

ANALYSIS OF CHANGES IN SYSTOLIC AND DIASTOLIC HEART DYSFUNCTION AS A RESULT OF LIVER CIRRHOSIS

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SUMMARY

In clinical and instrumental examination of 98 patients with cirrhosis of the liver by means of Echo-CG in M-regimen, in 85,0% of cases damage to the heart was revealed. The basis of damage to the heart was presented by hypertrophy of the left ventricle and myocardial dystrophy that resulted in disturbance of contractive function, diastolic and systolic dysfunction. Damage to the heart in its turn contributed to the development of chronic cardiac insufficiency and increase of portal hypotension degree.

Key-words: cirrhosis of the liver, systolic and diastolic dysfunction, cirrhotic cardiomyopathy.

АНАЛИЗ ИЗМЕНЕНИЙ СИСТОЛИЧЕСКОЙ И ДИАСТОЛИЧЕСКОЙ ДИСФУНКЦИИ СЕРДЦА В РЕЗУЛЬТАТЕ ЦИРРОЗА ПЕЧЕНИ

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РЕЗЮМЕ

При клиническом и инструментальном обследовании с включением ЭхоКГ в М-режиме 98 больных с циррозом печени в 85,0% случаях были выявлены поражения сердца. Основу сердечных поражений составили гипертрофия левого желудочка и дистрофия миокарда (цирротическая кардиомиопатия), что привело нарушению сократительной функции, диастолической и систолической дисфункции. Поражение сердца, в свою очередь, способствовало развитию хронической сердечной недостаточности и повышению степени портальной гипертензии.

Ключевые слова: цирроз печени, систолическая и диастолическая дисфункции, цирротическая кардиомиопатия.

Liver cirrhosis is still considered a serious problem due to its high prevalence in the population, high level of disability, and the fact that treatment procedures do not always have a positive effect. It is known that liver cirrhosis is accompanied by necrosis, apoptosis, connective tissue reaction and the development of portal hypertension (Sadovnikova I.I., 2012; Babayanov A.Kh., 2014). In the disease, portal hypertension and associated hemodynamic changes lead to damage to all organs (M.F. Osipenko, E.A. Bikbulatova., 2007)

Damage to the cardiovascular system is accompanied by metabolic disorders in the heart muscle and is described as “cirrhotic cardiopathy” (“myocardial dystrophy”) (World Gastroenterology Meeting, Montreal 2005).

It has been shown that the study of disturbances in systolic and diastolic function of the heart in liver cirrhosis is important for the early detection of the consequences of the disease and the prescription of the necessary treatment. However, scientific research aimed at solving this problem is still insufficient, there is a one-sided approach to treating the disease, and treatment in many medical institutions is limited to the prescription of hepatoprotectors and diuretics.

Goal of the work. To study the significance of heart damage, systolic and diastolic dysfunction in the progression and exacerbation of the disease in patients with liver cirrhosis.

Materials and control methods.

In the 1st emergency department of the Samarkand branch of the Republican Research Center for Emergency Medical Care, there are 59 patients (60.2%), cirrhosis of the liver with viral etiology - 34 patients, cryptogenic cirrhosis of the liver - 34 patients, 5 patients (5.1%) - liver cirrhosis of toxic etiology) clinical, laboratory and instrumental studies were carried out. In our studies there were more men, 55 people (56.1%), and women - 43 people (43.9%). The average age of patients was 40.5 ± 1.9 years for liver cirrhosis of viral etiology, 52.3 ± 2.7 years for cryptogenic liver cirrhosis and 56.6 ± 7.5 years for liver cirrhosis of toxic etiology. In general, 11 patients (11.2%) under our observation had Child's stage A, 43 patients had stage B (43.8%), and 44 patients had stage C (44.9%):

Special examination methods included identifying patients with complaints characteristic of heart damage and symptoms of heart damage, data on heart damage and a history of liver cirrhosis. Physical examination of the heart consisted of examining the area of the heart, determining the relative and absolute boundaries of the heart, blood pressure and pulse.

Instrumental examination revealed left ventricular hypertrophy, cardiomegaly, pulmonary edema, rhythm and conduction disturbances, hypertrophy of the heart walls, diffuse-dystrophic, hypoxic changes in the myocardium. EchoCG studies in M and B

mode were performed in patients with liver cirrhosis to assess the functional state of the heart. Ultrasound examination of the heart determines the systolic size and diastolic size, stroke volume (FV, %), muscle fiber contraction velocity, systolic and diastolic volume of the left ventricle.

The systolic function index - systolic volume and size of the left ventricle, stroke volume, diastolic function index - diastolic size and volume of the left ventricle were determined. Echocardiography also made it possible to determine the expansion of the cavities of the heart, hypertrophy of the walls, hypokinesia or hyperkinesia, the state of the valvular apparatus of the heart, and the state of cardiac contractility.

For the control group, the results of examination of 20 healthy people were taken into account. The results obtained were assessed using the variation statistics method. The arithmetic mean and its root-mean-square error were determined by the method of moments. An analysis of the reliability criterion and the level of reliability of the obtained results was carried out.

Obtained results and analysis. An objective examination of the heart in liver cirrhosis reveals cardiac symptoms in 4.4-58.3% of cases. Clinical symptoms of heart damage in liver cirrhosis are pain in the heart area, palpitations, a feeling of heart failure and swelling. Examination revealed pallor of the skin and visible mucous membranes, displacement of the relative border of the heart to the left, and the transverse size of the heart was more than 15 cm. A decrease in pulse tension, tachycardia and muffled heart sounds were also observed. These clinical symptoms indicate not only functional damage to the heart, but also dystrophic and ischemic damage to the heart muscle.

X-ray examination revealed various changes in the heart in 61 patients (62.24%). 50 patients (51.0%) had an enlargement of the left ventricle, 12 patients (12.24%) had an enlargement of both ventricles, 61 patients (62.24%) had more than 40% of the cardiothoracic index, 25 patients (25.5%) - flattening of the aortic arch, in 44 patients (44.8%) - decreased contractility of the heart, in 17 patients (17.34%) - increased contractility of the ventricles.

Signs of automaticity, excitability and conduction disturbances during an ECG study, characteristic of heart rhythm, were identified in 71 patients and amounted to 72.44%. Impaired automaticity: sinus tachycardia was observed in 37 patients (37.7%), sinus bradycardia - in 8 patients (8.1%), sinus arrhythmia - in 5 patients (5.1%). Excitability disorders - ventricular extrasystole was observed in 12 patients (12.2%), supraventricular extrasystole - in 5 patients (5.1%), tremor arrhythmia - in 6 patients (6.1%). First-degree atrioventricular block due to conduction disturbances was noted in 3 patients (3.1%), incomplete blockade of the left bundle branch was noted in 10 patients (10.2%).

Using an ECG, symptoms of dystrophic myocardial damage were identified in 31 people (35.7%): a decrease in the RS-T segment, flattening or negativity of the T wave in connections I, II, III, aVL, aVF, V3, B4 and B5. The ECG showed symptoms of myocardial ischemia - based on a decrease in the S-T segment and changes in the T wave (28.6% in 28 patients). Depression of the S-T segment (signs of ischemia of the anterior wall) in connections I, aVL - 10 (10.2%), depression of the S-T segment (signs of ischemia of the posterior wall) in connections II, III, aVF - 12 patients (12.24%).

In the ExoKG study, signs of cardiac damage were noted in 85 patients (86.7%). Compared with healthy people, the left ventricle has end-systolic (115%), end-diastolic size (117%), end-systolic volume (143%) and end-diastolic volume (128%) (ESR, EDR, ESV, EDV) the indicators were statistically significant, the increase was characteristic ($R < 0.05$; $R < 0.02$). These indicators are signs of serious damage to the heart muscle and profound changes in hemodynamics. The stroke volume of the heart averaged $52.3 \pm 5.4\%$ and a statistical decrease of 1.28 times was noted compared with healthy people ($R < 0.02$). In 13 examined patients (13.26%), the stroke volume was more than 60% (normal value), in 41 patients (41.8%) - 59-50% (an indicator of decreased contractility), in 27 patients (27.5%) - In 49-40% (a sign of obvious heart failure), in 16 patients (16.3%) - less than 40% (a sign of severe heart failure). Patients were also characterized by a decrease in the velocity of circular contraction of muscle fibers ($V_{cfo/c}$).

In addition, there were signs of hypertrophy of the heart walls (40 patients, 40.8%), including the posterior wall of the left ventricle and hypertrophy of the interventricular septum (in 65 patients, 66.3.0%), dilatation of the left ventricular cavity (18 patients , 18.3%), parietal hypokinesia (15.3% in 15 patients) and increased cardiac contractility (20.4% in 20 patients).

Thus, in patients with liver cirrhosis, a targeted approach to clinical, radiological, ECG and exoCG studies allows identifying cardiac damage in 85.0% of cases. Heart damage is based on the development of left ventricular hypertrophy and myocardial dystrophy. As a result, there is a decrease in contractility, systolic and diastolic function of the myocardium. Heart damage, in turn, leads to chronic circulatory disorders, further increases the level of portal hypertension, aggravates hepatocellular failure, becomes one of the main causes of hepatorenal syndrome and worsens the general condition of patients. In order to improve the functional state of the heart and prevent heart damage in the treatment of liver cirrhosis, the use of potassium drugs, β -blockers, and ACE inhibitors is pathogenetically important in the treatment of heart damage.

LITERATURE

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