

Development of the Heart and Vascular System

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Annotation: This article describes the heart and vascular system, which is the main part of the human body. Currently, the origin of most diseases is related to this system. The heart is a muscular organ and has its own complex structure.

Key words: Heart, cardiovascular system, blood circulation, myopericardial layer, antioventricular, pulmonary veins, artery, myocardium, blood vessels, lymphatic vessels, blood circulation, circulatory circle, epithelium.

As time goes by, sciences such as medicine are developing more and more rapidly. This made it possible to study human anatomy and understand it on a large scale. Thanks to this, it became easier to identify and diagnose diseases. Unfortunately, the number of diseases has increased accordingly. It is found that the origin of most of these diseases is related to the cardiovascular system. Cardiovascular diseases are widespread all over the world, including in our country, Uzbekistan. Therefore, all doctors, especially cardiologists, therapists and general practitioners, have the right principles of timely diagnosis and should have deep knowledge about treatment and prevention of these diseases.

The heart is made of muscle and is the main member of the blood circulation system. It is located in the middle part of the chest and has a conical shape. On the 17th day of the embryonic development period, the double buds of the heart develop in the form of a pair of endocardial sacs in the neck area. The myopericardial layer is formed from the visceral mesoderm, which surrounds the endocardial sacs and forms the sacs of the heart. In the 3-week embryo, heart buds unite to form a two-layered heart tube. At the end of the 5th week, a wall growing from the bottom up is formed in the common ventricle, which divides the common ventricle into right and left. The stem of the common artery is also divided into two parts and a four-chambered heart is formed. There are chambers and ventricles of the heart, aorta, pulmonary artery, superior and inferior vena cava that drain into the right chamber, and pulmonary veins that bring blood to the left chamber. The chambers and ventricles of the heart are antioventricular are separated by valves, and during the systole of the ventricles, their plates are tightly closed, preventing blood from returning to the ventricles. At the entrance of the ventricles of the left and right ventricles, each of them has three convex sides facing the magisterial vessels, and semicircular pulmonary arteries and aortic valves are located. There is a small sinus between the vessel wall barrier. The main functions of the heart:

- * **Automation**
- * **Conductivity**
- * **Excitability**
- * **Contractility**

Automatism is a feature of the heart that produces electrical impulses without the influence of the external environment. Only the cells of the conduction system of the sinoatrial node and compartments and ventricles do not have this feature.

Conduction is the way impulses reach the contracting part of the myocardium through the fibers of the cardiac conduction system.

Excitability is the excitation of cardiac conduction cells and myocardium under the influence of external impulses.

Contractility is the contraction of the heart muscle in response to excitation.

Blood vessels of the heart. The heart is supplied with blood by the right and left coronary arteries starting from the ascending part of the aorta. As the heart arteries begin in the area of the sinuses of the septum, when the ventricles contract, their opening is closed by the valve plate. Therefore, blood passes to them when the ventricles are relaxed.

Function of cardiovascular system. The cardiovascular system performs very important functions in the body. Liquids, namely lymph and blood, flow inside blood vessels. Blood delivers oxygen and nutrients necessary for the life of cells and tissues. From them, substances unnecessary for the body are taken to the organs of excretion through veins. Depending on the fluid content of the veins themselves, they are divided into two parts: blood vessels and lymphatic vessels. Blood vessels reach almost all parts of the body, but not in the epithelium of the skin and mucous membranes, hair, cornea of the eyeball, and joints. Blood vessels are divided into three groups:

***A blood vessel leaving the heart is an artery**

***A blood vessel entering the heart is a vein**

*** Capillary blood vessel**

An artery is a blood vessel coming out of the heart, the wall of which is composed of three layers of membrane. Depending on their location in relation to organs, arteries are divided into surface arteries of organs and internal arteries of organs. If the branches of arteries join with other branches of arteries, it is called an anastomosis. If the arteries do not join with other vessels until they divide, they are called terminal arteries. With the change in the location of organs, their direction, length and starting areas also change. "changes. The vascular system of children differs from that of adults. The density of blood vessels of the child's organs is high compared to the area unit. In the first year of a child's life, internal blood vessels develop very quickly. There are more fibrous tissues in the wall of the aorta. In medium and small arteries, smooth muscle cells enlarge and appear anew. In early childhood, the abundance of elastic fibers ensures the elasticity of the vessels of the growing limb.

Veins are blood vessels that run opposite to arteries and carry blood from the organs to the heart. Blood does not flow in the veins, but collects in some parts of it (splenic veins, portal veins of the liver, veins of the legs). Veins are divided into trunk and limb veins. Depending on the location, superficial and deep veins are distinguished. The wall of the veins is thinner than the artery and consists of three layers. Depending on the structure of the wall, veins are divided into two types: veins with smooth muscle and veins without muscle.

Capillaries are very small blood vessels. They are so small that one red blood cell, that is, an erythrocyte, can barely fit through them. They facilitate the exchange of certain elements between blood and tissues, helps to connect the veins together. That's why you can see a lot of capillaries in tissues that are very active, such as muscles, liver and kidneys.

The circle of blood circulation is divided into two: large and small circle of blood circulation. The large blood circulation includes the aorta starting from the left ventricle of the heart, the arteries of the head, neck, arms and legs, the body, their branches, the microcirculatory vessels of the organs, small and large veins, flowing into the right lobe, includes superior and

inferior vena cava. The largest single artery of the blood circulation is the aorta, and its three parts are different:

***Ascending part of aorta**

***Aortic valve**

***Descending part of the aorta.**

A small circulatory circle ensures the exchange of gases between the blood in the pulmonary capillaries and the alveoli of the lungs. The small circulatory circle includes the pulmonary trunk starting from the right ventricle, the microcirculatory flow of the lungs with the branches of the right and left pulmonary arteries, and two right and two left Pulmonary veins are included.

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