The study aimed to establish the features of the intramuscular distribution of nerves in the triceps muscle of the lower leg in human fetuses 4-6 months old. The study of the innervation features of the triceps surae was carried out on preparations of the lower extremities of 19 human fetuses of 81.0-230.0 mm parietal-coccygeal length (P*CL*) using the methods of fine dissection, vascular injection, and morphometry.

The triceps of the lower leg is a combination of muscles located on the posterior surface of the lower limb – the two-headed gastrocnemius and the soleus. All muscles of the posterior group of the lower leg have a constant source of innervation - the tibial nerve. The gastrocnemius supplied with intramuscular nerves all over equally. The gate of the muscle branches from the tibial nerve to the medial head of the gastrocnemius muscle is near 2.5-5.0 mm above the gate of the lateral head nerve entry. The places of nerves entry in each head of the gastrocnemius muscle lie close to the entry points of the main arteries. In the thickness of each head, nerves are located in front of the arteries. The direction of the intramuscular nerve trunks does not coincide with the direction of the muscle bundles. The main nerve trunks are divided according to the loose type, and the branches which moved downward from these stems are divided according to the main type. Also, there are much more intramuscular nerve connections in the lateral head of the gastrocnemius muscle than in the medial muscle. At the inferior angle of the popliteal fossa, the tibial nerve is usually divided into two branches: anterior and posterior. The anterior branch of the tibial nerve is distributed in the thickness of the lateral and medial parts of the soleus muscle. The posterior branch of the tibial nerve plunges into the thickness of the posterior surface of the muscle. In this case, the nerves, as a rule, approach the soleus muscle at an acute angle to the long axis of the muscle. The branching of the lateral trunk, which has departed from the anterior branch of the tibial nerve, predominantly occurs according to the loose type, and the distribution of the medial trunk of the anterior branch is of a mixed type. What about of the intramuscular distribution of the nerve trunks that have departed from the posterior branch of the tibial nerve, the main type of branching prevails. The direction of the large intramuscular nerve trunks and their branches does not the same as the direction of the muscle bundles.

During studying the intramuscular distribution of nerves, it is possible to distinguish the medial, intermediate, and lateral regions, which correspond to the parts of the soleus muscle of the same name. The intramuscular nerve trunks of all three regions of the soleus muscle communicate with each other through the connecting nerve trunks. We noticed that the connections between nerve branches are the best developed in the distal soleus muscle. Interesting from our point of view is the fact that in the middle and lower third of the muscular part, the intramuscular nerve trunks formed loops and arcades. In the thickness of the soleus muscle, the arteries were located in front of the nerves.

Malyk Yu.Yu.

SUBMICROSCOPIC STRUCTURE OF MYOENDOCARDIAL FORMATIONS OF THE LEFT VENTRICLE OF THE HUMAN'S HEART

Department of Histology, Cytology and Embryology
Bukovinian State Medical University

The increased interest in the studies of structural features of the internal relief of the human heart ventricles is provided by the rising necessity for the further researchdevoted to the pathogenesis of cardiovascular diseases; to get an understanding of the basic mechanisms of these states and to afford possibilities of these data being used in cardiology and cardiac surgery.The internal relief of the heart ventricles is a complex parietal configuration formed by numerous formations that protrude into their cavity. There are already well-known muscle trabeculae, papillary muscles and false chordae tendineae among myoendocardial formations. Since the presence of false chordae tendineae in the cavities of the ventricles of the heart is the cause of various complications, it is advisable to conduct an in-depth study of their morphological structure in order to understand the mechanisms of complications and, therefore, their prevention.The aim of the study was to research the submicroscopic structure of myoendocardialformations of the left ventricle of the human heart.The study materialsconsisted of papillary muscles and false chordae tendineae found in the cavities of the left ventricles of 20 humans' hearts. Light and electron microscopy methods were used.Results of the study. Electron microscopy showed that the papillary muscles and false chordae tendineae were externally lined with a single layer of endothelial cells that lay on a continuous basal membrane. In the center of the endotheliocyte was an elongated oval nucleus filled with an electron-transparent nucleoplasm with euchromatin located in the center and heterochromatin which occupied a peripheral position in the nucleus. A few general organelles, a large number of pinocytic vesicleswere localized in the cytoplasm of the endothelial cell. The lumenal surface of the endothelial cell contained submicroscopic projections in the form of individual microvilli. The peripheral collagen-elastic layer was localized under the endothelium. This layer was formed by loose fibrous connective tissue with elastic fibers within, which quantitatively prevailed over collagen fibers and fibroblastic cells. The electron microscopic examination of false chordae tendineae revealed that the elastic fibers, located side by side were circularly oriented in relation to the axis of the chordae, whereas collagen fibers formed thin bundles. Between collagen and elastic fibers fibrocytes were identified, which had a strongly elongated irregular shape, i.e. an elongated nucleus along the cell in which heterochromatin predominated, a reduced volume of cytoplasm with less development of organelles. The basis of the papillary muscles was constituted by contractile cardiomyocytes, which had an elongated cylindrical shape; they were interconnected with each other by intercalated discs and formed functional fibers that anastomosed and constructed a three-dimensional network.Moreover, the Purkinje cells,the elements of the conduction system of the heart, were identifiedamong contractile cardyomyocytes. Thin layers of loose fibrous connective tissue with blood vessels were localized between the bundles of cardiomyocytes. In 28% the central core of false chordae tendineae was formed by ordered, densely packed, linear oriented bundles of collagen fibers; cells of the fibroblastic row were localized between and along the way of collagen fibers. In 25% of cases,false chordae tendineae which basically were formed only by striated cardiac muscle tissue, except the contractile cardiomyocytes, the Purkinje cells were also identified. The central core of false chordae tendineae in 47% of cases was formed not only by the bundles of densely packed, linear oriented collagen fibers and cells of the fibroblastic row, but also contained contractile cardiomyocytes forming irregularly shaped cords.

Cardiomyocytesthe most frequently were localizedin the form of islets in places of attachment to the wall of the left ventricle, to the papillary muscles, or stretched along the whole chordae, dividing it into two halves. Thus, an in-depth study of the morphology of myoendocardial formations of the human heart will increase and improve methods of diagnosis and treatment of malformations and heart diseases because it is exactly what practical medicine needs today.

Oliinyk I.Yu.

PREDOMINANCE OF PHOSPHORUS (P) GROWTH RATE IN THE STUDY OF THE DYNAMICS OF CHANGES IN THE MACROELEMENT COMPOSITION OF THE UPPER JAW GERM OF FETUSES

Department of Pathological Anatomy
Bukovinian State Medical University

Mineralization of bone tissue of the upper jaw germ in prenatal human ontogenesis is the result of the course of histogenesis processes and determines its formation (Oshurko A.P., Oliinyk I.Yu., 2017). Methods of flame atomic emission and atomic absorption analysis reveal opportunities for modern researchers to examine the features of the structure and quality of maxillofacial bones by studying the content of trace elements (Oshurko A.P. et al., 2018). The results of such investigations are often crucial for choosing prevention methods even at the early stages of prenatal ontogenesis (Ponomarenko S.I., 2015; Ferros I.N. et al., 2015). At the same time, the determination of quantitative indicators of the macroelement composition of the upper jaw tissue of human fetuses is a significant contribution to the development of quantitative morphology (Vareniuk I.M., 2009; Slabyi B.O., 2017).