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CHANGES IN IMMUNOLOGICAL PARAMETERS OF FATTY LIVER DISEASE
IN THE EXPERIMENT

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Relevance. Non-alcoholic fatty liver disease (NAFLD) is a chronic liver disease of metabolic origin associated with the accumulation of lipids in the cellular elements that make up the hepatic lobule, occurring in individuals in the absence of exogenous factors causing toxic liver damage. It is morphologically confirmed by steatosis, steatohepatitis, fibrosis, cirrhosis, or adenocarcinoma. The diagnosis of ALS is verified when there are more than 5% liver cells containing lipid deposits.

The aim of the study is to evaluate the practical significance of using early predictors in the diagnosis of fatty liver disease in a model of experimental animals.

Research materials and methods. The experimental study was conducted on sexually mature white outbred male rats with a body weight of 180–220 g. Laboratory animals were kept under standard vivarium conditions with an air temperature of 20–24 °C, relative humidity of 50–60%, and a 12-hour lighting regime. The rats had free access to drinking water and food. The study included 16 sexually mature white laboratory rats. Using the distribution method according to the nature of the experimental effect, the animals were divided into four groups: **Group I — control group** — 1 animal, **Group II — fatty diet group** — 6 animals; to model fatty hepatosis, the animals received a diet with an increased content of fats and easily digestible carbohydrates during the specified experimental period, **Group III — group administered antibiotics** — 5 animals received a standard vivarium diet and antibiotics according to the developed experimental scheme, **Group IV — group of combined effect of antibiotics and a fatty diet** — 4 animals received a simultaneous diet with an increased content of fats and antibiotics according to the established experimental scheme. At the end of the experimental period, blood samples were taken from the animals to determine biochemical and immunological indicators. In the blood serum, the activity of alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, gamma-glutamyltransferase, and lactate dehydrogenase was investigated. Statistical analysis of the results. Quantitative data were presented in the form of the mean and standard deviation in the normal distribution, and in the form of the median and interquartile interval in the non-normal distribution. The normality of the distribution was assessed using the Shapiro-Wilk test.

Research results. In the control animal, alanine aminotransferase activity was 34 U/L, aspartate aminotransferase was 86 U/L, alkaline phosphatase was 208.3 U/L, gamma-glutamyltransferase was 2.4 U/L, and lactate dehydrogenase was 75.5 U/L.

In animals receiving a high-fat diet, the average activity of ALT increased to **59.67 ± 23.11 E/l**, which was approximately 1.8 times higher than that of the control animal.



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AsAT activity was 124.00 ± 19.18 U/L, alkaline phosphatase was 281.83 ± 118.22 U/L, and LDH was 991.80 ± 775.91 U/L.

Conclusion. The most pronounced changes in enzymatic activity were identified in the group where antibiotics and a fatty diet were used together. In this group, ALT activity was 77.25 ± 30.37 U/L, which is approximately 2.3 times higher than the control value. AsAT activity reached 157.25 ± 28.50 U/L, which was 1.8 times higher than that of the control animal. The mean LDH activity was 1754.58 ± 905.41 U/L, exceeding the control value by more than 23 times. In the group of animals receiving only antibiotics, changes in enzymes were less pronounced. AlAT activity was 44.80 ± 14.62 U/L, AsAT was 103.80 ± 22.91 U/L, alkaline phosphatase was 158.44 ± 64.97 U/L, and LDH was 409.38 ± 290.67 U/L.