Comparative characterization of liver morphometric parameters during pregnancy in experimental chronic renal failure

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Abstract. Comparative characterization of liver morphometric parameters during pregnancy in experimental chronic renal failure. We studied morphological and morphometric indicators of the liver of pregnant white rats. We learned the following:

1. Deformation of the wall of the central vein and dimensions of the space.

1 Introduction

Treatment of liver pathologies in chronic kidney failure observed during pregnancy and prevention of their consequences remains a medical and social problem in the world. Despite the development of prevention, diagnosis and treatment methods of liver diseases, the death rates are taking the leading places. [1]. Currently, in our country, special attention is paid to improving the quality of social protection and health care system, diagnosis and treatment of chronic liver diseases. [12]. We studied morphological and morphometric indicators of the liver of pregnant white rats. We learned the following:

1. Deformation of the wall of the central vein and dimensions of the space.
2. Small-sized vacuoles (droplets) in the cytoplasm of hepatocytes. Hepatocytes - the nucleus is in the center, basophils are stained. [13].
3. The space of the sinusoid space and the perisinusoid area (Disse) is narrowed.
4. We found out that Kupffer cells and binucleated hepatocytes are numerous

2 Materials and methods

7 months pregnant, 1 month after experimental chronic renal failure, a total of 150 white outbred rats.

Histological study of cellular structure of the liver after experimental chronic renal failure in non-white pregnant rats. General morphological examination by staining with hematoxylin and eosin; Morphometric - study of hepatocyte sizes; statistical - methods are used.

3 Results

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<th>The length of the liver</th>
<th>The width of the liver</th>
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Hepatocytes are the main cells of the liver. Hepatocyte cell structure is cubic or polygonal. The nucleus is in the center of the cell, round in shape - in most cases it has two nuclei. The cytoplasm is stained with eosinophils. Its cytoplasm is rich in endoplasmic reticulum (organelle synthesizing blood plasma proteins) and a large amount of granular endoplasmic reticulum (organelle synthesizing toxins, bilirubin and bile). The following surfaces are distinguished in hepatocytes. [6].

Sinusoidal surface of hepatocytes. It is the surface facing the sinusoidal capillaries, and carries out the exchange of substances and the synthesis of proteins.

The synthesis of bile fluid is carried out on the surface of the billiard table.

The apical surfaces of two side-by-side hepatocytes have pits in their membrane, which unite to form the wall of the bile duct. Hepatocytes are surrounded by fine connective-reticulin fibers and form a stroma. Hepatocytes join together to form a liver plate. [2]. The plates form an anastomosis with each other, and sinusoid capillaries, which are branches of the portal vein and hepatic artery, are located between them. The walls of sinusoidal capillaries contain fenestrated endothelium and stellate reticulo-endotheliocytes and even Kupffer cells [4]. The basal membrane consists of incomplete fenestrae. Kupffer cells have the following functions: Phagocytosis of blood-borne antigens. [7]. It breaks down old erythrocytes, binds iron with ferritin protein, stores it as a reserve and participates in the formation of erythrocytes when necessary. Accumulation of vitamin A and fat-soluble vitamins. Synthesis of extracellular matrix, i.e., myofibroblasts at the site of injury.

Liver lobes are the structural and functional unit of the liver. Central vein (Vena centralis) is located in the middle of each lobe. Sinusoidal capillaries and the liver plate are directed radially to the central vein. The lobes of the liver are separated from each other by interlobular connective tissue, and in this area the liver triad (artery, vein, and bile ducts) is located.
4 Discussion and conclusions

The results of the study of the morphology and structural changes of liver hepatocytes reveal the complex mechanisms of the processes in the liver that occur after experimental chronic kidney failure in the body, allow to expand the level of theoretical knowledge about the organs of the digestive system. [3]. About 70% of the living organism consists of water. 81 of the 92 elements found in nature are found in the human body. 1 liter of potable water should contain the following amounts of trace elements:

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Development of measures to prevent pregnancy-related changes in the structures of the liver in experimental chronic renal failure, increase the quality of effective treatment methods during the disease and when complications are observed, early diagnosis of liver pathologies observed in experimental chronic renal failure, and the effectiveness of using Joyzar water are evaluated [14].

The developed morphometric criteria for evaluating liver components in experimental chronic renal failure will increase knowledge about renal failure and help to create preventive measures to prevent this pathology in pregnant women [15]. In our experiment, in order to study the beneficial aspects of microelements, the amount of their compounds and minerals in the composition of Joyzar water, we corrected the liver of pregnant rats with chronic kidney failure with this water. In addition to the above microelements, it was found that Joyzar water also contains secondary microelements. For example, the presence of zinc microelement and its compounds: actively participates in the metabolism of proteins, carbohydrates, fats and nucleic acids. Parenchymatous protein (hydropic) dystrophy was eliminated in hepatocytes, the nucleus of hepatocytes was in the center, enlarged basophils were stained, vacuoles (droplets) of different sizes of cytoplasm were reduced.

The presence of copper microelement and its compounds has regenerative functions, growth and development, active participation in blood creation, oxidation-reduction, humoral immunity and tissue oxygenation; In the hepatocytes, fatty (fatty) droplets have been replaced, hypertrophied hepatocytes have been identified, and the number of Kupffer cells has increased. The presence of selenium and its compounds in the composition of glutathione peroxidase prevents the peroxidation of lipids and prevents damage to the cell membrane. [11].

We can see that the deformation (sclerotic changes) of the liver triad (vein wall) has been replaced by regenerative (increased endothelialocytes), light pink thin collagen fibers are rare. Sodium and potassium carbonate compounds have an effect on the sodium and potassium pumps in the cell membrane and restore their function; the reduction of swelling in the body, the slowing down of proteins, indicates the restoration of the endoplasmic reticulum. Normalization of albumin and globulins indicates the absence of proteinuria. Based on the above morphological and morphometric indicators, the presence of microelements and their compounds necessary for the body in the Joyzar water contributes to the return of the body to an active lifestyle and a healthy life.
References


22. D. Zaripova, R. Sharipova, Academicia an international multidisciplinary research journal 10(8), 422 (2020).