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Ischemic heart disease: modern methods of diagnostics

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Abstract

The article reviews modern methods of diagnostics of cardiovascular diseases which now are the main cause of disability and death in economically developed countries. Ischemic heart disease (IHD) is regarded as one of the most common pathologies of the heart and blood vessels. Early diagnostics of the disease and healthy lifestyle changes are reported as factors that can significantly reduce the risk of complications.

Keywords: cardiology, Ischemic heart disease (IHD), cardiovascular diseases

Cardiovascular diseases are the main cause of disability and death in economically developed countries. Today the proportion of these diseases in the structure of mortality makes about 40-60 percent and the morbidity is still increasing. Statistics show that even younger people are affected, which makes cardiovascular diseases the most important medical and social health problem.

Cardiology – (from Greek “kardia” – “heart” and “logos” – “word”, “teaching”) is the branch of medicine which studies the structure and function of the heart and vessels as well as their diseases, aetiology, the mechanisms of development, clinical manifestations and diagnostics. Additionally, cardiology studies methods of treatment, prevention and medical rehabilitation of patients with disorders of the cardiovascular system. Modern methods of diagnostics in cardiology (electrocardiography, phonocardiography, angiocardiography, studying of the heart sounds, a number of biochemical techniques, etc.) can identify the heart’s and vessels’ diseases at their early stages and assist in effective prevention and treatment.

Ischemic heart disease (IHD) is just one among the pathologies of the heart and blood vessels, which cardiology deals with. But this is also one of the most common diseases of the cardiovascular system. In recent past the pain in the heart and the intake of nitroglycerin were more associated with people of the older generation, but now IHD can affect even those of younger age. The term “ischemic heart disease” comprises a number of cardiac diseases generated by the same cause - atherosclerosis of blood vessels.

At present the ischemic heart disease is the main cause of mortality (40 – 60 % according to different data). One may often see rather young patients with myocardial infarction in intensive care units. Nowadays there are many factors which contribute to the development of IHD at an earlier age. The most important of them include ecology and environment, smoking and drinking, hereditary predisposition, modern lifestyle connected with stress, hypodynamia and a diet rich in fats.

Unfortunately IHD is rarely manifested by ischemia symptoms. If it were so, one could constantly take nitroglycerin without worrying about one’s heart’s functioning. IHD can be accompanied by arterial hypertension, heart rhythm disturbances, heart insufficiency, cerebral circulatory insufficiency. Atherosclerosis underlies all these diseases.

Modern cardiology uses the most advanced methods of diagnostics and treatment. At earlier times a medical person could use no other means than physical examination, auscultation of the heart with a stethoscope and an electrocardiogram. Nowadays there have appeared modern, complex and effective methods of diagnostics in the arsenal of cardiologists.

The method of ultrasound investigation has been employed in medicine for more than one decade. Modern ultrasound investigation machines allow not only to see the structure of the heart but also to assess the state of blood flow through its vessels, which is very important. This became possible due to dopplerography. The medical person can see a pathological discharge of blood in the cavities of the heart, monitor the rate of blood flow through the coronary arteries, assess the state of the wall of the heart and its valves on the screen. But the main and oldest method of IHD diagnostics is electrocardiography (ECG). This method is absolutely safe, simple and cheap. The ECG allows the medical person to get to know how the heart muscle reacts to a particular load. For example, during IHD at the time of an attack of angina, it is possible to notice the corresponding shifts on the ECG tape. The ECG also allows monitoring (observation) of the heart’s functioning. This is the so-called Holter monitoring when the patient is given a special portable device, which allows the medical person to assess the heart's performance during the day.

Ordinary X-ray control as a method of diagnosing heart diseases has already become obsolete and plays no role today. But X-ray control is an integral part of other very important and serious methods of IHD diagnostics. Whereas the so-called non-invasive diagnostic methods have been described above, the X-rays are currently used in invasive diagnostic methods that imply introduction of these or those tools or substances into the patient's body.

Coronary angiography is one of the best known and frequently used methods among these. The method is connected with radiography of the heart area in order to reveal the existing narrowing of the coronary vessels’ lumen. But to make the vessels visible among the mass of the other thorax tissues with the help of X-rays, a long thin plastic tube or probe is inserted into the coronary arteries of the heart through the femoral artery in the inguinal region. A special contrast substance is introduced through this probe, due to which it is possible to see the arteries of the heart and their narrowing. Thus this method allows you to see exactly which artery is narrowed and to what extent, which is not possible by means of any ultrasound investigation of the heart or ECG.

IHD treatment has undergone significant changes but its main principle remains the same — the restoration of the blood flow through a narrowed or clogged coronary artery for normal supply of the myocardium. This is achieved in two ways: medication or surgical

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treatment. The main function of medicines used in the treatment of IHD is to ensure the widening of the lumen of blood vessels. It is also essential to make healthy lifestyle changes, stop smoking and drinking, reduce everyday stress and have regular check ups with a local physician.

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