VC. ECG data did not reveal the negative impact of the therapy with tiotropium bromide inhalation to the cardiovascular system.

Thus, the combination of COPD and IHD is a frequent comorbid disorder with the development of mutual aggravation syndrome. This combination is characterized by a more pronounced progression of COPD, is manifested by development of lung restriction and decreased reversibility of airway obstruction, reduced response to therapy with bronchodilators and worsening of quality of patients` life.

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**THE IMPACT OF LIVER INFLAMMATION ON THE RENAL BLOOD FLOW IN HEPATORENAL SYNDROME**

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Hepatorenal syndrome (HRS) is a relatively common complication of cirrhosis and occurrs in 39% of cirrhosis patients within five years since the diagnosis has been made. Generally accepted theory is that blood vessels of kidneys constrict because of the dilation of blood vessels in the visceral circulation, which is caused by factors of the liver disease. Histamine, prostaglandins, and nitrous oxide (NO) affects unstriated muscle structure of vessels, causing the dilation of blood vessels, which increases the blood flow and circulating leukocytes in it. But the role of inflammatory cytokines in the pathogenesis of hepatorenal syndrome is still under the study.

The objective of the study was to analyze the impact of liver inflammation on the renal hemodynamic disoders in HRS. We examined 90 patients in total: 30 – with alcoholic liver cirrhosis (ALC)+normal renal function (group 1); 30 ALC+renal failure, but without HRS criteria (group 2); 30 ALC+HRS (group 3). We measured IL-6 and TNF-α levels in the blood serum by the kits of Immunoassay Cytoscreen (Biosource International, Camarillo, CA, USA), and NO level by Griess reaction. The index of interlobar arterial resistance (IARI) was estimated with the data of duplex dopplerography.

The mean value of IARI in group 3 (0.76±0.02) was statistically higher than in group 1 (0.64±0.04) and group 2 (0.68±0.01) ($p<0.05$). The numbers of NO were the highest in group 3 – 28.5=3.2 mmol/L in comparison with 16.2±2.5 mmol/L in group 1. There was no statistically significant differences between NO levels in groups 1 and 2 (17.6±2.3 mmol/L) ($p>0.05$). TNF-α levels in the blood serum were significantly overstated in group 3 – 2.79=0,68 pg/mL ($p<0.05$) in comparison with 1.89±0.34 pg/mL - in group 2 and 1.89±0.34 pg/mL – in group 1. Group 3 also revealed high level of IL-6 – 15.35±0.93 pg/mL ($p<0.05$), while in group 1 and 2 it was 12.39±1.07 pg/mL and 11.64±1.32 pg/mL respectively.

Spearman's rank correlation analysis revealed the direct correlation between IARI and NO in the blood serum ($r=0.86$), IARI and levels of TNF-α in the blood serum ($r=0.73$), IARI and IL-6 in the blood serum ($r=0.67$) ($p<0.05$).

Thus, this paper proves that proinflammatory cytokines, including TNF-α, IL-6 and NO, play a key role in the pathophysiology of HRS. The identification of serum levels of these cytokines, along with the routine biochemical and ultrasound examination, can help in early detection of renal hemodynamic disorders in patients with ALC even before renal disfunction becomes clinically evident. It also makes possible the identification of a subgroup of ALC patients who have higher risks for HRS progression.

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**STATE OF PLATELET-VESSEL HEMOSTASIS IN PATIENTS WITH HYPERTENSION, ABDOMINAL OBESITY AND NONALCOHOLIC FATTY LIVER DISEASE**

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The aim of the research was to investigate the association of nonalcoholic steatohepatitis and steatohepatosis in patients with essential arterial hypertension (EAH) and abdominal obesity (AO) with signs of platelet-vascular hemostasis depending on the degree of obesity.

96 patients with nonalcoholic fatty liver disease (NAFLD), EAH 2nd stage, 1-2 degree, high and very high risk with concomitant AO, metabolic syndrome (MS): men – 41,67 % (40), women – 58,33 % (56), the average age was 53,70 ± 5,34 years, were involved in the prospective research. Abbreviated blood coagulogram has been studied by indexes of activated plasma recalcification time (APRT), recalcification time (RT), prothrombin index (PI), content of fibrinogen A (FGA); density of blood – by indexes of haematocrit (HT). Function of the liver has been studied by the activity of enzymes.

First degree abdominal obesity (AO) was found in 27,08% (26) people, OB II degree – in 58,33 % (56), OB III degree in 14,58 % (14) patients; steatohepatitis with minimal activity of mesenchymal-inflammatory process has been established in 16,67 % (16) people, steatohepatosis – in the other 83,33 % (80) of patients. There has been established reliably higher level of PI, RT and CF in patients with EAH and AO I degree than in those with AO III degree by 9,94 % ($p = 0,048$), 13,88 % ($p = 0,029$) and 2,31 times ($p = 0,003$), respectively. Obtained data confirm a slowdown in the clotting process in two levels at a time: extension of the period of active thrombin generation by an external mechanism in the activation of compensatory fibrogenesis (pas factor and fibrinogen). The increase of FGA plasma content in patients with AO I degree against the background of higher content of leukocytes in the peripheral blood 25,92 % ($p =$

0,002), the indicators of the latter do not exceed the reference value, additionally confirms the possible presence of inactive inflammation. Changing the primary hemostasis indexes considering the type of NAFLD has demonstrated the higher level of FGA by 56,71 % (p = 0,008) and leukocytes – by 20,25 % (p = 0,021) in patients with steatohepatitis than in patients with stetohepatosis.

Changes in coagulation potential in patients with NAFLD, EAH and AO are accompanied by longer periods of trombogenesis by 9,94 %, of fibrinogenesis by 2,31 times (especially in patients with obesity of the 1st degree), by a decrease in blood coagulation ability at the 2nd and compensatory growth at the 3rd hemocoagulation phases, without significant deviations in the formation of thrombin complex at the first phase of platelet-vascular hemostasis.

Changes of primary hemostasis indicators in patients with steatohepatitis, EAH and AO associate with the amplification of fibrynogenesis and the presence of mesenchymal-inflammatory syndrome in the liver.

**Teleki J. M.**

## BLOOD CYTOKINES PROFILE AT THE PATIENTS WITH THE CHRONIC OBSTRUCTIVE PULMONARY DISEASE COMBINED WITH THE CHRONIC PANKREATITIS

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It was established that the exacerbation of the chronic obstructive pulmonary disease is accompanied by the activation of the local inflammation in pulmonary tissue, and also is accompanied by a rise of the cytokines in the peripheral blood. This is a sign that COPD exacerbation is associated with the systemic inflammatory response.

The aim of our study was to analyze the level of some circulating pro-and anti-inflammatory cytokines, such as C-reactive protein (C-RP), interleukin - 6 (IL-6), tumor necrosis factor alpha (TNF-α), interleukin - 10 (IL - 10) in patients with COPD combined with chronic pancreatitis (CP). 27 people suffering from COPD formed group I, 25 COPD patients with concomitant CP made the second group, and 7 healthy persons made the group of comparison. Patients of I and II groups revealed high concentrations of IL-6 ($p < 0.05$), TNF-α ($p < 0.05$), CRP ($p < 0.05$) and IL-10 comparing with a group of healthy individuals. However, the level of IL-6 and IL-10 in the second group was lower than in patients of group I (in 1.3 times, $p < 0.05$), TNF-α (in 4.6 times, $p < 0.05$), CRP (in 2.4 times, $p < 0.05$).

Expressed cytokine's disintegration in patients with COPD, combined with CP, on the background of the increased level of the inflammatory cytokines inadequate to the level of the anti-inflammatory IL-10 and almost no response to TNF-α, may prove the exhaustion of the anti-inflammatory factors resistance and the spread of the inflammatory response beyond the bronchopulmonary system.

**Voloshyna L.O.**

## THE MAIN FEATURES OF IMPAIRED FIBRONOLYTIC AND PROTOLYTIC ACTIVITY OF BLOOD PLASMA IN PATIENTS WITH OSTEOARTHROSIS DEPENDING ON THEIR COMORBIDITY

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Osteoarthritis – is one of the most common age-dependent diseases, which degenerate the joints, with an inflammatory component, which is characterized by high level of poly- and comorbidity. Among them the most common are diseases of the cardiovascular system and digestive tract that cause high levels of cardiovascular and gastrointestinal risks, especially in connection with the use of anti-rheumatic drugs. Comorbidity and high cardiovascular risk are now recognized as a key issue in modern medicine.

To study the features of impaired fibrinolytic and proteolytic activity of blood plasma in patients with osteoarthritis, depending on the age rates of comorbidity. We have studied clinically the age features of comorbid processes in 120 patients with osteoarthritis, using biochemical methods, we also studied the fibrinolytic and proteolytic activity of blood, levels of fibrinogen and C-reactive protein.

It was established that comorbidity in patients with osteoarthritis aged under 50 is low, it increases to a high level at the age of 51-60, after 60 years the phenomenon of comorbidity is deeper by frequency and severity. The lesions of the cardiovascular system dominated, including metabolic syndrome, diseases of the digestive tract and kidneys were less frequent. After the age of 50 years levels of cardiovascular risk were high, gastrointestinal risks were less frequent. In patients with low comorbidity the minor disorders in fibrinolysis were observed, after 50 (especially 60 years) on the background of high levels of comorbidity the fibrinolytic and proteolytic activity of blood deteriorated progressively as a part of high cardiovascular risk, the level of fibrinogen and C-reactive protein increased.

In patients with osteoarthritis the disease severity and level of comorbidity as well as the level of cardiovascular risk increase with the age. These phenomena are accompanied by progressive disorders in fibrinolytic and proteolytic activity of the blood, increased levels of fibrinogen and C-reactive protein, as one of the components of cardiovascular risk.