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LABORATORY AND INSTRUMENTAL APPROACHES TO DIAGNOSTICS OF NON-ALCOHOLIC FATTY LIVER DISEASE

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Non-alcoholic fatty liver disease (NAFLD) is a chronic liver disease with a metabolic pathogenesis, the prevalence of which is increasing worldwide. In some patients, the disease may progress to severe forms of liver disease, such as fibrosis and cirrhosis, which are associated with the risk of death. NAFLD is expected to become one of the leading causes of liver transplantation in the coming years. [1,3] The increase in the prevalence of the disease is associated with the growing epidemic of obesity and type 2 diabetes.[2] The pathogenesis of non-alcoholic fatty liver disease (NAFLD) is based on insulin resistance and hyperinsulinemia, which lead to significant disturbances in lipid and carbohydrate metabolism, as well as to an imbalance between the intake and utilization of fats. As a rule, NAFLD is asymptomatic and is detected accidentally during examination of patients seeking medical care for arterial hypertension, coronary heart disease, peripheral vascular pathologies, obesity, or type 2 diabetes.

The aim of the study. Determine the information content and diagnostic value of laboratory and instrumental methods in identifying non-alcoholic fatty liver disease (NAFLD).

Material and methods. The study examined 100 patients with non-alcoholic fatty liver disease and divided them into 3 groups according to the degree of steatosis. 34 patients were examined with grade 1 steatosis, 60 with grade 2 steatosis and 6 with grade 3 steatosis. The average age of the patients was 61.50. According to the results of the analysis of the patients participating in the study by gender, the female gender prevailed (57%), while the male gender was 43%. When assessing the predictors of high risk of NAFLD progression in patients, it was found that 69% of them suffered from metabolic syndrome, 18.9% from type 2 diabetes mellitus, and 52.2% from

hypertriglyceridemia. Thus, 70% of the examined patients belong to the high risk group of NAFLD progression. The diagnosis of NAFLD was verified based on clinical, biochemical and instrumental studies. As an instrumental method, all patients underwent ultrasound examination (US) of the liver.

Results

According to the results of the blood biochemical analysis of the study participants, it was determined that the indicators were within the reference level. The AST index was 25.0 ($Q_1 – Q_3$) (21.8 – 34.2), and the ALT index was 16.0 ($Q_1 – Q_3$) (13.0 – 20.5). As steatosis increased, AST (p=0.063) and ALT (p=0.049) also increased. The results of the study showed that blood glucose levels increased with the clinical stage of NAFLD. The median glucose level in stage 1 was 4.4 mmol/L, in stage 2 it was 4.9 mmol/L, and in stage 3 it was 5.3 mmol/L. The difference between the groups was statistically significant (p=0.008), and there was a particularly significant difference between stages 1 and 2 (p=0.009). These results indicate that changes in glucose metabolism are associated with the progression of NAFLD. The level of total bilirubin did not demonstrate statistically significant differences between groups with different degrees of NAFLD (p = 0.631). The average bilirubin values remained stable at all stages of the disease, which may indicate the relative independence of this indicator from the progression of NAFLD. According to the ultrasound examination of the liver, hepatomegaly was detected in 90 patients (90%). Increased echogenicity of the organ was observed in 88 people (88%). In 45 patients (45%), such changes as vascular pattern blurring and distal echo signal attenuation were noted.

Conclusion

The obtained data emphasize the importance of a comprehensive approach to the diagnosis and monitoring of patients with NAFLD, taking into account not only biochemical but also instrumental indicators, as well as risk factors for metabolic disorders.

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