

The Hepatic Stellate Cell and Its Role in Human Liver Diseases

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The hepatic stellate (Ito) cell lies within the space of Disse and has a variety of functions. Stellate cells store vitamin A in characteristic lipid droplets. In the normal human liver, the cells can be identified by the presence of these lipid droplets; in addition, many stellate cells in the normal liver express alpha-smooth muscle actin. In acute liver injury, there is an expansion of the stellate cell population with increased alpha-smooth muscle actin expression; stellate cells appear to play a role in extracellular matrix remodelling after recovery from injury. In chronic liver injury, the stellate cell differentiates into a myofibroblast-like cell with marked expression of alpha-smooth muscle actin and occasional expression of desmin. Myofibroblast-like cells have a high fibrogenic capacity in the chronically diseased liver and are also involved in matrix degradation. In vitamin A intoxication, hypertrophy and proliferation of the stellate and myofibroblast-like cells may lead to non-cirrhotic portal hypertension, fibrosis and cirrhosis. In liver tumours, myofibroblast-like cells are involved in the capsule formation around the tumour and in the production of extracellular matrix within it. The transition of stellate cells into myofibroblast-like cells is regulated by an intricate network of intercellular communication between stellate cells and activated Kupffer cells, damaged hepatocytes, platelets, endothelial and inflammatory cells, involving cytokines and nonpeptide mediators such as reactive oxygen species, eicosanoids and acetaldehyde. The findings suggest that the stellate cell plays an active role in a number of human liver diseases, with a particular reactivity pattern in fibrotic liver disorders.

Key words: *Hepatic Stellate cell, Liver Damage, Chirosis*