

MYOCARDIAL INFARCTION: CAUSES, SYMPTOMS, RISK FACTORS, FIRST AID.

Andijan branch of Kokand University

Faculty of Medical Sciences

Student of DI 25-36 group

Meliqo'ziyev Umidjon Muhammadjon ugli

Annotation: Myocardial infarction consists of ischemic necrosis of a specific part of the heart muscle. According to the extent of the process, two types of myocardial infarction are distinguished:

1. transmural, and
2. endocardial or intramural.

According to the clinical course, complicated and uncomplicated myocardial infarction are distinguished. The main factors determining the clinical picture of acute myocardial infarction are the degree of damage to the coronary arteries and the development of collateral circulation; the extent of myocardial damage and its localization largely depend on these factors. According to localization, acute myocardial infarction is divided into infarction of the anterior wall, lateral wall, and posterior wall of the heart.

In diagnosing acute myocardial infarction, in addition to anamnesis data, electrocardiography, enzyme diagnostics (determination of creatine kinase, aspartate aminotransferase, lactate dehydrogenase in blood serum), radioisotope diagnostics with Tc99 or Tl201, radiological diagnostics, echocardiography, selective coronary angiography, and left ventriculography are of great importance.

Modern methods of treatment of acute myocardial infarction.

In acute myocardial infarction, treatment should be aimed at maintaining and improving cardiac function and circulation, preventing complications, and preserving as much viable myocardium as possible. Treatment begins with relief of pain attacks and simultaneous oxygen therapy (oxygen delivery via a nasal catheter).

To limit the area of myocardial damage, two groups of measures are used:

1. measures that improve coronary perfusion of the infarct and peri-infarct zones;
2. measures that reduce myocardial oxygen demand.

Measures of the first group can be achieved through medications, endovascular (invasive), and surgical methods.

Keywords:

Myocardial infarction, ischemic necrosis, ischemic heart disease, coronary arteries, atherosclerosis, thrombosis, coronary circulation, transmural infarction, endocardial infarction, clinical signs, chest pain, shortness of breath, arterial hypertension, diabetes mellitus, obesity,

smoking, risk factors, ECG diagnostics, enzyme diagnostics, thrombolytic therapy, coronary angiography, angioplasty, aortocoronary bypass grafting, first aid, rehabilitation, prevention.

Conservative treatment includes drugs with antispasmodic effects, drugs that reduce aggregation of formed blood elements, beta-adrenergic receptor blockers, and calcium antagonists. Along with conservative treatment, there are a number of endovascular and surgical methods that help restore impaired blood flow and the affected area, and limit the size of myocardial damage. Among them, intracoronary thrombolytic therapy, intra-aortic counterpulsation, and aortocoronary bypass grafting are considered the most effective methods.

Myocardial infarction is an acute condition and a clinical form of ischemic heart disease that occurs due to myocardial necrosis of heart muscle tissue as a result of complete or partial blood supply insufficiency. This leads to dysfunction of the entire cardiovascular system and puts the patient's life at risk. The main and most common cause of myocardial infarction is impaired blood flow in the coronary arteries that supply the heart muscle with blood and, accordingly, oxygen. Most often, such impairment occurs against the background of arterial atherosclerosis, in which atherosclerotic plaques form on the vessel walls. These plaques narrow the lumen of the coronary arteries and contribute to damage of the vessel walls, creating additional conditions for thrombus formation and arterial stenosis.

Administration of thrombolytic drugs into the coronary vessels is aimed at recanalizing the thrombosed coronary artery, restoring blood flow, limiting the area of damage, preserving the viability of the peri-infarct ischemic zone of the myocardium, and reducing mortality from acute myocardial infarction. An angiographic catheter is inserted into the occluded coronary vessel, through which 20,000–40,000 IU of thrombolytic agents (streptase, avelysin) are administered simultaneously, followed by drip infusion at a rate of 2,000–6,000 IU per minute, with the total dose not exceeding 20,000–24,000 IU. The entire procedure takes about 1 hour. Thrombolytic therapy performed within the first 6 hours after the onset of infarction allows recanalization of the occluded vessel in approximately 75–80% of cases. After successful thrombolytic therapy, long-term treatment with anticoagulants (2–3 months) is carried out. For more complete restoration of coronary artery patency, thrombolytic therapy is combined with coronary angioplasty or aortocoronary bypass grafting.

Risk factors for infarction:

There are a number of factors that significantly increase the risk of developing this acute disease:

When talking about the main causes of infarction in young people, first of all, improper nutrition and obesity play a role. Unfortunately, it cannot be denied that today most young people consume large amounts of fast food, fatty and fried foods, carbonated drinks, and products with high sugar content. This leads to excess weight, increased blood pressure, and the development of atherosclerosis in blood vessels.

Atherosclerosis. The formation of atherosclerotic plaques on the vessel walls as a result of lipid metabolism disorders is the main risk factor in the development of myocardial infarction.

Age. After 45–50 years, the risk of developing the disease increases.

Sex. According to statistical data, this acute condition occurs 1.5–2 times more often in women than in men, especially during menopause, when the risk of myocardial infarction in women increases.

Arterial hypertension. In people suffering from hypertension (high blood pressure), the risk of developing cardiovascular diseases is higher, since increased arterial pressure raises myocardial oxygen demand.

Previous myocardial infarction, even if small in extent.

Smoking. This harmful habit leads to dysfunction of many organs and systems of the body. Chronic nicotine intoxication causes narrowing of the coronary arteries, leading to myocardial oxygen deficiency. This concerns not only active smoking but also passive smoking.

Obesity and hypodynamia. When lipid metabolism is disturbed, the development of atherosclerosis accelerates and the risk of diabetes mellitus increases. Physical inactivity and low mobility negatively affect metabolism, leading to accumulation of excess body weight.

Diabetes mellitus. In patients with diabetes mellitus, the risk of myocardial infarction is higher because elevated blood glucose adversely affects vessel walls and hemoglobin, impairing its transport (oxygen-carrying) capacity.

Signs and symptoms of myocardial infarction:

1. Chest pain or discomfort.

The most common symptom of a heart attack is pain or discomfort in the chest. It may feel like pressure, squeezing, or a heavy load in the chest. The pain may radiate to the arms, back, neck, jaw, or stomach.

2. Shortness of breath:

Difficulty breathing, especially during physical exertion or when lying down, may be a sign of myocardial infarction. This occurs due to the heart's inability to pump blood effectively, leading to fluid accumulation in the lungs.

3. Fatigue or weakness:

People experiencing a heart attack may feel unusually tired or weak, even with minimal effort. This symptom is often more common in women.

4. Dizziness or lightheadedness:

Weakness, dizziness, or lightheadedness may occur when blood flow to the brain is reduced. This is a common symptom of a heart attack, especially in the early stages.

5. Nausea and sweating:

Nausea, vomiting, or cold sweating may accompany chest pain, especially in women. These symptoms are often mistaken for gastrointestinal problems.

6. Pain in other parts of the body:

Pain during a heart attack may radiate to the left arm, neck, jaw, back, or stomach. Some people may experience discomfort in these areas without chest pain.

In the development of a heart attack, symptoms do not appear immediately but occur gradually. Subsequently, severe pain in the heart appears with a burning sensation in the chest. The pain may radiate to the arms, shoulders, stomach, lower jaw, as well as other organs and parts of the body. Pallor and cold, clammy sweat appear.

Necrotic damage to heart tissues may lead to fever, low blood pressure, shortness of breath, and swelling of the legs and arms. During the period when plaques form in the vessels, symptoms may stop manifesting.

Diagnostics:

This disease is diagnosed using ECG, blood tests (the composition of which has characteristic signs of a heart attack), as well as coronary angiography.

Treatment of myocardial infarction:

The treatment process includes several stages, each carried out under specific conditions.

Pre-hospital stage. The ambulance team performs primary resuscitation and transports the patient to the hospital.

Hospital stage. Doctors of specialized vascular surgery departments directly treat myocardial infarction during the most acute and acute stages of the disease.

Rehabilitation. In a specialized department of a hospital or cardiac sanatorium, the patient undergoes rehabilitation after myocardial infarction, allowing maximum restoration of body functions under medical supervision.

Outpatient stage. In the post-infarction period, the patient returns to normal life and periodically visits a specialist at the local clinic.

Hospital treatment of myocardial infarction solves three main problems:

1. The first is relief of pain resulting from muscle tissue necrosis.
2. The second is limitation of the necrosis zone through administration of anticoagulants and thrombolytics.
3. The third is prevention of severe complications (acute heart failure, arrhythmia, etc.) through special medications.

In the absence of timely medical care or when attempting to treat myocardial infarction at home using folk remedies, the risk of complications increases significantly and may even lead to death.

With some effort, anyone can significantly reduce the risk of developing such a serious disease. Preventive measures for myocardial infarction are very simple: limit the intake of fatty and fried foods in the diet, quit smoking and reduce alcohol consumption, control cholesterol and blood sugar levels. One should not forget about physical activity, which is possible and should be regular. In addition, excessive physical and emotional stress should be avoided. Maintaining health into old age is entirely in our own hands.

When myocardial infarction is suspected in a patient, treatment begins immediately with hospitalization to the nearest hospital and urgent comprehensive resuscitation measures are taken. It is very important to calm the patient. Pain is relieved with narcotic analgesics, arrhythmia, heart failure, and cardiogenic shock are managed.

If the patient's condition is satisfactory, coronary angioplasty (surgery to dilate the arterial walls) is performed on the day of hospitalization or the following day. Rehabilitation and its duration depend on the extent of heart damage. Rehabilitation includes supervised restorative therapy, a special light diet, and physical activity.

Conclusion:

Myocardial infarction is a serious disease that can lead to life-threatening consequences if not

treated in a timely manner. By understanding its causes, symptoms, risk factors, and treatment methods, people can take active steps to protect heart health. Lifestyle changes, early diagnosis, and appropriate medical care are key to preventing heart attacks and managing long-term health outcomes.

Disclaimer:

This article is intended for informational purposes only and does not replace professional medical advice. Always consult a healthcare provider for diagnosis and treatment.

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