

***ВОЗРАСТНЫЕ ОСОБЕННОСТИ АРТЕРИЙ И НЕРВОВ ПЕРИКАРДА  
ЧЕЛОВЕКА***

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***AGE-RELATED FEATURES OF ARTERIES AND NERVES OF HUMAN'S  
PERICARDIUM***

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Questions about nerves and blood vessels of pericardium are of great interest for clinical medicine. Bountiful visceral vascular nets are used for improving collateral circulation in coronary vessels of the heart during last years. The development of present-day surgical technique has given an opportunity for artificial improvement of heart circulation.

Intraorgan neuroplexes of pericardium are formed by branches of phrenic nerves, branches of vagus and sympathetic and have the connection with myocardium apparatus through the transitional folds as vessels have. The works are dedicated to the research of intraorganic vessels of pericardium are not numerous. There is no unified opinion about the sources of pericardium blood supply and features of it's microcirculatory channel, relations of plexus of vessels and intraorgan nerve barrels. That's why the research was carried out.

20 preparations of fetuses' (the second half of intrauterine development) and newborns' pericardium were researched in this work. The research was conducted using the method of injection of the vessels with colored masses, the method of elective coloring by A.G.Jahnize, and using histological preparations.

According to our, the main vessels supplying the pericardium with blood are pericardio-phrenic arteries. These arteries are located on the anterolateral surface of the pericardium. They pass with phrenic nerves and form neurovascular sheaf.

Left neurovascular sheaf protrudes on the surface of pericardium anteriorly to aortic arch and lays on the distance of 20-30 mm from the hilar. It is tortuous throughout and has a bigger zone of blood supply and innervation in comprion with the first one.

Right neurovascular sheaf enters the pericardium between subclavian artery and vein or anteriorly to vessels and is located near the hilar. It is rectilinear and is shorter than the left one.

Large branches extend from the main trunks of phrenopericardial arteries. Nerve trunks of diaphragmatic nerves follow throughout the way of these branches.

Two branches depart from diaphragmatic nerve abreast of the aortic arch. They enter the plexus of internal thoracic artery. Powerful periarterial plexus falls along the wall of this artery to the phrenopericardial artery and its branches. Arterial branches of left phrenopericardial artery in the number of 4-5 pass downwards to the medial and lateral part of pericardium. They divide dichotomously and give their branches by different angles.

On the right phrenic nerve forms connective branches with bronchial plexus and together with the branches of sympathetic trunk enters the plexus of internal thoracic artery.

This plexus provides with periarterial nerve the right phrenopericardial artery and its branches.

Arterial branches of the right phrenopericardial artery (in the number of 2-3) distribute mainly on the anterior surface of pericardium anastomosing with medial branches of opposite side and upward phrenic arteries. Their caliber becomes smaller during the estrangement from the main trunk.

The largest arterial trunks have the rectilinear direction. They become tortuous during the estrangement from the main trunk.

Arterial branches anastomose together by different angles forming nets. Large branches form large-loop plexuses, and the small ones form small-loop nets. Every artery is accompanied by two veins that similarly to arteries form plexuses. Loops of venous plexus are smaller than loops of arterial plexus and they join the loops of arterial plexus. This plexus forms loops of polygonal form constituting the micro circular channel of pericardium.

The thickest net of vessels is located in the superficial layer of anterolateral left part of pericardium. There are a lot of vascular nets in the anterior arterial transition fold in the region of aorta and pulmonary trunk.

There are less vessels in collagen-elastic layer that lays under superficial loose fibrous layer. They anastomose together and form large loops that have different forms and follow collagen and elastic fiber. These nets anastomose under the epicardium with the vessels of myocardium.

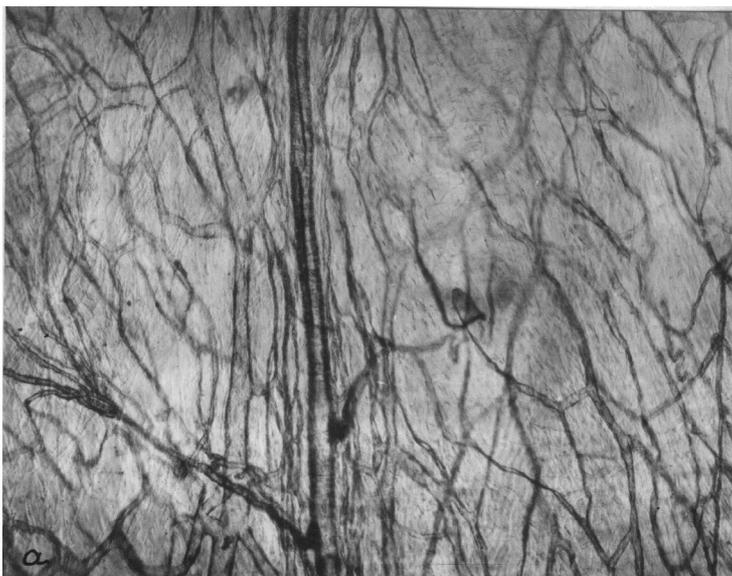
A large count of nerves is determined on the background of the thick vascular net. They are located alone or accompany. These nervous trunks and periarterial plexus form intraorgan plexes that compose loops of different form and size. The biggest concentration of nerves can be found on the anterolateral left surface and on the anterior surface near the top of the heart, where we found a lot of bagged endings by type of Vater-pachinevie corpuscle.

Thereby, the main vessels that supply pericardium are pericardio-diaphragmatic arteries and their branches that form neurovascular bundles together with diaphragmatic nerves. Also they form intraorganic neurovascular plexus with large and small loops together with branches.

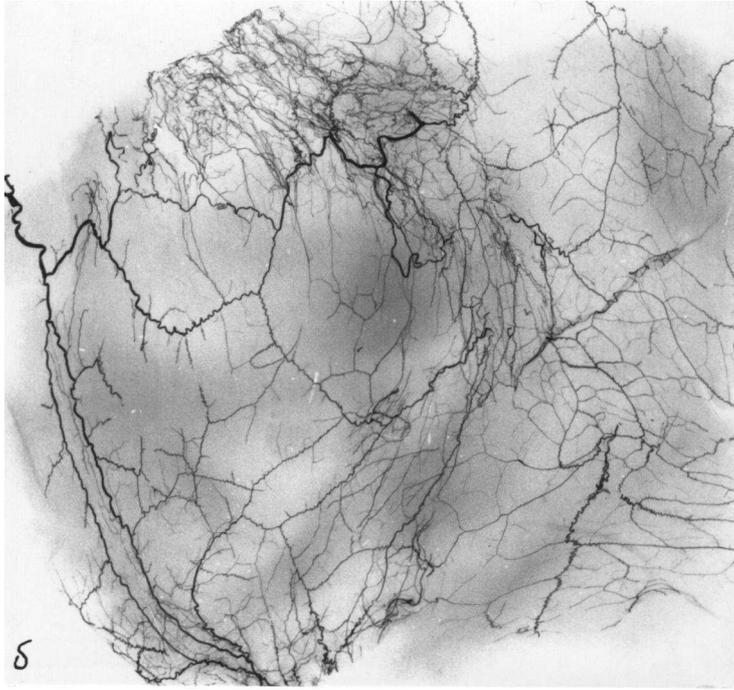
The size of the loops is enlarges throughout the life.

Pericardium is also supplied by the vessels of bronchial arteries, esophageal arteries, upward arteries of diaphragm, branches of thymus and intercostal artery.

Loads of vascular plexes in the layers of pericardium plays a certain role in roundabout circulation of the heart according to the data obtained by clinicians and rescarches.

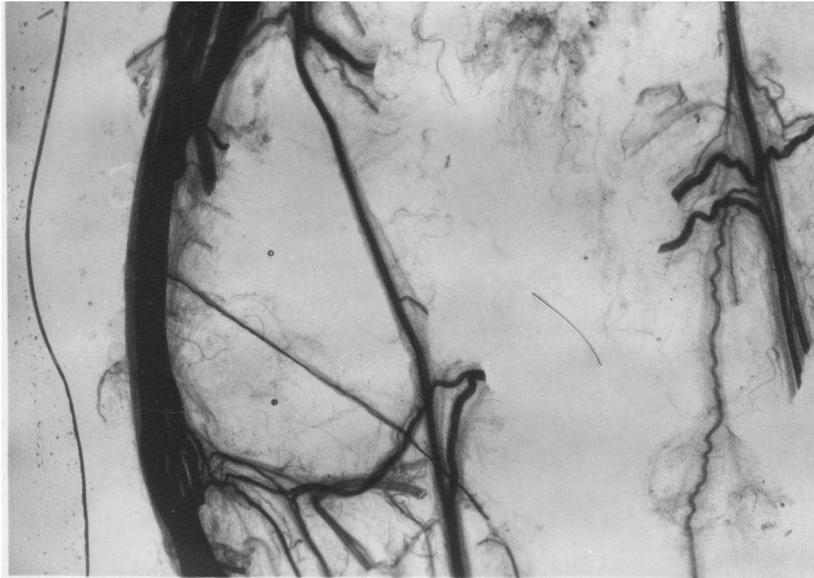


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