Cellular Transplantation and Tissue Engineering 2012 vol.7 N3, pages 169-172

Transplanted hepatic stellate cells participate in liver regeneration after partial hepatectomy without risk of hepatic fibrosis

Shafigullina A., Gumerova A., Trondin A., Titova M., Gazizov I., Burganova G., Kaligin M., Andreeva D., Rizvanov A., Muhamedov A., Kiassov A.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Hepatic stellate cells are considered as one of the potential stem cells candidates in the liver. The aim of our work was to study the probability of hepatic stellate cells transplantation to rats after partial hepatectomy, their further homing, the ways of differentiation and hepatocytes repopulation in the recipient liver. For this reason fresh isolated rat's hepatic stellate cells were transplanted into portal vein of intact rats (control group) and rats immediately after partial hepatectomy (experimental group). Before transplantation cells were labeled by adenovirus expressing green fluorescent protein. Our results showed that it was possible to detect 2 types of donor cells in the recipient liver of control and experimental groups:1) hepatocyte-like cells in liver parenchyma;2) small, spindle-shaped, rounded and triangular cells in liver sinusoids and portal areas. Transplantation after partial hepatectomy leads to significant increase of transplanted cells homing and stimulation of their differentiation into hepatocytes. Over the whole experiment there was no hepatic stellate cells transdifferentiation into myofibroblasts, thus there is no risk of liver fibrosis development after this cell type transplantation. In summary hepatic stellate cells after being transplanted are able to differentiate into hepatocytes and do not induce liver fibrosis, that confirms their role in organ regeneration and probable belonging to hepatic progenitor cells.

Keywords

Hepatic stellate cells, Hepatocytes, Myofibroblasts, Partial hepatectomy, Regeneration, Transplantation