

CLINICAL MEDICINE: EXPERIENCE AND INNOVATIONS

DOI <https://doi.org/10.30525/978-9934-26-226-5-1>

CHANGES IN THE LIVER INDICATORS IN OBESITY PATIENTS IN COMBINATION WITH HYPERTENSION DISEASE

ЗМІНИ ПОКАЗНИКІВ ПЕЧІНКИ У ХВОРИХ НА ОЖИРІННЯ ВПОЄДНАННІ З ГІПЕРТОНІЧНОЮ ХВОРОБОЮ

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Nonalcoholic fatty liver disease (NAFLD) – is one of the most common non-viral and nonalcoholic chronic liver diseases [1]. NAFLD includes a steatosis, steatohepatitis and fibrosis which is often a cause of development of liver cirrhosis [2]. High incidence of NAFLD is being facilitated by increasing of number of people with obesity and diabetes mellitus. In particular, in patients with a Body Mass Index (BMI) of 35 kg/m² NAFLD occurs more than in 35% of individuals [3]. NAFLD is combined with pathology of the cardiovascular system, including hypertension and coronary heart disease in 14-20% of cases [4].

The aim of the study was to assess the impact of BMI on lipid spectrum of the blood, liver transaminases level, data of ^{13}C -Methacetin breath test and ultrasound change of liver tissue in obesity patients with combined with hypertension and NAFLD.

The study involved 40 obesity patients with stage II hypertension combined with NAFLD who were hospitalized with upset of the disease. There were 30 (75,6%) women and 10 (24,4%) men, mean age – $55,4 \pm 1,58$ years.

All patients underwent anthropometric, general clinical, laboratory and instrumental research methods. Height of patients was measured; body weight was determined and BMI was calculated according to generally accepted formulas. To assess abdominal obesity according to the recommendations of the International Diabetes Federation, waist circumference and hip circumference were additionally measured in patients and the ratio of these indicators was determined separately for men and women. All patients underwent ultrasonography of internal organs (USG), while special attention was paid to the size of the liver lobes, the density of its parenchyma, the degree of fibrosis and fatty infiltration, and the diameter of the portal vein (VP) was determined. Fatty infiltration of the liver was determined by the presence of an increase in its size, a diffuse homogeneous increase in its echogenicity, the appearance of the effect of distal shadowing, with the expansion of the VP. All patients underwent echocardiography too.

The levels of bilirubin and its fractions, total cholesterol, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, and triglycerides were determined in blood serum. The activity of aspartate aminotransferase (AST) and alanine aminotransferase (ALT) was also determined.

To determine the functional state of the microsomal enzyme systems of hepatocytes, the patients underwent a ^{13}C -methacetin breath test. Metacetin labeled with the non-radioactive carbon isotope ^{13}C was administered orally to these patients. During the test, ten breath samples were obtained: the initial one – before taking the test breakfast (75 mg of ^{13}C -metacetin dissolved in 200 ml of tea without sugar), another six samples – during the first hour (one every 10 minutes) and three – during the second hours (one every 20 minutes). Analysis of air samples was carried out on an infrared spectroscope IRIS (Germany, Wagner company).

The obtained results were processed statistically using the Student's test, Pearson's correlation analysis using the Microsoft Excel computer program.

All patients were divided into two groups depending on the level of BMI. The first group included 18 (45%) patients with a BMI

of 30.0 to 34.9 kg/m², second group – 22 (55%) patients with a BMI higher than 35 kg/m²

Third of patients had the following symptoms: fatigue, general weakness, decreased physical and mental performance, discomfort and heaviness in the right upper quadrant, bloating, and nausea. The most common clinical manifestation of fatty liver disease was a hepatomegaly syndrome. All patients have increasing size of the liver during percussion. Palpation of the liver in 90% of cases detected sharp edge, smooth surface and densely-flexible texture of liver. Signs steatohepatitis verified in 8 (20%) patients, portal vein diameter was over 13 mm.

We once again confirmed that the progression of NAFLD to the stage of steatohepatitis was accompanied by a more pronounced increase in systolic and diastolic blood pressure larger in comparison with steatosis of mass index of myocardium according to echocardiography and anterior-posterior size of the left atrium, indicating the progression of structural myocardial disorders [5].

The levels of hepatic transaminases did not change from normal, but in 12 (30%) cases of ALT and AST was increased. Examination of correlations between anthropometric and clinical and laboratory parameters showed a positive correlation between BMI/ALT ($r=0,64$), LDL/VP ($r=0,31$), LDL/AST ($r=0,43$). However, the results of ¹³C-Methacetin breath test a marked decrease in the rate of metabolism of the liver with increasing BMI ($p<0,05$). Increased BMI makes it possible to diagnose NAFLD in 19–35% of cases. USG makes it possible to qualitatively assess the specific changes in the liver – uniform seal structure of parenchyma, change of it echogenicity and to determine the diameter of the portal vein. In 30% of cases of steatosis and steatohepatitis accompanied by increased levels of ALT and AST. The most reliable information concerning abnormal liver function can be obtained using the ¹³C-methacetin breath test [6]. The rate of metabolism significantly decreases with increasing body weight.

Thus, in one third of patients with hypertension combined with obesity the fatty liver manifested typical clinical symptoms, a gradual increase in the level of transaminases and in 20% of cases – an increase in the diameter of the portal vein. As a result of ¹³C-Methacetin breath test decreasing of the rate of liver metabolism with increasing BMI has been noted. In patients with steatohepatitis the diameter of the portal vein often increases, as well as the levels of ALT, AST and reduced metabolic rate.

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