isolated course of CKD ($p < 0.05$). The suppression of TFA occurred at the expense of the decrease of EF: in patients with NAS the index is significantly lower than the control in 1.2 times, in patients with NAS with CKD — in 1.4 times, in patients with NASH — in 1.7 times, in the group of patients with NASH and CKD — by 1.9 times, while in the group of patients with CKD, the suppression of EF was registered — 1.3 times ($p < 0.05$). At the same time, the NEF in patients of all groups increased in comparison with the PHP group: in patients with NAS, in 1.2 times, in patients with NAS with CKD — in 1.3 times, in patients with NASH — in 1.4 times, in the group of patients with NASH with CKD — 1.5 times, while in the group of patients with CKD the activation of NEF was registered 1.2 times ($p < 0.05$), with the presence of a probable difference between the groups with comorbidity and isolated course of CKD ($p < 0.05$).

Conclusions. Analysis of hemostasis and fibrinolysis indices in examined patients with NASH, depending on the stage of CKD showed that with the growth of the CKD stage, the activity of the cohort increases, with the exception of the fibrinogen content (most likely due to coagulopathy consumption), the activity of the anticoagulants decreases, the total and enzymatic activity of fibrinolysis is reduced, and non-enzymatic compensator increases. Thus, metabolic intoxication, oxidative stress, which accompany the flow of NAFLD with obesity and CKD, promote the activation of the kallikrein-kinin system, the formation of plasma and thrombin, with subsequent disturbance of equilibrium between them, the development of stasis, slag phenomenon, the formation of platelet and erythrocyte aggregates in blood circulation system. The consequence of significant activation of hemocoagulation against the suppression of total fibrinolytic activity (TFA) is the local clotting of blood in the arteries.

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The features of biochemical markers of liver fibrosis with non-alcoholic steatohepatitis in patients with I–II degree obesity and chronic kidney disease I–III stage

The purpose of the research — to find out the features of biochemical markers of liver fibrosis with non-alcoholic steatohepatitis in patients with I–II degree obesity and chronic kidney disease I–III stage, to establish the effectiveness of Heparhizine influence on the state of carbohydrate-protein components of the connective tissue of the extracellular matrix of the liver and kidneys.

Material and methods. 98 patients with non-alcoholic steatohepatitis on the background of I–II degree obesity were examined: 52 patients with non-alcoholic steatohepatitis (1st group) (without accompanying chronic kidney disease), 46 patients with non-alcoholic steatohepatitis with a comorbid chronic kidney disease I–III stage (2nd group). The control group consisted of 20 practically healthy persons (PHPs) with the corresponding age and sex. Biopsy of the liver was performed on 32 patients with non-alcoholic steatohepatitis with the accompanying of chronic kidney disease I–III stage, 28 patients with non-alcoholic steatohepatitis without chronic kidney disease. Patients on both groups of non-alcoholic steatohepatitis received Heparhizine treatment (glycyrrhizin 40 mg, glycine 400 mg, L-cysteine hydrochloride 20 mg) (Valartin Pharma) by intravenous administration of 20 ml of the drug for 10 days followed by enteral administration of 2 tablets of Heparhizine (1 tablet: glycyrrhizin 25 mg, glycine — 25 mg, methionine — 25 mg) 3 times a day for 80 days. Patients with non-alcoholic steatohepatitis with a comorbid flow of non-alcoholic steatohepatitis, obesity and chronic kidney disease of the I–III stage, except heparisin, they received baseline therapy of chronic kidney disease I–III stage: chronic pyelonephritis (course of antibacterial drugs, uroseptics, cainfron). The examinations were carried out prior to treatment and on the 90th day of treatment.

Results. The study showed that in the case of non-alcoholic steatohepatitis that develops on the background of obesity and chronic kidney disease on the I–III stage, the presence of fibrotic changes in the liver tissue was established, which according to the biochemical index of fibrosis, exceeds those in patients with non-alcoholic steatohepatitis without comorbidity with kidney pathology. in patients with non-alcoholic steatohepatitis, which was accompanied by obesity, a significant increase in the synthesis of collagen and glycosaminoglycans which was accompanied with an ineffective resorption of newly formed collagen due to inhibition of the collagenolytic activity of blood plasma, due to significant activation of proteinase inhibitors (α2-MG) was observed with a significant imbalance in the system of connective tissue metabolism.

Conclusions. Under the conditions of the comorbidity of non-alcoholic steatohepatitis with chronic kidney disease I–III stage, collagen synthesis and resorption are activated, but the anabolism processes predominate, in spite of the compensatory activation of collagenolysis, a substantial hyperproduction of actinic-phase proteins, fibronectin, glycosaminoglycans, fibroblast growth factor and lead to progressive fibrosis of the liver and disturbance of its functions.

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The pathogenetic features of nonalcoholic steatohepatitis course with obesity and chronic kidney disease

The purpose of the study was to determine the pathogenetic role of the bacterial endotoxin content in the blood on the hepatocytes damage markers, the degree of steatosis and liver fibrosis in patients with NASH with obesity, depending on the form and stage of CKD and their progression.

Materials and methods. To realize this goal 170 patients with NASH aged 40–55 years were examined. All patients were distributed as follows. Group 1 consisted of 70 patients with NASH with concomitant obesity 1st degree.

Group 2 consisted of 100 patients with NASH and obesity 1st degree with a comorbid CKD of I–II st. (chronic pyelonephritis). We examined 30 practically healthy persons (PHPs), which by age and sex were not statistically significantly different from the main group and the comparison group.

Results. The article presents the theoretical generalization of the features of the microbial state of the colon cavity (MSCC) during the comorbid flow of non-alcoholic steatohepatitis (NASH) with obesity and chronic kidney disease (CKD) of the I–III stages, which is characterized by the development of deep dysbiosis (II–III st.) with the appearance and prevalence of pathogenic microflora, an increase in the number of opportunistic bacteria and yeast fungi of the genus Candida, a probable deficiency of representatives of normal microbiota: lactobacilli, bifidobacteria, bacteroids.

Conclusions. As a result of the study, it was found that the bacterial endotoxin content in the blood has a high predictive value as a marker for the progression of NASH on the background of CKD and obesity with a growth above 0.23 EO/ml (sensitivity 87.1 %, specificity 91.6 %).

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Apolipoprotein A1 and coefficient of atherogenicity at experimental abdominal sepsis

The purpose of this study was to study content the apolipoprotein 1 and coefficient of atherogenicity at experimental abdominal sepsis.

Materials and methods. It was carried out the research of apolipoprotein 1 and coefficient of atherogenicity at experimental abdominal sepsis in 13 rats with experimental abdominal sepsis. It was used male rats. The weight of rats was 150–199 g. Model of abdominal sepsis in rats was made by a way of introducing 30 % stool suspension intraperitoneally. Through 24 hours after the start of the experiment it was carried out blood examination. The coefficient of atherogenicity was defined as the subtraction α-lipoproteins from cholesterol and division on α-lipoproteins.

Results. It was carried out assessment the general condition of rats (condition of the wool, breathing, weight loss, presence or absence of diarrhea, disorder orientation in space and disorder activity in the rat ant other). On the first day of the experiment the content of apolipoprotein 1 decreased to 0.14 ± 0.04 g/l, which could be caused by an increase in endogenous intoxication. It was knows that of apolipoproteins are a protein part of lipoproteins. One of the important functions of apolipoproteins is specific immunological defense against microorganisms. There are isolated data on the relationship between changes of apolioprotein 1 content and the development of sepsis. After evaluating the coefficient of atherogenicity, we obtained results that showed its reduction. The coefficient of atherogenicity was 0.48, which is due to the growth of both α-lipoproteins and the growth of cholesterol. Cholesterol content was increased to 2.11 ± 0.05 mmol/l in these rats. We found changes in lipid metabolism after 24 hours of the experiment which characterized by a violation of the content of α-lipoproteins. Their content increased and amounted to 1.42 ± 0.04 mmol/l compared with control group. In processing the inflammatory process, α-lipoproteins acquire pro-inflammatory properties and promote the outflow of cholesterol from cells. Compared with the control parameters, the content of β-lipoproteins varied slightly and amounted to 0.23 ± 0.02 mmol/l.

Conclusions. Lipoprotein metabolism take a part in development of abdominal sepsis, as indicated by an increase in cholesterol, α-lipoproteins. Given the conflicting data and the relevance of the topic, the state of lipid metabolism in abdominal sepsis requires further analysis and study.

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The hormone-like cytokines usage for liver fibrosis diagnostic in patients with non-alcoholic steatohepatitis

Background. The hormone-like cytokines considered crucial players in inflammatory-associated disorders. Non-alcoholic fatty liver disease (NAFLD) is characterized by excess lipid accumulation and in a substantial subset of patients with inflammation in the liver — non-alcoholic steatohepatitis (NASH) development. Such cytokines play a central role in many stages of liver diseases mediating fundamental aspects of those diseases like lipid metabolism, cholestasis, fibrosis and, also, regulate crucially the development of insulin resistance. Non-invasive measurement of hormone-like cytokines could be used for screening of individuals with high metabolic risk, identify patients with a poor prognosis, assess the progression of the disease, predict the response to therapeutic treatment. Achieving these goals will reduce the need to perform a liver biopsy.

The purpose was to evaluate the association of serum fibroblast growth factor 21 (FGF21) with liver fibrosis stage and metabolic markers in NASH patients.

Materials and methods. Fasting serum FGF21 was measured in 60 NASH patients (mean age 50.1 ± 6.9 years; 56.6 women). In addition to basic laboratory tests and ultrasonographic examination, the Fibromax test (Biopredective, France) were performed.

Results. Patients with NASH have higher serum FGF21 than those without (309.4 (279.4; 425.6) pg/ml Vs 99.5 (88.2; 117.5) pg/ml ($p < 0.001$). FGF21 correlated positively with BMI — direct link — $r = 0.31$ ($p < 0.001$), total cholesterol $r = 0.41$ with triglycerides $r = 0.36$ ($p < 0.001$); indicators of carbohydrate metabolism: with glucose — $r = 0.48$, $r = 0.41$ with insulin and $r = 0.42$ with a HOMA index ($p < 0.001$) regardless of patient gender. In logistic regression analysis, circulating FGF21 was found to be an independent predictor for subclinical atherosclerosis ($P = 0.022$) in addi-