

Abstract Submission

Hepatology

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QUANTIFICATION OF MICROCHIMERISM AFTER MESENCHYMAL STEM CELL INFUSION FOR CHRONIC LIVER DISEASE

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Presentation Preference: Oral or Poster Presentation

Objectives & Study: Cell transplantation is a promising alternative to liver transplantation. The cells can be either hepatocytes or liver derived progenitors. In both cases tracking the cell fate after infusion and monitoring the chimerism is an important point. Traditional method (sex-based FISH, HLA mismatch, Short Tandem Repeat PCR) achieve only low level of sensitivity (1%) and are seldom used. The use of quantitative Real-Time PCR based on mismatch of null allele is a promising alternative.

Methods: We selected four genes with a high level of null genotype in population (SRY, RHD, GSTM1, GSTT1). We evaluated the genotype distribution on a panel of 25 blood donor. We created an artificial chimerism based on DNA mix or liver derived progenitor to test sensitivity, accuracy and variability. We also tested the method on the biopsy of a patient which had cell progenitor infusion for G6PD deficiency. The biopsies were taken at 3.5 month and 7 month.

Results: Analysis combining the four genes had sensitivity up to 0.01% of chimerism, with a good accuracy and below 3% of coefficient of variation for intra and interassay experiment. The informativeness is 57% for the four genes. The measured chimerism of the patient was 0.045% of the total liver mass, corresponding to 5% engraftment of the transplanted cells (SD : 0.02) for the right liver biopsy and 0.025% (SD : 0.013) for the left liver biopsy at 3.5 month. At 7 month the level of chimerism was under the limit of detection but present. It should be noted that the patient presented to acute enteritis with diarrhea at five month which could be have caused to a diminished immunosuppression.

Conclusion: The chimerism determination with real-time PCR amplification of null allele is a reliable and sensitive tool. It could be easily implemented in follow up of patient with cell infusion for liver disease.

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