DEVELOPMENT OF CARDIOMYOPATHY IN DIABETES MELLITUS

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Annotation: clinical manifestations of types of cardiomyopathy in combination with diabetes mellitus, symptoms both diseases, the clinical symptoms of which disease are more pronounced, general andvarious symptoms in the clinical course.

Key words: Diabetic cardiomyopathy (DC), cardiomyopathy, classification, dilated, hypertrophic, diabetic CMP, microangiopathy, insulin resistance.

The term "cardiomyopathy" (CM) for most clinicians is strongly associated with terminological triad "hypertrophic – dilatational – restrictive". However, if to think about the essence of this most famous classification of cardiomyopathies, then attentive the specialist will find great limitations in the definition of various cardiomyopathies, and in the principle that underlies their classification. Thus, the release of hypertrophic and dilated CMP is based on assessment of the anatomy and geometry of the left ventricle (LV) of the heart, and the term "restrictive" characterizes myocardial function. The question arises: what to do if Is there a disturbance in both LV function and geometry within the same disease?

For example, infiltrative CMP and storage diseases are characterized by frequent development significant LV hypertrophy in the absence of its dilatation, but they are often accompanied by impaired diastolic filling. This means that the same state can be attributed to two categories? In addition, the identification of these three groups does not reflect the heterogeneity clinical manifestations of CMP.

Classification of cardiomyopathies (WHO, 1995): 1. Dilated cardiomyopathy.

2. Hypertrophic cardiomyopathy.

3. Restrictive CMP.

4. Arrhythmogenic right ventricular cardiomyopathy.

5. Unclassified CMP: – fibroelastosis; – non-compact (spongy) myocardium; –

LV systolic dysfunction without dilatation or with minimal dilatation; – defeat myocardium at the level of mitochondria.

Diabetic cardiomyopathy (DC) is a pathological condition of the heart muscle due to disorders associated with diabetes mellitus: electrolyte, metabolic, vascular. This disease occurs in any type of diabetes mellitus and even in children if their mothers had hyperglycemia during pregnancy. In adults with type II develops gradually, can

be asymptomatic and begin to manifest itself only after ten to fifteen years of high blood sugar. But still, development time

diabetic cardiomyopathy is individual and depends on many factors:

therapy for diabetes, the type itself, characteristics of the body, genetic predisposition.

According to statistics, the mortality rate for diabetics from cardiomyopathy is 20-25%.

Diabetic cardiomyopathy - symptoms

The disease is characterized by long-term asymptomatic development. The first manifestations may

appear several years after the onset of the disease (diabetes mellitus), but subsequently gives about

be aware of the following symptoms:

cardiac, pressing pain in the left side of the chest. Resembles an attack of angina, but with

there is no irradiation to the left arm, neck or scapula. The pain is weaker. First

patients note such sensations after physical activity, its level increases each time

decreases and cardialgia occurs even in a calm state. At the same time, nitroglycerin and

other nitrate-based drugs have no effect;

shortness of breath, cough, dizziness, which may accompany chest pain or may occur

separately without good reason, without load;

Blue discoloration of the lips, nasolabial triangle, fingers, acrocyanosis.

Symptoms appear during attacks that last from 1 hour to 4 hours. If sick

does not decide to make an appointment with a cardiologist, then the disease does not go away on its own, but

develops and patients already note almost constant pain in the heart area, even with

under minor loads, coughing, shortness of breath, dizziness occur, and the condition suddenly

getting worse.

Diabetes mellitus (DM) and arterial hypertension are diseases that are

according to the AHA classification, may be accompanied by the development of DCM. In the defeat of the heart

and blood vessels in diabetes, a complex of factors is involved, including hyperglycemia, hyperlipidemia

deemia, oxidative stress, and in older people – also hyperinsulinemia and/or

hyperproinsulinemia, disorders in the blood coagulation and fibrinolytic systems.

Myocardial damage in diabetes leading to heart failure occurs under
the action of the “cardiotoxic triad” (specific myocardial damage - diabetic
CMP, myocardial ischemia and arterial hypertension), processes of impaired cell adaptation,
combined with atherosclerosis of the coronary arteries, microangiopathy, violation
gene expression and cardiac autonomic neuropathy. Proposed Mechanisms
development of diabetic cardiomyopathy are metabolic disorders, myocardial fibrosis,
small vessel disease, cardiac autonomic neuropathy and insulin resistance.
Heart damage in diabetes initially represents an adaptive process with disruption
compensatory mechanisms and progressive myocardial dysfunction, as in cardiac
failure of another etiology. At the early stage of diabetic CMP, adaptation occurs
to metabolic changes, this stage is completely reversible, changes in cardiomyocytes
can be detected only at the organelle level, and cardiac dysfunction - only with special
highly sensitive methods. At the next stage, apoptosis and necrosis occur
cardiomyocytes, local production of angiotensin II, which transforms
growth factor β1, mild cardiac autonomic neuropathy develops, leading to
fibrosis and myocardial hypertrophy. In the posterior stages, microvascular and persistent
structural and functional changes in the myocardium.
Diagnosis of DC
The earlier diabetic cardiomyopathy is detected, the fewer severe consequences
will be a patient with diabetes, it is possible to maintain quality of life and not worry about
own life. This, of course, requires diagnostics.
First of all, it is necessary for everyone who is diagnosed with diabetes mellitus, or even
pre-condition - impaired glucose tolerance, visit a cardiologist and undergo
full heart examination:
ECG (electrocardiography) - allows
blood flow using thallium-201 dye; detect by electrical
cardiac activity pathology at an early stage;
Ultrasound of the heart (echocardiography) is one of the most effective diagnostic methods, with its
can be used to assess the condition of myocardial tissue, the volume of blood ejection, contractile

ability of the heart muscle;

Radioscintigraphy - this method makes it possible to evaluate

Take blood tests to determine quantitative indicators: glucose levels, lipoproteins, liver and cardiac enzymes.

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