

МЕДИЦИНА И СТОМАТОЛОГИЯ

PATIENTS WITH ISCHEMIC HEART DISEASE AND MULTIVESSEL CORONARY ARTERY DISEASE AFTER SUCCESSFUL STENTING CLINICAL-RELATED ARTERY IN ACUTE CORONARY SYNDROME WITHOUT ST-SEGMENT ELEVATION: A COMPARISON OF METHODS FOR COMPLETE MYOCARDIAL REVASCULARIZATION

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Annotation. In patients with ischemic heart disease and multivessel lesions after successful stenting of the clinical-dependent artery using stents of the 3rd generation with drug coating for acute coronary syndrome without ST segment elevation and intermediate severity of lesions on the SYNTAX SCORE, when performing full functional revascularization, there are no differences in the indicators of large cardiovascular events between coronary artery bypass grafting and percutaneous coronary interventions.

Keywords: coronary heart disease, coronary artery bypass grafting, percutaneous coronary intervention, acute coronary syndrome without ST-segment elevation.

Coronary heart disease (CHD) is the main cause of death and disability, a significant contribution to which is made by acute coronary syndrome (ACS) [1].

Most often occurs ACS without ST segment elevation (nonSTEMI). This is confirmed by a large number of coronary revascularization in this pathology [2].

Patients with nonSTEMI and multi-vessel coronary bed lesion represent a complex task for the participants of the "heart team" in selecting the best strategy of complete revascularization of the myocardium. This is due to the severe condition of patients, a combination of several risk factors and chronic diseases, the prevalence of atherosclerotic lesions [3], the lack of specific recommendations for myocardial revascularization [4].

In everyday clinical practice, patients with nonSTEMI urgently performed stenting (PCI) of the clinical-dependent artery (CDA) and the second stage - complete endovascular revascularization or coronary artery bypass grafting (CABG).

The aim of the study was to compare the results of PCI with the use of 3rd generation drug-coated stents and CABG in patients with previously successfully performed PCI CDA with the use of 3rd generation drug-coated stents for nonSTEMI for two years of follow-up.

Materials and methods. The study included 140 patients with coronary artery disease and multivessel coronary artery disease who underwent emergency CDA stenting for nonSTEMI, and subsequently - complete functional revascularization not later than 90 days from the date of the PCI CDA. Complete functional revascularization was performed by CABG (CABG group) or PCI methods using 3-generation stents with drug coating and biodegradable polymer (PCI group).

For PCI were used stents 3-generation drug-eluting and sirolimus bioresorbable polymer "CALYPSO" producer "Angioline", Russia.

The diameter of the implantable stents was selected based on the distal reference diameter of the coronary artery, the length - from the need to overlap the artery section not less than 5 mm distal from the edge of the atherosclerotic plaque in both directions.

Coronary artery PCI was performed according to the standard procedure, in particular, pre-dilation, stent implantation and, if necessary, post-dilation using high-pressure cylinders.

In the presence of a bifurcation lesion, protection of the lateral branch by a conductor was used. The one-cent strategy of stenting was preferable, in the presence of indications - the occurrence of pain syndrome, slowing blood flow, compromising the mouth of the lateral branch - "kissing-dilation" was carried out, while maintaining complications - stenting of the lateral branch.

Criteria for success of PCI: blood flow TIMI III, residual stenosis no more than 10%, disappearance of objective and subjective symptoms of acute myocardial ischemia after intervention; and was successful in 100% of cases in both groups.

Before performing PCI, patients received a loading dose of clopidogrel, acetylsalicylic acid, clopidogrel, beta-blockers, statins and angiotensin-converting enzyme inhibitors were also prescribed.

CABG was performed by a single technique – the imposition of a mammary shunt on the anterior descending artery and venous shunts on other arteries in the presence of indications in terms of cardiopulmonary bypass, normothermia, cold blood cardioplegia.

The CABG group included 74 patients - complete myocardial revascularization was performed by CABG.

66 patients were in the group of PCI, revascularization of the coronary bed in this group was carried out by the method of PCI.

Exclusion criteria: age less than 18 and more than 80 years prior to PCI or CABG, lack of adherence to drug therapy, contraindications to the reception of disaggregants, the presence of severe comorbidities that limit the survival of patients, the inability to perform full functional revascularization, the severity of coronary lesions on the scale of Syntax less than 22 points and more than 33 points, the left coronary artery trunk.

The long-term results were evaluated quarterly over two years. End points of observation - cardiovascular mortality, myocardial infarction, acute cerebrovascular accident, re-revascularization and MACCE.

Statistical processing was performed using the program Statistica version 13.3 (TIBCO SoftwareInc.,

2017, <http://statistica.io>). The results are presented as mean and standard deviation ($M \pm SD$) at normal distribution, median with interquartile range of 25% and 75% percentiles at asymmetric distribution. The type of distribution of quantitative variables was evaluated by the Kolmogorov – Smirnov criterion with Lillifors correction. When comparing quantitative data, the Mann – Whitney U – test with continuity correction was used. Two-sided Fisher criterion was used to compare qualitative variables. The ratio of the chances of the development of large vascular events and the return of the angina clinic was calculated by four-field tables. Statistically significant differences between the groups were considered at $p < 0.05$.

Results. There were no statistically significant differences in clinical, demographic and operational characteristics between the groups (tab. 1, table. 2), except for the number of Smoking patients, which was higher in the PCI group.

TABLE 1.

CLINICAL CHARACTERISTICS OF PATIENTS

Indicator	Group CABG (n = 74)	Group PCI (n = 66)	p
Age, years	59,7±5,5	60,2±7,3	0,85
Female sex, n (%)	14 (18,9%)	11 (16,7%)	0,82
Body mass index	28,2±4,5	28,7±5	0,64
Generalized atherosclerosis, n (%)	40 (54,1%)	58 (87,9%)	0,1
Hyperlipidemia, n (%)	72 (97,3%)	66 (100%)	1,0
Arterial hypertension, n (%)	72 (97,3%)	66 (100%)	1,0
Diabetes mellitus, n (%)	13 (17,6%)	11 (16,7%)	0,16
Smoking, n (%)	21 (28,4%)	27 (41,0%)	0,03
A history of myocardial infarction, n (%)	24 (32,4%)	11 (16,7%)	0,52
Acute cerebrovascular accident in history, n (%)	4 (5,4%)	6 (9,1%)	1,0
Angina of the III-IV functional class according to the classification of the Canadian Heart Society, n (%)	73 (98,6%)	66 (100%)	0,85
Heart failure III-IV functional class according to NYHA classification, n (%)	22 (29,7%)	18 (27,3%)	0,36
Left ventricular ejection fraction after stenting of a clinically dependent artery, %	57,9±6,2	57,1±7,6	0,36
Euroscore II, points	1,4±0,6	1,6±2,6	0,12
Time to complete revascularization, day	68,2±19,2	74,5±15,4	0,06

TABLE 2.

ANGIOGRAPHIC AND OPERATIONAL CHARACTERISTICS OF PATIENTS

Indicator	Group CABG (n = 74)	Group PCI (n = 66)	p
Localization of clinically dependent artery, n (%)			
Anterior descending artery	24	33	0,04
Circumflex artery	29	12	0,009
Right coronary artery	21	21	0,71
The severity of the lesion of the coronary bed on the SYNTAX scale, points	26,4±3,8	26,3±2,5	0,68
The average number of implanted stents in a clinically-dependent artery, n (%)	1,1±0,35	1,2±0,45	0,66
The average length of the stented area in the clinically dependent artery, mm	24,2±7,9	27,3±13,2	0,28
The average diameter of stents implanted into clinic-dependent artery, mm	3,1±0,6	3,1±0,3	0,64

Analysis of the results (table. 3) showed the difference between the groups in the frequency of re-

vascularization and MACCE, which were higher in the PCI group.

TABLE 3.

RESEARCH RESULT

Indicator	Group CABG (n = 74)	Group PCI (n = 66)	P
Cardiovascular mortality, n (%)	2	0	0,5
Nonfatal myocardial infarction, n (%)	0	4	0,47
Nonfatal acute cerebrovascular accident, n (%)	0	0	1,0
Repeated revascularization, n (%)	0	5	0,02
Return of the clinic of angina pectoris that does not require revascularization (not heavier than Class II according to the classification of the Canadian Heart Society, n (%))	2	1	1,0
MACCE, n (%)	2	9	0,03

Discussion. The question of choosing the optimal tactics of revascularization in patients with nonSTEMI and multivessel lesions is relevant today. Timely myocardial revascularization is a leading factor that improves the survival of the above-mentioned group of patients. Recommendations of the European society of cardiology [4] suggest that patients with nonSTEMI and multi-vascular lesions require mandatory revascularization of the coronary bed, but the decision on its type, timing and phasing should be taken by the "heart team".

The lack of clear recommendations leads to the choice of a suboptimal strategy of invasive treatment in some patients and suboptimal results in the long term.

The choice of PCI CDA as the first stage of myocardial revascularization in high-risk patients with nonSTEMI and multivessel lesions is logical [5]. Determination of the optimal tactics of complete revascularization of the myocardium in the next stage, causes considerable difficulties. Often, preference is given to the endovascular method due to the low invasiveness of the intervention, the absence of risks of General anesthesia, and the short period of hospitalization [6]. The leading criterion for choosing the method of complete revascularization of the coronary bed in patients with multi-vascular lesions is the prevalence and severity of atherosclerotic process in the coronary arteries, which is estimated on the scale of Syntax [11]. Taking into account the high values of the Syntax scale in both groups of our study (SyntaxScore was 26.4 ± 3.8 and 26.3 ± 2.5 points in the groups of CABG and PCI, respectively), we can talk about the need for wider use of CABG as a method of complete revascularization in patients after successful PCI CDA, even with the use of modern stents of 3rd generation with drug coating.

Our results have shown the benefit of CABG in patients with previously successful PCI CDA about nonSTEMI and multi-vessel lesions according to the frequency of repeated revascularization and MACCE.

Conclusion. Patients with coronary artery disease and multivessel coronary lesions, who had successfully performed stenting of the clinical-dependent artery using stents of the 3rd generation with drug coating for acute coronary syndrome without ST segment elevation, and intermediate severity of lesions on the SYNTAX

scale when performing full functional revascularization by coronary artery bypass grafting or stenting methods have no differences, except for the frequency of repeated revascularization and MACCE, which were higher in the stenting group.

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