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STRUCTURE AND PHYSIOLOGY OF HEART AND CARDIOVASCULAR SYSTEM.

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Abstract

The cardiovascular system works like a pump and delivers blood to tissues and organs. Blood performs its various functions only when it is moving. This article provides information on the structure and physiology of the heart and cardiovascular system.

Key words: Heart, blood vessel, epicardium, chest, vena cava, compartments, coronary artery.

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Introduction

The heart (Latin: cor, Greek: kardía sardia) is a hollow muscular organ with an irregular conical shape, the heart is the central organ of the blood-vascular system, and it performs the function of pumping blood to all organs and tissues in the body. is a complex organ. It is located in the middle of the lower chest area. The heart is divided into the following morphological parts: the base (basis) directed upwards and slightly backwards and the tip (apex) directed forward, downward and to the left are distinguished. In the base of the heart, there are large blood vessels that make up its base (root). The heart has 3 surface parts: 1) front (sternocostal) surface; 2) the lower (facing the diaphragm) surface, and 3) the back (spine or lung) surface. Every person's heart is the size of their fist. A child's heart beats faster than an adult's, and their appearance is spherical and horizontal**.** The anterior surface of the heart also includes the beginnings of the following large vessels; to the right and a little behind is the superior vena cava, ahead and to the left is the ascending aorta, and further to the left is the pulmonary artery. The heart is anatomically composed of 4 chambers, divided into two chambers and two ventricles. The left ventricle and the left ventricle together make up the "arterial heart" because only arterial blood flows through it. Blood vessels passing through it are called "arteries". It is called a "venous heart" because only venous blood flows through the right ventricle and right ventricle. The heart contracts and relaxes rhythmically during its work. The state of contraction of the heart is called systole, and the state of relaxation is called diastole. The heart beats on average 70-74 times per minute. In medicine, this indicator is accepted as 60-90. The heart is four-chambered, and arterial blood is completely separated from venous blood. A better separation of arterial and venous blood causes heat to spread evenly throughout the body and tissues. Unlike other organs, most of the deaths caused by diseases are caused by heart pathology, which means that heart-related pathologies are the leading cause of death in world medicine. The heart is one of the target organs for negative factors affecting the human body.

The cardiovascular system includes the heart, blood vessels, and lymphatic vessels.

• The heart is an organ that pumps blood to tissues and organs.

• Arteries are a group of blood vessels that get smaller as they branch and carry blood from the heart to other blood vessels. It mainly contains oxygen-saturated blood (except pulmonary arteries).

• Capillaries are small blood vessels that exchange oxygen, carbon dioxide and nutrients between tissue and blood.

• Veins are a group of blood vessels that are formed from capillaries, gradually become bigger and bigger, and bring blood to the heart.

• Lymphatic vessels - starting from lymphatic capillaries, perform the function of returning tissue fluid to the blood. Lymphatic capillaries join to form larger vessels, and large lymphatic vessels drain into veins.

The structure of the wall. The wall of the heart consists of 3 layers: inner - endocardium, middle - myocardium and outer - epicardium. Also, the heart is surrounded by the pericardium from the outside.

Endocardium is a relatively thin layer of the heart. It consists of the endothelium and the subendothelial layer made of connective tissue that serves as a support for it. Under

these layers lies the musculo-elastic layer consisting of elastic fibers and smooth muscle fibers.

The myocardium is the thickest layer of the heart and is made up of heart muscle. Heart muscle cells are called cardiomyocytes. They are located in a row and form a cardiac muscle fiber. Typical and atypical muscle fibers are distinguished in the myocardium. Typical muscle fibers perform the function of contraction, and atypical muscle fibers perform the function of impulse transmission. Muscle fibers are connected to each other through intermediate plates. Intermediate plates perform the function of trophic and impulse transmission. Cardiac conduction system. The conduction system of the heart includes atypical muscle fibers. They generate impulses and transmit them to typical muscle fibers. The conduction system of the heart is composed of the sinus node (Kiss-Flak), atrioventricular node (Ashof-Tovar) and interventricular bundle (His bundle) and its fibers. The bundle of Gis divides into two and forms 1 pair of Purkin fibers.

Activity: Cardiac muscles, like other muscles, have the properties of excitability, conduction and contractility. However, the heart is also characterized by automaticity. Excitability is the occurrence of biochemical and biophysical changes in the tissue as a result of an impulse (emergence of action potential). Conduction is the spread of the action potential generated in one cell to others. We considered the conduction system of the heart above. Contractility is manifested in the form of a response reaction to the action potential generated in the heart muscle. The contraction of the organ through impulses that occur without external influences is called automaticity.

We have often heard that the heart itself does not use the blood in the chambers of the heart. Nevertheless, the blood passing into the aorta is the first to supply blood to the coronary arteries. The heart is supplied with blood through 1 pair of coronary arteries.

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