Abstract

Partial hepatectomy is greatly indicated for hepatocellular carcinoma as the main curative approach. The present work aimed to study the role of hepatic stellate cells and angiogenesis in liver regeneration after 70% partial hepatectomy in rats. Forty male albino rats were randomized into 5 groups of eight rats each; group I was the sham control group, and groups II, III, IV and V in which the animals were sacrificed 3, 7, 14 and 21 days postoperatively.

At the time of scarification of each group, specimens were taken and fixed immediately in 10% buffered formalin for histological and immunohistochemical studies. Image analysis and statistical analysis of the obtained results were performed. H & E and immunohistochemical staining for proliferating cell nuclear antigen (PCNA), vascular endothelial growth factor (VEGF) and α-smooth muscle actin (α- SMA) were done.

The results of the study proved that partial hepatectomy stimulated regeneration in the remaining liver lobes with reconstitution of the liver mass 21 days postoperatively. The liver showed disturbed histological architecture with distortion of the neatly arranged hepatocyte plates in group II which was restored in the following groups. Wide distribution of Kupffer cells, enlargement of the sinusoidal endothelial cells was also noted in group II and continued in group III. The PCNA and VEGF activity showed significant reaction in groups II and III while, insignificant imunoreaction was reported in groups IV and V in relation to control. The α- SMA showed significant reaction in group II only however, insignificant immunoreaction was reported in the remaining other groups.

It was concluded that partial hepatectomy stimulated liver regeneration and this process was associated with angiogenesis and HSCs activation as denoted by VEGF expression and α- SMA expression respectively.

Key word: Hepatocellular carcinoma, partial hepatectomy, liver regeneration, immunohistochemistry.