functioning nephrons with connective tissue and kidney wrinkling. The physical growth and development (G&D) of children with CKD C3-C5 is often markedly different from the G&D of healthy children due to metabolic disorders and the specifics of the prescribed diet with protein restriction. Patients who are on this type of diet require careful monitoring for timely nutrition correction if necessary.
Methods: The 40 children with CKD C3-C5 from 1 year to 17 years (17 girls, 23 boys) with an average age of 11.9 years were comprehensively examined in the nephrological or urological Department of a multidisciplinary hospital. Anthropometry was evaluated: height, weight, and body mass index (BMI). Children over 5 years of age were assessed by the bioimpedance method (body composition). The glomerular filtration rate was calculated using the Schwartz formula (range from 8.2 to 59.9 ml / min). G&D data was analyzed in various ways: using centile tables, calculating sigmal deviations, and the WHO AnthroPlus program. Statistical data processing was carried out.
Results: Growth retardation was detected in 45% of children (σ from -8.26 to -1, z-score from -7.16 to -1.6), distribution by centile corridors (CC) growth: 1-32.5%, 2 and 3 by 12.5%, 4-30%, 5 and 6 by 5%, 7-2.5%. Body mass deficit was detected in 52.5% (σ from -6.6 to -2 , z-score from -5.96 to -1.17). The distribution by CC of body weight is as follows: 142.5% , 2- 10%, 3 and 4 by 17.5%, 5- 5%, 6 – 2.5%, 7 – 5%. BMI below the norm was determined in 45% of children with CKD (z-score from – 9.38 to -0.61), distribution by the CC of BMI: 1- 25%, 2 – 20%, 3 and 4 by 15%, 5 – 7.5%, 6 – 5%, 7 – 12.5%. An inverse relationship was found between growth and creatinine levels, and a more severe degree of CKD ($p < 0.050$). There were no statistically significant links between gender and the degree of CKD, and changes in G&D. Significant differences in BMI were found in the distribution of a group of children with CKD C3-C5 who received surgical aid and did not receive it (Mann Whitney U test, $p < 0.050$). Patients who received surgical treatment were more likely to have a BMI close to normal, and severe BMI deficiency was observed in patients with CKD in therapeutic group.
Conclusion: Dynamic monitoring of the G&D of children with CKD is necessary for timely detection of deviations from the norm. Interdisciplinary approach to the management of patients with CKD can prevent severe damage to G&D. Children with CKD, starting from the first stages of the disease development, should receive recommendations for lifestyle changes and in particular dietary recommendations.
Disclosure of Interest: None declared

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ASSOCIATION OF CHRONIC KIDNEY DISEASE AND EFFECTIVENESS OF NUTRITIONAL SUPPORT IN PATIENTS AT NUTRITIONAL RISK: SECONDARY ANALYSIS OF A PROSPECTIVE RANDOMIZED TRIAL

A. Bargetzi*[1], P. Schuetz [1], B. Mueller [1], N. Emmenegger [2], S. Wildisen [2], L. Bargetzi [1], L. Hersberger [1]. on behalf of EFFORT study group[1] *Kantonsspital Aarau, Aarau, Switzerland;* [2] *University of Basel, Basel, Switzerland*

Rationale: Malnutrition has negative effects on clinical outcomes in multimorbid medical patients, particularly patients with chronic kidney disease (CKD) are at substantial risk for malnutrition. Whether kidney function has an effect on the effectiveness of nutritional support on mortality and other clinical outcomes in patients with nutritional risk remains unclear.
Methods: This is a secondary analysis of an investigator-initiated, prospective randomised controlled multicenter trial in Switzerland (EFFORT) that investigated the effects of individualised nutrition support on outcomes in medical inpatients. We investigated whether differences in clinical response to nutritional support exist in regard to mortality (primary endpoint) depending on the glomerular filtration rate (GFR) using multivariable regression analyses.
Results: Creatinine levels at hospital admission were available in 1,943 out of 2,028 patients (96%) from the original trial. There were 100 and 198 patients with a stage V and IV (GFR <15 and 15 – 30ml/min/1.73m^2), and 569, 635 and 441 patients with stages III, II and I (GFR 30 – 60, 60 – 90 and > 90ml/min/1.73m^2). Kidney function had a strong influence on the effect of nutritional support on mortality with patients with CKD stage V showing the strongest effect of nutritional support (12/49 (24%) vs. 5/51 (10%), OR 0.19 (0.04 to 0.91), p=0.037 for CKD V patients vs 11/235 (4.7%) vs. 17/206 (8.3%), OR 1.78 (0.77 to 4.08), in patients with normal kidney function. Effects were similar for other secondary outcomes.
Conclusion: Kidney function strongly influenced the effects of nutritional support on mortality in medical inpatients with multiple morbidities. These data may help to better personalize nutritional support to patients showing most benefit.
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EFFECTS OF A SINGLE DOSE OF COCOA FLAVANOLS ON BLOOD PRESSURE IN PATIENTS WITH TYPE 2 DIABETES COMPARED TO HEALTHY PEOPLE

A. Tanghe*[1,2], E. Heyman [2], S. Shadid [3], E. Rietzschel [4], E. Lespagnol [2], B. Celie [1], P. Calders [1]. [1] *rehabilitation sciences, University of Ghent, Ghent, Belgium;* [2] *unité de recherche pluridisciplinaire sport santé société, Uliversité de Lille, Lille, France;* [3] *endocrinology, Ghent, Belgium;* [4] *cardiology and internal medicine, University of Ghent, Ghent, Belgium*

Rationale: Type 2 diabetes mellitus (T2DM) is a complex metabolic disorder with high risk for developing vascular complications. This study investigates whether an acute ingestion of flavanols, extracted from the cacao bean (CF), could improve blood pressure (BP) in T2DM.
Methods: An acute, randomized, placebo-controlled, double-blinded, crossover study was set up. Subjects were tested twice, with 3 days to 2 weeks in between, in order to consume the 2 different products: CF-enriched (8 capsules that represented a dosage of 2.5g of cocoa extract containing 790mg flavanols of which 150 mg epicatechin, Naturex, France) or placebo (6 capsules containing maltodextrin and an equivalent dose of theobromine and caffeine than the cocoa extract product). Before and 75 minutes after intake of the capsules, mean systolic and diastolic BP (SBP and DBP) were assessed for 21 minutes with intervals of 3 minutes. Wilcoxon and Mann-Whitney U-tests (SPSS Statistics 26) were used for data-analysis with correction for multiple testing.
Results: 16 subjects participated in this study: 7 patients with T2DM without arterial hypertension (3 female (F)/4 male (M), age = 68 ± 6y, BMI = 26 ± 3 kg/m^2) and 9 healthy controls (5F/4M, age = 60 ± 5y, BMI = 26 ± 4 kg/m^2). No statistical effect on mean SBP or mean DBP within or between groups could be detected by statistical analyses. However, a clinical effect (at least a reduction of 2 mmHg for both SBP and DBP [1]) after intake of CF compared to placebo was detected for mean SBP in healthy controls (-5 mmHg after CF intake versus -1 mmHg after placebo). The effect on mean SBP and DBP in patients with T2DM and on mean DBP in healthy controls showed no clinical relevance.
Conclusion: Based on this study we could only detect a clinical relevant effect on mean SBP in healthy controls, while in patients with T2DM without arterial hypertension no relevant effect could be noticed.
References: [1] Whelton PK, He J, Appel LJ, Cutler JA, Havas S, Kotchen TA, Roccella EJ, Stout R, Vallbona C, Winston MC (2002) Primary prevention of hypertension: clinical and public health advisory from The National High Blood Pressure Education Program. Jama 288 (15):1882-1888
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FECAL METABOLITES REFLECTING THE INTERACTION BETWEEN PREBIOTIC DIETARY FIBER AND THE GUT MICROBIOTA IN OBESE PATIENTS

A.M. Neyrinck [1], J. Rodriguez*[1], Z. Zhang [2], B. Seethaler [3], C. Robles Sánchez [1], M. Roumain [1], S. Hiel [1], L.B. Bindels [1], P.D. Cani [1], N. Paquot [4], M. Cnop [5], M. Laville [6], G.G. Muccioli [1], J.-P. Thissen [1], S.C. Bischoff [7], J. Walter [2,8], N.M. Delzenne [1]. [1] *UCLouvain, Brussels, Belgium;* [2] *University of Alberta, Edmonton, Canada;* [3] *University of Hohenheim, Stuttgart, Germany;* [4] *ULiège, Liège, Brussels, Belgium;* [5] *ULB, Brussels, Belgium;* [6] *CRNH, Lyon,*

France; [7] *University of Hohenheim, Stuttgart, Belgium;* [8] *University College Cork, Cork, Ireland*

Rationale: Inulin-type fructans (ITF) are dietary prebiotic fibers that may confer beneficial health effects through changes in the gut microbiota. The identification of potential mediators brings us closer to a mechanistic understanding of how prebiotics work. The project FiberTAG[1] aims to establish a set of markers of gut barrier function and bacterial metabolites, linking dietary fiber intake to gut microbiota-related health effects. We have tested the impact of native inulin intervention on fecal metabolites characterizing the interaction gut microbiota-related health effects in obese patients.
Methods: Microbiota (16S rDNA sequencing), long- and short-chain fatty acids (LCFA, SCFA), bile acids, zonulin and calprotectin were analyzed in fecal samples of obese patients included in a randomized, single-blinded, placebo-controlled trial (NCT03852069). Participants received either 16 g/d native inulin (ITF n=12) versus maltodextrin (placebo n=12), coupled to dietary advice to consume inulin-rich versus -poor vegetables for 3 months.
Results: Both placebo and prebiotic interventions lowered energy and protein intake. A substantial increase in *Bifidobacterium* appeared as a signature of ITF treatment supporting our recent data obtained in a large cohort[2]. Interestingly, fecal calprotectin, a marker of gastro-intestinal inflammation, was reduced upon ITF treatment. Both ITF and placebo interventions increased the ratio of tauro-conjugated/free bile acids. Prebiotic treatment did not significantly modify fecal SCFA content but it increased fecal rumenic acid, a conjugated linoleic acid (c9,t11 CLA), that correlated to the expansion of bifidobacteria.
Conclusion: Our study demonstrates that ITF-prebiotic intake during 3 months decreased a fecal marker of intestinal inflammation in obese patients and increased rumenic acid, which was related to the expansion of bifidobacteria. Our data point to a potential contribution of new microbial metabolites in gastro-intestinal dysfunction related to obesity.
References:
1 FiberTAG project from European Joint Programming Initiative “A Healthy Diet for a Healthy Life” https://www.fibertag.eu/
2 Clin Nutr. 2020 Apr 13. pii: S0261-5614(20)30160-6.
Disclosure of Interest: None declared

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EFFICIENCY OF MUSCLE MASS IN TERMS OF STRENGTH. COMPARATIVE OF THREE DIFFERENT GROUPS VS CONTROL

B. Pintor-De-La-Maza*[1], E. González-Arnaiz[2], D. Ariadel-Cobo[2], A. Hernández-Moreno[2], L. González-Roza[2], D. Barajas-Galindo[2], A. Urioste-Fondo[2], I. Cano-Rodríguez[2], M.D. Ballesteros-Pomar[2]. [1] *Hich Risk Obesity Unit, León, Spain;* [2] *Endocrinology and Nutrition Department, COMPLEJO ASISTENCIAL UNIVERSITARIO DE LEON, León, Spain*

Rationale: Sarcopenia is defined by a low muscle strength, quantity and quality. Different diseases can affect de efficiency of muscle mass and directly affect quality of life and increase the risk of worst evolution of a disease. Evaluate the presence of sarcopenia in three different groups [Osteoporosis group, Obesity group and Kidney disease group (KD)] with a control group.
Methods: Prospective study performed in Hospital Universitario de León (Spain) from May 2019 to February 2020. Patients that had a medical appointment in the endocrinology and nutrition department were offered to participate in the study. All patients signed a written informed consent. Patients were divided in three groups according to the main disease: osteoporosis (T score femur neck <-2.5), obesity (BMI >35 kg/m^2) and kidney disease (Stage G2 GF <89mL/min/1.73 m^3). All groups were compared vs CG. Body composition was assesed using an electrical bioimpedance (Tanita MC780, Tanita Corp, Tokyo, Japan). Hand grip strength (HGS) in the dominant hand was assesed with an electrical dynamometer (Dynx, Akern) and leg strength (LS), stability and standing speed was assesed using a Tanita platform BM-220 (Tanita Corp, Tokyo, Japan). The index between appendicular skeletal muscle mass index (ASMI) of arms and HGS and ASMI of legs and the values obtained with Tanita BM-220 were calculated.
The statistical analysis included bivariant analysis.
Results: 66 patients were included (77.3% male), 23 patients were included in the osteoporosis group, 22 in the obesity group, 11 in the kidney disease group and 10 in the control group. Mean age of all patients was 57.78 (SD 19.72) years.
There were differences on BMI in the comparaison between each group and CG [21.97 (IQR11.9)kg/m2)]: Osteoporosis 24.63 (IQR5.9)kg/m2 (p=0.032), Obesity 48.67 (IQR 5.0)kg/m2 (p<0.001), KD 28.67 (IQR5.3)kg/m2 (p=0.013).
There were differences on body mass index in the comparaison between each group and CG [21.97 (IQR11.9)kg/m2)]: osteoporosis 24.63 (IQR5.9) kg/m2 (p=0.032), obesity group 48.67 (IQR 5.0)kg/m2 (p<0.001), KD 28.67 (IQR5.3)kg/m2 (p=0.013).
ASMI was statistically different between osteoporosis and obesity and CG [(7.07 (IQR 1.20) kg/m2)]: Osteoporosis 6.49 (IQR 0.57) kg/m^2 (p<0.001) and Obesity 11.13 (IQR 2.00) kg/m^2 (p<0.001).
ASMIArms was statistically different between CG and Obesity [1.63 (IQR 0.37) kg/m^2 vs Obesity 2.77 (IQR 0.55) kg/m^2 (p<0.001)].
ASMILegs was statistically different between Osteoporosis and obesity and CG [5.44 (IQR 0.88) kg/m^2]; Osteoporosis 4.96 (IQR 0.44) kg/m^2 (p=0.043), obesity 8.35 (IQR 1.47) kg/m^2 (p<0.001).
The comparative of HGS, LS, stability, standing power and the index with ASMI of arms and legs between CG and the three groups are detailed in table 1.

Table 1.
Full results of body composition, strength tests and strength index.

	Osteoporosis (n= 23)	Obesity (n=20)	Kidney Disease (n=11)	Control Group (n=10)
HGS (kg)	*17.01 (IQR 5.10)	25.78 (IQR 10.33)	*19.39 (IQR 7.80)	28.30 (IQR 8.90)
Leg Strength	*1.13 (IQR 0.06)	*1.15 (IQR 0.11)	*1.16 (IQR 0.07)	1.35 (IQR 0.13)
Stability	*39.44 (IQR 19.00)	47.55 (IQR 8.00)	*38.09 (IQR 19.00)	52.90 (IQR 3.00)
Standing power (kgf/seg/kg)	*6.38 (IQR 2.62)	*6.74 (IQR 1.90)	*7.30 (IQR 2.20)	9.91 (IQR 2.20)
HGS / ASMArms	*4.89 (IQR 1.27)	*3.48 (IQR 1.68)	*3.98 (IQR 1.93)	6.36 (IQR 1.86)
Leg Strength / ASMLegs	0.10 (IQR 0.01)	*0.05 (IQR 0.02)	*0.08 (IQR 0.02)	0.09 (IQR 0.04)
Stability / ASMLegs	3.52 (IQR 1.64)	*2.20 (IQR 0.69)	*2.48 (IQR 1.02)	3.66 (IQR 1.39)
Standing speed / ASMLegs	0.56 (IQR 0.31)	*0.31 (IQR 0.19)	*0.48 (IQR 0.12)	0.69 (IQR 0.39)

BMI: Body mass index; FM: Fat mass; FFM: Fat free mass; HGS: Handgrip Strength; ASMI: appendicular skeletal muscle mass index.
*p<0.05
Conclusion: Although muscle mass and appendicular skeletal muscle mass index was higher in obese patients, it appears to be less efficient in terms of strength when comparing with other groups that are supposed to be more fragile.
Disclosure of Interest: None declared

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THE OCCURRENCE OF CHRONIC KIDNEY DISEASE IN PATIENTS ON LONG-TERM HOME PARENTERAL NUTRITION

B. Miller*[1], D. Green[2], M. Barrett[1], K. Farrer[1], S. Ahmed[1], A. Cloutier[1], A. Teubner[1], A. Abraham[1], S. Lal[1]. [1] *Intestinal Failure, Salford, United Kingdom;* [2] *Renal Medicine, SALFORD ROYAL HOSPITAL, Salford, United Kingdom*

Rationale: Home Parental Nutrition (HPN) is the primary treatment for patients with Chronic Intestinal Failure (CIF). Patients receiving long-term HPN can, however, develop chronic kidney disease (CKD) and pathology such as renal stones. However, there are minimal data on the prevalence of, or factors associated with, the development of CKD in patients with CIF. We