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EFFECTIVENESS OF PCI IN PATIENTS WITH CAD WITH SYSTOLIC LEFT VENTRICULAR DYSFUNCTION AND ITS INFLUENCE ON THE LIFE PROGNOSIS.

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Abstract: To study the clinical and functional parameters and prognosis in patients with CAD with systolic dysfunction of the left ventricle (LV) after percutaneous intervention (PCI) against the background of optimal drug therapy for CHF after 6 and 24 months of observation.

Key words: coronary heart disease, heart failure, percutaneous coronary interventions, medium and long-term prognosis.

Materials and methods.

The study included 165 patients, which were divided into two: Group I (n = 82) with LVEF less than 40%, where, in addition to optimal drug therapy for CAD and CHF, angiographic study was performed followed by PCI (OMT+ PCI) and group II (n = 83) of optimal medical therapy (OMT). The severity of heart failure was assessed by SHOKS patient's clinical condition scale (modification by V. Yu. Mareev), six-minute walk test (6MWT), standard echocardiographic parameters. The prognosis was assessed at the end of the 6- and 24-month observation period.

Results. After 6 months of observation, in the OMT + PCI group, as compared with the OMT, there was a significant decrease in the total number of scores according to SHOKS (from 7.81 ± 2.01 to 3.88 ± 1.34 points), an increase in the distance according to the 6MWT (from 160.9 ± 55.8 to 270.3 ± 60.9m), no hospitalizations due to exacerbation of CHF. There was a statistically significant decrease in the volumetric dimensions of the heart (by 12% and 4%, respectively), ESD - by 20.5% and 8%, and an increase in EF by 6% and 2%, respectively, in both groups of patients ($p < 0.05$). After 24 months, significant positive dynamics of SHOKS (4.2 ± 1.1b) and 6MWT (293.8 ± 47.9m) indicators remained in the OMT + PCI group compared with the only OMT group, despite a general decrease in LVEF, which was more pronounced in the OMT group ($p < 0.001$). When assessing the quality and prognosis of life, a significant increase in relapses of angina pectoris was noted in the OMT group, which required myocardial revascularization.

Conclusion. In the long-term follow-up, with approximately the same mortality from cardiovascular causes, a significantly better quality of life is observed in patients who underwent OMT+PCI, with approximately the same mortality rates.

Conflict of interest. The authors declare no conflict of interest.

List of abbreviations

CABG - coronary artery bypass grafting; ARNI-angiotensin receptor-neprilysin inhibitors; ACE inhibitors; CHD/CAD – coronary heart/artery disease; MI - myocardial infarction; SGLT2 - sodium-glucose transporter type 2 inhibitors; ICMP-ischemic cardiomyopathy; LV-left ventricle; OMT-optimal medical therapy; DM - diabetes mellitus; HF-heart failure; 6MWT - Six minute walk test; EF - ejection fraction; SHOKS patient's clinical condition scale (modification by V. Yu. Mareev), CHF-chronic heart failure; PCI-percutaneous coronary intervention; EchoCG-echocardiography; ESC-European Society of Cardiology

Introduction.

One of the main causes of CHF is coronary artery disease (CAD). At the same time, various forms of coronary artery disease, including myocardial infarction (MI) are determined in 60-70% of patients with HF [1,4]. An important aspect is the study of long-term prognosis in CAD patients with CHF, especially in the era of updating the arsenal of diagnostic and therapeutic approaches to the management of patients with coronary pathology.

Since its introduction into clinical practice, percutaneous coronary interventions (PCI) have gradually become the method of choice in the treatment of patients with uncomplicated coronary artery disease resistant to optimal medical therapy [1]. At the same time, the use of PCI for the treatment of patients with complex forms of coronary vascular disease, low contractility of the left ventricle remains the subject of controversy in current days.

The aim of study.

To study the dynamics of clinical and functional parameters and prognosis in patients with heart failure of ischemic etiology against the background of optimal medical therapy for CHF and in combination with PCI based on the results of 6 and 24 months of follow-up.

Materials and methods.

The study included 165 CAD patients with left ventricular systolic dysfunction aged 55 to 82 years with LVEF less than 45%. The study was performed in accordance with the principles of the Declaration of Helsinki on the Ethics of Clinical Research, patients were informed and written consent was obtained.

Depending on the intervention, the patients were divided into two groups. Group 1 (n=82) included patients with LVEF less than 40%, who, in addition to standard therapy for coronary artery disease and heart failure, underwent angiographic examination followed by PCI. Group 2 (n=83) consisted of patients with reduced LVEF, who refused to undergo revascularization for socioeconomic reasons and were on drug therapy in accordance with current recommendations [2]. At the end of 24 months, 8 patients dropped out of the study (1 in group 1, 7 in group 2).

Clinical characteristics of patients of 2 groups are presented in table No. 1.

Table 1. Initial clinical and functional parameters of both groups.

Signs	**1 group (OMT+PCI), (n=82), n (%)**	**2 Group (OMT), (n=83), n(%)**	**p**	**χ^2**
Sex: male. female.	 63 (75.9) 20 (24.1)	 69 (75.9) 13(15.9)	>0.05	1,751
Age, years	58,7±7.7	62.4±8.01	>0.05	
Arterial hypertension	76 (91.5)	75 (91.4)	>0.05	5.619
DM type 2	37 (44.5)	34 (41.4)	>0.05	0.163
PICS in anamnesis,	65 (78.3)	68 (82.9)	>0.05	0.072
Angina pectoris II-III FC	54 (65.06)	62 (76.6)	>0.05	2.092
CHF III-IV FC (NYHA)	63 (76)	66 (80)	>0.05	0.293
Left ventricular aneurism	24 (28.9)	25 (30.4)	>0.05	1.794
LV EF, %	37,1±5.6	37.4±4.7	>0.05	

Notes: OMT, optimal medical therapy; PCI - percutaneous coronary intervention; DM - diabetes mellitus; PICS-postinfarction cardiosclerosis; CHF - chronic heart failure; p-level of confidence

As can be seen from Table 1, men predominated in both study groups: in 1st group, there were 63 (75.9%) males, 20 (24.1%) females, in 2nd group, 69 (84.1%) males, and 13 females. (15.9%). The age of patients in the 1st group ranged from 35 to 78 years (58.7±7.7 years), in the 2nd group - from 45 to 81 years (62.04±8.0 years). The groups did not have a statistically significant difference in the generally accepted risk factors. In both groups of patients, arterial hypertension was most common - in 91.5% (76) and 91.4% (75) of patients, diabetes mellitus 44.5% (37) and 41.4% (34) in the 1st and 2nd groups of patients, respectively. The LV ejection fraction ranged from 18% to 45%, and averaged 37.1±5.6% in the 1st group from 27 to 41% in the 2nd group, which averaged 37.4±4.7%.

An assessment of the clinical and functional state was carried out using: objective clinical criteria – the clinical condition assessment scale for patients with CHF according to Mareev (2000) (SHOKS), a six-minute walk test (6MWT), intracardiac hemodynamic parameters, according to the standard methods in M- and B-modes. The prognosis at the end of the 6- and 24-month follow-up period included an assessment of the hospital readmissions, the frequency of recurrent angina pectoris, the need for myocardial revascularization, the development of MI and death due to cardiovascular disease detected during return visits or (in cases of death) by phone from family and friends.

Statistical processing of the obtained results was carried out with the calculation of the arithmetic mean (M), standard deviation (SD). The significance of differences was determined according to Student's t- test. The $\chi 2$ test was used to analyze the significance of differences between qualitative indicators. Differences were considered statistically significant at $p<0.05$. Data are presented as M±SD.

Results.

All patients at the time of inclusion in the study were on optimal medical therapy for CAD and CHF. It should be noted that new drugs for the treatment of CHF (ARNI and iSGLT2) were taken by a small number of patients (3/2 in the OMT + PCI group and 4/2 in the OMT group), due to their inaccessibility at that time. The group of medications, their average dosage and frequency of administration are presented in Table No. 2.

Table 2. Medications taken

Group of drugs	**Average daily dose**	**Dosage frequency %**
ACE inhibitors, (lisinopril, enalapril)	8.36±0.4mg	100
Beta-blockers, (bisoprolol)	3.1±0.4 mg	95
Aldosterone receptors antagonists (spironolactone, eplerenone)	375±625 mg	100
Diuretics (torsemide)	7.5±3.2 mg	56
Statins (rosuvastatin)	12.5±3.25 mg	80
Antiaggregants, (aspirin or clopidogrel or their combination)	125.0±35.25 mg	90

Table 3 shows the semiotics of coronary artery lesions in both groups of patients and the average SYNTAX score

Table 3. Semiotics of coronary lesions

The number of affected vessels	I group, n (%)	II group, n (%)	p
1-vascular lesions	21 (25.3%)	23 (28.0%)	>0.05
2-vascular lesions	29 (34.9%)	28 (34.1%)	>0.05
3-vascular lesions	33 (39.8%)	31 (37.8%)	>0.05
Average SYNTAX score	19.5±2.0	20.5 ±2.0	>0.05

Note: p-level of confidence

In 64 (77.1%) cases, the average score on the SYNTAX scale was less than 22 points, i.e. these patients had a low risk of complications from PCI. PCI was performed in 83 CAD patients with LV systolic dysfunction. The total number of installed stents was 148. The calculation of the average number of stents per 1 patient turned out to be 1.78. Correlation analysis between the number of vascular lesions and global LV contractility did not reveal any relationship (p>0.05).
According to the results of the study after 6 months, it was revealed that in patients who underwent PCI, there was a significant decrease in the total number of points according to SHOKS (7.81±2.01 and 4.03±1.11 points, respectively, p<0.05) and a significant increase in 6MWT, which showed an increase easily walked distance from 160.9±56.7 to 270.3±61.2 m and corresponding to stable heart failure III NYHA class without episodes of decompensation.
In the drug therapy group, positive dynamics was also observed, although less pronounced compared to the 1st group. Despite a slight increase in the total score for SHOKS, the length of the walked distance according to the 6MWT data increased to 170.2±57.20 m after 6 months and to 182.2±67.26 m after 24 months of observation (Table No. 4).

Table 4. Clinical and functional indicators in dynamics after 6 months.

Indicators	Initially on hospitalization		After 6 months		P1 (1-2)	
n=83	1 group n=82	2 group n=83	1 group n=81	2 group n=74	P2 (1-3)	P3 (2-3)
SHOKS points	7.81**±2.01**	7.**69±2.**09	3.88±1.34	6.89±1.81	**<0.05**	>0.05
6MWT, m	160.9±56.7	167.1±55.8	270.3±61.2	170.2±57.9	**<0.05**	**<0.05**

Note: SHOKS - clinical condition assessment scale; 6MWT- a six-minute walk test; p-level of confidence

This state of affairs persisted over the following months.
After 24 months of observation, it was noted that despite a slight increase in the scores for SHOKS in the first group of patients, the 6MWT values did not decrease, while in the second group of patients maintaining the SHOKS values, there was a slight increase in 6MWT. Table No. 5 presents the results of the survey after 24 months compared with baseline.

Table 5. Clinical and functional indicators in dynamics after 24 months compared to baseline.

Indicators	Initially on hospitalization		After 24 months		P1 (1-2)	
	1 group n=82	2 group n=83	1 group n=81	2 group n=74	P2 (1-3)	P3 (2-3)
SHOKS points	7,81**±2,01**	7,**69±2,**09	4,2±1,1	6,89±1,65	**<0.05**	>0.05
6MWT, m	160.9±56.7	167,1±55,8	293,8±47,9	182,2±67,3	**<0.05**	**<0.05**

Note: SHOKS - *clinical condition assessment scale; 6MWT- a six-minute walk test; p-level of confidence*

Assessing the echocardiographic parameters at the stages of 6 and 24 months of observation, dynamic changes in the volumetric parameters of the heart were shown a decrease in EDV in both groups (by 12% in the 1st group and 4% in the 2nd), and the difference after 6 months of observation reached statistically significant values ($p<0.05$). At the same time, the size of the ESD decreased by 20.5% and 8%, which led to a significant increase in EF by 6% and 2%, respectively, in the 1st and 2nd groups of patients. After 6 months of observation, a significant increase in EF was noted in favor of the 1st group of patients ($p<0.05$). The size of the LA increased in both groups, however, the increase in its size was significantly less pronounced in the PCI group compared to patients who were on drug therapy ($p<0.05$). No significant changes were observed in other ECHOCG parameters (Table 6).

Table 6. Echocardiographic parameters in dynamics after 6 months.

Indicators	Consequence			6 months		
	1 group, n=82	**2 group** n=83	**P**	**1 group** n=81	**2 group** n=74	**P**
LA, sm	38,7±5,5	40,41±7,33	>0.05	40,09±6,3	43,57±9,4	**<0.05**
Ao, sm	34,1±4,1	33,16±3,74	>0.05	33,3±3,17	33,52±3,0	>0.05
EF %	37,1±5,6	37,4±4,7	>0.05	43.1±7,45	40.02±4,2	**<0.05**
EDV, ml	229,1±75,8	231,63±56,6	>0.05	201,4±55,8	222,52±64,5	**<0.05**
ESV, ml	144,1±59,2	144,82±44,8	>0.05	114,5±46,7	133,46±59,2	**<0.05**
IVS, sm	9,9±2,9	10,1±2,26	>0.05	9,9±2,5	10,1±1,83	>0.05
LVPW, sm	9,9±1,6	10,1±1,9	>0.05	10,2±2,2	10,5±1,8	>0.05

Note: Ao - aorta; EF - ejection fraction; LA - left atrium; RV - right ventricle; IVS and LVPW - the thickness of the interventricular septum and the posterior wall of the left ventricle; EDV - end diastolic volume; ESV - end systolic volume; p-level of confidence

After 24 months of observation, the EDV indicators both in the 1st and 2nd groups increased slightly (by 0.5% and 6%, p> 0.05). At the same time, in the OMT group, there was a significant increase in ESD (by 12.5%), which led to worse contractility in this group (EF decreased from 40.02±4.2% to 35.54±6.4%, p< 0.001) (Table 7).

Table 7. Echocardiographic parameters in dynamics after 24 months.

Indicators	**1 group (OMT+PCI)**			**2 group (OMT)**		
	6 months n=81	**24 months** n=81	**P**	**6 months** n=74	**24 months** n=74	**P**
LA, sm	40,09±6,3	41,41±7,**1**	>0.05	43,57±9,4	43,77±4,6	>0.05
Ao, sm	33,3±3,17	33,37±3,3	>0.05	33,52±3,0	33,62±2,8	>0.05
EF %	43.1±7,45	41,03±7,5	>0.05	40.02±4,2	35,54±6,4	**<0.001**
EDV, ml	201,4±55,8	200,89±59,4	>0.05	222,52±64,5	236,52±61,4	>0.05
EVS, ml	114,5±46,7	118,47±44,3	>0.05	133,46±59,2	152,46±60,1	**<0.05**
IVS, sm	9,9±2.1	10,65±1,4	**<0.05**	10,1±1,83	10,36±1,63	>0.05
LVPW, sm	10,2±2,2	10,65±2,4	>0.05	10,5±1,8	10,54±1,55	>0.05

Note: Ao - aorta; EF - ejection fraction; LA - left atrium; RV - right ventricle; IVS and LVPW - the thickness of the interventricular septum and the posterior wall of the left ventricle; EDV - end diastolic volume; ESV - end systolic volume; p-level of confidence

After 6 months, when studying the clinical course of the disease in terms of the frequency of readmission, no statistically significant differences were found. In the group with PCI+OMT, there was 1 death due to the development of SCD, meanwhile in the group of drug therapy - 2 cases - both after the development of AMI (p>0.05). There was a significant increase in angina relapses in the OMT group, exceeding those in the PCI + OMT group by more than 2.5 times. In the OMT group, AMI was also more common, and in 2 cases it ended up with the death of patients. Revascularization was also more frequently observed in patients on medical therapy.

After 24 months in the drug therapy group, there was a higher frequency of readmissions and a significant increase in the number of relapses of angina pectoris (by 7.5% and 49%), as well as the frequency of recurrent MI in groups 1 and 2, respectively. At the same time, the number of deaths due to CVD turned out to be approximately equal in both groups and did not differ significantly from each other (Table 8).

Table 8. Prognosis of patients in both groups after 6 and 24 months of follow-up

	6 months			24 months		
	1st group (n=81)	2nd group (n=74)	Comparison of 1 and 2 groups, 6 months, p, χ^2	1st group (n=81)	2nd group (n=74)	Comparison of 1 and 2 groups, 24 months p, χ^2
Death from cardiovascular causes, n	1 (1,5%)	2 (2,7%)	>0.05, 0.42	5 (7%)	6 (8%)	>0.05, 0.19
Readmission rate per year	2,42±0,56	2,58±1,2	>0.05	2,36±0,56	2,8±1,2	>0.05
Recurrent angina, n	4 (5%)	12 (16%)	<0.05, 4.31	6 (7,5%)	36 (49%)	<0.001, 19.32
Myocardial infarction, n	1 (1.5%)	3 (4%)	>0.05, 1.16	4 (5%)	8 (11%)	>0.05, 1.59

Note: p - level of reliability; data are presented both in absolute values and M±SD

Discussion

Treatment of patients with coronary artery disease with reduced myocardial contractility, despite the progress made in modern cardiology and cardiovascular surgery, remains the subject of discussion in current days. Most CAD patients with low ejection fraction are candidates for heart transplantation, however, for a number of socio-economic reasons, its implementation is the most difficult task, and often this type of medical care becomes simply inaccessible to them. Carrying out drug therapy, according to the CASS study (Coronary Artery Surgery Study), in patients with coronary artery disease with a LV ejection fraction of 35 to 49% is characterized by a four-year survival rate in 71% of cases, and in patients with an LV ejection fraction of less than 35%, the survival rate over the same observation period does not exceed 50% [3]. In our study, after 2 years of follow-up in patients with a baseline EF of less than 45% and receiving only medical therapy, the survival rate was 92%.

In recent years, various methods of myocardial revascularization have been widely used in patients with coronary artery disease with low LV ejection fraction. In previous studies of CABG in patients with ischemic dysfunction and low EF, a good long-term prognosis of their use was shown, however, both intraoperative and hospital mortality in these patients is higher than in patients with an LVEF of more than 40% [4,5, 6]. The effectiveness of minimally invasive revascularization in this category is poorly understood, and today it is not possible to unambiguously answer the question of whether PCI is an alternative to CABG. In this regard, in our work, the task was to study the immediate and long-term results of the use of percutaneous coronary interventions in patients with coronary artery disease with low left ventricular EF.

Our study included 83 patients with low LV ejection fraction (less than 45%) undergoing percutaneous coronary interventions, in whom we managed to study both mid-term (6 months) and long-term results (24 months). The comparison group consisted of 82 patients with known semiotics of coronary disease and who were on only optimal drug therapy. In both groups of the study, men predominated - 75.9% versus 24.1% in the first group and 84.1% versus 15.9% in the 2nd group of patients. In both groups of patients, arterial hypertension was most common - in 91.5% (76) and 91.4% (75), diabetes mellitus in 44.5% (37) and 41.4% (34) of cases in the 1st and 2nd groups of patients, respectively. The LV ejection fraction ranged from 18% to 45%, and averaged 37.1±5.6% in the 1st group, in the 2nd group from 27 to 41% and averaged 37.4±4.7 %. According to the data of selective coronary angiography, there were no significant differences between the groups in terms of the number of affected vessels: three-vessel lesion of the coronary bed - 39.8% and 37.8% of cases, two-vessel lesion - in 34.9% and 34.1% of cases, and single-vessel lesion - in 25 .3% and 28.0% of cases in the first and second groups of patients, respectively. The patient data obtained at the initial stage are consistent with the study by H. Serota et al., who analyzed the results of percutaneous coronary interventions in 73 patients with a left ventricular EF below 40%, male and female patients accounted for 72.6% (53) and 27.4% (20) respectively. The mean age of the patients was 62±10 years. Single-vessel lesion occurred in 13 (18%) patients, two-vessel – in 36 (49%), three-vessel – in 24 (33%) [7]. In a study by SerranoJr. et al. in 162 patients with low LV ejection fraction (22±5%) who underwent further surgical correction, single-vessel disease was detected in 50 (30%); two-vessel lesion in 62 (37%) patients and in 56 (33%) patients a three-vessel lesion of the coronary bed was revealed [8].

Thus, in our study, as well as in many of the above studies, male patients predominated among CAD patients with reduced myocardial contractility, and patients often had multivessel coronary disease.

By the effect on intracardiac hemodynamic parameters, a positive effect of PCI in patients with LV ischemic dysfunction was shown. In the study by Y. Nozari et al., which included 115 patients with coronary artery disease and low LV ejection fraction, who were implanted a drug-eluting stents, an increase in LVEF was noted, which, according to the authors, indicated a positive effect of the intervention. Thus, the average ejection fraction was 40.52 ± 6.36% on the day before PCI, 41.83 ± 7.14% on the next day, and 44.0 ± 7.89% after 3–6 months of PCI [9]. According to D. Dudek et al. (2001), who studied the results of PCI in patients with coronary artery disease with EF less than 40% in the long-term follow-up examination revealed an increase in LV EF from 38.4 ± 6 to 50.4 ± 15% ($p = 0.005$). Their study included 29 patients (mean age 54.4 ± 11.0 years) who were examined 6 months after successful PCI. The authors noted a significant improvement in LV EF in patients with NYHA classes I and II (from 40.4 ± 5 to 58.1 ± 9%; $p = 0.0001$) compared with patients belonging III and IV NYHA classes, where LV EF practically did not change (from 31.4 ± 9 to 31.8 ± 11%; p=ns) [10].

In our study, the results are consistent with the above data. There was a statistically significant decrease in the volumetric dimensions of the heart (by 12% and 4%), ESV - by 20.5% and 8%, and an increase in EF by 6% and 2%, respectively, in the 1st and 2nd groups of patients. In comparison, after 6 months of observation, there was a significant increase in EF in favor of the PCI group ($p<0.05$), regardless of the NYHA class of heart failure.

The data obtained by us in the course of the study, as well as data from the world literature, show that percutaneous coronary interventions in patients with coronary artery disease with reduced myocardial contractility contribute to an increase in the LV ejection fraction with positive changes in heart volume parameters.

Analyzing the impact on events in the immediate and long-term period, the following was shown: when observed for up to 24 months, no statistically significant differences were found in terms of the frequency of readmissions. In the group with PCI+OMT, there was 1 death due to the development of SCD, in the 2nd group - 2 cases - both after the development of AMI ($p>0.05$). There was a significant increase in angina relapses in the OMT group, exceeding those in the PCI + OMT group by more than 2.5 times. In the OMT group, AMI was also more common, and in 2

cases it ended up with the death of patients. Myocardial revascularization was also more frequently observed in patients on drug therapy.

C. Briguori et al. in 2008 published data on the results of treatment of 337 patients with a LV EF of 35% or less, who received stents from April 1993 to March 2004. The hospital period proceeded smoothly in 322 (95.3%) patients. Hospital mortality was 1.5%. During the two-year follow-up period, 83 (24.6%) patients died (Group 1), while 254 (75.4%) were alive (Group 2). Sudden death occurred in 65% of cases. Acute myocardial infarction occurred more frequently in group 1 (18% versus 5.4%, p=0.001). Cardioverter-defibrillators were implanted in 6.7% of patients in group 1 and in 20.7% of patients in group 2 (p=0.005). LV EF significantly improved only in the 2nd group - from 29ë6 to 35ë11% (p=0.001), while in the 1st group it remained unchanged (p=0.30). Independent predictors of long-term death were acute myocardial infarction (95% p=0.001), LV EF less than 25% (p=0.006) and completeness of revascularization (p=0.020) [11].

L.A. Bokeria et al. demonstrated the results of PCI in 52 patients with LV EF less than 40% with a hospital mortality rate of 1.4% and a four-year survival rate of 81%. Based on the analysis, the authors stated that PCI in patients with coronary artery disease with LV EF less than 40% is an effective and safe intervention, is associated with a low hospital risk, allows achieving good angiographic and clinical results, and also increases the contractility of the left ventricular myocardium and significantly improves the quality of life of patients [12].

V. Kunadian et al. in 2012 conducted a meta-analysis of studies using PCI in patients with left ventricular systolic dysfunction (ejection fraction less than or equal to 40%) to determine in-hospital and long-term (over 1 year) mortality rates. A total of 4766 patients were included in this meta-analysis. The mean age of patients was 65 years (95% CI: 62-68), 80% of them were men (95% CI: 75-84%). The mean LV ejection fraction was 30% (95% CI: 27-33%). Hospital mortality was 1.8% (39/2202, 95% CI: 1.0-2.9%). Long-term mortality (within 24 months) was 13.6% (401/2937, 95% CI: 11.0-20.7%). Based on the results of clinical studies, the authors concluded that PCI in patients with left ventricular systolic dysfunction is possible with the same low in-hospital and long-term mortality as with coronary bypass surgery [13].

The SYNTAX- study included patients who had a significant impairment of LV contractility (EF?30%) in the control period [14]. An analysis of the effectiveness of PCI in 301 patients with severe ICMP (mean LVEF-24%) showed a 30-day, 6-month and 4-year mortality of 1.3%, 6% and 33%, respectively [15,16]. These results compare favorably with the results of surgical treatment. On the other hand, the degree of LV involvement is a known determinant of poor outcome even in patients undergoing PCI [17]. Further studies are needed to evaluate the efficacy of PCI and the impact on prognosis compared with current drugs recommended for the treatment of heart failure and coronary artery bypass grafting.

Thus, based on the analysis of our own data and the above studies, it becomes obvious that percutaneous coronary interventions can be an alternative method of myocardial revascularization in patients with coronary artery disease with low LV ejection fraction.

Conclusion.

In the long-term follow-up, with approximately the same mortality, there is a significantly better quality of life in patients undergoing PCI + OMT, which is indirectly reflected in clinical, functional and echocardiographic parameters.

In patients with coronary artery disease with reduced myocardial contractility, PCI is accompanied by clinical efficacy, which is expressed in an improvement in the clinical and functional status of both manifestations of coronary artery disease (angina pectoris recurrence and the development of AMI) and HF (stabilization in the frequency of repeated hospitalizations, improvement in the tolerability of PT and intracardiac hemodynamics).

Used literature.

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