Expression of toll-like receptors in hepatic cirrhosis and hepatocellular carcinoma

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Received August 11, 2015
Accepted September 9, 2015
Published July 15, 2016
DOI http://dx.doi.org/10.4238/gmr.15027419

ABSTRACT. Toll-like receptors (TLRs) can specifically identify pathogen-associated molecular patterns (PAMPs) by recognizing structural patterns in diverse microbial molecules, and can provide an effective defense against multiple microbial infectious. A variety of TLRs can be expressed on the surface of liver parenchymal as well as nonparenchymal cells. Kupffer cells are a type of hepatic nonparenchymal macrophage, and are positively associated with the severity of liver fibrosis. They play an important role in the synthesis and deposition of the extracellular matrix by upregulating the expression of tissue inhibitor of metalloproteinases and downregulating the activity of matrix metalloproteinases. Cirrhosis, a chronic diffuse lesion usually accompanying extensive liver fibrosis and nodular regeneration, is caused by liver parenchymal cells repeating injury-repair following reconstruction of organizational structure in the hepatic lobules. Hepatocellular carcinoma is caused by repeated and persistent chronic severe liver injury, and partial hepatocytes can eventually transform into hepatoma cells. Multiple TLRs such as TLR2, TLR3, TLR4,
and TLR9, as well as other receptors, can be expressed in cirrhosis and hepatocellular carcinoma. About 53 and 85% of hepatocellular carcinoma patients frequently express TLR3 and TLR9, respectively. The chronic and repeated liver injury caused by alcohol, and HBV, HCV, or other pathogens can be recognized by TLRs through the PAMP pathway, which directly increases the risk for hepatic cirrhosis and hepatocellular carcinoma. In this review, we briefly present evidence that the novel cellular molecular mechanisms of TLRs may provide more information about new therapeutics targets of the anti-inflammatory immune response.

**Key words:** Toll-like receptor; Innate immunity; Hepatic cirrhosis; Hepatocellular carcinoma