Morphofunctional features of human pericardial plexus

Морфофункциональные особенности перикардиального сплетения человека

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In the formation of the surface of nerve pericardium take place mainly branches of the left pneumogastric and thoracic cardiac nerves, originating from the uppermiddle stellate nodes of the left sympathetic trunk. Besides these nerves the plexus includes branches of the right pneumogastric which has direct contact with the nerves of the right sympathetic trunk.From the right and left recurrent laryngeal nerve in all cases permanently depart branches to pericardium.Left branches often depart directly from the trunk of the recurrent laryngeal nerve, rarely they depart from his heart branches.In rare cases, the branches to the pericardium depart from the connections between the branches,connecting the left recurrent nerve with tracheal plexus.

Right pericardial branches depart from the trunk of the right recurrent laryngeal nerve, and from its heart branches.In rare cases, these branches diverging from the branches, which are involved in the formation of the right front pulmonary plexus.Pericardial branch of the left recurrent laryngeal nerve usually departs from him immediately after his exit out of the aortic arch.On the right these branches diverge when they pass the nerve under the subclavian artery, rarely in his discharge from the vagus nerve.

Pericardial branches that extend from the heart of the recurrent laryngeal nerve branches occur in the pericardiumalmost on the same level. The amount of the branches is not constant. Caliber and length of pericardial branches varies and depends on the level of divergence.Minor length of pericardial branches of the right recurrent laryngeal nerve is explained by the fact that they often depart from its cardiac branches, butnot from its trunk.In cases when they go directly from the trunk of the recurrent laryngeal nerve, their length increases.The direction of these branches is downward.Going deep in the pericardium, pericardial branches form the connections with other nerves and form plexus, loops of this plexus have a different shape and size.The distribution of the pericardial branches occurs mainly in the area

of pericardium, which is located at the aorta and the pulmonary trunk, and also on the front and rear transition folds, where they directly penetrate into the epicardium.

Front and rear pulmonary plexus also constantly sending branches to the pericardium.Left front pulmonary plexus located in the tissue on the front surface of the pulmonary artery and the upper pulmonary vein.Left front pulmonary plexus is more severe than right one.Heading to the front surface of the lung root vessels, it passes in the thickness of the anterolateral surface of the pericardium in the middle and lower sections of it.Part of described nerves, rounding the pulmonary artery from front to back, sends branches to other trunks of the left vagus nerve, which is located closer to the peripheric part of the lung root, and sent to the middle part of lateral surface of the pericardium, being a part of the cardiac plexus /Left cardiac plexus V.P. Vorobyov, 1917/.

Described branches usually have horizontal downward direction.. Caliber and length of branches varies and depends on their level of divergence and changes with age.

Right front branches of pulmonary plexus depart at the level of pulmonary artery and right bronchus.They generally have a downward direction, they aretortuousand distributed to the pericardium in the upper rear surfaceand the upper and middle parts of the anterolateral surface of the pericardium.Pericardial branches of the right and left anterior pulmonary plexus have connections among themselves and with the branches of esophageal, bronchial plexus and with cardiac branches of the recurrent nerve.

Rear left pulmonary plexus, which is located in the peribronchial tissue, sends branches to the pericardium.These branches depart at the posterolateral surface of the left lower bronchus and sent to the lower and middle sections of the anterolateral and posterior surface of the pericardium.Number of branches suitable to the pericardium is not permanent.

Pericardial branches of the back right pulmonary plexus depart at the rear surface of the right bronchus and presented by single nerve trunks.The length of nerves till its penetration in the wall of the pericardiumgenerallyis not more, than 5-10 mm. Esophageal plexus is located in periesophageal tissue. From plexus usually depart branch at the level from the tracheal bifurcation to the diaphragm.Rarely pericardial branches diverge from plexus only at the roots of the lungs. Direction of the branches is downward and horizontal. Nerve trunks have straight or tortuous course.Length and caliber of branches varies with age.Pericardial branches of esophageal plexus are distributed to the rear surface of the pericardium, and also on the left side in the lower part.Between nerve trunks there are links that form a networkwith large loops.

Besides these sources, in the innervation of the pericardium take part branches of cervical nodes and stellate sympathetic trunk, which are constant sources of supply of the pericardium. In most cases they innervate the pericardium through extracardiac and pulmonary plexus, which are mentioned above, and only a small number of them

are directly involved in the innervation of the pericardium.Some nerve branches, which extend from the fifth thoracic node are connected to the phrenic nerve branches and then are distributed in the lateral surface of the middle section of pericardium. Thus, as follows from the foregoing, the nerves of the pericardium have a close relationship with the nerves of the chest cavity.The observed difference in the levels and sources of discharge of nerves to the pericardium is justified in embryology.