

METABOLIC CHANGES IN THE LIVER IN GALLBLADDER AND BILIARY DUCT DISEASES

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Abstract. This article examines metabolic disturbances in the liver in 30 patients with gallbladder and biliary tract diseases. To determine the acid-base balance in the liver, 18 women and 12 men aged 35–60 years with gallbladder and biliary tract pathology were recruited. Initially, blood was collected from a vein in the elbow area. During abdominal surgery, blood was collected directly from the liver, followed by a comparative analysis of the acid-base balance. The results obtained demonstrate significant differences between the parameters of blood collected from a peripheral vein and blood obtained from the liver. These findings confirm the presence of metabolic disturbances in the liver.

Keywords: Patient, liver, metabolism, acid-base balance, acidosis, alkalosis, peripheral vein, blood, morphological changes.

ИЗМЕНЕНИЯ МЕТАБОЛИЧЕСКИХ ПРОЦЕССОВ В ПЕЧЕНИ ПРИ ЗАБОЛЕВАНИЯХ ЖЕЛЧНОГО ПУЗЫРЯ И ЖЕЛЧНЫХ ПУТЕЙ

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Аннотация. В статье изучены нарушения метаболической активности печени у 30 пациентов с заболеваниями желчного пузыря и желчных путей. Для определения кислотно-щелочного равновесия в печени были отобраны 18 женщин и 12 мужчин в возрасте 35–60 лет с патологией желчного пузыря и желчных путей. Первоначально у пациентов производился забор крови из венозного сосуда в области локтевого сгиба, а во время операции при

вскрытии брюшной полости — забор крови непосредственно из печени с последующим сравнительным анализом состояния кислотно-щелочного равновесия. Полученные результаты свидетельствуют о значительных различиях между показателями крови, взятой из периферической вены, и крови, полученной из печени. Выявленные данные подтверждают наличие метаболических нарушений в печени.

Ключевые слова: Пациент, печень, метаболизм, кислотно-щелочное равновесие, ацидоз, алкалоз, периферическая вена, кровь, морфологические изменения.

Introduction. In recent years, the problem of cholelithiasis has acquired particular relevance. Obesity is a proven risk factor for the development of cholesterol cholelithiasis [1,2]. Currently, a clear understanding has formed regarding the association of metabolic syndrome (MS) with the functional state of the digestive tract organs: the digestive organs are directly involved in the development of MS and themselves become target organs [3,4]. A number of large-scale epidemiological studies have shown that the risk of gallstone formation increases with an increase in body mass index. It is well known and undisputed by anyone that in pathology of the biliary tract, the liver is simultaneously involved in the pathological process [5,6]. Functional and morphological changes occur in it, the degree of which depends on the duration of the disease, the frequency of attacks, the severity, and the stage of the inflammatory process in the biliary system [7,8]. The state of organ metabolism in the liver itself in biliary tract pathology has not been studied. This is apparently explained by the anatomical-topographical conditions of the organ's location and the technical difficulties in obtaining blood from the liver for clinical and biochemical studies. The modern level of development of hepatology and biliary tract surgery dictates the need for more precise differentiated knowledge of metabolic shifts not only in peripheral blood but also in the liver itself, where the main process is localized.

Aim of the study. To investigate changes in metabolic processes in the liver in diseases of the gallbladder and biliary tract.

Materials and methods. Therefore, a comparative study of acid-base balance indicators in blood from the liver and the cubital vein was conducted in 30 patients with chronic cholecystitis: 18 women and 12 men aged 35 to 60 years. The duration of the disease ranged from 3 to 12 years, on average 7 years. Determination of acid-base balance was performed using the modern electrochemical method of Astrup-Siggaard-Andersen. All patients underwent surgical interventions under endotracheal anesthesia with artificial lung ventilation. Immediately after opening the abdominal cavity, blood was taken from the liver by puncture, and simultaneously blood was collected from one of the cubital veins. In the blood portions, acid-base balance indicators were determined.

Results. The blood pH and carbon dioxide tension in the blood (PCO_2 in mm Hg) correspond to a mild respiratory alkalosis, which is secondary and compensatory in nature due to a markedly pronounced metabolic acidosis in the liver. BE in mEq/L (excess of buffer bases) characterizes the metabolic side of the shifts and, in essence, determines all other indicators, making it possible to judge the state of oxidative-reductive and enzymatic processes in the organ from which the blood was taken. Statistical processing of BE values showed high significance of the differences in metabolic shifts between the liver and peripheral blood.

Conclusion. In biliary tract pathology, an organ-specific autonomous disturbance of metabolism occurs in the liver, which differs in degree of severity from the indicators in peripheral blood. For the purpose of assessing the functional state of the liver in pathological changes of the biliary tract, along with the study of peripheral blood, it is necessary to perform clinical and biochemical examination of blood taken directly from the liver by preoperative puncture biopsy or during surgery.

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