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Impact of cold ischemia on cytokines after partial liver transplantation in rats

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ABSTRACT. To study the impact of cold ischemia on tumor necrosis factor-alpha (TNF-α) and interleukin-10 (IL-10) expression after liver transplantation, a stable model of partial liver transplantation in rats was established. The experimental animals were divided into the following groups: a partial hepatectomy control group, a group that received partial liver transplantation after 30 min of cold ischemia (experimental group A), and a group that received a partial liver transplantation after 10 h of cold ischemia (experimental group B). The survival rate was observed in each group. The liver tissue was sampled 1, 2, and 4 days after surgery, and immunohistochemical detection of proliferating cell nuclear antigen TNF-α and IL-10 was performed. The correlation between liver regeneration and TNF-α and IL-10 expression was analyzed, and the impact of the 2 cytokines on rat liver regeneration after liver transplantation was evaluated. The survival rates of rats in the partial hepatectomy control group, in the group that received a partial liver transplantation after 30 min of cold ischemia, and the group that received a partial liver transplantation after 10 h of cold ischemia were 100, 70, and 33.3%, respectively. The expression of proliferating cell nuclear antigen and TNF-α was decreased ($P < 0.05$), and IL-10

expression was increased ($P < 0.05$) in animals that received a partial liver transplant after 10 h of cold ischemia compared with that in the animals that received a partial liver transplant after 30 min of cold ischemia. We conclude that with the extension of cold ischemic time, liver regeneration and survival rate after liver transplantation decreased. TNF-α and IL-10 play important regulatory roles in the regeneration process of transplanted livers.

Key words: Liver transplantation; Liver regeneration; Interleukin-10; Tumor necrosis factor

