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BIOCHEMICAL BLOOD PARAMETERS IN CHOLESTASIS SYNDROME

Rajabova Dilorom Jalilovna
Bukhara State Medical Institute

Annotation: Clinical and biochemical monitoring of the severity of endogenous intoxication in chronic cholecystitis of the necessary component should include parameters of the antioxidant and oxidant systems, protein metabolism. One of the most informative indicators reflecting the level of endotoxicosis was the total antioxidant activity and catalase activity in erythrocytes, which make up a pool of medium-weight molecules. In the clinical and biochemical assessment of the severity of the condition of patients with cholecystitis, an important place should be occupied by calculated indices characterizing the ratio of the studied parameters in blood plasma and erythrocytes.

Keywords: endotoxicosis, chronic cholecystitis, biochemical parameters and evaluation To date, chronic cholecystitis is one of the most common nosological forms. The immuno-biochemical monitoring of the condition of patients with cholecystitis revealed pathogenetic mechanisms of the disease development, which contributed to a more objective assessment of the severity of endogenous intoxication and prognosis of the outcome of the disease [1-5].

The aim of the work is to study the informativeness of the bio–chemical parameters of the severity of endotoxicosis in chronic cholecystitis.

Material and methods of research

The material of the study was the data of a retrospective analysis of the results of clinical and biochemical examination of patients with chronic cholecystitis to identify possible marker changes in laboratory parameters of endotoxicosis. In accordance with the set goal and objectives of the study, 2 groups of the surveyed were formed:

1) control group (49 people) – practically healthy people without clinical manifestations of any diseases (outpatient examination) aged 20 to 43 years;

2) study group 1 (48 people) – patients with gallstone disease with chronic cholecystitis aged 24 to 65 years.

The study group 1 included patients with a favorable outcome of the disease at the stages: before and after surgery (1st, 3rd, 5th day of the postoperative period).

Unified methods of biochemical analysis of the level of endogenous intoxication were used using the parameters of the pool of medium-weight molecules - substances of low and medium molecular weight (HH and SMM) and the concentration of oligopeptides (OP), calculated intoxication indices: leukocyte (LII) according to Kalf–Kalf, Island and Chemical and the nuclear shift index, as well as indices reflecting the ratio of the levels of HH and SMM and the OP – coefficient K1, the value of the plasma catabolic pool, the integral index of endogenous intoxication (AI) [6, 7].

The assessment of the level of endogenous intoxication provided for the determination of the values of medium-mass molecules (MSM) at a wavelength of 254 nm [8].

Unified methods of analysis of the antioxidant system and the severity of oxidative processes in the blood were used: total antioxidant and oxidant - OAA and OOA, respectively – activity [9]; activity of ceruloplasmin in blood plasma [7] and catalase in erythrocytes [9]; the level of malondialdehyde – MDA – in the blood [10].

Research results and their discussion

Clinical and biochemical monitoring of the dynamics of the analyzed indicators of antioxidant and oxidant status revealed their different informativeness in assessing the condition of patients with chronic cholecystitis during laparoscopic operations and in the early postoperative period.

The dynamics of the studied parameters before the operation had the following character: Blood plasma OAA and OOA were elevated relative to the norm in

2.1 and 3.8 times, respectively, and the OAA of erythrocytes was reduced by 1.4 times. The obtained data may indicate the stress of the system of generation and utilization of reactive oxygenating radicals ($p < 0.05$).

Changes in catalase activity in erythrocytes served as confirmation of the dynamics of these parameters. Prior to surgery in patients with chronic cholecystitis, catalase activity in erythrocytes was reduced by 2.9 times. Against this background, the activity of ceruloplasmin was increased by 1.4 times, and the level of malondialdehyde (MDA) in the blood was reduced by 1.6 times ($p < 0.05$).

Based on these data, it seemed important to compare the dynamics of the parameters of free radical oxidation and antioxidant protection of blood before cholecystectomy and in the early postoperative period in patients with chronic cholecystitis.

During cholecystectomy, the most pronounced changes were characterized by OAA and catalase activity in erythrocytes: after surgery, they increased, compared with the values of these indicators before surgery, by 1.3 times ($p < 0.05$).

In the dynamics of observations by the 1st day after surgery, the OAA of blood plasma and erythrocytes changed most significantly: it increased by 1.25 times and 1.4 times, respectively, compared with the values of this indicator before surgery ($p < 0.05$). At the same time, the level of MDA in the blood increased by 1.5 times, reaching the values of the norm.

The OAA of erythrocytes in patients with chronic cholecystitis on the 1st day of observation also reached the lower limit of the corresponding values in donors. However, in general, the data obtained may indicate the tension of the reactions of anti-oxidant protection in patients with chronic ho-lecystitis: up to 5 days of observations, trends in the dynamics of OAA and OOA of blood plasma, ceruloplasmin activity persisted.

The different informative value of the antioxidant and oxidant status of blood in patients with chronic cholecystitis during laparoscopic operations and in the early postoperative period (1-5 days) is shown. The observed increase in the level of OAA of erythrocytes, approaching the lower limit of the norm on the 1st day after surgery, can serve as a favorable prognostic sign.

The severity of oxidative processes and the activity of the antioxidant system were correlated with the dynamics of biochemical parameters for assessing endotoxicosis in chronic cholecystitis.

The level of MSM in patients with chronic cholecystitis from the beginning of observations before surgery and up to 3 days inclusive was increased by 2 times in relation to the norm, slightly decreasing by the 5th day after surgery, but remaining increased by 1.7 times, compared with the control group ($p < 0.05$).

Against this background, the concentration of OP in plasma reached the highest values on the 1st day after surgery and was increased by 2.4 times relative to the group of outpatient patients, maintaining this level up to three days of observations inclusive ($p < 0.05$).

The final stage of the analysis of the severity of the condition of patients with chronic cholecystitis in the early postoperative period was the application of the calculated indices of the severity of endogenous intoxication and the equations of multifactorial regression of the studied hematological and clinical-biochemical tests with the parameters of the anti-oxidant and oxidant blood systems.

In patients with chronic cholecystitis, the following statistically significant changes in the calculated indices of the severity of endotoxicosis were revealed in the dynamics of observations:

1) the coefficient K1, reflecting the distribution of HH and SMM between plasma proteins and erythrocyte glycocalyx and equal to the ratio of the corresponding values, was 1.5 times higher after surgery than in the control group ($p < 0.05$);

2) the integral index of endogenous intoxication, calculated as the sum of the products of the values of HH and SMM and OP in blood plasma and erythrocytes, on the 1st day after surgery was 2 times higher than in the control group (and due to IPLASM increased by 4.2 times), $p < 0.05$.

Consequently, among the components of the clinical and biochemical assessment of the severity of the condition of patients with chronic cholecystitis in the course of surgical treatment, tests characterizing the ratio of the studied parameters in various biological environments of the body, including blood plasma and erythrocytes, should occupy an important place.

The values of MSM showed the most statistically significant regressions with indicators of the antioxidant and oxidant status of blood and calculated indices of intoxication in patients with chronic cholecystitis: with the values of the catabolic pool and AI in erythrocytes before surgery, with the values of OP in erythrocytes after surgery, with the concentration of MDA in the blood at 1st and 5th days after the operation, with OOA on the 3rd day after the operation. Conclusion. Thus, in patients with chronic cholecystitis after surgical intervention, the most indicative clinical, bio-chemical aspects of monitoring the severity of endotoxicosis may be indicators of the antioxidant and oxidant blood systems. The use of these biochemical tests allows for a more informative assessment and characterization of the balance of free radical oxidation and antioxidant protection of blood against the background of changes in the level of medium-weight molecules and oligopeptides. These results are consistent with the data presented in our previous studies [11].

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Volume: 03 Issue: 05 | May - 2023
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