УДК: 616.13-089

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DIAGNOSIS OF SMALL MYOCARDIAL INJURIES AFTER PERCUTANEOUS CORONARY INTERVENTIONS

Summary. Cardiovascular diseases are currently the main cause of disability and premature mortality in economically developed countries. Ischemic heart disease (CHD) remains the most common disease today, despite the high level of development of world medicine. The treatment of coronary artery disease in patients is an urgent problem at the present time. More than 3.0 million myocardial revascularization procedures are performed worldwide every year. In recent years, the ratio of percutaneous coronary interventions (P B) (angioplasty and stenting of the coronary arteries) and coronary artery bypass grafting is 2: 1 in Europe, and 6: 1 in the USA and Japan. Observational studies involving a large number of patients confirm that PCI is a highly effective procedure with a low complication rate compared to other methods of myocardial revascularization. Nevertheless, there are still many open questions in the PCI problem.

Key words: minor myocardial injuries, stenting of coronary arteries, Troponin T, CPK-MB.

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ДИАГНОСТИРОВАНИЕ МАЛЫХ ПОВРЕЖДЕНИЙ МИОКАРДА ПОСЛЕ ЧРЕСКОЖНЫХ КОРОНАРНЫХ ВМЕШАТЕЛЬСТВ

Резюме. Сердечно-сосудистые заболевания в настоящее время являются основной причиной инвалидности и преждевременной смертности жителей экономически развитых стран. Ишемическая болезнь сердца (ИБС) на сегодняшний день остается наиболее распространенным заболеванием, несмотря на высокий уровень развития мировой медицины. Лечение ИБС у пациентов - актуальная проблема в настоящее время. Ежегодно в мире выполняется более 3,0 млн. процедур реваскуляризации миокарда. В последние годы соотношение чрескожных коронарных вмешательств (Ч В) (ангиопластика и стентирование коронарных артерий) и коронарное шунтирование составляет 2:1 в странах Европы, и 6:1 - в США, Японии. Наблюдательные исследования, охватившие большое количество пациентов, подтверждают, что ЧКВ высокоэффективная процедура с низкой частотой осложнений в сравнении с другими методами реваскуляризации миокарда. Тем не менее, в проблеме ЧКВ остается еще много открытых вопросов

Ключевые слова: малые повреждения миокарда, стентирование коронарных артерий, Тропонина Т,КФК-МВ.

Introduction. Cardiovascular diseases are currently the main cause of disability and premature mortality among residents of economically developed countries. Ischemic heart disease (IHD) remains the most a common disease, despite the high level of development of the world medicine.

The treatment of coronary artery disease in patients is an urgent problem at the present time. Annually inmore than 3.0 million myocardial revascularization

procedures are performed worldwide. In recent years the ratio of percutaneous coronary interventions (PCI) (angioplasty and coronary artery stenting) and coronary artery bypass grafting is 2: 1 in countries Europe, and 6: 1 - in the USA, Japan.

Today they have been studied and described in sufficient detail, according to the classification ACC / AHA complications after PCI, such as: death, myocardial infarction, stroke, transient ischemic attack, complications at the puncture site, renal failure, an allergic reaction to a contrast agent; specific complications – thrombosis coronary artery, its perforation, tamponade and arrhythmias.

The term "minor myocardial injury" (MPI) appeared in the literature recently. MMI occurs in 8-15% of cases after planned PCI and are manifested only by an increase in the level of cardiospecific markers, without clinical and electrocardiographic signs of myocardial damage [2, 3, 5].

Purpose of the study. Optimize diagnostics, identify risk factors development of minor myocardial injuries and assess their impact on long-term results planned percutaneous coronary intervention in patients with ischemic heart disease: angina pectoris.

Materials and research methods. The study included 45 patients with coronary artery disease: angina FC III-IV, admitted to the Namangan Cardiological Center for planned PCI and stenting of coronary arteries, selected according to inclusion and exclusion criteria.

The patients included in the study were divided into groups, according tothe level of the content of cardiospecific markers in the blood serum: group studies - 25 patients (13 men, 12 women) with coronary artery disease III-IV functional classes after PCI complicated by minor myocardial injuries; comparison group - 20 patients (12 men, 8 women) with coronary artery disease: angina pectoris stresses III-IV functional classes after PCI, not complicated by MMI.

During the study, general clinical research methods were used. (general blood test, urine test), biochemical blood test (blood test for the content blood electrolytes, lactate dehydrogenase, aspartate dehydrogenase, creatinine, urea,

prothrombin index, international normalized ratio, total cholesterol, triglycerides, glucose) and special research methods - immunochemical blood test (troponin T, creatine phosphokinase-MB, myoglobin). Also used instrumental research methods: electrocardiography (ECG), daily Holter ECG monitoring, echocardiography and selective coronary angiography.

Research results. When examining patients with coronary artery disease: angina pectoris strains of III-IV functional classes subjected to PCI and stenting coronary arteries, on the 1st day, the presence of complaints in the study group for slight discomfort behind the sternum in 3.2% of patients there were complaints, so over time, patients in the comparison group did not show any complaints ($p < 0.05$).

In patients with coronary artery disease in the study and comparison group after performing PCI and stenting of coronary arteries, according to indicators of biochemical blood test, such as: hemoglobin, creatinine, cholesterol - no differences were found. However, there is an increase in the general blood test of the level of leukocytes above normal - 10.23 * 109 / l, in patients of the study group, which is not observed in patients of the group comparison ($p < 0.05$).

Instrumental data for detecting MMI are insignificant - these include ECG signs in the form of early repolarization of the ventricles, which registered only in the study group (17.1%) after planned PCI ($p < 0.05$). There were no differences in the ECHO-CG parameters between the groups of patients.

On the 1st day after PCI and stenting of the coronary arteries, an increase in the level of the content of CPK-MB in blood serum in patients of the study group, exceeding the indicators of the comparison group by 1.7 times ($p < 0.05$) We received data on the excess of troponin T levels in the group studies over the comparison group by 74 times ($p < 0.05$)

When considering the statistical contingency of the investigated cardiospecific markers of myocardial damage in the study group, it was possible to identify the average positive correlation between content levels myoglobin and CPK-MB ($r = 0.7693$, $p = 0.0001$), also between myoglobin and troponin T ($r = 0.6021$, $p = 0.001$). The data obtained indicate the presence of MMI in patients of

the study group. Stepwise regression analysis performed for cardiospecific markers of myocardial damage, revealed a stable linear the relationship between the markers studied and the clinical manifestations of MMI. So how, myoglobin has a direct effect on the formation of values troponin T, meanwhile, CPK-MB has an indirect effect on formation of troponin T.

Using serum troponin T levels in patients with coronary artery disease after PCI and stenting of coronary arteries, by immunochemical examination, you can determine the value of myoglobin, using linear regression equation, with further identification of the development of MMI individually for each patient.

Also, obtained in the course of regression analysis, a linear equation, possibly by the values of the CPK-MB indicator, determined using the immunochemical examination of blood serum of patients with coronary artery disease, calculate the second cardiospecific marker of myocardial damage - troponin T. The correlation coefficient is: r = 0.53366. The obtained linear regression equations show a more important role of the relationship increase in cardiospecific markers, such as: myoglobin, troponin T and CPK-MB in response to the occurrence of minor myocardial injury after percutaneous coronary interventions and stenting of coronary arteries, which can serve algorithm for identifying the specified complication.

Conclusions: Clinical features of the early postoperative period in patients with coronary heart disease, on the 1st day after the planned percutaneous coronary intervention in patients with the development of minor lesions myocardium, in contrast to the comparison group, is the presence of an insignificant discomfort behind the breastbone (17.1%), an increase in the level of leukocytes in the blood (10.23 * 109 / l), syndrome of early repolarization of the left ventricle of the heart on the ECG (3.2%) ($p < 0.05$) Increased serum cardiospecific markers blood: myoglobin (95.1 ± 0.55 ng / ml), troponin T (0.074 ± 0.002 ng / ml), creatine phosphokinase-MB (5.58 ± 0.089 ng / ml) in patients with coronary artery disease: angina pectoris tension of III-IV functional classes after performing percutaneous coronary interventions, with a high probability indicate the development of minor

myocardial injury.Risk factors to predictdevelopment of minor myocardial injuries after percutaneous coronary intervention andstenting of coronary arteries in patients with coronary artery disease are: diffuse lesion coronary arteries, stenosis length more than 24.07 ± 1.3 mm, recanalization with stenting coronary arteries, lateral branch occlusion, implantation of metal stents, implantation of two or more stents, systemic atherosclerosis, type 2 diabetes mellitus, arterial hypertension ($p < 0.05$).

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