The Factors Affecting Transplanted Hepatocytes Repopulation in Rats with Liver Fibrosis

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Background & Aims: Recently cell therapy for various diseases is widely accepted. Because the most of patients with chronic liver failure have a mild to severe liver cirrhosis, there are many limitations to try clinical applications. We analyzed how to increase the cell engraftment in rat with liver fibrosis.

Materials and Methods: We used analbuminemic SD rats (NARs) as recipients of syngeneic CAG-EGFP SD hepatocytes obtained by 2 perfusion method. The hepatic fibrosis was induced with thioacetamide in drinking water for 6 weeks in the recipient NARs. NARs were pretreated with Gadolinium, Doxorubicin and Gliotoxin before hepatocyte transplantation. We evaluated the degrees of cell engraftment by RT-PCR and immunofluorescent staining for GFP and albumin. The transplanted cells were detected by immunostaining for albumin and the serum albumin was also measured.

Results: Although the detection for GFP by RT-PCR was variable, the albumin was detected in all groups at 4 wks after hepatocyte transplantation. The GFP and albumin were also detected by immunofluorescent staining at 1 and 4 wks after cell transplantation. In control, the albumin production is maximal at 3 wks and after that it was rapidly decreased. In gadolinium and doxorubicin treated group, the albumin productions were increased up to 4 wks. The albumin production of gadolinium treated group was superior to that of doxorubicin treated group.

Conclusion: The kupffer cells play the most important role on cell engraftment in hepatic fibrosis. Therefore the perturbation to kupffer cells in hepatic fibrosis should be needed to increase the cell engraftment.