SCHOLASTIC:
Journal of Natural and Medical Education
Volume 2 Issue 5, Year 2023 ISSN: 2835-303X
https://univerpubl.com/index.php/scholastic

Predictive Parameter of Myocardoprotection in Patients with Chronic Heart Failure as a Consequence of Myocardial Infarction

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Article Information

Received: March 09, 2023
Accepted: April 10, 2023
Published: May 11, 2023

Keywords: *myocardial infarction, coronary heart disease, chronic heart failure, sodium-dependent glucose transporter type 2 inhibitor, fructose 1,6 diphosphate (FDP).*

ABSTRACT

263 patients with coronary heart disease who underwent MI were examined. Of these, men – 157, women – 106. The average age of all studied was 56.2 ± 1.9 years. Each patient underwent the following examinations: anamnesis collection and examination; general clinical and biochemical studies, electrocardiography (ECG). The manifestations of CHF of both groups were evaluated according to the New York classification, obtained from the results of the 6-minute walk test. In patients who have suffered a myocardial infarction with or without a Q wave, the complication of which was CHF; against the background of basic therapy, the use of FDP significantly effectively affected the quality of life.

Introduction. The most common cause of the development of chronic heart failure (CHF) belongs to coronary heart disease (CHD), especially acute myocardial infarction (AMI). The most important and key stage in the development of CHF, which occurs as a complication of a myocardial infarction, is structural and functional changes leading to remodeling of the left ventricle, involving both systolic and diastolic dysfunction, i.e. violation of the contractile function of the myocardium [2,4]. A special role in the occurrence of the latter belongs to cardiomyocytes, whose contractile activity decreases sharply, but the need for oxygen and the necessary components of metabolism: tissue and cellular. As a result, myocardial ischemia is caused, the next stage is a sharp deficiency of ATP, leading to damage to intracellular structures, then the contractile function of cardiomyocytes is disrupted. This whole vicious circle is aggravated, with short-term treatment or with insufficiently effective therapy, ends with ischemic cardiomyopathy (ICMP). According to the latest standard of management of patients with CHF, it is necessary to use b-blockers, ACE inhibitors, mineralocorticoid receptor antagonists (AMR). The latter are represented by aldosterone receptor antagonists including; potassium-sparing diuretics: spironolactone and eplerenone. Having a weak diuretic property, AMP inhibitors are used not only and not so much as diuretics, in combination with b-blockers and ACE inhibitors, they affect the work of the heart: they reduce the need for oxygen, reduce post / preload, increase coronary blood flow [1]. A fairly successful effect on hemodynamic parameters, insufficiently effectively contribute to the use of oxygen by the myocardium. In addition, the above groups of drugs have a number of side effects, the use of which limits the scope of their use in most patients. As a drug with a metabolic effect, acting as a myocardial cytoprotector is FDP. Cardioprotection is achieved, at the cellular level, after providing a sufficient amount of energy,

namely ATP; which in turn builds the prerequisites for maintaining the normal contractile function of cardiomyocytes and the myocardium as a whole. The metabolic exchange of the heart is supported by the use of energy generated by the splitting of the two main substrates. Which are represented by free fatty acids (75%) and glucose (25%). FDP, by enhancing aerobic glycolysis and simultaneously reducing the intensity of fatty acid oxidation, leads to an energy potential. Which optimizes the myocardial oxygen demand in conditions of advanced ischemia [4,5]. It has been established that the use of FDP as an additional therapy; to the standard therapy of CHF in patients with coronary heart disease with MI; allows to reduce both systolic and diastolic myocardial dysfunction. Subsequently, this significantly reduces the functional class of CHF.

Target. To study the effect of the myocardial protector FDP in patients with myocardial infarction complicated by chronic heart failure.

Materials and methods: 263 IHD patients who underwent MI were examined. Of these, men – 157, women – 106, with a percentage ratio of 77.34% and 22.66%, respectively. The average age of the studied was 56.2±1.9 years. Each patient underwent the following examinations: anamnesis collection and examination; general clinical and biochemical studies, electrocardiography (ECG). The manifestations of CHF of both groups were evaluated according to the New York classification, obtained from the results of the 6-minute walk test. The patients were divided into 2 groups. The first group included 170 (69%) patients [men – 132 (80%), women – 48 (20%)] who, along with basic therapy, received FDP-D-Fructose-1,6-diphosphate of trisodium salt 5g (equivalent to 3.75g of D-fructose-1,6-diphosphoric acid) dissolved in 50 ml of its solvent; in / in drip 1 time a day, from 3 to 10 days. The second group (control group) included 93 (31%) patients [men – 60 (71.4%), women - 33 (28.6%)] who received standard therapy (beta-blockers, ACE inhibitors, AMP inhibitors). At the time of inclusion of patients in the study, 59 (29%) patients were included in the 1st group: I FC - 11 (18.6%), II FC -29 (49.2%), III FC - 14 (23.73%) and IV FC - 5 (8.47%). In group 2 in 36 (17.7%) patients: I FC in 14 (38.9%), II FC -3 (8.3%), IIIFK - 12 (33.3%) and IVFC - 7 (19.4%) patients. According to the Minnesota questionnaire, in the 1st group of patients, the quality of life indicators (the average value in points) was 61.7±0.79 points ($p<0.053$).

Results and discussion. There was an improvement in the quality of life of patients against the background of the treatment. This proved to be the case in positive hemodynamics and evaluation of manifestations of CHF phenotypes by FC. In the group receiving FDP, the number of patients with II FC CHF increased from 29 (49.2%) to 41 (69.5%), I FC CHF from 11 (18.6%) to 18 (30.5%) patients compared with baseline data due to patients from III FC and IV FC. The number of patients with III FC CHF decreased to 6 (10.2%) and IV FC CHF to- 3 (5.1%) patients; and in the control group, there is a slight negative dynamics ((III and IVFK up to 3 (8.3%) and 5 (13.9%), respectively). The study noted the positive dynamics of indicators reflecting the quality of life according to the Minnesota questionnaire. In the 1st group of patients, the quality of life indicators (the average value in points) improved from 61.4±0.8 points ($p<0.052$) to 34.2±0.28 points ($p<0.013$). In the 2nd group from 58.7±0.94 to 53.3±1.2 points ($p<0.051$).

Conclusion: FDP is a cardioprotector, in particular, it is possible to give the vocation of a high-class myocardoprotector. This drug on the background of use (3 to 10 days) causes an improvement in the metabolism of the myocardial muscle and is indicated for all patients with coronary heart disease who have suffered a myocardial infarction in the early stages of chronic heart failure.

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