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Myocardial Infarction its Etiology, Pathophysiology, Clinical Course and Treatment Methods

Akhrorov Abdulaziz Azizjonovich
Sobirova Dildora Ravshanovna
Tashkent Medical Academy, Uzbekistan

Abstract:
This article discusses the causes, etiology, pathogenesis, clinical course of myocardial infarction, preventive measures to prevent the disease and methods of its treatment.

Keywords: Myocardial infarction, ECG, Acute period, moderate acute period, positive teeth, negative teeth.

Introduction

Myocardial infarction is a disease caused by an acute violation of the coronary circulation, which leads to necrosis of the heart muscle. The cardiovascular system includes the heart and blood vessels, which provide the organs with continuous blood supply. The heart is a muscular organ that consists of a cavity. The heart is anatomically located behind the collar, inside the chest in the anterior area of the chest cavity. The heart consists of 4 Chambers: 2 atria and 2 ventricles. The chambers are characterized by valves that open and close with the heartbeat, allowing blood to flow only in one direction. As the heart contracts, the valves open when the pressure in the chambers increases. [1] contraction and biopatentials of the heart muscles are determined using ECG (electrocardiography). There are 5 teeth in the ECG and they are bellied with Latin letters. The three large teeth i.e. P, R, T are pointing upwards and are called positive teeth. The two small teeth Q and S are downward-pointing, called negative teeth, and are located below the isochysis. The P tooth is the algebraic sum of the potentials where the left and right divisors contract. Its duration is 0.1 sec. The Q tooth, on the other hand, determines the excitation of the ventricles, the heart end of the intercostal barrier, the right sucker muscle and the depolarization of the inner surface of the ventricles. Voltage is 0-0.3 mv. The R tooth is considered the highest tooth in the ECG, indicating that the base of the heart and the outer surface of the ventricles are excited, and its voltage is 0.6-1.6. S indicates that the excitation of the myocardium of the dental ventricles is fully covered. Voltage is 0.25-0.14. T indicates myocardial repolarization of the tooth. This tooth is the most variable part in the ECG and has a voltage of 0.25-0.6 mv[4].

Despite the achievements of modern medicine, cardiovascular disease remains the leading cause of death in developed countries. Myocardial infarction is the most urgent form of ischemic heart disease, requiring the patient to be admitted to a specialized

hospital with immediate treatment measures. Myocardial infarction usually damages the left ventricle of the heart, but sometimes the origin of the disease is also associated with the right ventricle. The involvement of the right ventricle in the field of myocardial infarction has been known since the 30s of the last century, when necrosis of the right side of the heart was described in autopsies by Saunders et al . However, the clinical picture of right ventricular infarction was first identified by Kon et al in a group of patients with left ventricular inferior wall infarction, who had symptoms of right ventricular insufficiency in the form of increased venous pressure [6].

It has been scientifically proven that in young and middle-aged people with myocardial infarction, the risk of death during the first year after the hospital does not depend on the presence of a deviation of the BT segment at the time of the patient's sex, age or examination of the diagnosis [7].

Etiology

Myocardial infarction occurs in 97-98 percent of patients when the coronary heart vein develops atherosclerosis. Clogging of the coronary heart is caused by the presence of a wound of atherosclerotic plaques, blood flow to them, as well as a violation of the blood clotting process. Myocardial infarction occurs if acute compression of the coronary heart continues for a long time. After the cleft palate ruptures, the substances inside it are added with blood and platelet aggregation develops. Factors of the blood clotting system are activated. Fibrin, erythrocytes are added to form a monolithic thrombus. The blockage of the coronary heart vessel disrupts the blood supply to the myocardium. Myocardial necrosis, more often develops in the wall of the left ventricle. Systolic and diastolic activity of the heart is impaired due to necrosis in the myocardium [8].

Pathophysiology

According to the distribution and depth of the necrosis furnace to the myocardial floors, the following types of myocardial infarction are distinguished:

- Q toothless (small hearth) – (subendocardial, subepicardial and intramural). In the ECG, there is mainly a change in the ST segment and T tooth;

– Q tooth (large furnace) – (non – transmural-damages 50% of myocardial floors) - pathological Q tooth appears in the ECG, changes are observed in the ST segment and T tooth, and the R tooth is preserved;

- Q toothpick – transmural – (necrosis furnace damages all floors in a certain area of the myocardium) - in the ECG, the QRS complex takes on the appearance of QS and changes in the ST segment and T toothpick are observed. [2]

Clinical course

The clinical course of myocardial infarction in a patient is divided into the following periods:

Acute period of myocardial infarction

Myocardial infarction begins with severe pain that mainly occurs in the heart area. The pain is located in the front of the chest, in the area under the collarbone, and is given to the left arm, shoulder, chest, left lower jaw. Sometimes there is pain in the two hands, between the spars, below the collarbone. Pain in the right hand and shoulder is observed less often. Pain can also be accompanied by nausea, vomiting, rest of the abdomen, constipation.

Moderate acute period of myocardial infarction

This period lasts from one week to 30 days. The patient's condition begins to improve, blood pressure is in one norm. Changes in the blood improve. But even during this period, the following complications can develop: thromboembolism syndrome, thromboendocarditis, pneumonia, post-infarction Dressler syndrome (pleurisy, pericarditis, pneumonitis), chronic insufficiency of the left ventricle of the heart and the right ventricle of the heart.

The period after myocardial infarction

The patient's condition improves, walks actively, his pulse is in moderation. Sometimes pain occurs around the heart. The heartbeat is even, and extrasystole is sometimes observed. Necrosis in the myocardium of the heart begins to appear scars on the site of the furnace. This period runs from 1oy to 3oy. In some cases, there is a continuous increase in body temperature. This is due to complications of myocardial infarction [5].

Treatment options

All patients with myocardial infarction are admitted in special intensive care units of the hospital. Treatment measures should be aimed at completely eliminating pain syndromes, preventing heart rhythm and conduction disorders, and limiting the focus of necrosis. In this case, patients are prescribed Thrombolytics (streptokinase, streptodecase), anticoagulants (heparin, fracsiparin), antiagregants (aspirin, cardiomagnil, stazex), nitrates (nitrosorbit, nitrong, monosan, oligard), β-blockers (atenolol, egilok, nebilet), antiarrhythmic (cordarone, β-blockers, allapinin) in individual doses based on the patient condition. When recommending them, it is important not to ignore the indications and contraindications. [3]

Prevention

Elimination of risk factors leading to ischemic heart disease: abstinence from smoking, normalization of body weight, consumption of dietary foods low in animal fats, moderation of uric acid and hypercholisterinemia in the blood.

CONCLUSION

Myocardial infarction is necrosis (local death) of the heart muscle layer as a result of blockage of the coronary arteries of the heart with a thrombus or their compression, as a result of a violation of the blood supply to the muscle layer of the heart. People between 45 and 60 years of age get sick with this disease. Myocardial infarction is more common in people with atherosclerosis, hypertension and diabetes.

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