ANALYSIS OF BIOCHEMICAL INDICATORS IN PATIENTS INFECTED WITH ECHINOCOCCOSIS

Sattarova Khulkar Gayratovna, Khalikov Kahhor Mirzaevich, Nazarova Makhbuba Erkinovna, Murtazoeva Nasiba Komiljanovna

Abstract: At the last international congresses on echinococcosis, the directions of future work were defined: according to it, increasing the efficiency of echinococcosis diagnosis, improving testing systems are among them. To study the effect of the parasite on the organism of the host; enables a more accurate study of the development periods of pathogens, their strain. Echinococcosis takes the first place among diseases associated with interstitial biochemical disorders. Biochemical components and ion exchange determine the basis of transformation into repeated cysts (microcephalocytes). Currently, it is almost impossible to reliably determine the nature of echinococcal cysts that appear in a patient after surgical treatment. Accumulated experience and literary sources give more and more reason to believe that the pathogenesis of recurrence of echinococcosis is associated with several, possibly unequal, causes.

Keywords: echinococcal, sodium, potassium, plasma proteins

1. INTRODUCTION

The chronic course of echinococcal disease is characterized by damage to the liver, lungs, kidneys and other organs, as well as structural and functional damage to the organs in which they are located. In echinococcosis, the changes related to biochemical indicators in blood serum are in the first place. The amount of electrolytes in the blood plasma—sodium and potassium—are strict hemostatic constants, which depend on the balance of the processes of intake and introduction of ions, as well as their exchange between cells and the extracellular environment. Regulation of the homeostasis of these cations is carried out by changes in nutrient content (salt consumption) and a decrease in humoral regulation, among which the aldosterone system and atrial natriuretic hormone are of primary importance.
The main homeostatic constant is the concentration of calcium in the blood plasma. Ca\textsuperscript{2+} is the most important regulator of metabolic processes and cell functions. It is also a source for transport into cells. It also participates in the implementation of functional and chemical properties of plasma proteins, enzyme activity and blood clotting mechanisms [1, 12].

2. MATERIALS AND METHODS

Biochemical examination of the blood of patients with echinococcosis in order to determine the dependence of disturbances in the exchange of electrolytes and enzymes in patients infected with echinococcosis and the development of a serological diagnosis algorithm in order to improve the serological diagnosis of echinococcosis [13-18].

The amount of biochemical indicators in the blood serum of 30 patients who underwent surgery for echinococcosis of the liver and lungs, 32 patients with unknown cysts in various parenchymatous organs, and 30 healthy people were examined.

3. RESULTS AND DISCUSSION

In this study, based on biochemical analysis methods, electrolytes, enzymes and biochemical components in patients' blood sera were examined on a BS-200 apparatus (Herba-Merrill, India). Studies were conducted on the following parameters - sodium, potassium, calcium, iron, magnesium, zinc, chlorides, phosphates, as well as bilirubin (total, split, unbound), cholesterol, ALT, AST. Special kits were used to determine electrolytes, enzymes and biochemical parameters. Research results. According to the results of the study of biochemical indicators, the pathological effect of echinococcus on the liver was noted, and an increase in the level of total bilirubin in the blood serum of patients compared to healthy people was determined by 11 (15.3%). Unbound bilirubin was 4 (5.6%) and bound bilirubin was 18 (25%). An increase in the amount of bound bilirubin ensured an increase in total bilirubin [19, 20].

An increase in the activity of aminotransferases was found in patients with echinococcosis: an increase in the concentration of ALT by 16 (22.2%), AST - by 15 (15.3%). In patients with echinococcosis, the ALT and AST levels were higher than the control group (healthy people), although the average statistical norm was 30 (31.47%). Thus, as a result of changes in biochemical indicators observed in patients with echinococcosis, cytolytic, cholestatic and mesenchymal inflammatory syndromes were observed (Fig. 1, Table 1).

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicators</strong></td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Total bilirubin μmol/l</td>
</tr>
<tr>
<td>Unbound bilirubin μmol/l</td>
</tr>
</tbody>
</table>
Quantitative indicators of biochemical substances in the blood of healthy and echinococcal cyst-removed patients suspected of having echinococcus

<table>
<thead>
<tr>
<th>Substances</th>
<th>Healthy Person</th>
<th>Echinococcal Cyst-Removed</th>
<th>Echinococcal Cyst-Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bound bilirubin μmol/l</td>
<td>16,523±0,894</td>
<td>15,996±0,851</td>
<td>15,582±1,335</td>
</tr>
<tr>
<td>Cholesterol μmol/l</td>
<td>6,1±0,635</td>
<td>5,52±0,318</td>
<td>4,5±0,04</td>
</tr>
<tr>
<td>AST level, g/l</td>
<td>0,79±0,046</td>
<td>0,68±0,038</td>
<td>0,416±0,052</td>
</tr>
<tr>
<td>ALT level, g/l</td>
<td>0,808±0,086</td>
<td>0,672±0,046</td>
<td>0,707±0,026</td>
</tr>
</tbody>
</table>

According to the results of the examination, the total bilirubin was 15,996±0,851 μmol/l, unbound bilirubin =1,808±0,851 μmol/l, bound bilirubin □16,523±0,894 μmol/l, AST level □0.79±0.046 g/l, ALT level □0.808±0.086 g/l. It follows that in cases affected by echinococcosis, like other diseases of the liver, an increase in the level of bilirubin, ALT, AST is observed.

Table 2
Different cysts were detected in different parenchymatous organs, quantitative changes of ion indicators in the blood of healthy people and patients infected with echinococci.
Figure 2. A comparative analysis of quantitative changes of ion indicators in the blood of healthy people and patients infected with echinococci, where various cysts were detected in different parenchymatous organs.

It was found that the amount of calcium in patients affected by echinococcosis was 2.71±0.04 to 1.936±0.09 μmol/l in healthy people, zinc was 15.4±0.98 μmol/l to 6.9±0.42 μmol/l, and iron decreased sharply from 18.1±0.76 μmol/l to 3.5±0.067 μmol/l. In healthy people, the amount of sodium was 145±4.56 μmol/l, and in patients with confirmed echinococcosis, it increased to an average of 147.0±2.33 levels, and potassium was 4.45±0.25 μmol/l in healthy people, it was found that it decreased by 3.87±0.53 μmol/l in patients with disease. The amount of magnesium in patients was 1.54±0.087 μmol/l, while in healthy people it was 0.99 ± 0.07 μmol/l. The amount of calcium, chlorides and phosphates is significantly reduced.

4. CONCLUSION

Thus, it was found that in the blood of patients, except for sodium, almost all electrolytes are different from healthy people. In particular, the amount of calcium, magnesium, iron, zinc and phosphates changes. It was found that the level of magnesium increased in patients infected with echinococcus, while calcium, iron, zinc and chlorides decreased. A decrease in the amount of calcium in the blood of patients infected with echinococci is explained by the fact that the calcification of cysts occurs very slowly in many patients. In addition, many literatures emphasize the frequent rupture of cysts with a thin shell during surgery. A decrease in the amount of calcium in the body of patients with echinococcosis compared to healthy people is an important factor in the diagnosis of echinococcosis. The level of sodium and chlorides is moderately reduced.
Echinococcosis was decreased. This is explained by the effect of these electrolytes on the thickening of cysts and parasite membranes. Therefore, it is assumed that the introduction of calcium-containing preparations into the course of treatment can increase the therapeutic effect of ongoing conservative treatment. An increase in the level of magnesium is observed.

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