## ABOUT THE POSSIBLE CONNECTION OF NONALCOHOLIC FATTY LIVER DISEASE WITH HYPERHOMOCYSTEINEMIA

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Epidemiology. NAFLD and NASH occur in all human age groups, including children. But mostly it is diagnosed in people of 40 - 60 years. NAFLD is registered in 20-35% of adults in developed countries and in 75% of women, who have reached the postmenopausal age. The prevalence of NAFLD in Ukraine is still has not been studied in detail. The reason is the absence of symptoms and delayed treatment of patients for medical help. Fatty liver is more common in people with obesity, second type of diabetes, metabolic syndrome and cardiovascular diseases. Etiopathogenesis. The basis of modern ideas about the pathogenesis NAFLD traditionally is the hypothesis of "two strikes", proposed by S.R. Day and O.F. James in 1998. The first "hit" is the process of laying lipids in the liver - fatty infiltration of the liver. There are three main mechanisms of primitive accumulation of fat in the liver: excessive entering, excessive synthesis and / or slow oxidation of fatty acids, insufficient removal of fat from the organ. The accumulation of fat in the liver is triggered by several factors - dietary, hormonal, metabolic syndrome and more. If there are prolonged action of triggering factors and lipid accumulation in the liver from 1.5% (normal value) to above 5% - processes, that lead to NAFLD progression ("second blow") run automatically. The implementation of the "second strike" is the progressing of lipid accumulation in the liver, the occurrence of steatohepatitis, fibrosis and cirrhosis. The driving force of this process is the activation of oxidative stress and mitochondrial dysfunction, aided by obesity, insulin resistance, other hormonal disorders, metabolic syndrome and so on. Some role is played by the phenomenon of so-called «lipotoxicity» of products of lipid peroxidation, activation of stellate cells and mobilization of profibrogenic cytokines: connective tissue growth factor, transforming growth factor beta. Hyperhomocysteinemia. Normally the level of overall HC in plasma is low (nearly 10-15 mmol/l). Elevated level of HC in blood is quite common. For example, in Ukraine HHC is detected in 10% of healthy people. Therefore, there is a high probability of a patient with both syndromes simultaneously - liver steatosis and HHC. Many pathogenic mechanisms of action HHC are described. Basic among them - it's inhibition of methylation, activation of oxidative stress and protein homocysteinylation. They trigger other pathological processes - destabilizing the genome (due to the decrease DNA methylation), dysregulation of some redox-sensitive genes, decrease of hydrogen sulfide synthesis, thrombophilia, etc. Possible involvement of HHC in the etiopathogenesis of NAFLD. In the series of works carried out in VNMU named after M.I Pirogov on rats, as well as in clinic, were studied biochemical parameters (more than 30) of the liver and other organs under the influence of carbon tetrachloride ($CCl_4$, including the additional administration of HC), high-fat diet and pharmacological correction of violations. The correction were carried out by means vitamins, trace elements, S-adenosylmethionine. The study showed that when liver damage by means of $CCl_4$, significantly increased levels of homocysteine in the blood. Artificial HHC, achieved by the administration of the Homocysteinethiolactone, enhances hepatotoxic effects of $CCl_4$. In this case, the serum concentration of the marker of fibrogenesis (TGF-beta) is significantly increased. Preparations with hypohomocysteinemic actions (vitamins $B_6$, $B_9$, $B_{12}$, microelement complex preparation «Esmin», S-adenosylmethionine) also have antitoxic, antioxidant and hepatoprotective effect.

Conclusion. Experiments confirm the view that hyperhomocysteinemia is one of the pathogenetic factors of the emergence and progression of NAFLD. Hyperhomocysteinemia induces hypomethylation, protein homocysteinylation and activates oxidative stress. These phenomena are biochemical mechanisms of steatogenous action of hyperhomocysteinemia. Therefore, one of the additional measure of prevention and treatment of hepatic steatosis may be in using of hypohomocysteinemic therapy.

## MONITORING OF TUMORAL GROWTH BY INDICATORS OF OXIMETRY

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Aim: To define the changes in a range of oximetry parameters depending on the stage of carcinogenesis in 33 cancer patients. How it's known, hypoxia is the best-characterized mechanism in tumors. Low oxygen concentration may result from increased metabolic activity and oxygen consumption and/or increased tumor cell distance from local capillaries and blood supply. Also a feature of growth of cancer cells is the condition of active proliferation accompanied by prevalence of anaerobic glycolysis instead of aerobic respiration, which causes lactate accumulation. Methods: Research is being done at various stages of carcinogenesis with 33 cancer patients (stage I – 3, stage II -12, stage III -18). These patients had the following types of cancer: lung, skin, esophagus, stomach, small intestines, large intestines, pancreas, liver, bile duct, kidneys, adrenal gland, bladder, prostate gland, mammary glands, ovary and uterus with the morphological forms of a cancer: adenocarcinoma, intraductal carcinoma, renal cell carcinoma, basal cellular cancer, mesenchymal chondrosarcoma, osteogene sarcoma and medullary cancer. Capillary blood was analyzed with the blood gas analyzer Cobas B 221 (Roche, Germany) in 15 patients; arterial blood was analyzed by the blood gas analyzer ABL 800 Flex in 18 patients. The following indicators of blood were analyzed: pH; full oximetry: partial pressure of gases - $pO_2$, $pCO_2$; tHb – total hemoglobin, $sO_2$- saturation index indicating the ability of hemoglobin to contact with oxygen; $HbO_2$ – oxyhemoglobin; HbCO - carboxyhemoglobin; MetHb - methemoglobin; HbH–deoxyhemoglobin; acid and alkaline status – buffer capacity (BC), carbonic acid ($HCO_3$); lactic acid – lactat. Results: The data was processed by E.A.Tcherniavskaia, A.V. Saetchnikov (Belarusian State University), and obtained for processing by a neural network include the following: recovering the past data (an iterative method of k - neighbors), allocating principal components (the main feature groups for the subsequent data interpreting), neural network analysis of principal component data files (multilayered perceptron) for evaluation of patient groups. The integrated