POSTNATAL ONTOGENETIC DEVELOPMENT STAGES OF THE BRONCHI IN CHILDREN OF DIFFERENT AGES IN THE EARLY CHILDHOOD

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Abstract. *A number of scientific studies are being conducted worldwide to optimize the indicators of postnatal ontogenetic development of the bronchial tubes of the lungs in children under three years of age. In this regard, morphometric indicators of the morphology of the walls of the trachea and pulmonary bronchi of children in early childhood, morphometric indicators of the morphology of the walls of the trachea and pulmonary bronchi at the age of 1 year of age of children, morphometric indicators of the morphology of the walls of the trachea and pulmonary bronchi at, of particular importance are scientific studies aimed at assessing the morphometric indicators of the morphology of the walls of the trachea and pulmonary bronchi in infants under one year of age and developing a system for predicting the dynamics of the development indicators of the trachea and pulmonary bronchi in children under three years of age.*

Key words: *morphological changes, control group, children, observation group.*

TURLI YOSHDAGI ILK BOLALIK DAVRIDA BOLALARDA BRONXLARNING POSTNATAL ONTOGENETIK RIVOJLANISH BOSHQICHLARI

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Annotatsiya. *Jahonda uch yoshgacha bo‘lgan bolalarda o‘pka bronxlarining posnatal ontogenetik rivojlanish ko‘rsatkichlarini optimallashtirish maqsadida qator ilmiy tadqiqotlar amalga oshirilmoqda. Bu borada ilk bolalik davrda bolalarning traxea va o‘pka bronxlari devorlari morfologiyasi morfometrik ko‘rsatkichlarini, bolalarning 1 yoshlik davrida traxea va o‘pka bronxlari devorlari morfologiyasining morfometrik ko‘rsatkichlarini, bolalarning 3 yoshlik davrida traxea va o‘pka bronxlari devorlari morfologiyasining morfometrik ko‘rsatkichlarini, bir yoshdagi bo‘lgan chaqaloqlar traxea va o‘pka bronxlari devorlari morfologiyasining morfometrik ko‘rsatkichlarini baholash hamda to‘g‘ilgandan uch yoshgacha bo‘lgan bolalarda traxea va o‘pka bronxlarining rivojlanish ko‘rsatkichlari dinamikasini baholash tizimini bashoratlash asosini ishlab chiqishga qaratilgan ilmiy tadqiqotlar alohida a hamiyat kasb etadi.*

Kalit so‘zlar: *morfologik o‘zgarishlar, nazorat guruhi, bolalar, kuzatuv guruhi.*

ЭТАПЫ ПОСТНАТАЛЬНОГО ОНТОГЕНЕТИЧЕСКОГО РАЗВИТИЯ БРОНХОВ У ДЕТЕЙ РАЗНОГО ВОЗРАСТА В РАННЕМ ДЕТСТВЕ

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Аннотация. *В мире проводится ряд научных исследований с целью оптимизации показателей постнатального онтогенетического развития бронхов легких у детей в возрасте до трех лет. В связи с этим необходимо учитывать морфометрические показатели морфологии стенок трахеи и легочного бронха детей в раннем детстве, морфометрические показатели морфологии стенок трахеи и легочного бронха детей в возрасте 1 года, морфометрические показатели морфологии стенок трахеи и легочного бронха детей в возрасте 3 лет., особое значение приобретают научные исследования, направленные на оценку морфометрических показателей морфологии стенок трахеи и легочных бронхов у грудничков в возрасте одного года, а также на разработку основы прогнозирования системы оценки динамики показателей развития трахеи и легочных бронхов у детей от прямого до трехлетнего возраста.*

Ключевые слова: *торфологические изменения, контрольная группа, дети, группа наблюдения.*

The smooth muscle of the airways develops from local mesenchymal cells located around the ends of the growing epithelial buds. These cells gradually migrate from the proximal to the distal side of the bronchial tree, elongate, and begin to produce smooth muscle (SM)-specific proteins. Mechanical stress (i.e., cell spreading and elongation) regulates epithelial paracrine factors that control bronchial muscle processes. The exact role of many of these paracrine factors in the normative development of the lungs is currently unknown. It is also unclear whether paracrine and mechanical signals are integrated in general musculature, how they occur. Furthermore, as with other types of vascular SM and visceral SM, we have now identified genetic programs and intracellular signaling pathways that control lung muscle development.

Purpose of the research: study of the postnatal ontogenetic development of the bronchi in children at different ages in the early childhood period.

Materials and methods: To achieve the goal and fulfill the tasks, autopsy materials were obtained from 45 children under one year of age who died of non-respiratory diseases of the lungs and bronchi in the postnatal ontogenetic stage. The examination was conducted at the Republican Center for Pathological Anatomy in 2024-2026. The study was conducted on the bodies of infants under one year of age who were admitted in the first quarter. The lungs of infants who died from various causes, but whose respiratory system was unchanged, were studied in the lungs of infants who died from non-bronchial lung diseases, mainly from heart defects and other causes. The causes of death and the underlying disease were determined by forensic medicine and pathological anatomy reports. The examination materials were obtained from the following parts of the lungs: namely: the trachea, the right and left lungs, and the external and internal bronchi were examined from the lobar bronchi to the terminal bronchi. In our study, instrumental (using a caliper), general histological and histochemical, and morphometric methods were used. The obtained materials were fixed in formalin and then 5-8 μm sections were prepared. They were stained with hematoxylin-eosin and Van Gieson methods.

Results: Analysis of the results of morphometric examination revealed the following: the respiratory tract undergoes specific developmental and maturation processes in the early postnatal period after birth. We performed the task of observing and calculating the histological characteristics and morphometric changes of these processes using the example of a lobar bronchus of the lung. If we analyze in general the development and evolution of structural units in the layers of the wall of the bronchi in this early postnatal period, it was observed that the covering epithelium from the layers of the bronchi wall, the muscle layer and the mucous-producing glands in the mucosa of the mucous membrane grow in dynamics and thicken, then the private plate with connective While separately analyzing the morphometric indicators of the layers of the Bronx wall, it was found that the one-layer epithelium covering the surface of the mucous membrane is a relatively low structure in shape at one month, that is, due to its prismatic shape, its thickness is also small, quantitatively accounting for 5.0±1.08% of the thickness of all layers. By the age of 1, it was observed that the thickness of the single-layered prismatic epithelium also increased slightly, by an average of 6.3±1.2%, due to an increase in its volume. A similar dynamic was observed in the following months of the early postnatal period, with a peak of 7.4±1.3% at 1 year of age and 8.2±1.4% at 12 months of age. Based on these quantitative data, a general conclusion can be drawn that the epithelial lining of the bronchial wall thickens by about two times from the age of one to two years in the early postnatal period.

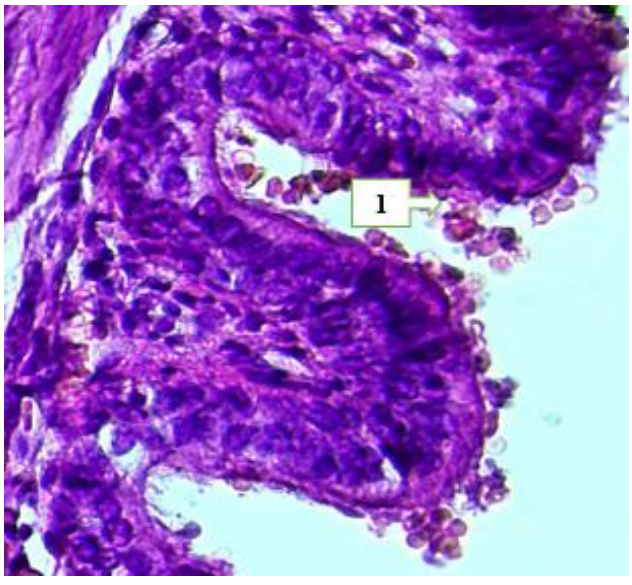


Figure 1. **Bronchus of a 1-years-old infant. 1-the mucous membrane is folded, the covering epithelium is multilayered, stained with hematoxylin-eosin. 10x40**

It is known that it was observed that the connective tissue private plate of the mucous membrane of the bronx Wall had an unformed structure at the age of one year of Early Childhood, its intermediate substance was dominated by nardon and edema processes, its thickness was 15.5±1.8% of the thickness of all layers of the bronx wall. In the following months of the early postnatal period, it was found that cells and fibrous structures in the unformed connective tissue in the mucosal private plate were relatively Evolute, resulting in a decrease in the tumor process in the intermediate, with its relative thickness at 1 year - 14.8±1.7%, age 2 -13.2±1.7%, age 3 - 11.8±1.6%.

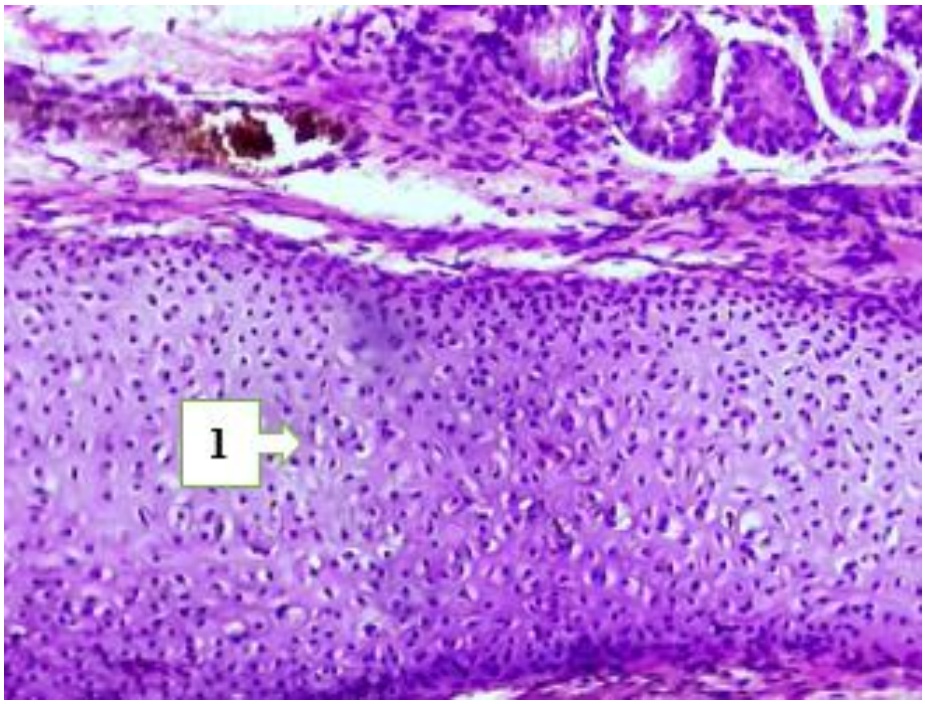


Figure 2. **Age 3. Bronchus. 1- Thickening of the cartilage ring, stained with hematoxylin-eosin. 10x40**

By the age of 1, it was found that the trachea had slightly lengthened, reaching an average length of 5.3±0.36 cm and a width of 1.4±0.08 cm. It was found that the cartilage rings of the Bronx had undergone some improvement, thickening, thickening, and a low level of chondrocytes, a relatively reduced amount of intermediate chondroid substance, and an increase in the surrounding connective tissue bundles. The submucosal layer of the mucous membrane is widened, rarefied, and contains an increased number of connective tissue fibers and cells compared to the two previous periods. The mucous membrane is relatively thick, and the epithelium covering its surface has a multi-layered structure. In children, the mucous membrane of the bronchi is thin, thin, the glands are well developed compared to the previous period, the covering epithelium contains a large number of smooth epithelia with a surface compared to the ciliated epithelium, numerically 1.7 times more. Both epithelial cells are relatively small in height, prismatic in shape, with irregularly located nuclei, most of which do not touch the basal layer, and are round or oval in shape. At the age of 2 years of age of children, it was observed that the mucous membrane of the bronchi consists of folds, but the folds are flattened in comparison with the previous period, the covering epithelium is relatively mature, dyed with dyes, the presence of a dark eosinophilic area in the apical part of the cells, reminiscent of a multi-row epithelium It was found that in children aged 3 years, the connective tissue plate of the bronchial mucosa was denser than in the previous period, and the amount of fibrous structures in its composition increased. The private plate showed an increase in the number and size of small blood vessels by this time (see Figure 1).

Conclusion: 1. It has been proven that at a young age, children consist of tissues in which all layers of the bronx wall did not find a good evolutionary, one layer of the covering epithelium at the age of one year, a tissue formed from connective tissue with a private plate not formed, and mountain peoples from a sparse chondroid and cellular structure to a dense chondromatous tissue with small cells.

2. It has been confirmed that the wall of the pulmonary compartments of the head bronchi at a young age turns from a funnel-shaped to a cylindrical shape, the covering epithelium from a multi-row, twisted state to a single-layer smooth structure, the private plate from a multicellular unformed state to a fibrous-structured connective tissue, the mountain peoples from a flat and

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