

The Phenomenon of Fetal Liver Regeneration Activity After Liver Resection

Davit Tophuria¹, Inga Kakhniashvili², Levan Benashvili³, Maia Matoshvili⁴, Nino Adamia⁵

Tbilisi State Medical University, Tbilisi, Georgia

Departments: Human Normal Anatomy¹, Clinical Skills², Topography Anatomy³, Dermato-Venereology⁴, Pediatric⁵

¹Supervisor MD, PhD, Associate Professor; ²MD, PhD Student; ³MD, PhD, Assistant Professor; ⁴MD, PhD; ⁵MD, PhD

Background: The process of liver regeneration is very complex and is dependent on the etiology and extent of liver damage and the genetic background. Liver regeneration is still not fully understood. The liver is a unique organ, and first in line, the hepatocytes encounter the potential to proliferate during cell mass loss. This phenomenon is tightly controlled and resembles in some way the embryonic co-inhabitant cell lineage of the liver, the embryonic hematopoietic system. **Methodology:** The experimental research was conducted on white lab rats. The animals were divided in two groups. First group consists of fetal rats (two weeks old), second group – 5 month age mature female rats. In both of groups was done 25% resection of liver tissue. After 24, 48 and 72 hours was investigated time of maximal activity of DNA, mitochondria synthesis and hepatocytes proliferation. **Results:** Laboratory investigations were shown, that after 24 hours in 1-st group was significant increase of mitochondria synthesis. After 48 hours in 1-st group of experimental animals was not changes of hepatocyte size, while in 2-nd group were seen hepatocyte enlargement and temporary increase in numbers of lysosomes, autophagosomes, and micro bodies. There was the different commencement of DNA synthesis and mitosis in the hepatocytes of 1-st with later extension in the hepatocytes of 2-nd group. Thus, the time of maximal activity was indicated in 1-st group much more earlier than in 2-nd group of experimental animals.

Key words: *Liver, Regeneration, Hepatocyte.*