ISSN NO: 2770-2936
Date of Publication:20-01-2024

Morphological And Morphometric Indicators of Intra-Pulmonary Blood Vessels in Childhood

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Abstract: In this article, researches were conducted on the morphological and morphometric indicators of intrapulmonary bronchus vascular wall tissues. The structures of the respiratory bronchioles of babies during the first childhood were studied. During the study, the following was proven: the layers of the respiratory bronchioles of young children between the ages of 4 and 7 are not well developed; the covering epithelium is multi-layered and single-layered, from the transformation of the connective tissue from the unformed. It was found that connective tissue-forming tissue, sparse chondroid and dense chondromatous tissue is covered with small cells.

Keywords:micrognathia, hypermagnesemia, hypo- and hypernatremia, malformation, pneumomediastinum, lobar emphysema, pneumothorax, Pera-Robena syndrome, macroglossia, tracheal atresia, tracheo-erythral fistula, laryngeal cyst, meconium aspiration syndrome.

Enter It is known from the world health data that the death of children in the field of medicine is one of the main problems in the world. Today, infant mortality is 15.6% per 1000 live births, but the birth rate is very low at 9.1% [10]. Respiratory distress syndrome (RDS) in newborns is caused by pulmonary and non-pulmonary diseases in the fetus. Diseases related to the respiratory system: narrowing of the nasal passages, micrognathia, Pera-Robena syndrome, macroglossia, laryngeal and tracheal atresia, vocal fold paralysis, laryngeal cyst, tracheo-erythral fistula, temporary tachypnea of stillbirth, meconium aspiration syndrome, stillbirth pneumonia, pneumothorax, lung hypoplasia, lobar emphysema, surfactant protein deficiency. Respiratory system and extrapulmonary diseases: congenital heart defects, cardiomyopathy, cardiac tamponade, severe heart failure, pneumomediastinum, diaphragmatic hernia, birth trauma, hypoxic-ischemic encephalopathy, central malformation, chromosomal disorders, torch infection, meningitis, urinary syndrome (beard), arthrogryposis, sepsis, hypoglycemia, metabolic acidosis, hypo- and hyperthermia, hypermagnesemia, hypo- and hypernatremia, hemolytic anemia [5,6,7,8].

In infants from birth to 9 years of age, lung ultrasonography age, lung findings and characteristics are statistically sufficiently correlated to diagnose all lung segments and respiratory system in the first 14-16 hours of life in premature infants without noted disease "interstitial syndrome" [1]. Minimally Invasive Airway Surfactant Delivery (LISA) in Preterm Infants with Respiratory Distress Syndrome (RDS) - Endotracheal intubation, a surfactant-free delivery method, has shown promise for reducing the incidence of bronchopulmonary dysplasia (BPD) in preterm infants [2].

In infants up to 1 month of age, the mucous membrane of the trachea is thin, delicate, the glands are poorly developed, and the number of smooth epithelium with a smooth surface is 1.5 times higher than that of ciliated epithelium in the covering epithelium. It is the cause of many acute respiratory diseases among children [3]. In the airways, the pulmonary-bronchial tree begins after the larynx and reaches the alveoli of the lungs, a special respiratory system in humans, until it reaches the parenchyma of the smaller and narrower lungs, and the respiratory bronchioles connect with the alveoli. These tree-like structures branch distantly 23 times, forming branches of the pulmonary-bronchial tree [4].

There are 2 types of secretory cells in the bronchial epithelium. Mastoid and Serous Secretory Glands: Mastoid cells are typical in shape, less in neonates, and increase in number later. Age-related characteristics and morphometric studies are of interest not only in fetal and newborn organs. Respiratory bronchial walls in infants in the first childhood period for morphological sciences, but also for clinical sciences such as neonatology and pediatrics [9]. In recent years, the adverse effects of bronchopulmonary dysplasia on the general development of the lungs, including the pulmonary vascular system, have been increasing. Recent studies have shown that developing pulmonary hypertension increases the risk of developing BPD. Current international guidelines call for improved screening for this complication [10].

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Pulmonary hypertension and heart defects are the most severe complications of bronchopulmonary dysplasia (BPD) and associated with diagnostic difficulty and high mortality. Doppler echocardiography was performed. 100 pediatric patients with bronchopulmonary dysplasia (BPD). Based on it, the level of development of the lungs was evaluated, as well as the mechanisms of action of the drugs. The pulmonary safety and efficacy of sildenafil was evaluated in patients with bronchopulmonary dysplasia (BPD) and hypertension [12].

Macroscopic and microscopic examination of the research revealed asymmetry in the distribution of glands in the respiratory system. The number and density of respiratory distribution system glands in the left bronchus is 1.5-2.1 times higher than in the right bronchus ($p<0.05$), the number of glands in the upper part is 1.56-2.91 times ($p<0.05$) a lot The number of glands and their size increases with age, reaches a maximum at the age of 21-35 and then decreases with old age. At the same time, distribution density decreased during the entire period of human life [11].

Premature babies make up the majority of patients in neonatal intensive care and intensive care units. Respiratory distress is a leading cause of neonatal morbidity and infant mortality. in order to improve the quality of medical care and reduce radiation exposure, the actual advantage of using lung ultrasound is discussed [15].

The purpose of the study:morphometric evaluation parameters of postnatal ontogenetic morphology wall of respiratory bronchioles in one-month-old babies.

Materials and methods An expert examination was conducted on the bodies of one-month-old babies admitted in the first quarter of 2020-2022 years at the Center of Pathological Anatomy of the Republic. Infants who died under the influence of various factors, but the respiratory system did not change, were studied in the corpses of children without diseases, mainly those who died from the heart, pulmonary bronchial tract defects and other causes. Causes and main causes of death. Anatomy, where the disease was detected in the results of the pathological examination. The following part of the lung was taken from the examination materials: the macropreparation was studied by taking the respiratory bronchiole. Instrumental (using a barbell), general histological, histochemical, morphometric and statistical research methods were used in our research. The obtained materials were put in formalin and then 3-5 m.km sections were prepared. They are stained with hematoxylin-eosin, Schick's reaction and Van-Gieson methods.

Research results The respiratory system consists of airways and two lungs. The respiratory tract is divided into upper and lower respiratory tracts depending on their location in the body. The upper respiratory tract includes the nasal cavity, larynx, nose, and mouth, and the lower respiratory tract includes the larynx, trachea (throat), bronchi, and lungs. Respiratory tracts due to the presence of bone and cartilage in the wall of the period, it has a unique tube-like structure that keeps this cavity at the same level. Therefore, the mucous membrane, along with its protective function, cleans the air and warms and moistens the air in the respiratory tract.

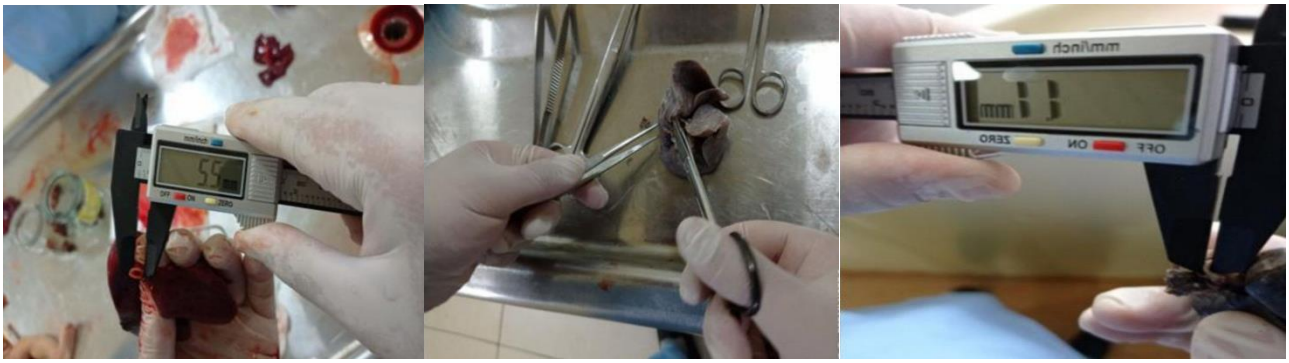

Figure 1. Obtaining the bronchial volume of a one-month-old baby using an electronic rod scheme. (a- measurement of the outer diameter of the bronchus of a one-month-old baby, b- taking a histological macropreparation from the lungs of a one-month-old baby, v- measuring the thickness of the right wall of the lung of a one-month-old baby)

The respiratory tract consists of the following parts: trachea, bronchi of lung lobes, segmental bronchi, interlobular bronchi, lobe bronchi, intralobular bronchioles, and terminal bronchioles. To study the

ISSN NO: 2770-2936
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features of the anatomy of the lower respiratory tract of the fetus, 50 fetuses from 15 to 23 weeks of age were examined. As a result of termination of normal pregnancy for social reasons obtained during them and ante-intranatal fetal death from acute hypoxia. new information was obtained about the characteristics of the macro-microscopic structure of the lower respiratory system, their microtopography, skelotopy, syntopy, necessary for microsurgical intervention in fetal surgery [13-14].

In this study, we aimed to study the microscopic image of specific changes in the walls of respiratory bronchioles located in the lung parenchyma. Distribution of materials by age and gender of babies up to one month abc, %

Young groups	Children the number	Children	
		Boys	Girls
0-7 days old	12	7 people (9.3%)	5 people (6.7)
7-14 days	13	7 people (9.3%)	6 people (8%)
14-20 days	25	15 people (20%)	10 people (13.3%)
20-28 days	25	11 people (14.6%)	14 people (18.6%)
total	75	44 people (58.6%)	31 people (41.4%)

Macroscopic and microscopic preparations obtained in our study were taken from newborns up to 1 month old. In the survey, 44 (58.6%) were boys and 31 (41.4%) were girls. With a gender ratio of 1.41:1.

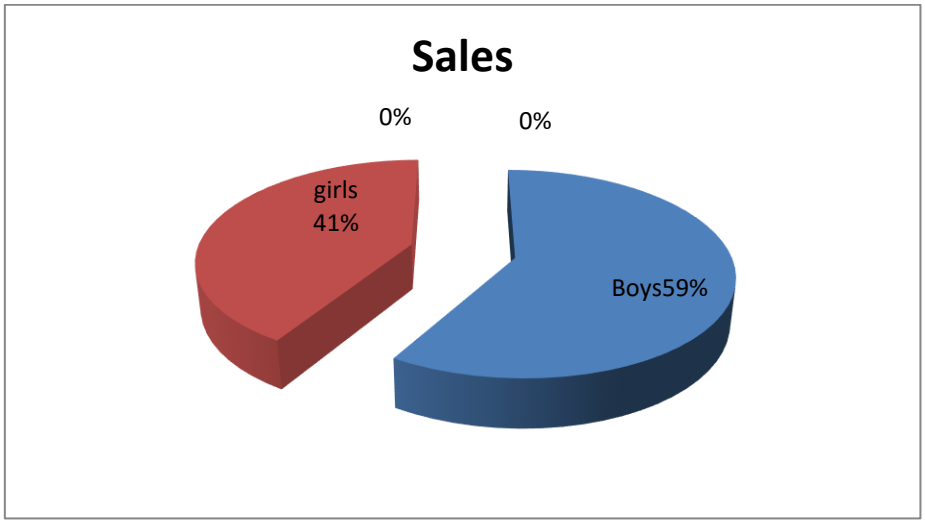

Figure 2. Distribution of bodies of dead babies in Uzbekistan by sex, one month after birth (%)In the results of the microscopic examination, it was found that the respiratory bronchiole is located directly in the lung tissue, and its wall consists of only one-layer prismatic epithelium (see Fig. 3), even the basement membrane is attached to the lung tissue. In this case, the lining epithelium is single-layer prismatic, and in some places so long that it resembles a cylindrical epithelium. It was found that the nuclei are located mainly in the basal part, but some of them occupy the middle part of the cell and the cytoplasm have an eosinophilic granular appearance. Histochemical examination showed that it is a single-layered prismatic epithelial respiratory bronchiole in the wall, the basal membrane of which is more brightly stained with picrofuchsin (Fig. 4 see). Several layers of picrofuchsin-positive collagen fibers were found in the arterial wall around the bronchioles, and these fibers were connected to the basement membrane of the bronchioles.

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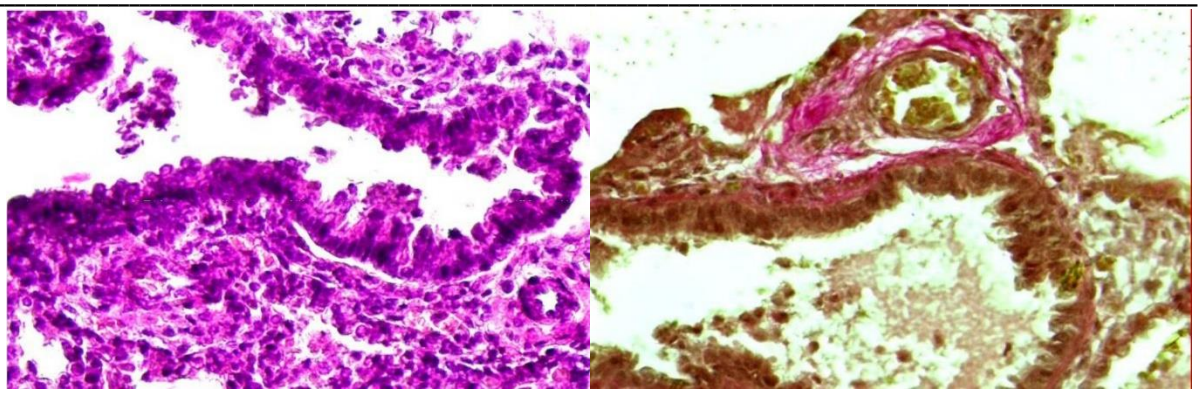

Figure 3. Respiratory bronchiole, one month period. Figure 4. Respiratory bronchiole, one month. The wall of the bronchiole consists only of lining epithelium. Only Hematoxylin-eosin staining method in the wall of respiratory bronchioles. Basal membrane with 10x40 picrofuchsin fibers. enlarged picture 10x40 picture painted by the Van Gison method

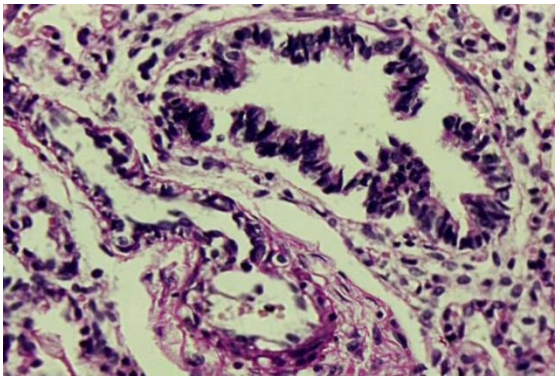

Figure 5. Respiratory bronchiole, one month period. Formation of mucopolysaccharides is observed in the basal membrane of fibrous bronchioles and lung tissue. It is stained with the hematoxylin-eosin method. 10x40 extended image

For identification, histochemical staining with SHIK-reaction revealed the presence of carbohydrate-containing substances in the form of mucopolysaccharide network in the interstitial part of the fibers of the connective tissue of the lung tissue adjacent to the basal membrane of the respiratory bronchiole wall (see Figs. 5-6). Mucopolysaccharides located in a relatively thin circle, combined with the basement membrane, in the form of defined fibers.

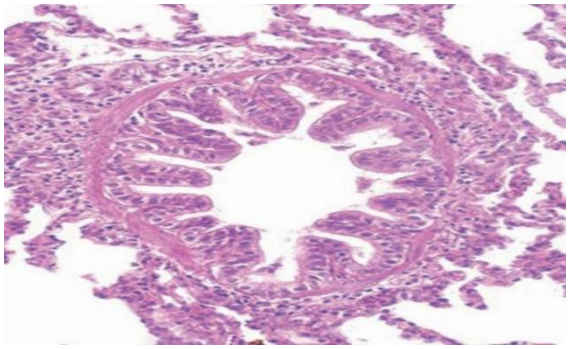

Figure 6. Respiratory bronchioles, One month period. On the surface of the covering epithelium, mucopolysaccharides, private plate and submucosa are stained with SHIK-musdad. drawn by SHIK-reaction method. 10x40 enlarged image

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ConclusionsDuring the stages of the fetus, there are 3 stages of preparation for birth. At the 20th week, the bronchial tree is fully formed. By week 28, the bronchi grow 1.7 times in both length and width. At the 36th week, the bronchi expand mainly in width. The respiratory bronchiole is a tissue located directly in the lung, and its wall consists of a single-layer prismatic epithelium and a basement membrane, even attached to the lung tissue.

In the airways, the bronchial tree begins after the larynx, and branches 23 times in the distance to the alveoli, creating branches of the bronchial tree. In bronchial trees, the specialized ventilation system, which turns smaller and narrower until it reaches the lungs, and the respiratory bronchioles connect to the alveoli. The narrowing allows air from these tree-like structures to reach the alveoli easily and completely during respiration.

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ISSN NO: 2770-2936
Date of Publication:20-01-2024