BIOCHEMICAL INDICATORS OF BLOOD OF PATIENTS WITH ACUTE CALCULOUS CHOLECYSTITIS

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БИОХИМИЧЕСКИЕ ПОКАЗАТЕЛИ КРОВИ БОЛЬНЫХ С ОСТРЫМ КАЛЬКУЛЕЗНЫМ ХОЛЕЦИСТИТОМ

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Annotation. Currently, acute calculous cholecystitis is one of the most common pathologies of the digestive tract [1, 4, 14]. With age, there is an increase in incidence among the elderly, reaching 70% [1, 10]. Therefore, diagnosis of acute calculous cholecystitis at an early stage of the disease using biochemical studies is especially important. The article discusses changes in biochemical parameters of blood serum of patients with acute calculous cholecystitis in three age groups.

Key words: acute calculous cholecystitis, biochemical parameters, age groups, C-reactive protein.

Аннотация. В настоящее время острый калькулёзный холецистит является одной из наиболее широко встречаемых патологий пищеварительного тракта [1, 4, 14]. С возрастом наблюдается увеличение заболеваемости среди пожилых, достигая 70 % [1, 10]. Поэтому диагностика острого калькулезного холецистита

на раннем этапе заболевания с помощью биохимических исследований особенно важна. В статье рассматриваются изменения биохимических показателей сыворотки крови больных острым калькулезным холециститом в трех возрастных группах.

Ключевые слова: острый калькулезный холецистит, биохимические показатели, возрастные группы, С-реактивный белок.

Introduction. Acute calculous cholecystitis is an acute inflammatory process of the gallbladder due to blockage of the cystic duct by a calculus. Often, after establishing characteristic symptoms, the patient requires immediate assistance from surgeons. Early diagnosis can significantly reduce the risk of possible complications, the main of which is the formation of purulent abscesses. For this purpose, as a rule, a wide range of instrumental diagnostics and laboratory indicators are used, which help to achieve significant progress in understanding the pathogenesis. A special place among them is occupied by plasma enzymes, indicators of pigment metabolism, exchange of bilirubin and its fractions, as well as C-reactive protein.

Material and methods. The blood sera of 90 patients with acute calculous cholecystitis in three experimental age groups of 30 people each (15 men, 15 women) were selected as research material: from 25 to 45 years (E1), from 46 to 65 years (E2), from 66 to 85 years (E3). A control group (C) of 20 relatively healthy adults was also studied, the values of which were fully consistent with generally accepted standards and served as reference values. Work with samples was carried out on a biochemical analyzer.

Blood serum examination was carried out on the day of patient admission to the hospital. The results were compared with the control group and literature data.

Results and discussion. The results of the study revealed significant differences in the level of concentrations of the considered parameters in the blood serum of patients with acute calculous cholecystitis in comparison with patients from the control group.

The ALT concentration in group E1 deviated from the norm compared to the control, amounting to 42.40±7.14 IU/l in men and 38.33±7.95 IU/l in women; in groups E2 and E3, a slight increase in the level of ALT concentration was recorded in comparison with K and E1. The values of AST concentrations in E1 fluctuated within acceptable values (30.67±2.34 IU/L in men, 28.40±3.07 IU/L in women). In groups E2 and E3 there was an increase in AST to 107 IU/l. Thus, the fact of a simultaneous increase in the concentrations of transaminases is recorded, which can serve as evidence of obstruction of the biliary tract. The data obtained correspond to literature sources: a slight increase in ALT and AST (in comparison with K) is possible during the development of acute calculous cholecystitis [2, 8, 13].

In addition to this fact, there was an increase in the indicator from E1 to E3, associated with diseases associated with age-related changes that can significantly complicate the process of diagnosis and surgical treatment of calculous cholecystitis. Thus, an increase in the activity of both indicators often indicates cardiac pathology among people over 65 years of age, corresponding to group E3 in our study. An increase in AST occurs before typical signs of a heart attack are detected, which is especially important when diagnosing elderly patients [2, 15, 16].

Of practical interest are studies of alpha-amylase and alkaline phosphatase in the blood serum of patients as one of the ways to monitor liver pathologies, even in the absence of symptoms or their vagueness. An increase in indicators indicates a slowdown in the excretion of bile, in 20% of cases accompanied by the development of cholangitis and various forms of cholecystitis. However, the average values remained within normal limits during the examination period in all groups presented, varying slightly depending on the age of the patient [3, 9, 17].

The concentration of total bilirubin at normal levels is slightly increased in groups E2 and E3, by 1.5–2 times. The dynamics of the increase in the indicator from E1 to E3 are clearly visible, characteristically expressed in both men and women. At the same time, direct bilirubin levels remained within normal limits compared to the control group. Consequently, the increase in total bilirubin occurred due to an increase in the fraction of indirect bilirubin, which was clearly demonstrated in men of groups E2 (16.28 ± 3.24 μmol/l) - an increase of 1.4 times, E3 (24.43 ± 5.56 μmol/l) – 2.2 times. A similar picture is typical when there is difficulty in the outflow of bile [2, 6, 12]. It should be noted that an increase in these indicators also occurs with helminthiasis, viral hepatitis, malignant tumors, inflammatory processes in the liver, and may be a consequence of taking a number of medications. In this regard, the use of bilirubin as a reliable marker can only be considered in conjunction with a complex of additional laboratory and instrumental indicators.

The concentration of C-reactive protein (CRP) in the blood serum in the control group was fully consistent with generally accepted normal values, amounting to less than 5 mg/l; in group E1 exceeded the figure by 11 times (55.86±7.43 mg/l in men, 54.86±12.4 mg/l in women). For groups E2 and E3, an excess of the norm was recorded by more than 13–14 times compared to group K (73.7–74.6 mg/l in men, 66.2–67.1 mg/l in women) [2, 5, 6].. The increase in CRP concentration from E1 to E3 is probably also associated with a number of diseases concomitant with acute calculous cholecystitis in older age groups. A significant increase in indicators is due to the high sensitivity of CRP, which is a multifunctional acute phase protein, a marker of infections, inflammation, as well as tissue damage, capable of enhanced synthesis already 6 hours after exposure to the causative factor. This makes CRP convenient for

assessing the course of not only acute calculous cholecystitis, but also any pathological process.

Conclusions. As a result of the study, it was revealed that the biochemical parameters under consideration have similar increasing dynamics in men and women. The increase in the level of the studied biochemical parameters in the E2 and E3 groups in relation to E1 reflects a direct dependence on the patient's age. And also, enzyme indicators of blood serum, pigment and CRP in combination with instrumental studies can act as markers for acute calculous cholecystitis.

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