**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ’Я УКРАЇНИ**
**БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»**

# М А Т Е Р І А Л И

**105-ї підсумкової науково-практичної конференції**
**з міжнародною участю**
**професорсько-викладацького персоналу**
**БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ**
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Матеріали підсумкової 105-ї науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) – Чернівці: Медуніверситет, 2024. – 477 с. іл.

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У збірнику представлені матеріали 105-ї підсумкової науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.



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mm, the left one is 2.86 mm, the diameter is 948 and 726 mkm, respectively, and the wall thickness is 198 mkm. The diameter of lobar bronchi ranges from 326 to 400 mkm, segmental bronchi – from 176 to 220 mkm. Morphologically, it can be seen that the folds of the mucous membrane become well expressed in the subsegmental bronchi, reaching a height of 24-28 mm. In the system of the pulmonary artery, in contrast to the embryos of the previously described stages of development, in addition to lobular, segmental and subsegmental branches, interlobular arteries are also defined, the wall of which is still poorly differentiated and is represented only by endothelium and one or two layers of circularly arranged elongated cells with well-stained boron carmine nuclei 4-8 mkm in size. The outer shell of the vessel is not yet formed and passes into the surrounding connective tissue without a noticeable border.

In embryos with a PCL from 65.0 to 76.0 mm, as in earlier stages of development, the size of the lungs is still significantly smaller than the corresponding pleural cavities, although their growth is quite intensive and in an embryo 76.0 mm long, the longitudinal dimension of the right lung reaches 9.65 mm, left - 10.32 mm, transverse - respectively 5.95 and 5.15 mm. Further branching of the bronchial tree and some thickening of intersegmental and interlobular connective tissue partitions are observed. The length of the main bronchi increases relatively little – up to 2.42 mm (right) and 2.99 mm (left), their diameter is 974 and 780 mkm, respectively, the wall thickness is 220 mkm. The mucous membrane lining the bronchi forms longitudinal folds within the main, partial, segmental, subsegmental, and sometimes intralobular bronchi, but their height in the region of the latter is insignificant and, as a rule, does not exceed 8-12 mkm, in the main bronchi – 220m-242 mm. Bronchial glands are formed, which develop from the epithelium lining the bronchial tree, by pressing the latter between the folds of the mucous membrane into the underlying tissue.

**Conclusions**. Morphologically, along with the glands that are in the initial stages of formation, there are separate already formed glands not only in the wall of the main and lobar bronchi, but also segmental ones. The bronchial tree along its entire length is lined with prismatic epithelium, but in contrast to the intralobular branching of the bronchi, it turns from multi-row into two-row, and sometimes into single-row, the nuclei of epithelial cells are located approximately in the middle of the distance between the basal membrane and the lumen of the bronchi, they have a rounded shape – 4-6 mm in diameter.

**Komar T.V.**

## STRUCTURAL ORGANIZATION OF SUBCUTANEOUS ADIPOSE TISSUE OF THE LOWER LEG IN HUMAN FETUSES

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**Introduction.** Every year, the prevalence of metabolic disorders among the population of different ages is increasing. A few decades ago, obesity was a disease of adults, but today, society is faced with the problem of increasing the frequency of metabolic disorders in children. That is why the interest of researchers in the peculiarities of the formation of adipose tissue has increased. Recent studies prove the existence of three types of fat cells in humans: white, beige, and brown adipocytes.

**The aim of the study** is to investigate the features of the formation of adipose tissue of the lower leg in human fetuses of 5-6 months.

**Material and methods.** A microscopic examination of preparations of the upper, middle, and lower thirds of the lower leg of 12 human fetuses with a parietal-coccygeal length (PCL) of 136.0-230.0 mm was carried out using staining of histological sections with hematoxylin and eosin. For a better contrast of the protein elements of the structures – a histochemical study of the protein with bromophenol blue according to the method of Mikel Calvo. The percentage of multilocular cells was calculated on digital copies of optical images in the environment of the computer program ImageJ 1.53t (2022) with subsequent statistical processing of quantitative data using the open software "PAST" (Paleontological statistics, version 4.9 2022).

**Results**. During the microscopic examination of the structures of the lower leg in human fetuses of 5-6 months, features of the structure and location of adipose tissue were revealed. In 5-month-old human fetuses, the adipose tissue of the upper third of the lower leg is represented by single cells, which are mainly localized around blood vessels and nerves. It is notable that in fetuses of this age, the most adipocytes were found at the level of the lower third of the leg, which formed flat plaque-like clusters of uni- and multilocular cells, and in most cases were localized near blood vessels. Such clusters of adipocytes are clearly separated from neighboring structures by loose connective tissue. The percentage of multilocular adipocytes is 85.3±0.92% (confidence interval 70.8-94.4% at $p=0.05$). In 6-month-old fetuses, the subcutaneous tissue of the lower leg has the appearance of elongated flat plaque-like clusters located in one row. Adipose tissue is well vascularized and clearly separated from neighboring structures. Multilocular adipocytes prevail quantitatively, 93±0.12% (confidence interval 88.7-96.0%, $p=0.05$).

**Conclusions.** Subcutaneous adipose tissue in human fetuses of 5-6 months is heterogeneous and is represented by uni- and multilocular cells. During the fetal stage, the number and proportion of types of fat cells changes. In 5-month-old human fetuses, adipocytes are located singly, with a predominance in the lower third of the lower leg; in 6-month-old fetuses, they already form elongated clusters.

**Malyk Yu.Yu.**

## STRUCTURAL EXAMINATION OF THE PAPILLARY MUSCLES OF THE LEFT VENTRICLE OF THE HUMAN HEART AT THE SUBMICROSCOPIC LEVEL

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**Introduction.** Cardiovascular diseases are a significant cause of mortality in Ukraine and worldwide. According to the estimates in 2019, 17.9 million people died from cardiovascular diseases, accounting for 32% of all deaths worldwide. Early detection of cardiovascular diseases is important to initiate treatment as early as possible. Therefore, in-depth research into the structural components of the heart to identify the causes and understand the pathogenic mechanisms of cardiovascular diseases remains relevant.

**The aim of the study** was to study the submicroscopic structure of papillary muscles of the left ventricle of the human heart.

**Material and methods.** The material for the study were papillary muscles of the left ventricles of 20 human hearts. Light and electron microscopy methods were used.

**Results.** In electron microscopic examination, papillary muscles were externally lined with endothelium, underneath which a subendothelial layer of loose fibrous connective tissue was localized. The basis of the papillary muscles consisted of striated cardiac muscle tissue. Contractile cardiomyocytes within the papillary muscles had an elongated cylindrical shape and connected to each other through intercalated discs, forming functional fibers that anastomosed and formed a three-dimensional network. Most contractile cardiomyocytes had one or two nuclei, located centrally along the cell. Nucleus of the cardiomyocyte was filled with electron-transparent nucleoplasm, the main content of which was chromatin. Heterochromatin appeared as compact electron-dense masses, primarily located under the nuclear envelope and around nucleoli. Euchromatin predominated in the nuclei of cardiomyocytes and filled the entire inner nuclear space as a weakly contrasted network. In contractile cardiomyocytes, specialized organelles, myofibrils, were clearly visible, penetrating the cell from one pole to another, firmly anchored in the plasmolemma, often anastomosing. The sarcomeres of contractile cardiomyocytes were arranged in such way that their Z-lines were parallel not only within one but also in adjacent contractile cardiomyocytes. The Z-lines of adjacent myofibrils were connected to each other, and on the periphery of the cells with the sarcolemma and elements of the collagen framework. Due to the characteristic structure of myofibrils, cardiac muscle tissue appeared striated under ultra-microscopic examination. Along the cardiac fiber, dark anisotropic A-bands with a constant length alternated with light isotropic I-bands, which were reduced in shortened cardiomyocytes. M-lines