

MORPHOMETRIC CHARACTERISTICS OF THE LIVER DURING PREGNANCY IN EXPERIMENTAL ACUTE RENAL FAILURE

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Abstract: Acute renal failure during pregnancy significantly affects liver morphology and function, remaining an urgent clinical and social problem [1]. The study aimed to evaluate morphological and morphometric changes of the liver in pregnant white rats with experimentally induced chronic renal failure.

Keywords: pregnancy, acute renal failure, liver morphology, morphometry, hepatocytes

Materials and Methods. The research was conducted on 60 pregnant white rats. Acute renal failure was modeled and liver samples were analyzed histologically and morphometrically after one month. Statistical analysis was performed using Student's t-test and Fisher's exact test.

Results. Histological examination revealed protein and fatty dystrophy in hepatocytes, vacuolization of the cytoplasm, and a decline in binuclear cells. Hepatocyte nuclei appeared shrunken with basophilic staining, while the cytoplasm contained numerous vacuoles of varying sizes. Structural deformations included thickening of arterial walls, narrowing of vascular lumina, and marked inflammatory infiltrates [2;3].

Morphometric evaluation showed that hepatocytes and their nuclei were moderately enlarged, while sinusoidal spaces exhibited dilation and reduced density. The portal vein and hepatic artery diameters were increased, indicating vascular remodeling. Microscopic analysis confirmed the reduction in mitochondria and glycogen granules, as well as dilation of endoplasmic reticulum cisternae. These ultrastructural alterations reflected impaired hepatocellular metabolism and synthetic activity.

Moreover, deformation of interlobular bile ducts and decreased ductal diameter indicated impaired biliary transport. Sinusoids were compressed by hypertrophied hepatocytes, leading to an eleven-fold reduction in their volumetric density.

Conclusion. Experimental chronic renal failure in pregnancy leads to severe degenerative and structural changes in the liver, impairing hepatocellular synthetic function and biliary system integrity. These findings highlight the importance of early diagnosis and preventive strategies in obstetric practice.





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