

## Improving the Management of Patients with Acute Coronary Syndrome Complicated By Arrhythmias at the Stages of Treatment

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**Abstract.** According to the literature, cardiac arrhythmias and conduction disturbances are a permanent complication of acute coronary artery disease (ACAD) and in the first day of the disease they are observed in 90-95% of patients (Alyavi B.A., Yakubov M.M., 2008). The recorded late potentials of the ventricles of the heart are highly sensitive markers of the development of ventricular tachycardia, being the most common causes of death in patients with ACAD (Karetnikova, V.N. 2010). The urgency of this problem lies in the low efficiency of diagnosing the onset of rhythm disturbances, predicting their course and insufficiently effective treatment.

**Key words:** cardiac arrhythmias, amiodarone hydrochloride, myocardial ischemia, cytoprotectors

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**Introduction.** The urgency of this problem lies in the low efficiency of diagnosing the onset of rhythm disturbances, predicting their course and insufficiently effective treatment. Pathological changes in the myocardium are accompanied by various disturbances in the electrical activity of the heart, but all of them are characterized by general patterns and are prognostically unfavorable in terms of the occurrence of fatally dangerous rhythm disturbances (Osinchuk Ya.B., 2012). The onset of myocardial ischemia due to a decrease in coronary blood flow leads to disruption of biochemical processes in mitochondrial

cells, as a result, the contractile function of cardiomyocytes decreases (Kochkina M.S. 2015). Hypoxia activates anaerobic glycolysis, and glycogen is metabolized to lactate, therefore, the pH in the myocardium shifts to the acidic side and the electrical activity and contractility in the heart muscle decreases even more (Drapkina, O.M 2018). The electrical impulse, propagating through the conducting system, reaches the blocked zone, retrograde and, provided it leaves this state, passes through the blocked zone. Re-entering the pulse creates a circular excitation wave. Single cycles of an ectopic impulse or circular wave create an

extrasystole, and long cycles lead to the development of paroxysmal tachycardia, fibrillation - atrial flutter (AF) (Kapelko V.I., 2011), which served as the subject of studying this problem and its treatment in patients with acute the resulting coronary ischemia. Currently, the correction of microcirculatory disorders and free radical oxidation of lipids is considered as absolutely necessary links in the treatment of all forms of myocardial ischemia (Kaktursky L.V., 2007). One of the leading and, undoubtedly, the most effective methods of preventing complications and deaths, as well as improving the quality of life of patients with ACAD, is a rapid and stable restoration of blood flow using thrombolytic therapy (TLT) Myocardial damage as a result of occlusion develops rapidly, necrotizing within 6 hours up to 90% of living tissue of the myocardium. Restoration of coronary blood flow in the first 12 hours from the onset of the first symptoms gives good results in subsequent periods of ACAD. The most positive result is achieved if TLT is applied in the first 2 hours from the onset of the disease. And the restoration of blood flow in the first hour after the onset of an attack can prevent the development of myocardial infarction and make the lesion

focus minimal (Kukharchuk V.I. et al., 2007).

In the pharmacotherapy of ischemic heart disease, drugs of metabolic and cytoprotective action have become of particular interest, which is determined by the importance of normalizing energy metabolism in cardiomyocytes in this pathology. Unlike traditional methods of treatment aimed at directly improving coronary circulation, the principle of action of modern cytoprotectors is based on their ability to increase the ability of the myocardium to tolerate ischemia without losing or quickly restoring its functional activity (Shilov A.M. 2007). The mechanism of action of cytoprotectors includes an improvement in cellular energy metabolism and a decrease in the content of peroxides in the vascular wall and blood. Optimization of energy metabolism is based on the ability of cardiocytoprotectors to stimulate glucose oxidation, as the most beneficial way of energy generation from the point of view of oxygen saving (Karetnikova V.N. 2010). Therefore, myocardial protection (cardioprotection) is of great importance in the medical correction of ACAD. For this purpose, it is advisable to use antihypoxants and antioxidants - agents that optimize energy exchange processes in the myocardium, improve metabolism

in the ischemic area. And also the functional activity of cardiomyocytes (Andreeva N.N. 2009, Belenkov Yu.N. 2008). This class includes corvitin and trimetazidine.

**Material and methods.** This work will be based on the results of examination and treatment of 90 patients with clinical and instrumental signs of ACAD delivered no later than 3 hours after the onset of an anginal attack, who will undergo TLT.

At the first stage of the work, data from a survey of 45 patients with ACAD will be analyzed. These patients will undergo TLT in the first hours of ACAD. The second stage of the work will assess the effect of corvitin and trimetazidine in a group of 45 patients on the processes of myocardial remodeling, in particular on the correction and prevention of cardiac arrhythmias in patients with ACAD, against the background of standard conservative therapy of ACAD. If indicated, patients will be additionally prescribed antiarrhythmic drugs (to stop an attack of FTP) amiodarone hydrochloride at a dose of 600 mg intravenously.

Standard diagnostic methods will be carried out, including a general blood test, urine, biochemical blood tests: blood glucose, alanine aminotransferase, aspartate aminotransferase, creatinine,

total cholesterol and its fractions: low and high density lipoproteins, triglycerides, blood coagulation system.

Electrocardiographic study, which will allow assessing the amplitude-interval characteristics of each lead, rhythm and conduction disturbances and determine the localization of myocardial damage (ischemia and necrosis), in the intensive care unit, monitoring of the main indicators using a cardiac analyzer.

Echocardiographic examination of patients will allow determining the peak flow rate in the phase of early (E, cm / s) and late (A, cm / s) LV filling, E / A ratio, time of blood flow deceleration of early LV filling (DT<sub>e</sub>, ms), isovolumic relaxation time LV (IVRT, ms), which will determine the types of impairment of LV diastolic function.

**Research results and discussion.** The aim of this work is to develop an approach to the differentiated use of cytoprotectors as part of complex therapy with an assessment of their effectiveness in the treatment of patients in the treatment of life-threatening arrhythmias in patients with acute coronary syndrome after TLT at the stages of treatment.

To achieve the goal, the following research objectives were set:

- 1) to determine the state of arrhythmic activity of the myocardium in patients with after TLT at the stages of treatment;
- 2) to study the early diagnostic signs of left ventricular (LV) dysfunction in patients with ACAD after TLT, which determine the arrhythmic activity of the myocardium;
- 3) to assess the state of intracardiac and central hemodynamics in patients with ACAD after TLT, during treatment with corvutin and trimetazidine;
- 4) to determine the antiarrhythmic efficacy of corvutin and trimetazidine as part of complex therapy in patients with ACAD.
- 5) to develop an approach to the differentiated use of cytoprotective therapy in the treatment of arrhythmias in patients with ACAD after TLT, taking into account the indicators of LV systolic-diastolic dysfunction.

Scientific novelty.

A multifactorial analysis of the relationship between the mechanisms of arrhythmic syndrome formation will be carried out and a comparative assessment of various tactical approaches to the treatment of cardiac arrhythmias associated with TLT in patients with ACAD at the stages of treatment will be carried out.

The data on the relationship between early systolic and diastolic dysfunction of the

LV myocardium in patients with ACAD after TLT and the occurrence of arrhythmias will be studied for the first time.

The role of indicators of diastolic dysfunction according to echocardiography (Echo-KG) data in predicting the occurrence of cardiac arrhythmias will be determined.

The theoretical and practical significance of the work.

An approach to differentiated treatment of arrhythmic syndrome depending on the diagnostic parameters of LV diastolic and systolic dysfunction in patients with ACAD after TLT will be proposed.

The parameters of LV systolic-diastolic dysfunction will be formed and substantiated, which can serve as criteria for the need to include corvutin and trimetazidine in the complex therapy for the treatment of arrhythmic syndrome in patients with ACAD after TLT at the stages of treatment.

Indications for the use of corvutin and trimetazidine and a regimen of administration in patients with ACAD after TLT will be developed for the prevention and correction of arrhythmic complications.

**Conclusion.** Echocardiographic examination of patients will allow to determine the peak flow rate in the phase

of early (E, cm / s) and late (A, cm / s) LV filling, E / A ratio, time of blood flow deceleration of early LV filling (DT<sub>e</sub>, ms), isovolumic relaxation time LV (IVRT, ms), which will determine the types of impairment of LV diastolic function.

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