



## **ISCHEMIC HEART DISEASE - ETIOLOGY, CLINICAL, PATHOLOGICAL AND ANATOMIC CHANGES OF THE HEART, MODERN METHODS OF TESTING AND TREATMENT**

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### **Abstract:**

It is known that there is a serious epidemiological situation in the cardiovascular system around the world. Cardiovascular disease is one of the leading causes of death in the world. According to the World Health Organization in 2016, 17.6 million people died of cardiovascular disease in 2016, accounting for 31% of world deaths. If 100% of deaths due to cardiovascular diseases are considered, 52.5% of them are due to angina pectoris, heart attack. According to the Centers for Disease Control and Prevention in 2019, approximately 18.2 million American adults are diagnosed with coronary artery disease and 805,000 Americans have a heart attack each year. The urgency of this problem for health, their prevalence, high mortality and disability rates, are associated with socio-economic losses affecting the country's labor potential. One of the most common types of cardiovascular disease today is angina pectoris.

**Keywords:** Angina, heart attack, coronary heart disease, transient ischemia, myocardial ischemia, atherosclerosis, rheumatic vasculitis, traumatic mesoaortitis, nodular periarteritis, aortic heart disease, severe anemia, cardiosclerosis, postinfarction angioedema, postinfarction mercury angina pectoris, prismetal angina, unstable angina, transmural ischemia, coronary artery spasm, bradycardia, tachycardia.

**OBJECTIVE:** To analyze and treat the course of the disease in people with angina pectoris and the processes that take place in them.

### **MATERIALS AND METHODS.**

If 100% of deaths due to cardiovascular diseases are considered, 52.5% of them are due to angina pectoris, heart attack. Angina pectoris is a type of coronary heart disease that begins with transient ischemia and is characterized by short-term pain attacks between the ribs II to V on the left side of the chest. Angina pectoris, also known as thoracic stenosis, is a clinical syndrome associated with the sudden onset of myocardial ischemia and characterized by chest pain. The essence of the disease is that it disrupts blood flow through the coronary arteries, the vessels that supply blood to the myocardium, leading to pain in the heart area or behind the chest. The pain usually lasts for a few minutes in the neck, intercostal spaces, left arm with the left shoulder, around the sternum, on the left side of the lower jaw, and rarely on the right side of the chest. and pain is transmitted to the right arm and waist. Occasionally there is shortness of breath, sweating, or fear of death. During an attack, patients are less likely to show pain in the area with the palm or fist on the sternum [1,3,4]. The leading clinical

symptom of angina pectoris is a mismatch between myocardial oxygen delivery and myocardial delivery, resulting from impaired coronary circulation [Meduniver.com 1] [3]. This disrupts blood flow through the coronary arteries, which supply blood to the myocardium, leading to pain in the chest area behind the chest [Meduniver.com 2]. In most cases, the cause of pain is myocardial ischemia. Her pain syndrome is a symptom of angina pectoris and has the following characteristics:

The location of the pain is usually behind the chest or slightly to the left;

Pain spread - mostly under the left shoulder blade, neck, left arm, chin;

Causes and conditions of occurrence - physical exertion, excitement, eating;

The nature of the pain is oppressive;

The duration of the pain is from a few seconds to 30 minutes [3].

Pain in angina is more common in patients with coronary atherosclerosis, inflammatory bowel disease - rheumatic vasculitis, traumatic mesoaortitis, nodular periarteritis, aortic heart disease and severe anemia [3].

Angina pectoris is a form of ischemic heart disease, which can be the only symptom of the disease, or it can be accompanied by other forms -



cardiosclerosis, postinfarction myocradiosclerosis, chronic aneurysm of the heart. The prevalence of angina increases with age between both sexes: the incidence of angina among 45-54 year olds is 2-5 percent, while in 65-74 year olds it is 10-20 percent. In many European countries, between 20,000 and 40,000 new cases of angina occur each year.

There are three main types of angina:

- Typical angina pectoris;
- Prinsmetal angina;
- Unstable angina [1].

The Fremingham study found that in about 40 percent of men and 56 percent of women, coronary heart disease begins as a stable angina pectoris and progresses gradually. Typical angina pectoris is observed in areas of physical exertion. Nervous tension, negative emotions, the patient develops severe pain in the heart area or behind the chest, and the heart rate increases, with an increase in blood pressure. will continue together. Pain is a state of anxiety and fear. The onset of this type of angina pectoris is due to the fact that the myocardium's need for oxygen increases and it is unable to meet this need for oxygen from the blood, as it reduces blood flow through the damaged coronary arteries. At this point, left ventricular subendocardial ischemia begins, as this section is located in the farthest part of the coronary arteries and becomes more vulnerable when blood flow from these vessels decreases. Stress angina is relieved when a person calms down, rests, and uses nitroglycerin [1,4,5].

Vasospastic (Prinsmetal, spontaneous, or variant) angina, on the other hand, begins when a person is at rest, as a result of spasm of the coronary arteries, and in some cases at certain times of the day (night or early morning), when myocardial blood supply is reduced. This leads to transmural ischemia [1,3]. Transmural ischemia is the covering of the entire wall thickness of the left ventricle [2]. The cause of this type of angina is spasm of the coronary arteries, the pain lasts from 5-10 minutes to 20-30 minutes, is mostly located behind the chest, and the left arm and shoulder are also transmitted under the shoulder blade. In most cases, bradycardia is observed. Tachycardia occurs when the seizure is obvious or at the end, when the sympatho-adrenal system is activated in response to pain or under the influence of nitroglycerin. Another clinical sign of vasospastic angina is a disturbance in heart rhythm and conduction that occurs during an attack of pain and is caused by electrolyte imbalance. Patients often present with transient intraventricular and atrioventricular block, high-grade ventricular

extrasystole, paroxysmal tachycardia, and sometimes ventricular fibrillation. Elevation of the ECG and RS-T segment above the midline (similar to the acute phase of myocardial infarction) in prinsmetal angina indicates the development of transmural ischemia, which is clearly manifested in the myocardium due to transient coronary spasm. Once the attack is resolved, the RS-T segment returns to its original position [1,3].

Unstable angina is considered to be an exacerbated form of angina pectoris, with frequent and severe attacks of pain. This is what makes unstable angina known as acute coronary insufficiency, but the cause is not yet clear. In some people, this type of angina is associated with stenotic atherosclerosis of the coronary arteries. In other cases, platelet aggregation and coronary artery bypass grafting are important [1].

Pain in angina is often accompanied by shortness of breath and fear of death. If the patient puts his hand on the chest with a fist, it is typical of angina, if he points a finger at a point in the chest and thinks that it is the area where the heart is located, then the cause of pain is angina. will not depend. In some cases, the pain is of secondary importance, and the patient may experience shortness of breath, chest tightness, severe weakness, and fear of death. [3]

The diagnosis of angina pectoris can be made in 70% of cases using a complete history to confirm the diagnosis, which is higher than the ECG data. Non-invasive instrumental tests provide little information. Therefore, this diagnosis should be confirmed on the basis of various modern methods of ECG imaging. On the ECG: hypoxia, "ischemic" changes, signs of chronic coronary insufficiency, arrhythmia, conduction disturbances; The absence of changes in the ECG does not rule out the presence of angina. Biochemical tests: cholesterol, phospholipids, lipoproteins, the state of the blood protein spectrum, prothombin index, anomalies of blood coagulation and anticoagulant systems [3,6]. Some patients may not have short-term attacks of pain between the ribs II to V on the left side of the chest. At this time, patients are examined by veloergometry to diagnose angina pectoris. Patients are tested for cycling and other physical activity. If the patient has angina, the symptoms will appear.

• One of the following medications is used as first aid for angina pectoris.

• Nitroglycerin - 0.5 mg 1 tablet sublingually or nitroglycerin capsule (containing 0.5 mg of the drug, the capsule is placed under the tongue with a toothpick);



- Isosorbide dinitrate (nitrosorbide, isomac, isodinite, isocet, cardicet) 5 mg sublingually every 5 minutes (up to 3 times) for 15 minutes;

- Nitroglycerin dosed aerosol, 1-2 breaths (up to 3 times) for 15 minutes;

- Synthesized isosorbide 5 - mononitrates (imdur, olikard, afox-long) are used in the treatment of functional classes III-IV of stable tension angina;

- Molsidamine (sodnofarm, corvaton) - is radically different from nitrates in its chemical and structural and antianginal mechanism of action. In the liver, molsidamine is converted into an active metabolite that releases NO, which dilates blood vessels and has antiplatelet properties. The drug has an average duration of action (4-6 hours) [3,5].

- When there is a contraindication to the appointment of nitrates - it is recommended to take nifedipine, 5 mg sublingually or by chewing, beta-blockers (egilok, metapropol, etc.) with blood pressure and pulse control [3].

After pain relief:

- long-acting nitrates;

- beta-blockers,

- aspirin,

- Scheduled treatment measures in individual doses using heparin and AAFI [3].

### **CONCLUSION:**

First of all, it is necessary to determine the cause of angina. Based on the above data, the factors that strongly influence people's lifestyles - inactivity, stress, tobacco and alcohol, obesity, diabetes, high cholesterol in the diet and the conditions that contribute to the development of similar diseases of the heart. It is no secret that it has an impact on the development of vascular diseases, including angina.

The disease mainly affects the elderly and is currently accompanied by severe eating disorders and high cholesterol in the diet, leading to a rejuvenation of the disease and an increase in the incidence of the disease among young people.

The most effective way to treat patients with angina pectoris is to detect and diagnose the disease early. It is known that the same drug can have two different effects on patients with two identical diseases. Therefore, once the cause of the disease is identified, the use of medications can lead to early prevention and early elimination of the disease.

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