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MODERN METHODS OF DIAGNOSING DISEASES OF THE CARDIOVASCULAR SYSTEM

According to the World Health Organization, diseases of the cardiovascular system cause more than half of all deaths in the world, also these diseases account for a third of causes of disability and claim 17.5 million lives each year. These findings are based on an investigation of GBD (Global Burden of Disease) for 2019 year. The burden of cardiovascular disease has continued to rise for decades in almost all middle- and low-income countries. It is also alarming that the age-standardized rate of cardiovascular disease has begun to rise in some high-income countries, where it has previously declined. Global Burden of Disease measures the burden of health problems among the population in 196 countries, including Ukraine. It is the most comprehensive comparative health study, covering 286 causes of death, 369 diseases and injuries, 87 risk factors in 204 countries since 1990. The study is a systematic scientific effort to quantify the loss of health from disease, injury and risk by age. Coordinated by the Institute of Health Metrics and Evaluation (IHME). [1, c. 70]

Cardiovascular diseases are a group of diseases of the heart and blood vessels, namely: coronary heart disease - a disease of the blood vessels that supply blood to the heart muscle; cerebrovascular disease - a disease of blood vessels that supply blood to the brain; peripheral artery disease - a disease of blood vessels that supply blood to the upper and lower extremities; rheumatic heart disease - damage to the heart muscle and heart valves as a result of a rheumatic attack caused by streptococcal bacteria; congenital heart disease - existing from birth deformities of the heart; deep vein thrombosis and pulmonary embolism - the formation of blood clots in the veins of the legs, which can move and move to the heart and lungs. Among the diseases of the cardiovascular system, the most common cases are hypertension, coronary heart disease, myocardial infarction and stroke, atherosclerosis, and rheumatic heart disease. [2, c. 58]

Cardiovascular diseases are diagnosed using an array of laboratory tests and imaging studies. The primary part of diagnosis is medical and family histories of the patient, risk factors, physical examination and coordination of these findings with the results from tests.

• Electrocardiogram (ECG). This test records the electrical activity of the heart, shows abnormal rhythms (arrhythmias), and can sometimes detect heart muscle damage.

• Stress test. This is also called a treadmill or exercise ECG. This test is done to monitor the heart while you walk on a treadmill or pedal a stationary bike. Your doctor also monitors your breathing and blood pressure. A stress test may be used to detect coronary artery disease, or to determine safe levels of exercise after a heart attack or heart surgery. This test can also be done using special medicines that stress the heart in a similar manner as exercise does. Sometimes a stress test will collect ECG information along with heart ultrasound pictures. This is called an exercise or stress echocardiogram. It is more sensitive and specific than ECG stress testing alone.

• Transthoracic echocardiogram (echo or TTE). An echo is a noninvasive test that uses sound waves to evaluate your heart's chambers and valves, and how well it pumps. The echo sound waves create a real time image on the monitor as an ultrasound probe is passed across the skin over your heart.

• Coronary Angiography and Cardiac Catheterization. This test is an invasive test. A dye is injected into the veins to reach the coronary arteries. This is done via coronary catheterization. Thereafter detailed pictures of the blood vessels of the heart are taken using special imaging methods. This is called coronary angiography. Cardiac catheterization involves threading of a thin, flexible tube called a catheter via a blood vessel in the arm, groin (upper thigh), or neck. The tube is inserted under imagine guidance till it reaches the heart. Coronary angiography detects blockages in the large coronary arteries.

• Chest X Ray. This is a test that shows the shape and size of the heart lungs and major blood vessels. This is a test seldom used in diagnosis of heart diseases as it does not provide added information over echocardiography and other imaging studies.

• Electron-Beam Computed Tomography or EBCT. EBCT helps to detect the calcium deposits or calcifications in the walls of the coronary arteries. These are early markers of atherosclerosis and coronary heart disease. This is not a routine test in coronary heart diseases.

• Cardiac MRI. Cardiac MRI (magnetic resonance imaging) that uses radio waves, magnets, and a computer to create pictures of the heart. This gives a 3D image of the moving as well as still pictures of the heart.

• Tilt table test. Your doctor may perform a tilt table test if you've fainted. They'll ask you to lie on a table that moves from a horizontal to a vertical position. As the table moves, they'll monitor your heart rate, blood pressure, and oxygen level. The results can help your doctor determine whether your fainting was caused by heart disease or another condition.

• CT scan. A CT scan uses multiple X-ray images to create a cross-sectional image of your heart. Your doctor may use different types of CT scans to diagnose heart disease. For example, they may use a calcium score screening heart scan to check for calcium deposits in your coronary arteries. Or they may use coronary CT angiography to check for fat or calcium deposits in your arteries.

• Heart MRI. In an MRI, large magnets and radio waves create images of the inside of your body. During a heart MRI, a technician creates images of your blood vessels and heart while it's beating. After the test, your doctor can use the images to diagnose many conditions, such as heart muscle diseases and coronary artery disease. [3, c. 130]

The ways doctors diagnose heart disease can vary quite a bit, depending on which kind of heart disease we're talking about.

When a patient complains of symptoms that may suggest a heart or blood vessel problem such as shortness of breath, chest pain, chest pressure, heart palpitations, dizziness, sweating, numbness and weakness the health care team will run a variety of tests to diagnose and screen for cardiovascular conditions. Usually, diagnosing a heart problem requires a combination of blood tests, heart monitoring and imaging tests. Cardiovascular diagnostic and screening tests can provide a wealth of information about the electrical

activity of the heart, heartbeat rhythm, how well blood is pumping through the heart's chambers.

In conclusion, *everyone needs to know and be able to timely recognize the signs of heart attacks and strokes that require emergency medical care, which occur suddenly, at any time of day and in different situations.*

REFERENCES

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