
Sutherland, A.I.	O-6, P-152	Teperman, L.	O-71, P-310	Tu, Z.	O-34, P-50, P-203
Sutton, M.E.	P-285	Terasaki, P.I.	O-128	Tuci, F.	P-687
Suzuki, T.	O-72, P-568	Terrault, N.	LB-9, O-71, O-137, P-400	Turan, I.	P-147, P-404
Sveinbjornsson, B.	O-95	Terrault, N.A.	O-38, O-62	Turker, G.	P-4
		Testa, G.	LB-47, P-154, P-333	Turkoglu, A.	P-320
		Testillano, M.	P-234, P-471	Turri, J.A.O.	O-40
		Thacker, L.R.	P-629	Tzakis, A.G.	O-90
		Thelen, A.E.	P-138, P-641	Ucar, M.	P-19
		Theocharidou, E.	P-309		
		Thethi, R.	P-525		

Uchida, H.	P-434	Vibert, E.	O-36, O-119, O-140,	Wang, W.	O-23, O-34, P-50, P-71, P-108,
Udo, E.Y.	P-362, P-602		P-209, P-592, P-706		P-114, P-203, P-267, P-281, P-292,
Uemoto, S.	LB-45, P-622	Vibhute, B.	P-495		P-350, P-389, P-418, P-451, P-526,
Uemura, T.	P-44	Victor III, D.W.	O-26, O-105		P-574, P-594, P-648, P-654
Ugalde, P.	P-458	Victor, D.	O-25	Wang, X.	LB-14, P-184, P-221,
Ullauri, V.	P-608	Victor, D.W.	O-30, P-405		P-236, P-237, P-407, P-474,
Umgelter, A.	LB-23	Vidal, V.	P-323		P-658, P-690, P-709
Umgelter, K.S.	LB-23	Videla, M.G.	P-446	Wang, Y.	LB-14, P-25,
Unal, B.	LB-48, P-396	Vigliano, C.	P-446		P-275, P-277, P-516
Undre, N.	P-125, P-642	Vignon-Clementel, I.	O-140	Wang, Y.-C.	P-443
Untas, A.	P-300	Vij, M.	P-208, P-353, P-665, P-679	Wang, Z.	LB-25, LB-33, LB-46,
Uyanik, M.H.	P-468	Vijay, V.	P-255		P-50, P-391, P-591, P-681
Uygun, K.	O-112	Vijaya, S.	P-183	Wang, Z.-X.	P-41
Valdivieso, A.	P-234, P-471	Vijayanand, D.	P-525	Washburn, K.	P-463
Valente, R.	P-652	Viklicky, O.	LB-41	Wassen, M.P.	P-707
Vallant, N.	P-449	Vila, S.	O-109	Watanabe, J.	P-403, P-618
Valverde, M.	P-633	Vilalta, R.	P-194	Watanabe, M.	O-72
van de Graaf, S.	O-2	Vilas, R.R.	P-408	Watson, C.	O-6
van den Berg, A.P.	P-682	Vilca, H.	P-30	Watson, C.J.E.	P-68
van den Hoek, S.	P-276	Vilca-Melendez, H.	O-51, O-127, P-49,	Watson, W.	P-293
van der Bent, S.A.S.	O-12		P-186, P-425, P-504,	Watt, K.D.	O-29, P-301
van der Laan, L.J.W.	O-2, O-126, P-276		P-521, P-598, P-631	Webzell, I.	P-656
van der Meulen, J.	P-643	Villamil, F.	P-542	Weeder, P.	P-48
van Hoek, B.	O-12	Villanueva, A.	LB-7	Wei, B.	P-119, P-312, P-355
Van Raemdonck, D.	O-39, P-450	Villarroya, F.	P-500	Wei, H.	P-312
Van Rensburg, A.	P-481	Villars, C.	P-598	Wei, L.	P-53
Van Vlierberghe, H.	P-316	Vinaixa, C.	O-64, O-67, O-102, P-61,	Wei, Q.	P-594
Vanhaecke, J.	O-39		P-101, P-205, P-519	Wei, X.	O-34, O-88, P-514
Vannelli, T.	P-476	Vincenzi, P.	P-352	Wei, Y.	O-23, P-108
Varescon, I.	P-300	Violi, P.	P-130, P-260	Wei Chieh, A.K.	P-590
Vargas Garcia, A.	P-163	Vitale, A.	O-9, O-35, O-91,	Weinberg, L.	P-11, P-251
Vargas, A.	P-511		P-299, P-537, P-687	Weinstein, J.	P-56
Vargas, J.H.	P-668	Vitin, A.A.	O-84	Weiss, E.	O-81
Vargese, J.	O-123, P-89,	Vittecoq, D.	P-60	Wen, T.	O-23, P-108
	P-208, P-634, P-679	Vivarelli, M.	P-352, P-537	Wendon, J.	O-117, P-142, P-598
Vargheese, J.	P-99	Vivekanandan, S.	P-153	Wesson, R.	O-111
Varghese, J.	P-153, P-183, P-420	Vohra, S.	P-470, P-699	West, K.	P-670
Varma, M.	P-495	Vohra, V.	O-17, O-121, P-159,	Westerkamp, A.	P-238
Varma, M.C.	P-201		P-246, P-253, P-627	Westerkamp, A.C.	O-112
Varma, V.	P-202, P-226, P-328,	Wadhavan, M.	P-557	Wettstein, P.	P-508
	P-335, P-386, P-562, P-694	Wadhawan, M.	LB-20, P-74, P-322,	White, A.	P-291
Varol, I.	LB-49		P-406, P-538, P-569, P-595, P-699	White, J.	P-18, P-252
Varona, A.	P-368	Wagener, G.	P-492	Whitehouse, G.	P-129, P-623
Vasallo, M.	P-85, P-134, P-243, P-554	Wahab, M.	P-637	Whitgift, J.	P-3
Vasavada, B.B.	P-64	Waked, I.	P-315, P-555	Wiederkehr, H.A.	P-408, P-472, P-707
Vasconcelos, R.D.	P-336	Wall, W.	O-129	Wiederkehr, J.C.	P-408, P-472, P-707
Vater, Y.L.	O-84	Waller, S.	P-435	Wielgos, M.	P-133
Vecchi, A.	P-352	Walson, P.	O-15	Wiersema-Buist, J.	P-285
Velarde, J.A.	P-528	Wang, C.	P-645	Wiersma-Buist, J.	P-48
Velayutham, V.	P-640	Wang, C.-C.	O-55, P-207, P-424,	Wigmore, S.J.	O-7, P-417
Vendrell, M.	O-125, O-131		P-433, P-447, P-583	Willars, C.	O-117
Venick, R.S.	O-73, P-668	Wang, C.-H.	P-17, P-240, P-247	William, B.	P-169
Venkatraman, J.	O-123	Wang, D.	O-65, O-114, P-52, P-69,	Williams, G.M.	O-111
Vennarecci, G.	O-91, P-305		P-143, P-176, P-282, P-284,	Wilson, D.	P-463
Ventoso, A.	P-234, P-471		P-304, P-374, P-407, P-459,	Wilson, G.C.	P-423
Ventre, C.	P-510		P-497, P-544, P-612, P-659	Wima, K.	P-423
Venugopal, K.	O-21, P-527	Wang, G.-S.	P-593	Winans, C.	O-130
Verhoeven, C.J.	O-2, O-126	Wang, G.-Y.	P-38, P-593	Winston, T.	O-31
Verleden, G.	O-39, P-450	Wang, H.	LB-19, O-34, P-47	Witt, U.	LB-10, P-349
Verma, A.	O-51, P-644	Wang, H.J.	P-462	Wolff, R.	LB-42
Verna, E.C.	O-62	Wang, J.	O-88, P-514	Won Tae, C.	P-382
Vero, V.	P-532, P-577	Wang, J.-Y.	P-529	Wong, F.	P-629
Verran, D.	O-52	Wang, K.	LB-14, P-391, P-645	Wong, R.J.	P-297, P-409
Verspagnet, H.W.	O-12	Wang, S.	LB-25	Wong, S.-R.	P-214
Verstegen, M.M.A.	P-276	Wang, S.-H.	P-447, P-583	Wong, T.	O-97
Veyckemans, F.	P-426	Wang, T.	P-114	Wong, T.C.L.	P-46, P-115, P-646
Vezozzo, D.C.P.	P-109			Wong, T.C.-L.	P-124

Woodle, E.S.	P-423	Yang, K.H.	P-319, P-469, P-630, P-635	Yu, Z.-Y.	LB-29
Worapot, A.	P-410	Yang, Q.	P-76	Yuan Chung, W.	P-670
Wozniak, L.J.	O-73, P-668	Yang, S.	P-325	Yuan, X.	P-143, P-184, P-221, P-237,
Wróblewski, T.	P-141, P-388	Yang, S.C.	P-240, P-247		P-474, P-650, P-658, P-690
Wray, C.L.	O-78	Yang, S.-C.	P-17	Yue, Y.	P-590
Wronka, K.M.	P-141, P-388	Yang, Y.	P-38, P-76, P-120,	Yuen, M.-F.	O-97
Wu, C.-H.	P-73		P-139, P-175, P-593	Yuksel, O.	P-401, P-570
Wu, H.	LB-19	Yang, Z.	O-96, P-515, P-649	Yun, I.J.	P-494
Wu, J.	O-34, O-93, O-134, P-50, P-119,	Yano, T.	P-412	Yun, M.	P-30
	P-174, P-274, P-355, P-358, P-390,	Yantorno, S.	P-446, P-539	Yun, Y.-I.	P-697
	P-411, P-574, P-615, P-648	Yao, A.	LB-14	Yuzer, Y.	O-41, P-84, P-217
Wu, L.	O-34, O-96, P-355,	Yao, H.	P-681	Zadeh, H.H.	O-114
	P-407, P-515, P-709	Yaprak, O.	O-41, P-84, P-217	Zafrani, E.S.	P-678
Wu, S.-C.	P-17, P-240, P-247	Yaroshenko, E.	P-117, P-647	Zaitsu, M.	O-72
Wu, T.-H.	P-443	Yassen, A.M.	P-493, P-637	Zambelli, M.	P-193
Wu, T.-J.	P-443	Yaylak, F.	LB-48	Zamboni, F.	P-121
Wu, Y.-M.	O-56, P-529	Yazar, S.	P-320	Zamfir, R.	P-178
Wyllin, T.	O-126	Ye, H.	P-47, P-170, P-455,	Zanetto, A.	P-299
Xia, V.W.	P-256, P-410		P-522, P-614, P-688, P-689	Zanfi, C.	O-92
Xia, W.	P-278	Ye, Y.	P-114, P-526	Zanus, G.	P-299, P-579
Xia, X.	P-103	Yebes González, J.	P-13, P-490	Zaouali, M.A.	P-20, P-33, P-258
Xiang, J.	P-292, P-358,	Yeh, H.	O-112	Zapata, F.	P-182
	P-390, P-411, P-615	Yetkin, O.	P-396	Zapata, H.	P-308
Xiang, P.	P-391, P-645	Yeung, W.O.	P-326	Zaza, G.	P-260
Xiao, G.	P-116, P-185, P-639	Yi, H.-M.	P-139	Zborowska, H.	P-141
Xiao, H.	O-93	Yi, M.S.	P-560	Zech, F.	P-426
Xie, H.	O-34, O-88, O-93, O-134,	Yi, N.-J.	O-3, O-44, O-99, O-100,	Zen, Y.	P-631
	P-25, P-275, P-277, P-278,		P-110, P-317, P-327, P-331, P-513,	Zeng, Q.	P-161, P-170, P-171, P-172,
	P-280, P-355, P-514, P-515, P-516		P-534, P-546, P-571, P-586, P-669		P-392, P-393, P-614, P-624, P-636
Xie, K.	LB-19	Yi, S.-H.	P-120, P-139, P-593	Zeng, Y.	LB-19, LB-29
Xie, S.	P-118, P-357	Yildiz, F.	P-473, P-686	Zeng, Z.	P-53
Xing, C.	P-355, P-515	Yilmaz, C.	O-50, P-457	Zerbakis, M.	LB-30
Xing, T.	LB-25, LB-38	Yilmaz, M.	LB-35, P-55	Zerega, A.	O-101, P-111
Xiol, X.	P-307, P-584	Yilmaz, O.	P-684	Zeytun, M.	O-50
Xu, C.	P-120	Yilmaz, S.	LB-35, LB-48,	Zeytunlu, M.	P-457, P-660
Xu, G.	P-47, P-52, P-522		LB-49, P-5, P-6, P-19,	Zhang, C.	P-47, P-174, P-284, P-522
Xu, J.	LB-25, P-648, P-703		P-55, P-58, P-88, P-156,	Zhang, F.	LB-46, P-688
Xu, S.	P-76		P-228, P-396, P-397, P-559	Zhang, H.	LB-14
Xu, W.	P-462	Yilmaz, T.U.	P-217	Zhang, J.	LB-25, LB-46, P-593
Xu, X.	O-34, O-88, P-119, P-355, P-391,	Yin, H.	P-41	Zhang, L.	P-53, P-265, P-413
	P-506, P-514, P-594, P-645, P-648	Yin, S.	P-40, P-498	Zhang, M.	O-34, P-50, P-119,
Xu, Y.	LB-14, P-612	Yimamoto, H.	P-95		P-203, P-358, P-648, P-703
Xystrakis, E.	P-29, P-37, P-39, P-164	Yokota, S.	P-42	Zhang, Q.	P-38, P-173,
Yadav, A.	P-337	Yonekawa, Y.	P-622		P-175, P-380, P-549
Yadav, K.	P-202	Yong, C.-C.	O-55, P-82, P-447, P-583	Zhang, T.	LB-19, P-120
Yadav, S.K.	P-100, P-329, P-655	Yoo, P.S.	P-334	Zhang, W.	LB-6, P-118, P-280,
Yagci, G.	P-401, P-570, P-667	Yoo, T.	P-534		P-281, P-357, P-526
Yagi, H.	O-13, P-104, P-531	Yoon, G.S.	P-215, P-453	Zhang, X.	P-391
Yalakanti, R.B.	P-338	Yoon, J.S.	P-132	Zhang, Y.	P-31, P-76, P-266, P-517
Yamamoto, M.	P-372	Yoon, M.	P-165	Zhang, Y.-C.	P-175
Yamashita, N.	P-657	Yoon, Y.-I.	P-166, P-356	Zhang, Y.-L.	P-676
Yamashita, K.	O-72, P-568	Yorifuji, T.	P-622	Zhang, Z.	P-43
Yan, L.	O-23, P-71, P-108,	Yoshida, O.	O-106, O-107, P-42	Zhao, A.	P-125, P-642
	P-185, P-350, P-389, P-418,	Yosry, A.	P-63	Zhao, L.	P-649
	P-419, P-451, P-639, P-654	You, T.	P-223	Zhao, M.	P-681
Yan, L.-N.	P-116	You, Y.K.	O-89, P-351, P-613, P-621	Zhao, Q.	P-176, P-282, P-659
Yan, S.	O-5, O-34, P-25, P-50, P-114,	Younossi, Z.	LB-9	Zhaowen, W.	LB-22
	P-275, P-277, P-281, P-366, P-390,	Yu, C.-Y.	P-198, P-437	Zheng, J.	P-292
	P-411, P-413, P-516, P-549, P-615	Yu, D.	P-267	Zheng, R.-Q.	P-175
Yan Rui, N.T.	P-590	Yu, H.C.	P-279, P-313		
Yang, C.-H.	P-148	Yu, J.	P-50, P-118, P-357, P-526		
Yang, F.	P-695	Yu, S.	P-526		
Yang, F.-C.	P-235	Yu, X.	P-119		
Yang, J.	P-185, P-419, P-639	Yu, Y.	LB-14		
Yang, J.D.	P-279, P-313	Yu, Y.D.	P-461		
Yang, J.-Y.	P-116	Yu, Y.-D.	P-664		
Yang, K.	P-701	Yu, Z.	LB-19, P-526		

- Zheng, S. O-5, O-34, O-88, O-93, O-96,
O-114, O-134, P-25, P-36, P-40, P-43,
P-50, P-59, P-107, P-114, P-118, P-119,
P-144, P-173, P-203, P-265, P-267,
P-270, P-274, P-275, P-277, P-278,
P-280, P-281, P-355, P-357, P-358,
P-366, P-380, P-390, P-391, P-411,
P-413, P-456, P-497, P-498, P-506,
P-514, P-515, P-516, P-517, P-526,
P-549, P-574, P-594, P-615, P-645,
P-648, P-649, P-695, P-703
- Zheng, S.-S. P-235, P-676
- Zheng, Z. O-96, P-59, P-312, P-649
- Zhi, X. P-582
- Zhihai, P. LB-22
- Zhong, L. LB-25, LB-27, LB-38
- Zhong, Y. P-185
- Zhong, Z. O-77, P-518, P-708
- Zhou, G.-H. P-676
- Zhou, J. P-173, P-221, P-236, P-237,
P-292, P-358, P-380, P-390,
P-411, P-474, P-615, P-650,
P-658, P-690, P-709
- Zhou, L. O-34, O-88, O-93, O-96, P-25,
P-36, P-43, P-59, P-107, P-119, P-144,
P-173, P-267, P-275, P-277, P-355,
P-380, P-390, P-411, P-514, P-515,
P-516, P-615, P-648
- Zhu, X. P-21, P-102, P-314, P-339,
P-347, P-407, P-452
- Zhu, Y. P-594
- Zhu, Z. P-53
- Zhuang, L. P-50, P-391, P-648
- Zia, H.H. P-365, P-553
- Ziaja, J. P-465
- Zieniewicz, K. P-141, P-388
- Zoulim, F. O-116
- Zwierzchoniowska, M. P-414

- Adhesion molecules O-134, P-272
- Adverse effects O-11, O-64, O-67, O-123, O-137, P-17, P-51, P-70, P-130, P-138, P-147, P-251, P-304, P-307, P-310, P-366, P-382, P-398, P-451, P-473, P-477, P-540, P-543, P-584, P-639, P-641, P-686
- African-American P-400
- Age factors O-41, O-42, O-124, P-124, P-325, P-377, P-400, P-612, P-616, P-655
- Alcohol LB-7, O-122, P-54, P-59, P-100, P-409, P-529, P-561, P-569, P-604, P-615, P-656
- Alloantibodies O-47, O-73, O-128, P-41, P-535
- Alloantigens P-29
- Allocation LB-23, LB-42, O-34, O-35, O-39, O-42, P-160, P-180, P-184, P-289, P-364, P-414, P-415, P-419, P-422, P-526, P-572, P-652, P-658, P-691
- Anastomatic healing P-320, P-449, P-465, P-599, P-694
- Angiography O-37, P-469, P-705
- Antibodies O-50, P-34, P-166, P-205, P-371, P-497, P-519, P-539, P-646
- Anti-CD3 P-509
- Anticoagulation O-85, P-14, P-88, P-614, P-699, P-699
- Antigen presentation O-106, O-107, P-73
- Apoptosis P-22, P-258, P-262, P-280, P-433, P-505
- Area-under-curve (AUC) P-546, P-610
- Arteriosclerosis O-29
- Arteritis P-214
- Autoimmunity P-129, P-623, P-657
- Azathioprine P-309
- B cells O-8, O-22, O-135, P-26, P-41, P-166, P-289, P-499, P-510, P-573
- Bacterial infection LB-27, P-167, P-208, P-220, P-224, P-448, P-468
- Bile duct LB-36, O-2, O-55, O-60, O-112, O-129, P-48, P-50, P-86, P-103, P-105, P-136, P-149, P-172, P-197, P-212, P-217, P-218, P-219, P-278, P-336, P-347, P-430, P-432, P-435, P-440, P-449, P-454, P-461, P-464, P-465, P-466, P-496, P-522, P-552, P-558, P-566, P-622, P-665, P-672, P-693, P-695, P-701
- Biliary atresia LB-40, P-175, P-186, P-434, P-491, P-665
- Bioartificial livers O-120, P-28, P-55, P-244, P-276
- Bioengineering P-28, P-276, P-501, P-530
- Bioequivalence P-264
- Biopsy O-28, O-43, O-99, P-80, P-83, P-204, P-205, P-315, P-318, P-436, P-490, P-533, P-565, P-587, P-673, P-686, P-702
- Blood transfusion LB-15, LB-21, LB-37, O-59, O-84, O-85, O-87, P-4, P-9, P-14, P-128, P-238, P-239, P-240, P-242, P-246, P-248, P-249, P-252, P-256, P-375, P-488, P-535, P-605, P-635
- Bone LB-30, P-188, P-223
- Bone marrow transplantation P-445
- Brain death P-47, P-395
- Cadaveric organs O-77, O-124, P-4, P-131, P-164, P-178, P-183, P-233, P-239, P-288, P-316, P-407, P-460, P-464, P-521, P-616, P-683, P-685
- Calcineurin LB-38, O-9, O-36, P-69, P-71, P-101, P-394, P-505, P-532, P-542, P-548, P-660
- Co-stimulation P-41, P-119
- Cytomegalovirus O-51, P-65, P-122
- Donation LB-18, LB-27, LB-50, LB-52, O-16, O-60, O-127, P-11, P-47, P-52, P-77, P-84, P-85, P-96, P-116, P-131, P-137, P-171, P-176, P-315, P-321, P-337, P-395, P-427, P-519, P-521, P-522, P-551, P-554, P-557, P-560, P-562, P-566, P-609, P-652, P-658, P-685
- Donor specific transfusion P-498
- Donors, marginal LB-3, LB-5, O-6, O-124, O-127, O-128, O-130, O-131, O-132, O-133, P-45, P-51, P-131, P-160, P-169, P-283, P-285, P-290, P-292, P-325, P-332, P-368, P-377, P-504, P-516, P-520, P-523, P-526, P-564, P-651, P-687
- Donors, non-heart-beating LB-3, LB-4, LB-16, O-6, O-87, O-125, O-126, O-127, O-129, O-131, P-44, P-45, P-47, P-49, P-50, P-52, P-129, P-171, P-176, P-184, P-273, P-275, P-284, P-285, P-287, P-407, P-413, P-504, P-521, P-522, P-525, P-623, P-659
- Donors, unrelated P-94, P-658
- Dosage O-32
- Drug interaction O-71, O-84, P-499, P-542
- Dyslipidemia O-37, P-123, P-367, P-645
- Echocardiography LB-24, LB-31, O-80, P-2, P-8, P-153, P-250, P-254, P-481
- Economics LB-9, P-137, P-200, P-527, P-632
- Edema P-19
- Effector mechanisms P-357
- Efficacy LB-12, LB-44, O-10, O-11, O-64, O-68, O-70, O-84, O-85, O-86, P-14, P-168, P-194, P-259, P-263, P-310, P-314, P-347, P-428, P-548, P-608
- Elderly patients O-27, P-6, P-312, P-625, P-683
- Endothelial activation P-682
- Endothelial cells O-29, O-52, O-59, O-109, O-134, P-27, P-269
- Enteral nutrition P-387, P-621, P-668
- Epithelial cells O-2
- Epstein-Barr virus (EBV) O-13, O-50, P-56, P-187, P-191, P-327
- Ethics LB-18, LB-23, LB-50, P-77, P-184, P-334, P-395
- FACS analysis O-135, P-42, P-314, P-512
- Fibrosis LB-32, O-43, O-62, O-63, P-98, P-260, P-261, P-299, P-435, P-442, P-496, P-703
- FK506 LB-22, LB-33, LB-44, O-111, P-22, P-71, P-140, P-237, P-262, P-267, P-366, P-391, P-455, P-473, P-474, P-505, P-546, P-547, P-686, P-689
- Fungal infection O-31, P-122, P-150, P-220, P-412, P-472
- Ganciclovir O-51
- Gene expression LB-8, LB-25, LB-29, O-74, O-96, P-44, P-118, P-272, P-274, P-277, P-280, P-357, P-433, P-504, P-511, P-582
- Gene polymorphism LB-22, LB-27, LB-33, O-2, O-66, O-83, P-35, P-119, P-341, P-355, P-391, P-511, P-532, P-645
- Gene therapy P-118, P-357, P-582
- Genomic markers O-15, O-74, P-35, P-43, P-118, P-290, P-582
- Genomics LB-25, O-88, O-104, P-524
- Glomerular filtration rate (GFR) P-67, P-71, P-125, P-154, P-163, P-306, P-308, P-642
- Glucocorticoids O-7
- Graft acceptance O-46, O-133, P-29, P-184, P-265, P-283, P-380, P-618
- Graft failure LB-9, LB-11, LB-26, LB-35, O-33, O-36, O-61, O-77, O-92, P-5, P-153, P-225, P-287, P-390, P-492, P-518, P-651
- Graft function LB-26, LB-32, LB-39, LB-44, O-23, O-24, O-33, O-52, O-57, O-87, O-126, P-3, P-7, P-24, P-36, P-46, P-81, P-88, P-144, P-164, P-165, P-190, P-206, P-209, P-229, P-230, P-244, P-269, P-270, P-326, P-332, P-366, P-413, P-432, P-438, P-447, P-461, P-470, P-487, P-525, P-533, P-559, P-567, P-620, P-662, P-680, P-687, P-702
- Graft survival LB-5, LB-49, LB-52, O-5, O-18, O-66, O-92, P-25, P-121, P-134, P-139, P-169, P-175, P-178, P-179, P-210, P-213, P-369, P-376, P-388, P-403, P-479, P-492, P-516, P-523, P-552, P-612, P-615, P-631, P-652, P-663, P-685, P-694
- Graft-infiltrating lymphocytes P-39, P-204
- Graft-versus-host-disease O-114
- Growth disorders P-660
- Growth factors P-92
- HB vaccine P-617, P-646
- Heart O-78, P-8, P-10, P-12, P-151, P-410, P-483, P-489, P-549

Heart failure	LB-24, LB-31, O-80, P-13, P-182, P-486	High-risk	LB-2, O-67, O-96, P-5, P-119, P-155, P-225, P-230, P-390, P-468, P-474, P-476, P-495, P-601, P-627	Intra-abdominal infection	P-130, P-472, P-493
Heart preservation	LB-17	Hispanic	P-528	Ischemia	LB-10, LB-14, O-48, O-77, O-104, O-106, O-125, O-129, O-132, P-20, P-21, P-23, P-27, P-31, P-32, P-39, P-42, P-144, P-175, P-209, P-258, P-266, P-269, P-270, P-273, P-278, P-279, P-282, P-349, P-378, P-398, P-510, P-518, P-520, P-525, P-599
Heart/lung transplantation	O-39, P-143	Histology	O-99, O-112, P-40, P-48, P-164, P-499, P-522, P-555, P-594, P-631, P-665, P-670, P-702	Isoantibodies	P-195
Heat shock proteins	LB-30	HIV virus	O-38, P-168, P-300, P-374	IVIG	O-135
Hemeoxygenase	LB-14	HLA antibodies	O-73, O-128, P-149, P-403, P-678	Jak/STAT	P-38, P-503
Hemodynamics	LB-11, LB-24, O-59, O-83, P-2, P-10, P-12, P-16, P-17, P-199, P-238, P-247, P-251, P-323, P-426, P-458, P-481, P-484, P-491, P-493	HLA antigens	P-63	Ketoconazole	P-122
Hemolytic-uremic syndrome	P-490	HLA matching	P-372	Kidney	O-29, P-163, P-324
Hepatic artery	LB-49, O-54, O-60, P-87, P-97, P-201, P-226, P-234, P-440, P-469, P-471, P-554, P-694, P-706	Hyperacute rejection	O-119, P-289	Kidney transplantation	LB-18, O-111, P-69, P-165, P-406, P-544, P-636, P-688, P-709
Hepatitis	LB-7, O-51, O-68, P-56, P-204, P-259, P-294, P-390, P-569, P-577	Hypercholesterolemia	P-206	Kidney/liver transplantation	O-36, O-83, P-9, P-143, P-153, P-168, P-194, P-328, P-374, P-406, P-415, P-421, P-440, P-481, P-490, P-611, P-664, P-696
Hepatitis B	LB-21, LB-37, LB-46, O-97, O-100, O-139, P-59, P-114, P-115, P-116, P-124, P-147, P-148, P-185, P-207, P-215, P-291, P-355, P-361, P-363, P-385, P-397, P-402, P-404, P-409, P-443, P-514, P-519, P-526, P-529, P-561, P-577, P-585, P-586, P-594, P-603, P-613, P-617, P-639, P-646, P-647, P-671	Hyperglycemia	LB-1, P-123, P-148, P-429, P-532, P-536	Kinases	P-264
Hepatitis C	LB-7, LB-9, O-18, O-38, O-61, O-62, O-63, O-64, O-65, O-66, O-67, O-69, O-70, O-104, O-137, O-138, P-60, P-61, P-62, P-63, P-64, P-115, P-117, P-148, P-205, P-232, P-298, P-299, P-300, P-301, P-302, P-303, P-324, P-341, P-344, P-409, P-437, P-442, P-512, P-532, P-533, P-534, P-537, P-538, P-539, P-542, P-584, P-656, P-680	Hyperlipidemia	P-139, P-206, P-338	Knockout	P-507
Hepatocellular carcinoma	LB-4, LB-6, LB-10, LB-15, LB-16, LB-43, LB-47, O-34, O-35, O-38, O-88, O-90, O-91, O-93, O-94, O-95, O-101, O-105, O-133, O-137, O-141, P-35, P-40, P-64, P-66, P-101, P-102, P-105, P-106, P-108, P-109, P-110, P-111, P-112, P-113, P-114, P-115, P-116, P-117, P-119, P-120, P-173, P-174, P-181, P-185, P-200, P-215, P-262, P-268, P-280, P-281, P-333, P-339, P-341, P-344, P-346, P-349, P-350, P-351, P-352, P-353, P-355, P-356, P-358, P-368, P-380, P-383, P-389, P-417, P-422, P-444, P-452, P-459, P-476, P-506, P-512, P-513, P-514, P-515, P-537, P-575, P-577, P-578, P-579, P-580, P-581, P-583, P-586, P-587, P-588, P-590, P-591, P-592, P-593, P-594, P-595, P-596, P-597, P-600, P-630, P-639, P-649, P-654, P-661, P-676, P-677, P-681	Hypertension	O-7, P-163, P-367, P-592	Lamivudine	O-97, P-519, P-577
		IgG	O-47, P-312	Laparoscopy	O-56, P-321, P-565
		Image analysis	P-199, P-202, P-417, P-698	Length of stay	LB-51, O-136, P-3, P-15, P-241, P-246, P-253, P-255, P-369, P-405, P-423, P-475, P-493, P-550, P-619
		Immune deviation	P-445	Leukocytes	P-301, P-616, P-700
		Immunoadsorption	LB-11, LB-41, O-119, P-236	Lipids	LB-30, P-30, P-32, P-282, P-302
		Immunogenicity	O-4, P-39, P-424, P-497	Liver	LB-6, LB-14, LB-19, LB-24, LB-25, LB-43, LB-47, O-4, O-17, O-26, O-56, O-59, O-62, O-69, O-75, O-82, O-87, O-95, O-98, O-117, O-122, O-123, O-131, O-134, O-140, P-11, P-16, P-21, P-26, P-28, P-32, P-54, P-55, P-89, P-90, P-92, P-94, P-98, P-103, P-126, P-134, P-137, P-146, P-159, P-162, P-188, P-189, P-196, P-198, P-200, P-212, P-216, P-222, P-231, P-235, P-242, P-252, P-259, P-265, P-276, P-278, P-298, P-303, P-315, P-327, P-337, P-340, P-343, P-350, P-389, P-403, P-414, P-418, P-439, P-440, P-441, P-451, P-456, P-476, P-488, P-500, P-528, P-540, P-562, P-569, P-585, P-594, P-597, P-605, P-609, P-620, P-639, P-644, P-654, P-670, P-674, P-675, P-676, P-678, P-679, P-684, P-692, P-704
		Immunoglobulins (Ig)	LB-21, O-73, O-135, P-312, P-510	Liver cirrhosis	LB-37, O-20, O-40, O-69, O-70, O-81, O-82, O-121, O-138, P-14, P-54, P-91, P-93, P-112, P-127, P-131, P-152, P-182, P-212, P-215, P-236, P-261, P-263, P-298, P-361, P-365, P-421, P-426, P-437, P-496, P-514, P-585, P-604, P-605, P-629, P-637, P-638, P-657, P-671
		Immunosuppression	LB-8, LB-12, LB-22, LB-33, O-5, O-8, O-9, O-10, O-11, O-12, O-13, O-14, O-15, O-65, O-71, O-74, O-103, O-108, O-110, O-114, O-119, O-141, P-29, P-34, P-65, P-66, P-68, P-69, P-70, P-72, P-73, P-74, P-75, P-76, P-92, P-101, P-117, P-121, P-125, P-135, P-140, P-142, P-150, P-196, P-237, P-257, P-261, P-264, P-265, P-267, P-268, P-286, P-304, P-305, P-307, P-308, P-309, P-311, P-313, P-327, P-370, P-379, P-384, P-394, P-453, P-455, P-462, P-473, P-474, P-498, P-499, P-502, P-503, P-509, P-513, P-539, P-540, P-541, P-543, P-544, P-545, P-547, P-548, P-549, P-578, P-584, P-624, P-636, P-642, P-644, P-650, P-682, P-689, P-709	IMPDPH Inhibitor	P-340
		Induction therapy	O-72		
		Infant	P-6, P-75, P-186, P-425, P-669		
		Infection	O-31, O-33, O-68, O-81, P-70, P-74, P-122, P-150, P-155, P-208, P-220, P-223, P-224, P-232, P-301, P-374, P-384, P-412, P-462, P-468, P-495, P-603, P-629, P-644, P-648, P-679, P-684		
		Inflammation	O-28, O-113, P-31, P-181, P-266, P-272, P-279, P-326, P-393, P-510, P-511, P-580, P-703, P-708		
		Informed consent	LB-50, P-82, P-334, P-551		
		Insulin	P-429		
		Insulinemia	P-536		
		Interferon (IFN)	O-70, O-106, P-301, P-538		
		Intestinal transplantation	P-256		
		Intimal	P-87, P-97		
Hepatocytes	LB-14, LB-29, O-115, O-122, P-23, P-49, P-268, P-501, P-506, P-507, P-517				
Hepatopulmonary syndrome	P-16, P-392				

- Liver failure LB-19, LB-40, LB-41, LB-53, O-4, O-23, O-113, O-115, O-116, O-117, O-118, O-120, O-121, O-122, O-123, P-18, P-19, P-54, P-55, P-56, P-57, P-58, P-93, P-157, P-189, P-191, P-221, P-263, P-293, P-294, P-295, P-296, P-297, P-335, P-365, P-373, P-405, P-450, P-469, P-485, P-508, P-518, P-524, P-527, P-528, P-529, P-530, P-531, P-553, P-640, P-655, P-657
- Liver grafts LB-3, LB-5, LB-20, LB-28, LB-32, LB-53, O-1, O-21, O-24, O-53, O-58, O-112, O-132, O-139, P-7, P-20, P-25, P-81, P-83, P-91, P-99, P-101, P-128, P-169, P-177, P-195, P-202, P-209, P-216, P-228, P-229, P-239, P-266, P-318, P-319, P-320, P-322, P-328, P-335, P-362, P-386, P-432, P-443, P-448, P-454, P-504, P-507, P-516, P-523, P-531, P-550, P-553, P-556, P-557, P-558, P-570, P-574, P-586, P-602, P-620, P-634, P-662, P-678, P-690, P-692, P-696, P-705
- Liver metabolism LB-25, LB-51, P-7, P-53, P-78, P-203, P-267, P-323, P-433, P-494, P-501
- Liver preservation O-1, O-6, O-106, O-109, P-20, P-33, P-258, P-270, P-285, P-408, P-455, P-524, P-702
- Liver transplantation LB-1, LB-2, LB-4, LB-6, LB-10, LB-11, LB-12, LB-15, LB-16, LB-17, LB-18, LB-20, LB-21, LB-22, LB-23, LB-26, LB-31, LB-33, LB-36, LB-38, LB-39, LB-41, LB-42, LB-43, LB-44, LB-45, LB-46, LB-47, LB-48, LB-49, LB-51, O-1, O-3, O-6, O-8, O-9, O-10, O-12, O-13, O-14, O-15, O-16, O-17, O-19, O-20, O-21, O-24, O-26, O-27, O-28, O-30, O-31, O-32, O-34, O-35, O-37, O-38, O-39, O-40, O-41, O-43, O-44, O-45, O-46, O-47, O-48, O-49, O-50, O-51, O-53, O-56, O-58, O-61, O-63, O-66, O-72, O-75, O-76, O-77, O-79, O-80, O-81, O-82, O-84, O-85, O-88, O-89, O-90, O-91, O-93, O-94, O-97, O-98, O-99, O-100, O-102, O-103, O-104, O-105, O-107, O-108, O-110, O-112, O-118, O-119, O-121, O-123, O-124, O-127, O-128, O-134, O-138, O-141, P-1, P-3, P-4, P-5, P-6, P-8, P-10, P-11, P-12, P-15, P-16, P-17, P-19, P-24, P-25, P-26, P-29, P-30, P-31, P-34, P-35, P-36, P-37, P-39, P-42, P-43, P-45, P-46, P-48, P-49, P-50, P-53, P-55, P-57, P-59, P-60, P-61, P-63, P-64, P-65, P-66, P-67, P-72, P-74, P-75, P-76, P-77, P-78, P-79, P-81, P-82, P-83, P-84, P-85, P-86, P-87, P-89, P-90, P-91, P-92, P-95, P-97, P-98, P-99, P-102, P-104, P-105, P-108, P-109, P-110, P-111, P-112, P-113, P-114, P-120, P-121, P-123, P-124, P-125, P-126, P-130, P-132, P-134, P-136, P-138, P-139, P-140, P-141, (Liver transplantation cont.) P-142, P-144, P-145, P-146, P-147, P-148, P-149, P-150, P-151, P-152, P-156, P-157, P-158, P-159, P-161, P-162, P-163, P-164, P-166, P-167, P-168, P-169, P-170, P-171, P-173, P-174, P-175, P-176, P-177, P-178, P-182, P-183, P-185, P-186, P-187, P-190, P-191, P-192, P-195, P-197, P-199, P-201, P-203, P-206, P-208, P-211, P-213, P-215, P-216, P-217, P-218, P-219, P-220, P-221, P-222, P-223, P-224, P-226, P-227, P-228, P-231, P-232, P-233, P-235, P-236, P-237, P-238, P-239, P-240, P-242, P-243, P-244, P-246, P-247, P-248, P-249, P-250, P-253, P-254, P-255, P-256, P-260, P-265, P-269, P-270, P-271, P-274, P-275, P-277, P-280, P-281, P-283, P-284, P-285, P-286, P-287, P-288, P-290, P-291, P-292, P-293, P-294, P-295, P-296, P-302, P-304, P-306, P-308, P-309, P-310, P-311, P-313, P-314, P-317, P-319, P-321, P-324, P-325, P-328, P-329, P-334, P-335, P-339, P-341, P-343, P-344, P-345, P-346, P-348, P-349, P-350, P-351, P-352, P-354, P-356, P-358, P-359, P-361, P-362, P-363, P-364, P-365, P-366, P-367, P-369, P-370, P-371, P-375, P-376, P-378, P-379, P-381, P-382, P-383, P-384, P-385, P-387, P-388, P-389, P-391, P-392, P-395, P-396, P-397, P-398, P-399, P-400, P-401, P-402, P-403, P-404, P-405, P-407, P-408, P-410, P-411, P-413, P-416, P-417, P-418, P-419, P-422, P-424, P-425, P-427, P-428, P-429, P-431, P-434, P-436, P-437, P-439, P-441, P-442, P-444, P-445, P-446, P-447, P-448, P-450, P-451, P-452, P-453, P-454, P-456, P-457, P-458, P-459, P-460, P-462, P-464, P-465, P-466, P-467, P-467, P-468, P-469, P-470, P-472, P-474, P-476, P-477, P-478, P-479, P-480, P-481, P-482, P-483, P-484, P-486, P-487, P-488, P-489, P-493, P-495, P-502, P-503, P-506, P-509, P-512, P-515, P-516, P-517, P-518, P-521, P-524, P-525, P-526, P-527, P-528, P-530, P-531, P-533, P-534, P-542, P-543, P-545, P-546, P-547, P-548, P-550, P-553, P-555, P-559, P-560, P-563, P-567, P-568, P-573, P-574, P-578, P-579, P-583, P-587, P-588, P-589, P-590, P-591, P-592, P-593, P-595, P-596, P-597, P-598, P-599, P-600, P-602, P-603, P-604, P-605, P-606, P-607, P-610, P-612, P-613, P-618, P-619, P-621, P-624, P-625, P-626, P-627, P-628, P-629, P-630, P-631, P-632, P-633, P-634, P-636, P-638, P-641, P-642, P-644, P-646, P-647, P-648, P-649, P-650, P-653, P-654, P-655, P-657, P-659, P-660, P-661, P-663, P-665, P-666, P-667, P-669, P-671, (Liver transplantation cont.) P-672, P-673, P-675, P-676, P-678, P-679, P-682, P-683, P-685, P-687, P-688, P-689, P-690, P-691, P-692, P-693, P-695, P-697, P-698, P-699, P-700, P-701, P-704, P-705, P-706, P-707, P-708, P-709
- Living-related liver donors LB-20, LB-29, LB-35, LB-37, LB-39, LB-47, LB-48, LB-50, O-16, O-18, O-19, O-20, O-21, O-22, O-23, O-44, O-54, O-55, O-56, O-60, O-86, O-89, O-98, O-121, P-1, P-30, P-50, P-51, P-62, P-63, P-64, P-77, P-78, P-79, P-80, P-81, P-82, P-84, P-85, P-87, P-88, P-89, P-90, P-91, P-93, P-94, P-95, P-96, P-97, P-100, P-104, P-110, P-113, P-116, P-127, P-134, P-157, P-166, P-167, P-195, P-198, P-202, P-211, P-217, P-219, P-226, P-229, P-241, P-286, P-289, P-294, P-302, P-315, P-316, P-317, P-318, P-319, P-320, P-321, P-322, P-323, P-324, P-326, P-329, P-330, P-331, P-332, P-333, P-335, P-338, P-346, P-351, P-353, P-365, P-372, P-383, P-386, P-387, P-399, P-401, P-402, P-412, P-420, P-424, P-430, P-431, P-437, P-441, P-447, P-451, P-457, P-467, P-470, P-484, P-531, P-535, P-550, P-551, P-553, P-554, P-555, P-556, P-557, P-558, P-559, P-560, P-561, P-562, P-563, P-564, P-565, P-566, P-568, P-570, P-571, P-572, P-573, P-595, P-596, P-599, P-609, P-613, P-616, P-620, P-627, P-630, P-637, P-640, P-664, P-680, P-693, P-696, P-700, P-708
- Lung O-79, P-6, P-263, P-396, P-708
- Lung infection P-1
- Lung preservation P-450
- Lung transplantation P-18, P-58, P-393, P-537
- Lymphocytes O-107, P-26, P-314, P-681
- Lymphoproliferative disease P-327
- Machine preservation O-108, O-126, P-273, P-293, P-450
- Magnetic resonance imaging P-203, P-480
- Major histocompatibility complex (MHC) LB-13
- Malignancy O-74, O-76, O-88, O-89, O-93, O-96, O-98, P-76, P-103, P-106, P-112, P-118, P-174, P-310, P-342, P-345, P-346, P-347, P-348, P-354, P-355, P-356, P-357, P-360, P-452, P-503, P-529, P-576, P-579, P-581, P-582, P-583, P-589, P-661, P-671, P-675
- Medicare P-382
- Meta-analysis O-65, P-69, P-143, P-374, P-530, P-544, P-612, P-628, P-690
- Metabolic complications O-25, O-83, O-103, P-267, P-391, P-446, P-607
- Metabolic disease O-3, O-99, P-53, P-152, P-192, P-411, P-431, P-523, P-645, P-664
- Methodology P-24, P-275

MHC class II	LB-13	(Outcome cont.)	P-371, P-372, P-373,	Post-operative complications	LB-2,
Mice	O-113, P-23, P-25, P-31,	P-375, P-376, P-378, P-379, P-381,	P-383, P-384, P-385, P-386, P-387,	LB-26, LB-31, LB-36, LB-52, O-21,	
	P-275, P-277, P-278, P-279,	P-389, P-390, P-392, P-393, P-394,	P-397, P-401, P-405, P-407, P-408,	O-45, O-54, O-55, O-57, O-79, O-140,	
Mice, knockout	P-282, P-340, P-496, P-549	P-409, P-411, P-414, P-416, P-418,	P-419, P-420, P-421, P-423, P-452,	P-1, P-7, P-85, P-142, P-156, P-179,	
	P-42, P-103,	P-456, P-459, P-461, P-463, P-466,	P-467, P-472, P-475, P-479, P-480,	P-193, P-197, P-201, P-208, P-214,	
	P-272, P-326	P-467, P-472, P-475, P-479, P-480,	P-484, P-487, P-494, P-527, P-539,	P-217, P-218, P-222, P-223, P-224,	
Mice, SCID	O-114, P-497	P-540, P-552, P-555, P-556, P-557,	P-559, P-563, P-566, P-568, P-570,	P-225, P-227, P-233, P-234, P-235,	
Microcirculation	O-52, O-131	P-575, P-576, P-579, P-588, P-589,	P-596, P-597, P-600, P-602, P-604,	P-237, P-256, P-259, P-322, P-332,	
Monitoring	LB-32, O-28,	P-606, P-607, P-608, P-609, P-614,	P-615, P-617, P-621, P-623, P-624,	P-336, P-363, P-375, P-382, P-398,	
	P-10, P-24, P-251,	P-625, P-626, P-627, P-628, P-629,	P-631, P-632, P-633, P-635, P-638,	P-399, P-406, P-410, P-430, P-436,	
	P-254, P-264, P-483	P-640, P-641, P-645, P-647, P-649,	P-652, P-655, P-659, P-662, P-663,	P-449, P-455, P-456, P-463, P-464,	
Monoclonal antibodies	P-535, P-650	P-667, P-668, P-673, P-677, P-691,	P-697, P-707	P-465, P-466, P-471, P-473, P-475,	
Morbidity	LB-2, LB-34, O-41,			P-477, P-492, P-494, P-520, P-552,	
	O-55, O-92, O-102, P-11, P-78,			P-622, P-634, P-635, P-674, P-686,	
	P-86, P-123, P-151, P-155, P-156,			P-688, P-689, P-692, P-695, P-698	
	P-214, P-222, P-227, P-271, P-322,			Post-transplant diabetes	O-7, P-378,
	P-336, P-373, P-396, P-420, P-436,				P-453, P-492, P-536, P-643
	P-618, P-621, P-633			Post-transplant hypertension	O-17
Mortality	LB-1, O-27, O-32, O-42,			Post-transplant lymphoproliferative	
	O-78, O-118, P-58, P-62, P-93, P-111,			disorder (PTLD)	O-43, O-50,
	P-127, P-141, P-154, P-156, P-158,				P-75, P-104, P-187
	P-159, P-183, P-230, P-297, P-336,			Post-transplant malignancy	P-102,
	P-369, P-388, P-396, P-410, P-482,				P-104, P-108,
	P-610, P-633, P-634				P-316, P-643
Multicenter studies	O-18, O-116,	Outpatients	P-132	Preclinical trials	O-115
	P-180, P-283, P-463	Oxidant stress	P-27	Prediction models	LB-19, O-91, O-101,
Multivariate analysis	O-78, P-9, P-89,	Pain	O-86, P-241, P-571		P-30, P-58, P-415,
	P-138, P-162, P-234, P-463,	Pancreas	LB-34, P-576		P-598, P-610, P-651, P-653
	P-471, P-600, P-641	Pancreas transplantation	P-170, P-288,	Pregnancy	P-133
Multivisceral transplantation	P-176,		P-453, P-459, P-624,	Preservation	O-125, P-20,
	P-614		P-636, P-688, P-709		P-27, P-49, P-273
Mycophenolate mofetil	LB-12, O-8,	Patient education	P-271, P-551	Preservation solutions	P-209, P-258
	O-13, P-311, P-546	Pediatric	LB-35, LB-40, LB-49, LB-53,	Primary sclerosing cholangitis	P-623
			O-3, O-44, O-45, O-46,	Procurement	P-221, P-233, P-460, P-690
Natural killer cells	O-22, O-90		O-48, O-49, O-58, O-139, P-18,	Prognosis	LB-34, LB-40, LB-42, O-3,
Necrosis	P-48, P-188, P-262		P-19, P-57, P-186, P-187, P-189,		O-93, O-117, P-4, P-43, P-107, P-108,
Nephrectomy	P-585		P-190, P-191, P-192, P-193, P-194,		P-174, P-228, P-250, P-286, P-345,
Nephrotoxicity	O-30, P-71		P-196, P-198, P-203, P-250, P-284,		P-358, P-360, P-419, P-444, P-482,
Neurotoxicity	P-480		P-304, P-348, P-359, P-425, P-426,		P-574, P-591, P-593, P-613, P-618,
Neutrophils	P-185		P-427, P-428, P-429, P-430, P-431,		P-622, P-681
Nitric oxide	P-486		P-432, P-434, P-483, P-485, P-488,	Proliferation	LB-29, P-37,
Non-invasive diagnosis	O-63,		P-556, P-622, P-661, P-664, P-666,		P-507, P-514, P-517
	P-442, P-601		P-667, P-668, P-669, P-696	Prophylaxis	O-97, P-88, P-291, P-404,
Obesity	O-20, O-25, O-103, P-32, P-33,	Peptides	P-266		P-412, P-679
	P-95, P-99, P-152, P-297,	Perfusion solutions	O-126	Protective genes	O-109
	P-318, P-381, P-416, P-433, P-477,	Pharmacokinetics	O-12, P-13	Proteinuria	P-67, P-68
	P-500, P-564, P-607, P-619	Phosphodiesterase inhibitors	P-13	Protocol biopsy	P-338, P-446, P-534
Osteoporosis	LB-38, P-188	Pig	O-115, O-125, O-140, P-47, P-508	Psychiatric comorbidity	O-44
Outcome	LB-1, LB-3, LB-5, LB-16,	Plasmapheresis	P-18, P-57,	Psychosocial	O-102, P-560, P-656
	LB-17, LB-23, LB-35, LB-41, LB-46,		P-243, P-363, P-666	Public policy	P-334, P-424, P-658
	LB-51, O-1, O-17, O-25, O-26, O-27,	Pneumonia	O-31	Pulmonary hypertension	O-79, P-2,
	O-30, O-32, O-39, O-46, O-49, O-53,	Polymerase chain reaction (PCR)	P-179,		P-13, P-177, P-486, P-608
	O-57, O-58, O-76, O-80, O-82, O-94,		P-274, P-536	Quality of life	LB-30, O-102, P-132,
	O-100, O-105, O-116, O-117, O-120,	Polymorphism	O-12		P-138, P-146, P-190, P-231, P-271,
	O-130, O-141, P-3, P-45, P-46, P-80,	Portal veins	LB-39, LB-45, O-57,		P-300, P-331, P-379, P-571, P-703
	P-86, P-95, P-96, P-98, P-100, P-115,		O-140, P-17, P-133, P-210, P-213,	Radiologic assessment	P-83, P-197,
	P-117, P-121, P-128, P-129, P-133,		P-214, P-225, P-247, P-252, P-323,		P-198, P-200, P-316, P-328, P-342,
	P-137, P-139, P-143, P-145, P-146,		P-426, P-438, P-454, P-458, P-554,		P-352, P-417, P-434, P-438, P-439,
	P-151, P-154, P-155, P-157, P-158,		P-567, P-626, P-669, P-697, P-705		P-441, P-498, P-562, P-575, P-576,
	P-159, P-161, P-170, P-171, P-172,				P-587, P-670, P-672, P-673, P-675
	P-178, P-180, P-181, P-192, P-196,			Rapamycin	P-21, P-37, P-261, P-268,
	P-213, P-232, P-238, P-240, P-241,				P-282, P-306, P-513, P-543, P-578
	P-242, P-246, P-248, P-249, P-252,			Rat	LB-4, O-4, O-95, P-21, P-36,
	P-253, P-255, P-284, P-292, P-293,				P-44, P-144, P-343, P-500
	P-295, P-296, P-297, P-303, P-330,			Reactive oxygen species	O-75, P-33,
	P-333, P-342, P-345, P-347, P-348,				P-281, P-500
	P-350, P-351, P-353, P-354, P-359,				
	P-360, P-361, P-362, P-367, P-370,				

- Recurrence LB-9, LB-10, LB-43, O-61, O-64, O-65, O-91, O-96, O-105, O-133, P-40, P-60, P-62, P-106, P-107, P-110, P-113, P-114, P-129, P-173, P-181, P-207, P-274, P-281, P-299, P-309, P-339, P-342, P-344, P-372, P-380, P-397, P-445, P-446, P-513, P-515, P-534, P-561, P-580, P-581, P-583, P-590, P-603, P-617, P-676, P-677, P-680
- Reinfection P-207, P-303, P-443, P-537
- Rejection LB-8, O-7, O-14, O-15, O-48, O-71, O-73, O-108, P-34, P-36, P-41, P-70, P-72, P-74, P-94, P-124, P-132, P-149, P-179, P-204, P-205, P-290, P-307, P-313, P-329, P-371, P-462, P-544, P-545, P-549, P-584, P-666
- Renal dysfunction O-9, O-30, O-132, P-68, P-72, P-127, P-135, P-147, P-153, P-154, P-165, P-245, P-255, P-305, P-307, P-311, P-406, P-479, P-490, P-541, P-598, P-611, P-635, P-643
- Renal failure O-69, P-135, P-140, P-160, P-165, P-245, P-298, P-305, P-478, P-485, P-491, P-541, P-545
- Renal function O-10, O-11, O-75, P-65, P-67, P-125, P-135, P-145, P-305, P-306, P-330, P-413, P-541, P-547, P-611, P-642
- Renal injury O-19, P-66, P-478
- Resource utilization O-40, P-15, P-142, P-218, P-248, P-249, P-254, P-364, P-416, P-423, P-632
- Retransplantation LB-17, O-36, O-45, O-54, P-79, P-126, P-244, P-368, P-376, P-485
- Risk factors O-2, O-86, O-101, O-130, O-136, P-8, P-9, P-15, P-90, P-107, P-145, P-221, P-231, P-235, P-240, P-245, P-247, P-291, P-360, P-370, P-377, P-443, P-475, P-478, P-482, P-487, P-568, P-598, P-601, P-614, P-615, P-648, P-651, P-653, P-659, P-701
- Safety O-16, O-23, O-71, O-136, O-137, O-138, P-12, P-51, P-52, P-80, P-82, P-96, P-141, P-194, P-211, P-216, P-253, P-317, P-319, P-330, P-331, P-337, P-373, P-408, P-428, P-447, P-461, P-563, P-565, P-572, P-707
- Screening O-37, P-109, P-189, P-337, P-439, P-495
- Sirolimus (SLR) LB-38, P-68, P-308, P-660
- Skin transplantation P-73
- Split-liver transplantation LB-28, LB-53, O-130, P-193, P-427, P-691
- Spontaneous arrest P-489
- Stem cells O-111, O-114, P-23, P-28, P-38, P-40, P-276, P-498, P-501
- Surgical complications LB-19, LB-20, LB-28, LB-34, LB-36, LB-45, LB-48, LB-52, O-24, O-52, O-53, O-118, P-53, P-84, P-136, P-161, P-170, P-172, P-193, P-210, P-211, P-212, P-219, P-226, P-227, P-228, P-229, P-230, P-234, P-331, P-392, P-393, P-401, P-420, P-435, P-448, P-457, P-460, P-470, P-471, P-489, P-494, P-558, P-570, P-571, P-572, P-606, P-626, P-628, P-662, P-667, P-684, P-687, P-693, P-694, P-695, P-697, P-698, P-700, P-701, P-703, P-704, P-706, P-707
- Survival LB-7, LB-15, LB-27, LB-28, LB-42, LB-45, O-19, O-25, O-26, O-33, O-35, O-41, O-42, O-62, O-76, O-78, O-81, O-89, O-116, O-120, O-136, P-2, P-5, P-46, P-59, P-76, P-99, P-100, P-106, P-120, P-126, P-128, P-130, P-136, P-141, P-160, P-161, P-162, P-167, P-172, P-173, P-177, P-180, P-207, P-210, P-236, P-245, P-292, P-296, P-299, P-325, P-329, P-339, P-353, P-356, P-358, P-359, P-362, P-364, P-368, P-377, P-380, P-386, P-388, P-394, P-400, P-411, P-414, P-415, P-418, P-423, P-491, P-515, P-520, P-538, P-564, P-569, P-580, P-581, P-589, P-591, P-595, P-601, P-602, P-606, P-608, P-625, P-630, P-637, P-640, P-643, P-648, P-650, P-654, P-656, P-684, P-699, P-704
- T cell activation O-95, O-113, P-38, P-257, P-511
- T cell graft infiltration O-110
- T cell reactivity O-5
- T cells LB-13, O-22, O-72, P-22, P-37, P-73, P-257, P-312, P-502, P-505, P-509, P-681, P-683
- T helper cells O-14, P-497
- Thrombocytopenia P-133, P-243
- Thymocytes P-313
- Tolerance LB-8, LB-13, O-5, O-47, O-72, O-107, O-110, O-111, P-38, P-257, P-277, P-502, P-508, P-573
- Toxicity P-260
- Transcription factors P-260
- Triglycerides P-338
- Tumor necrosis factor (TNF) P-22
- Tumor recurrence LB-6, O-34, O-90, O-92, O-101, P-43, P-102, P-105, P-107, P-111, P-120, P-340, P-343, P-352, P-444, P-506, P-574, P-575, P-586, P-593, P-637, P-649, P-653, P-677
- Ultrasonography P-199, P-201, P-435, P-663, P-670, P-672, P-674
- Vaccination O-100, P-402, P-404
- Vascular disease LB-48, O-29, P-243, P-251, P-320, P-399, P-438, P-449, P-457, P-567, P-674, P-682, P-706
- Viral therapy O-68, O-139, P-56, P-60, P-61, P-538, P-647
- Waiting lists LB-46, O-40, O-49, O-67, O-94, P-61, P-79, P-109, P-158, P-183, P-295, P-300, P-333, P-354, P-421, P-422, P-588, P-590, P-592, P-611, P-638, P-668
- Warm ischemia O-109, O-129, P-33, P-44, P-52, P-279, P-287, P-349, P-458, P-517
- Weight P-202, P-317, P-381, P-425, P-619
- Xenotransplantation P-508