MORPHOFUNCTIONAL FEATURES OF THE LIVER ON THE BACKGROUND OF HEPATIT C WITH CORRECTION BY A MEDICINAL PLANT

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Relevance. Liver damage causes serious disorders in the regulation of metabolism, detoxification and antimicrobial protection, because the liver performs vital functions and contributes to the functions of many body systems. The liver participates in the metabolism of all nutrients, in digestion, synthesis and reservation of substances necessary for the body, in the breakdown, detoxification and excretion of unnecessary or harmful substances, in hematopoiesis and the implementation of a number of other functions. In economically developed countries, chronic liver diseases are among the six main causes of death in patients aged 35 to 60 years, accounting for 14-30 cases per 100,000 populations. Every year, 40 million people die worldwide from cirrhosis of the liver and hepatocellular carcinoma, which develops against the background of hepatitis B virus carriage. In the CIS countries, cirrhosis occurs in 1% of the population. It is more common in men: the ratio of men to women is on average 3:1. The disease can develop in all age groups, but more often after 40 years [1,2].

The purpose of the study. To create a modified model of liver damage with carbon tetrachloride, to identify organ pathology through biochemical and histomorphological studies, correction of impaired liver function against the background of a reproduced model of hepatitis c with a medicinal milk thistle plant grown in the fields of the Bukhara state medical institute named after Abu Ali ibn Sino [3,5].

Materials and methods of research. Experiments were carried out on 60 white mongrel male rats weighing 200-220 g. 1 group of 30 rats were injected with carbon tetrachloride (CC14) in vaseline oil in a ratio of 1:1 using a special probe into the esophagus (dose – 0.064 ml per 100 g of animal weight). Group 2, together with carbon tetrachloride (CC14), were also given the medicinal plant milk thistle in the form of a powder diluted with water, administered to rats (10 g) orally through a 3 ml probe [4,6]. The following biochemical blood parameters were studied: the first and second groups, respectively: the amount of total bilirubin, alanine aminotransaminase (ALT), aspartate aminotransaminase (AST), activity of alkaline phosphatase (alkaline phosphatase), γ-glutamintransferase. To confirm the model of liver pathology, the organ biopsy was subjected to histomorphological analysis. The methodology is as follows. Sections of rat liver tissue measuring 5 cm were fixed in a 10% formalin solution for at least 3 days. Then the starting material was placed in a 20% formalin solution for 1 day, washed with running water for another 1 day [7]. After the fixation of the materials on the microtome, sections of liver preparations were made, which were studied under a microscope. The fixed material for

dehydration and preparation for pouring with pure paraffin was placed in an alcohol solution with increasing strength: 70% – 86% – 96% – 100% 7 hours in each concentration. Then the material was transferred to a mixture of chloroform and 100% alcohol solution for 9 hours, separately in chloroform it was kept for another 10 hours [8,9]. A mixture of chloroform and paraffin at +37 ° C was placed in a thermostat for 12 hours. For the manufacture of blocks, the filling with pure paraffin was made into paper boxes, from which paraffin blocks were subsequently made. The cutting was performed on a microtome MS-2. Hemotoxylin was used to color the sections, the preparations were kept in the dye for 5 minutes, then washed with distilled water. The resulting preparations were photographed. The analysis of the obtained results was evaluated by microscopy of the material [10]. All studies were conducted in accordance with the ethical requirements for working with experimental animals.

Results and discussion. In the first group of laboratory rats, cytolysis of a significant part of hepatocytes was observed after 5 days under the action of carbon tetrachloride, Kupfer cells were damaged, cell nuclei were compacted, the inflammatory process and liver cell dystrophy began. Biochemical changes under the same conditions were expressed in an increase in ALT and AST activity by 2.1 and 1.8 times, respectively. A 3-fold increase in the activity of γ-HT, which is the main marker of hepatitis, and a 4% increase in alkaline phosphatase may indicate massive necrosis of hepatocytes arising under the action of carbon tetrachloride. On the 30th day of the experiment, the activity of the enzymes ALT, AST, alkaline phosphatase and γ-GT continued to increase and amounted to ALT-205me/l, AST-137 iu/L, γ-GT - 104 iu/L, alkaline phosphatase-334 iu/L, total bilirubin -96 mmol/L. Under the conditions of experimental modeling of toxic hepatitis with carbon tetrachloride, a stable form of damage to the rat hepatobiliary system was obtained, which was characterized by the death of part of the hepatocytes. The lesion pattern was expressed by the destruction of the outer membrane of hepatocytes, as a result of which the cell nucleus thickened, the inflammatory process and liver cell dystrophy began. Necrosis and cell death mainly occurred in the central zone of the hepatic lobe [8]. As a result of the destruction of the walls of blood vessels, blood mixed with bile, and acute toxic hepatitis occurred in experimental animals. This provision indicates damage to the membranes of hepatocytes, an increase in their permeability, as well as the death of liver cells caused by the introduction of carbon tetrachloride, which is accompanied by the release of intracellular substances into the blood and lymph [8]. An increase in the activity of γ-HT and alkaline phosphatase may also indicate massive necrosis of hepatocytes that occur under the influence of carbon tetrachloride. Against the background of high activity of γ-GT, an increase in the concentration of total bilirubin occurs, which gives reason to assert that in experimental rats there is not only the formation of cytolysis, but also the development of intracellular cholestasis syndrome.

In the second group, under conditions of reproduced hepatitis with the use of milk thistle drug for 30 days, significant protection of the hepatobiliary system was revealed,

which was expressed by a significant improvement in biochemical parameters: the amount of ALT, AST and alkaline phosphatase increased with less aggressive indicators and amounted, respectively, ALT-115 iu/l, AST-95 iu/l, γ-GT -77 iu/l, alkaline phosphatase-221 iu/l, total bilirubin -64 mmol/l.

When comparing the results of groups 1 and 2, it was revealed that the new medicinal plant milk thistle has a significant hepatoprotective property, contributing to a decrease in the manifestations of toxic, cytolytic and cholestatic effects of carbon tetrachloride in experimental rats. Based on the results obtained on the use of milk thistle, its action is aimed at maintaining homeostasis in the liver damaged by carbon tetrachloride, increasing its resistance to the action of a toxic factor, normalizing functional activity and stimulating regeneration processes in the liver. The listed effects under the action of milk thistle indicate significant protection of the rat hepatobiliary system against the background of toxic hepatitis caused by tetrachloromethane [11]. The medicinal plant milk thistle, which contains a large amount of flavonoids, has a significant hepatotropic and detoxifying effect. Given the significant damage to liver tissue by carbon tetrachloride, even minor protection of hepatocytes by milk thistle can be considered pathogenetically acceptable due to the partial restoration of the number and function of hepatocytes. This is confirmed by the fact that herbal preparations with a membrane-stabilizing effect protect cells from the penetration of toxins into them. The products of this group also stimulate the antioxidant defense system, contributing to an increase in the content of reduced glutathione in the liver, as well as protein synthesis, which accelerates the regeneration of damaged hepatocytes [12]. Summing up, according to the study, the medicinal plant milk thistle grown in the fields of the Bukhara State Medical Institute named after Abu Ali ibn Sino has a unique phytopharmacological property inherent in the plants of this region, since they contain the largest amount of useful substances, in particular flavonoids [13].

Conclusion. In conditions of recreated toxic hepatitis, carbon tetrachloride obtained a stable form of damage to the rat hepatobiliary system, which was characterized by the death of part of hepatocytes and necrosis. The use of the drug milk thistle during the recreated toxic hepatitis, containing a large amount of flavonoids, contributed to a less pronounced toxic effect, a decrease in the severity of manifestations of cytolytic and cholestatic effects of carbon tetrachloride. Given the significant damage to liver tissue by carbon tetrachloride, even minor protection of milk thistle hepatocytes can be considered a pathogenetically acceptable effect.

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