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DIAGNOSIS OF ACUTE AND CHRONIC HEART FAILURE

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Abstract:

Heart failure is characterized by a change in the structure or function of the heart, leading to its inability to deliver oxygen in accordance with the need of tissues, despite normal filling pressure. In accordance with modern international recommendations, chronic heart failure (CHF) is defined as a syndrome in which a patient has typical complaints (shortness of breath, swelling of the legs, fatigue) and symptoms (increased venous jugular pressure, wheezing in the lungs, and displaced apical thrust) as a result of changes in the structure or function of the heart.

Keywords: Electrical State Of The Myocardium, Symptoms And Prevention, Patients

Heart failure can manifest itself with both reduced and normal left ventricular ejection fraction (LVEF). Here and further, CHF is considered only with reduced LVEF as the most common variant in patients after myocardial infarction.

An ECG after a myocardial infarction is one of the basics of monitoring the patient's condition, since it reflects the electrical state of the myocardium at the present time and a certain dynamics of its healing processes in time.

In patients after myocardial infarction with CHF, a number of laboratory parameters should be monitored. These include a general blood test (counting hemoglobin, erythrocytes, leukocytes, platelets, hematocrit), liver and kidney function indicators (creatinine, GFR), electrolyte levels (potassium, sodium), blood glucose.

Among the modern biochemical indicators confirming cardiac dysfunction, the brain natriuretic peptide is currently the main one. Along with it, new biomarkers of CHF are being studied and tested, which is relevant, especially for post-infarction conditions with asymptomatic LV dysfunction.

ECHO-KG has become the main instrumental method of verifying myocardial dysfunction today. Of the methods used to assess LVEF in patients after myocardial infarction, the apical biplane method of disks according to Simpson is the most adequate. Nevertheless, when measuring LVEF according to the Simpson method, the standard error for the same researcher may be 3.3% . This means that if the same specialist calculates the FV as 34%, then with repeated measurement, the FV may be in the range between 27% and 41%. It should be noted that these data are based on measurements carried out abroad by technicians, not doctors. Nevertheless, a number of measures are being considered to improve the accuracy of determining LVEF:

1. use of LV cavity echo-contrast;
2. the use of three-dimensional ECHO-KG, which is not yet standardized;
3. the use of MRI of the heart, which is very expensive in comparison with ECHO-KG;
4. Determination of LV dysfunction.

The Teichholz method, based on measurements in the one-dimensional ECHO-KG mode, is unacceptable in patients after myocardial infarction, since areas of myocardial dysfunction remain out of sight. When assessing myocardial contractility, for the same reasons, one should not focus on such an indicator of myocardial contractility as the shortening fraction.

Of this group of medicines, only dioxin is currently used. Dioxin is prescribed in the presence of tachysystolic fibrillation / or atrial flutter and the impossibility (contraindications) of using BAB. Digoxin can also be used for sinus tachycardia with significantly reduced LVEF according to ECHO-KG data (less than 30%), as well as for severe hypotension, which is a contraindication for the appointment of BAB.

The use of dioxin does not affect mortality rates, but leads to a decrease in the number of hospitalizations due to worsening of CHF by 28% during 3 years of treatment. These data are confirmed by the results of a meta-analysis in which dioxin demonstrated an improvement in symptoms and prevention of worsening of CHF.

It should be remembered about the side effects of dioxin, in particular its proarrhythmogenic effect (up to ventricular arrhythmias), especially against the

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background of hypokalemia. In this regard, when treating with digoxin, serum electrolytes and kidney function should be monitored.

The clinical hypothesis about the presence of CHF in a patient is formulated when identifying characteristic complaints and objective signs. Difficulties may be caused by differential diagnosis of dyspnea, edema, weakness, hepatomegaly, etc. The collection of anamnesis should be aimed at establishing the disease that causes CHF. In the future, the examination algorithm is built in such a way as to identify LV dysfunction, determine its cause and exclude alternative explanations of the patient's symptoms.

Magnetic resonance imaging of the heart makes it possible to achieve high image quality and accurate assessment of parameters in patients with poor visualization during echocardiography. Magnetic resonance imaging is the method of choice in the diagnosis of congenital heart defects, amyloidosis, myocarditis, Fabry's disease, unclassified cardiomyopathies. Contrasting with magnetic resonance imaging helps to differentiate ischemic and non-ischemic causes of CHF, as it allows to identify fibrosis / sclerosis. Compared to echocardiography, this method is less accessible and more expensive. Magnetic resonance imaging is not performed in patients with metal structures (joint prostheses, mechanical valves, pacemakers).

Computed tomography of the heart is used for noninvasive visualization of coronary arteries in patients with CHF and suspected coronary artery disease. However, coronary angiography is a more sensitive and specific method of diagnosing atherosclerosis of the coronary arteries, allowing, if necessary, to immediately proceed to the therapeutic effect.

Titration of the dose to the maximum is possible if several rules are observed: the beginning of therapy after achieving compensation for CHF, against the background of taking a pre-titrated dose of a diuretic (if it is indicated), the patient should have a stable body weight and normal concentration of electrolytes, drugs are prescribed only to patients with a confirmed diagnosis and an understandable cause of CHF, the titration step is usually 5-7 days, in elderly and severe patients - more. For the treatment of CHF, long-acting drugs are used (enalapril, fosinopril, perindopril, lisinopril, ramipril).

One of the main mechanisms of death of patients with CHF, including sudden, are fatal rhythm disturbances, primarily ventricular arrhythmias and asystoles. The implantable cardioverter-defibrillator constantly monitors the heart rate and, in the event of ventricular tachycardia or ventricular fibrillation, restores the sinus rhythm with a low-power discharge. Implantation of a cardioverter defibrillator should be discussed in all patients with CHF symptoms or LV dysfunction who have suffered cardiac arrest and/or symptomatic ventricular arrhythmias, for secondary prevention of sudden death. In patients who have had a myocardial infarction more than 40 days ago and have an LV <35% and II-III FC CHF, implantation of a cardioverter defibrillator is considered as a method of primary prevention.

A special variant of three-chamber electrocardiostimulation, restoring the correct interventricular interaction, which is often distorted with CHF and violation of intraventricular conduction, is cardiac resynchronizing therapy. Cardiac resynchronizing therapy as a method complementing pharmacotherapy can be considered in patients with CHF with PV <35% and blockage of the left leg of the Gis bundle starting from FC II and with a duration of the QRS complex >120 ms, however, the greatest effectiveness of the procedure was noted in more severe patients - with FC III-IV and a duration of the QRS complex >150 ms. Cardiac resynchronizing therapy is able to increase LV, reduce the symptoms of CHF and, most importantly, reduce mortality, including in patients with AF. Often the implanted device combines the functions of cardiac resynchronization therapy and a car-dioverter-defibrillator.

Lifestyle modification is no less important way of treating CHF than pharmacotherapy. Despite the lack of time, it is the attending physician who should provide the patient with information about the need and methods of quitting smoking and alcohol consumption, normalization of body weight. Overcoming the negativism that often occurs in patients during a conversation about the need for dietary restrictions, it is necessary to clearly indicate the need to bring the caloric content of food into line with energy costs (which are usually low in a patient with CHF), primarily by reducing the consumption of easily digestible carbohydrates and animal fats. It is also necessary to explain to the patient the importance of limiting the consumption of table salt. It is necessary to perform regular dosed physical activity (walking, gymnastics), causing mild shortness of breath or palpitations. Excessive physical activity should be limited.

A number of changes and updates of the following order have been made to the current recommendations (compared to the previous):

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1) the term "HF with a slight decrease in LVEF" (40-49%) was introduced;

2) recommendations for the diagnosis of CHF with LV FV <40, 40-49, >50 are proposed%;

3) an algorithm for diagnosing a non-acute CH is presented;

4) an algorithm has been developed that combines the diagnosis and treatment of acute HF, based on the presence/absence of stagnation/hypoperfusion;

5) revised data on the prevention of progression of HF and prolonging the life of patients;

6) indications for the appointment of a combined drug containing a non-lysine inhibitor sacubitril and an angiotensin II receptor inhibitor valsartan (angiotensin receptor-neprilysin inhibitor - ARNI) have been determined;

7) the indications for cardiac resynchronization therapy for HF have been changed;

8) the concept of early therapy, simultaneously with the diagnosis of acute HF, is proposed, similar to the existing concept in acute coronary syndrome.

Heart failure is a clinical syndrome with typical symptoms (shortness of breath, swelling of the ankles, fatigue), which may be accompanied by signs caused by structural and/or functional changes in the heart (increased pressure in the jugular veins, wheezing in the lungs, peripheral edema), leading to a decrease in heart function and /or an increase in intracardiac pressure at rest or when load.

The definition of HF focuses the doctor's attention on the necessity and importance of detecting HF precisely at the preclinical stage — the stage of asymptomatic structural and/or functional changes of the heart (systolic or diastolic LV dysfunction), which are considered as precursors of HF.

Oral anticoagulants are not recommended for use due to the lack of evidence of their effect on morbidity/mortality in patients with HF occurring without atrial fibrillation. If the patient is taking anticoagulants for atrial fibrillation or a high risk of venous thrombosis, it is advisable to continue taking these drugs.

Antiplatelet drugs, including acetylsalicylic acid, in patients with HF without concomitant coronary artery disease are not recommended for use due to the lack of significant evidence of a positive effect on the prognosis.

Experts strongly recommend identifying patients with geriatric conditions, in particular with senile asthenia syndrome, in order to provide timely medical and psychological and social support to the patient and his close circle. Senile asthenia is associated with age and is associated with a decrease in the physiological reserve and functions of many body systems, which can lead to disability and an unfavorable prognosis of life.

Current recommendations focus on palliative care. Traditionally, palliative care in the final period of life is provided mainly to cancer patients, but now the principles of providing this type of care have begun to be extended to other long-term progressive diseases. Palliative care is based on an interdisciplinary approach, the patient himself, his family, and society are involved in the process of providing care.

Lifestyle modification is no less important way of treating CHF than pharmacotherapy. Despite the lack of time, it is the attending physician who should provide the patient with information about the need and methods of quitting smoking and alcohol consumption, normalization of body weight. Overcoming the negativism that often occurs in patients during a conversation about the need for dietary restrictions, it is necessary to clearly indicate the need to bring the caloric content of food into line with energy costs (which are usually low in a patient with CHF), primarily by reducing the consumption of easily digestible carbohydrates and animal fats. It is also necessary to explain to the patient the importance of limiting the consumption of table salt. It is necessary to perform regular dosed physical activity (walking, gymnastics), causing mild shortness of breath or palpitations. Excessive physical activity should be limited.

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