



HIGH-TECH MEDICAL CARE TO RESTORE BLOOD FLOW IN PATIENTS WITH RESTENOSIS

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Article history:	Abstract:
Received: March 20 th 2023 Accepted: April 22 nd 2023 Published: May 24 th 2023	The purpose of the study is to justification of the choice of a surgical method for the treatment of restenosis
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RELEVANCE. Over the past 10-15 years, we have distinguished ourselves by the economically rapid growth and development of many countries of the world. This fact leads to significant changes in both living conditions and significantly improves the quality of life. In turn, adherence to an unhealthy lifestyle, in particular to an unhealthy diet; a high rate of arterial hypertension; a hypodynamic lifestyle, smoking and all sorts of other risk factors; which provoked the occurrence of atherosclerotic changes. These include atherosclerosis of the cardiovascular system (CFS), which defined coronary heart disease (CHD) as the leader in the level of death and disability in the countries of the world [1,3-6]. Its universal prevalence of percutaneous intervention (PCI), including the CV stenting method, in the therapeutic approach of various forms of coronary heart disease has led to a progressive increase in the number of restenoses, which is currently the most burdensome problem of interventional cardiology [2,4]. Reliable determination of the frequency of restenosis after PCI is not such an easy task. Various sources state that during the period before the creation of coronary stents, following balloon angioplasty, the frequency of restenosis reaches 35-57%.

A number of technical developments have been introduced into practical medicine over the past 25 years, where their purpose was to reduce the number of restenoses that have arisen. Initially, holometallic stents (HMS) appeared; the use of which will reduce the frequency of restenosis to 18.3—42.6%; later, stents with drug or drug coating (MP/LP) of the first and second generations and cylinders with MP/LP appeared; the introduction of this helps to reduce the number of restenoses that have arisen to 9.95% or less [3,5,8]. All this as an innovation leads to the fact that patients undergoing surgical revascularization (with lesions of the trunk of the left coronary artery; complex bifurcation lesions, stenosis with severe calcification) would have undergone PCI. As a

consequence of the above, there is a discrepancy in the number of restenoses that have occurred according to research data from various registries, including patients with more severe lesions of the CFS, which show a higher level of restenoses compared to randomized studies [1,6]. The data of the majority of clinical studies on the detection of restenosis gave the definition of the term restenosis - a decrease in the lumen of the vessel after PCI by 49.95% compared with the initial diameter [7,11]. Clinical practice most widely applies the definition of restenosis proposed by the Academic Consortium (ARC) and used when repeated revascularization is necessary, as a consequence of ischemic manifestations; includes stenotic narrowing of the lumen by more than 69.95% or narrowing by more than 49.95%, which is accompanied by angina pectoris. In this case, there are objectively signs of ischemia during rest or exercise, or when reading the pathological indicators of functional invasive tests, in particular, the fractional reserve of blood flow (FRK) is more than 0.795 [8]. Many cases of restenosis should be considered as a relative benign condition, manifested in the form of indicators and symptoms of stable angina pectoris.; but there are also data confirming stent restenosis as a phenomenon of an independent risk factor for death, as well as other important clinical factors, such as age, gender, diabetes mellitus, smoking, coronary artery bypass grafting and a decrease in the ejection fraction of the left ventricle [7,9]. Many patients with the development of restenosis complain of the occurrence of unstable angina and/or myocardial infarction, in particular, death [3,10]. Classification of restenosis, depending on the period of development from the moment of stent implantation, are divided into the following types:

- acute (during the first 24 hours);
- subacute (from 24 hours to 30 days);
- late (from 30 days to 1 year);
- and very late (more than 1 year) [8,9].



An actual indicator and the degree of study of predictors of the development of recurrent stenosis (restenosis), pathogenetic aspects of the process described above, methodological data for its prediction, including primary, secondary and tertiary prevention. All of the above processes are open topical issues, since the development of this type of complication leads to the development of recurrent ischemia, which in turn reduces the quality and life expectancy of the treated patients.

THE PURPOSE OF THE STUDY. Justification of the choice of a surgical method for the treatment of restenoses.

MATERIAL AND METHODS OF RESEARCH. We included 75 patients in the study who were treated for the first time or hospitalized for the first time with restenosis. The entire follow-up period for patients with restenosis was from 2.5 months to 5 years (median follow-up = 2.64 ± 1.38 years). The quantitative indicator of patients who required PCI earlier or before 1 year was 27 patients. Which, as a percentage, amounted to 36%. The quantitative indicator of patients who underwent PCI > 1 year ago was 48 people and 64%, respectively.

RESEARCH RESULTS. In order to eliminate the causes and consequences necessary in solving the tasks, a statistical analysis of patients treated for the first time or hospitalized for the first time with restenosis was carried out; in accordance with the following characteristic features:

1) clinical features (Quetelet index within $> 30 \text{ kg/m}^2$; from 1st to 12th months of follow-up after PCI; female; diabetes mellitus (DM); 2 or more times suffered myocardial infarction (PIM) in anamnesis data confirmed by electrocardiographic (ECG) examination; 2) angiographic features (compliance with the indicators of high-class restenosis according to the R.Mehran classification; presence of subtotal and/or total occlusions; volume of vascular lesions, measured as length-(L); vessel diameter-as a meter of small vessel volume (d); presence of multivessel lesions and laboratory data (fibrinogen level and aggregation the ability of platelets (AST) in the form of a degree is an increased level).

From all of the above studies, indicators of results were obtained: from all respondents who underwent CABG, clinical measurement markers (as a research factor excluded: female) occurred from 19.54 to 59.54%, with the peak indicator (59.54%) falling on the indicator - BMI $> 29.95 \text{ kg/m}^2$. When taking into account the markers of angiographic examination involved in the CABG sample, the presence of multivessel lesions (in all 100% of patients), stenosis

$\geq 94.57\%$ (79.95%) and d arteries $< 2.97\text{mm}$ (79.95%) played a significant role. According to laboratory studies – the degree of AST ≥ 2.97 ; significantly influenced the sample in favor of CABG.

A sample of patients who underwent intra-aortic balloon counterpulsation were included in the sample only if factors had a certain influence in favor of this particular recanalization method: clinical sign - DM, for up to 1 year and the multiplicity of the presence of PIM in the anamnesis; angiographic sign - L vascular lesion $> 19.95 \text{ mm}$ and d arteries $< 3\text{mm}$; laboratory sign – PH level $\geq 3.95\text{mg/dl}$. And at the same time, the occurrence of the above markers did not exceed 59.95%.

The combined recanalization technique was performed in patients who, in addition to restenosis, were diagnosed with stenotic narrowing of a non-target artery. Angiographic and laboratory markers were used as a basis for sampling this research method. In the statistical processing of research data from angiography indicators, the main percentage indicator fell on developed multivessel lesions, and laboratory ones affect the degree of AST ≥ 2.95 .

The analysis of the correlation method between the total calculation of markers and the chosen tactics for restoring the blood flow of the cardiovascular system (CFS) revealed a direct relationship of a reliable nature, with a high index ($p < 0.000012$), i.e. with an increase in the number of markers in a particular patient, the need for more complex therapies among high-tech medical care (VMP) increased disproportionately.

CONCLUSION. Due to the statistical analyses carried out, an algorithm of differentiation tactics for surgical therapy of restenoses has been developed, taking into account the above-mentioned triad of leading syndromes.

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