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Assessment of Left Ventricle Diastolic Function in Patients with Ihd and Type 2 Diabetes after Coronary Stenting in the Early Postoperative Period

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ANNOTATION

In this work, the diastolic function of the left ventricle was assessed in patients with coronary artery disease with type 2 diabetes mellitus in the early period after coronary artery (CA) stenting. This study was conducted on the basis of the Samarkand regional branch of the Republican Specialized Scientific and Practical Medical Center for Cardiology (SRF RSNPMCC). The study included 82 patients with coronary artery disease, of which 25 patients suffered from type 2 diabetes, the average age of which was 57.4±9.1 years. All patients, depending on the presence of concomitant DM, were divided into 2 groups: the 1st group consisted of 57 patients with coronary artery disease, without diabetes, the 2nd group consisted of 25 patients with coronary artery disease, with concomitant type 2 diabetes. All patients before and after coronary artery stenting underwent clinical and laboratory examination, including control of prandial and postprandial glycemia, ECG, echocardiography . diastolic function of the LV myocardium in patients with type 2 DM is impaired in more cases than without DM, which is associated with the negative effect of carbohydrate metabolism disorders on LV diastolic function.

Relevance

Despite the enormous amount of scientific research, the systematic reform of recommendations aimed at improving the effectiveness of treatment and preventing complications of coronary heart disease (CHD) still plays a dominant role in morbidity and ranks first among the main causes of death [1, 3, 5]. With the development of such complications of IHD as post-infarction aneurysm of the left ventricle (LV) and interventricular septal defect (VSD), ischemic mitral insufficiency (IMN), the prognosis significantly worsens [2, 4, 6]. The solution to the problem of treating IHD is necessary by increasing the effectiveness of the pathogenetic method of treatment, namely, myocardial revascularization (RM), which improves the quality and life expectancy [7. 9, 11]. Decreased contractility is often a complication of myocardial infarction (MI) and is considered as an independent factor that makes it possible to predict heart failure (HF) and mortality in the long term [8, 10, and 12].

Adaptation of cardiomyocytes to the effects of ischemia resembles "forced degeneration", as it leads to a decrease in the expression of mitochondrial oxidative enzymes and an increase in the expression of stress proteins, which reduces energy demand due to a decrease in contractile function [13, 15, 17]. To restore contractile activity, the myocardium needs structural restructuring; therefore, after the restoration of blood flow in the coronary arteries, a VM experiencing chronic ischemia may need weeks or months to recover [18]. Restoration of blood supply to the GM can reprogram cardiomyocytes to normal expression of key proteins and resume contractile function. Normal blood flow at rest is associated in the GM with a decrease in the blood flow reserve in the coronary arteries (CA) [14, 16, 20]. The myocardium may be subject to recurrent episodes of ischemia caused by an increase in myocardial oxygen demand, however, in the absence of a reserve of coronary blood flow, this situation leads to permanent postischemic dysfunction [19, 21, 23].

Timely restoration of blood flow through the infarct of the associated artery leads to a reduction in the zone of myocardial necrosis up to the complete functional recovery of the myocardium, which in turn determines the clinical prognosis and survival [22, 24]. Successful treatment of AMI depends on the degree of restoration of the lumen of the occluded artery and, accordingly, blood flow in the ischemic myocardial tissue, as well as the time elapsed between occlusion and restoration of the lumen of the vessel [25].

Purpose of the study. To evaluate LV diastolic function in CAD patients with type 2 diabetes mellitus in the early period after coronary artery (CA) stenting.

Material and methods. This study was conducted on the basis of the Samarkand regional branch of the Republican Specialized Scientific and Practical Medical Center for Cardiology (SRF RSNPMCC). The study included 82 patients with coronary artery disease, of which 25 patients suffered from type 2 diabetes, whose mean age was 57.4 ± 9.1 years. All patients, depending on the presence of concomitant DM, were divided into 2 groups: the 1st group consisted of 57 patients with coronary artery disease, without diabetes, the 2nd group consisted of 25 patients with coronary artery disease, with concomitant type 2 diabetes. Patients with valvular pathology and heart aneurysm, as well as patients with type 1 diabetes, were excluded from the study. All patients before and after coronary artery stenting underwent clinical and laboratory examination, including monitoring of prandial and postprandial glycemia, ECG, echocardiography . The issue of coronary stenting was decided on the basis of selective coronary angiography .

Research results. According to the results of echocardiography at the preoperative stage, in all the studied groups, there was a pronounced expansion of the LV cavity and a deterioration in the contractile function of the myocardium. Based on coronary angiography, the majority of patients had a two-vessel lesion of the coronary artery - 65 (79.3%). Significant stenoses of two CAs, more often of the LAD and RCA, were diagnosed in 38 (46.3%) cases. LCA trunk stenoses (hemodynamically significant) were found in 27 (30.7%) patients; they were regarded as a lesion of two CAs. In 32 (20.9%) cases, percutaneous transluminal balloon angioplasty followed by coronary stenting. LCA trunk stenoses (hemodynamically significant) were found in 47 (30.7%) patients; they were regarded as lesions of two coronary arteries. Analysis of the data obtained in the study of pulsed wave Doppler revealed the following changes: LV diastolic function in patients with coronary artery disease with type 2 diabetes is impaired in a greater percentage of cases (85%) than in patients without diabetes (65%); the ratio of peak rates of transmitral blood flow (E/A) after stenting significantly ($p<0.05$) changed in patients of both groups: in patients from group 1 from 0.96 to 1.12, in patients from group 2 from 0.75 up to 1.15. All patients paid attention to a significant improvement in well-being, which certainly had a positive effect on their clinical status. First of all, patients indicated that angina attacks after myocardial

revascularization were absent or the frequency of their occurrence was greatly reduced. Myocardial revascularization allowed to reduce the manifestations of angina pectoris in all patients. However, recurrence of anginal attacks in the long-term follow-up period was detected in 4 (2.6%) patients with DM.

Conclusions. Thus, the diastolic function of the LV myocardium in patients with type 2 diabetes is impaired in more cases than without diabetes, which is associated with the negative effect of carbohydrate metabolism disorders on the diastolic function of the left ventricle, which is confirmed by the initially impaired diastolic function of the LV myocardium in patients without diabetes. improves in the early postoperative period after stenting .

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