МЕДИЦИНА, ПЕДАГОГИКА И ТЕХНОЛОГИЯ: ТЕОРИЯ И ПРАКТИКА
ISSN: 3030-3001
SJIF 2023: 3.019, 2024: 5.444 ResearchBib IF: 11.79/ 2023
Том 2, Выпуск 5, 31 Май

ИЗМЕНЕНИЯ, НАБЛЮДАЕМЫЕ В ЛЕГКИХ НОВОРОЖДЕННЫХ ПРИ АТРЕЗИИ ПИЩЕВОДА

Ураков Кувандык Нематуллаевич, Гулафзал Узбекбоевна Аманова
Кафедра Патологической Анатомии с курсом секционной биопсии, Самаркандский государственный медицинский университет, Узбекистан

Аннотация. Тяжелое течение преэклампсии во втором триместре, 20-36 неделях беременности негативно влияет на дифференцировку легочной структуры. Выявлено морфо-функциональная картина легких у новорожденных с атрезией пищевода. Отмечена у новорожденных оперированных по поводу устранения атрезии пищевода легкие сформированные, но инфильтрированы воспалительно-клеточными инфильтратами, представленными в основном лимфоцитами. При этом происходит ряд изменений в легочной паренхиме вследствие аспирации слизью, амниотической жидкостью и мекониями плода. Дифференциальная диагностика легочных компонентов по морфологическим критериям у новорожденных оперированных по поводу устранения атрезии пищевода, мертворожденных плодов с аномалиями пищевода и живорожденных, но умерших новорожденных с аспирационной пневмонией показывает их неоднородность.

Ключевые слова: атрезия, морфология, морфометрия, легкие, пищевод, сфинктер.

CHANGES OBSERVED IN THE LUNGS OF NEWBORNS IN ESOPHAGEAL ATRESIA

Urakov Kuvandik Nematullayevich, Gulafzal Uzbekboyevna AMONOVA
Department of Pathological Anatomy with a course of sectional biopsy Samarkand State Medical University, Uzbekistan

Abstract. Severe preeclampsia in the second trimester, 20-36 weeks of pregnancy negatively affects the differentiation of the pulmonary structure. The morphofunctional picture of the lungs in newborns with esophageal atresia was revealed. It was noted in newborns operated on for the elimination of esophageal atresia, the lungs were formed, but infiltrated by inflammatory cell infiltrates, represented mainly by lymphocytes. At the same time, a number of changes occur in the pulmonary parenchyma due to aspiration by mucus, amniotic fluid and fetal meconium. Differential diagnosis of pulmonary components according to morphological criteria in newborns operated for the elimination of esophageal

ISSN: 3030-3001
SJIF 2023: 3.019, 2024: 5.444 ResearchBib IF: 11.79/ 2023
Том 2, Выпуск 5, 31 Май

atresia, stillborn fetuses with esophageal abnormalities and live-born but deceased newborns with aspiration pneumonia shows their heterogeneity.

Key words: atresia, morphology, morphometry, lungs, esophagus, sphincter.

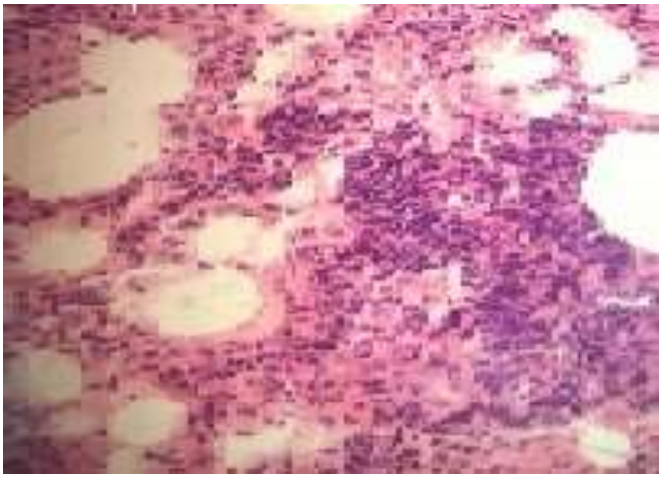
Respiratory system diseases are a type of pathology that is most common among infants. Lung disease corresponds to every sixth death worldwide [1, 5, 11, 15, 18]. Today, the problem of prevention and treatment of lung diseases in children, especially newborns, is becoming an actual issue. These factors affect the development of normal lung improvement in the fetus and their pathological appearance: acute polyhydramnios, diabetes mellitus, hyperthyroidism and foci of chronic infection [2, 5, 8, 21]. Stratification of the lungs is adversely affected by a severe type of preeclampsia in the second half of pregnancy, for weeks 20-36. In some cases, lung maturation is also negatively affected by defects in the fetal digestive, cardiovascular system and many other systems [4, 6, 7 , 8, 12]. In premature infants, alveolocytes are one of the main factors that stimulate damage to epithelial tissue as well as the occurrence of hyaline membrane disease (HMD), which is intranatal hypoxia and aspiration of amniotic fluid [2, 3, 6, 8, 9, 19]. Disorders of esophageal atresia and digestive system development also directly affect the development of organs of the respiratory system. It was the goal of our research that information about morphofunctional changes in the lungs of newborns with esophageal atresia was poorly cited in the literature.

Research source and methods. In the scientific center of Pediatric Surgery of the Samarkand region for 2019-2022 (52 cases), babies born with esophageal atresia and who died surgically, babies born with esophageal abnormalities and babies who died with complications such as aspiration pneumonia were examined. All cases were autopsied in the pathological anatomy department of SamSMU clinic No. 1. Of these, 39 were male - gendered (73.12 %) and 14 were female-gendered (26.88 %). The age of babies born and died alive was 1-1.5 months. During the autopsy examination, we received tissue fragments for examination from different areas of the lungs and also from different parts of the esophagus, as well as from unchanged parts of these organs. An autopsy revealed the development of aspiration pneumonia in girls in 12 cases, boys in 30 cases, girls in 10 cases, and esophageal-tracheal fistula (mites) in boys in 12 cases. In all cases, the cause of death was tested to be progressive respiratory and heart failure, aspiration pneumonia, mediastenitis, pleurisy, and pericarditis.

ISSN: 3030-3001
SJIF 2023: 3.019, 2024: 5.444 ResearchBib IF: 11.79/ 2023
Том 2, Выпуск 5, 31 Май

In all groups of observations, the material for the study was given importance to the fact that the bronchi of large, medium and small calibers are selected to the extent that it allows a complete assessment of the morphofunction state of the respiratory parts. To do this, the lungs of the fetus and deceased babies were examined either completely or with a fragment of the lungs. Attention was paid to the fact that approximately 5-7 tissue fragments from each segment of the lungs of slightly larger fetuses and deceased infants were taken from different areas. To analyze these obtained samples, we used a light microscope. We processed and hardened the lumps from the lung tissue in Buen liquid. We took the hardened flakes in 3-4 parts, washed in 800 alcohol, dehydrated and then paraffin. From each block, we prepared 6-8-step, 10 μm thick, cross-sections spaced 60-80 μm apart and painted with hematoxylin-eosin paint. At the same time, we also conducted morphometric studies.

The results of the study: when the lungs of infants with the practice of eliminating esophageal atresia are macroscopically examined, a small amount of serous fluid is found in the cavity of large-caliber bronchi, both lungs are fully mature, light pink in color and full of air. And on microscopic examination, the mucous membrane of the respiratory bronchioles is covered with prismatic epithelium. Epithelocytes of certain areas are desquamated, the mucous membrane is full of blood vessels, mucosal glands are hypersecretion, myocytes are in a swollen state, non-sparsely formed connective tissue fibers are fibrous, and inflammatory cell infiltrates are accumulated. These inflammatory cell infiltrates are composed of lymphocytes, monocytes, fibroblasts, plasmoblasts, and segmented-core neutorphils.



ISSN: 3030-3001
SJIF 2023: 3.019, 2024: 5.444 ResearchBib IF: 11.79/ 2023
Том 2, Выпуск 5, 31 Май

Figure 1. *Infiltration of lymphocytes, plasmocytes and macrophages in the lungs of a died baby with esophageal atresia (postoperative condition). Painted with hematoxylin-eosin, ob.40, ok.10.*

Small amounts of lymphogistiocytic infiltrates are detected in the muscle floor of Terminal bronchioles. When infants ' lungs are examined microscopically, they appear to have a canalicular structure (Figure 1). The alveoli are covered with a flat and cuboid epithelium. The alveolar cavity is found to contain a small amount of clear fluid, fibrin fibers, and macrophages. Lymphocytes and fibroblasts are concentrated in the walls of the aerogematic barrier, fullness and hemostasis are visible in the capillaries. Due to the increased permeability of capillaries endothelocytes, transudate is detected in the alveolar cavity and in the areas of aerogematic obstruction. When the body of babies born with esophageal anomalies and died from complications of aspiration pneumonia is autopsied, macroscopically large-caliber bronchial cavities detect mucus, displaced mucosal masses, as well as amniotic fluid, meconium residues. Lung parenchyma, on the other hand, is dark brown, airless, gives a positive result when a water probe is passed through, it can be determined that it has a soft-elastic consistency when we cut and see. On microscopic examination, the mucous membrane of the bronchi is covered with prismatic epithelium, which in most areas is desquamated, the cysts of prismatic epitheliocytes are overlapping and covered with a sticky substance.

The mucous membrane is covered with sparse unformed connective tissue, myocytes in a swollen state, lymphocytes, plasmoblasts, monocytes and fibroblasts.

We can see fullness and hemostasis in small blood vessels. The fibrosis-lower and adventitial floors are unchanged. The cavity of the small and terminal bronchi is blocked by a slimy mass. Microscopically, however, it is found that most cuboid epitheliocytes have been desquamated on the mucous membrane. Lymphogistiocytic infiltrates are concentrated in the mucous membranes, stasis develops in the capillaries. Most segments of the lungs do not have their alveoli open.

ISSN: 3030-3001
SJIF 2023: 3.019, 2024: 5.444 ResearchBib IF: 11.79/ 2023
Том 2, Выпуск 5, 31 Май

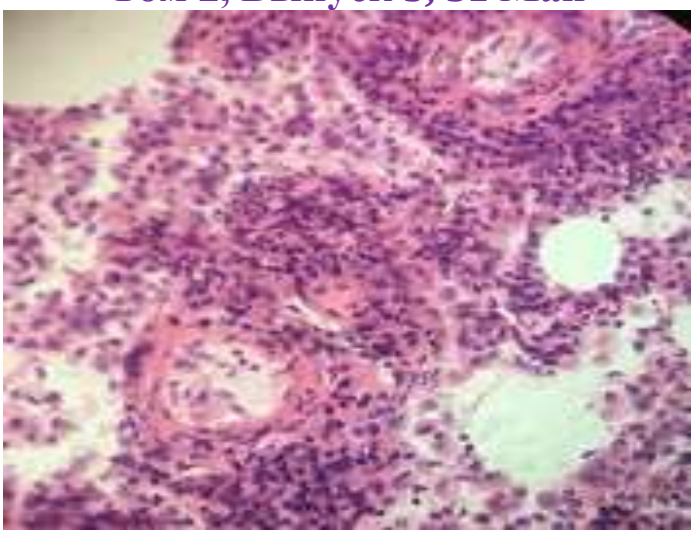


Figure 2. *Infiltration of lymphocytes, plasmocytes and macrophages in the lungs of a deceased baby with esophageal atresia (postoperative condition). At the same time, sclerotic changes in terminal bronchioles are detected. Painted with hematoxylin-eosin, ob. 40, ok. 10.*

In the process of maturation of the fetus, most of the alveolocytes are non-straightened, displaced, airless, distelectasis areas. The interalveolar barrier is thickened; infiltration of lymphocytes, monocytes and also hemosiderin granules is recorded (Figure 2). The cavity of some alveoli is flooded with homogeneous - homogeneous masses, and in some there are foci of bleeding (there are aggregates of blood cells), an increase in the number of endothelocytes in large-caliber blood vessels, thickening of the middle membrane and outer wall of their walls, stasis in blood vessels has been recorded. The alveoli are cuboid and covered with a flat epithelium. In some cases, the lungs have a structure characteristic of the alveolar stage, the alveolar divisions are wide, the general capillarization of the lungs is not formed, the endothelium of the capillaries is found to be in a swollen state.

ISSN: 3030-3001
SJIF 2023: 3.019, 2024: 5.444 ResearchBib IF: 11.79/ 2023
Том 2, Выпуск 5, 31 Май

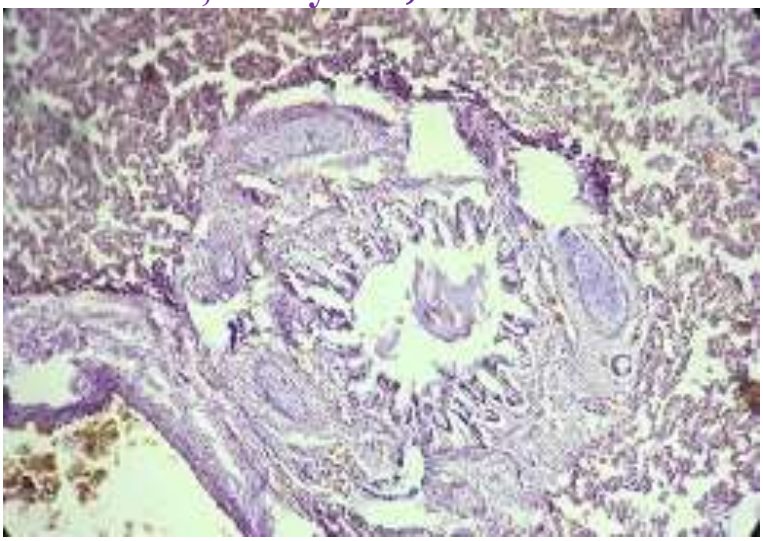


Figure 3. *In the stillborn lung, descvamative changes can be seen in the terminal bronchioles, aspiration and accumulation of pubic waters, and autolysis of the pulmonary parenchyma. Painted with hematoxylin-eosin, ob. 40, ok. 10.*

In children born to early from timeline (1,000-1,200 gr), the alveoli are small in size, covered with cuboid epithelium. The inter-alveolar barrier walls are wide, the network of capillaries in them is found not to be located directly under the epithelium in all areas. Elastic fibers are found to be underdeveloped in interstitial tissues. Lung tissue in an atelectasis condition is seen to be partially flattened in some areas (Figure 3).

Conclusion. In histological examinations of the internal organs of the body of infants, in which the operative treatment of respiratory organ pathologies and elimination of esophageal atresia was performed, it was found that the structure of the lungs was preserved morphologically. But the morphological picture was observed to be polymorphous, which in turn means how deep the changes in the lungs are: in a row of deceased babies, exudate was detected in the deformed bronchi and alveolar cavity, as well as fibrin, segment-core leukocytes, displaced alveocytes with no nuclei, fragmented and whole erythrocytes, hemosiderin granules. The walls of the bronchioles are in most cases intact, the preserved terminal bronchiole cavity contains a dense exudate, many segments-nucleated leukocytes, displaced bronchiolar epithelial elements. The peribronchial areas and alveolalaro barrier walls have developed edema, with a large accumulation of cell infiltrates of mixed composition: segment-nucleated leukocytes, macrophages and lymphocytes have

ISSN: 3030-3001
SJIF 2023: 3.019, 2024: 5.444 ResearchBib IF: 11.79/ 2023
Том 2, Выпуск 5, 31 Май

been identified. Thus, the degree and duration of survival of babies depends on the nature, type and course of morphological changes that have developed in the lungs.

Literature:

1. Геппе НА., Волков ИК. **Актуальные вопросы детской пульмонологии в России.** //Вестник Российской Академии медицинских наук 2008; (10):32-34.

2. Козлов В.К., Лебедько О.А., Пичугина С.В. и соавт. Актуальные вопросы хронических неспецифических заболеваний легких у детей. /Ж.Бюллетень. Выпуск 70., 2018., стр. 15-26.

3. Одиреев А.Н., Колосов В.П., Сурнин Д.Е.. Диагностика мукоцилиарной недостаточности у больных хронической обструктивной болезнью лёгких.// Бюллетень. Выпуск 23. 2006 г стр 47-50.

руткина Е.В., Сепп А.В., Цыбиков Н.Н..Динамика экспрессии тканевого фактора в легких в зависимости от стадии развития респираторного дистресс-синдрома на фоне пневмонии при гриппе А/НШ1. Архив патологии 6. 2013 г. Стр: 16-21.

5. Середа Е.В., Лукина О.Ф., СелимзяноваЛ.Р.. Механизмы бронхиальной обструкции и терапевтическая тактика при бронхитах у детей. Ж. Педиатрия, 2010, том 89, №5, стр.77-86.

6. Blinova S.A., Khamidova F.M., Ismoilov J.M. Изменение структурных компонентов бронхиального секрета при бронхоэктатической болезни у детей. // Вопросы науки и образования 2019; 27(76) 16-23.

7. Blinova S.A., Khamidova F.M., Ismailov J.M. /Congenital and acquired structures in the lungs of bronchiectasis disease inchildren// Вопросы науки и образования № 29 (41), 2018. P.99-101.

8. Blokhin B.M. Respiratory diseases in children. - M., ID "Medpraktika-M", 2007. - 616 p.

9. Khamidova F.M., Blinova S.A., Ismoilov J.M. Dynamics of changes of immune and endocrine lung structures in experimental pneumonia// Journal of Biomedicine and practice. Special issues-2. 2020 717-721 p.

10. Hallstrand T.S., Hackett T.L., Altemeier W.A., Matute-Bello G., Hansbro P.M., Knight D.A. Airway Epithelial Regulation of Pulmonary Immune Homeostasis and Inflammation // Clin Immunol. - 2014-151 (1) -1-15.

11. Waghray A, van den Berge M, Theis FJ, Regev A, Kaminski N, Rajagopal J, Teichmann SA, Misharin AV, Nawijn MC. The Human Lung Cell

Atlas: A High-Resolution Reference Map of the Human Lung in Health and Disease. Am J Respir Cell Mol Biol. 2019; 61 (1):31-41.

12. Muinovna K. F., Bakhtiyorovna J. M., Nematovich U. K. FREQUENCY, ETIOPATHOGENESIS AND PATHOMORPHOLOGY OF BRONCHOECTATIC DISEASE (LITERATURE REVIEW) //JOURNAL OF APPLIED MEDICAL SCIENCES. – 2023. – Т. 6. – №. 4. – С. 169-180.

13. Urunova, M. A., et al. "Hiqildoq giperplaziyasi morfologiyasiga doir." *Science and Education* 3.11 (2022): 297-304.

14. Ибрагимо Ш. Р. и др. Характер повреждений челюстей при оказании экстренной медицинской помощи //VolgaMedScience. – 2022. – С. 352-354.

15. Исламов Ш. Э., Ураков К. Н., Нормахматов И. З. ЗАЩИТА ПРАВ ПАЦИЕНТА ПРИ ПРОВЕДЕНИИ МЕДИЦИНСКИХ ЭКСПЕРИМЕНТОВ //ТВЕРСКОЙ МЕДИЦИНСКИЙ ЖУРНАЛ Учредители: Тверской государственный медицинский университет,(4). – С. 93-95.

16. Болысбек А. А. и др. Методы гранулирования удобрительных композиций //Сборник избранных статей по материалам научных конференций ГНИИ" Нацразвитие". – 2019. – С. 178-180.

17. Болысбек А. А. и др. Методы гранулирования удобрительных композиций //Сборник избранных статей по материалам научных конференций ГНИИ" Нацразвитие". – 2019. – С. 178-180.

18. Ураков К. Н. К ПРОБЛЕМЕ МУКОВИСЦИДОЗА //ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ. – 2023. – Т. 23. – №. 6. – С. 164-166.

19. Ураков К. Н. АНАЛИЗ ДЕТСКОЙ ЛЕТАЛЬНОСТИОТ ПНЕВМОНИЙ //ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ. – 2023. – Т. 23. – №. 6. – С. 167-168.

20. Солдатов А. В. и др. УСТРОЙСТВО ДЛЯ ПОЛУЧЕНИЯ ГРАНУЛИРОВАННОЙ АММИАЧНОЙ СЕЛИТРЫ. – 2016.

21. Бобоназаров С. Д., Норжигитов А. М., Ураков К. Н. РЕЗУЛЬТАТЫ ХИРУРГИЧЕСКОГО ЛЕЧЕНИЯ РЕЦИДИВНОГО ЭХИНОКОККОЗА ЛЕГКИХ В ЗАВИСИМОСТИ ОТ МОРФОЛОГИЧЕСКИХ МОДИФИКАЦИЙ КИСТЫ //International scientific review. – 2020. – №. LXXV. – С. 71-76.

22. Абдуллаев Б. С. и др. Частота встречаемости гиперпластических процессор в гортани //Science and Education. – 2022. – Т. 3. – №. 11. – С. 289-296.

23. Амонова, Г. У., & Исмоилов, Ж. М. (2017). РЕОРГАНИЗАЦИЯ ЦИТОАРХИТЕКТОНИКИ ЭПИТЕЛИАЛЬНОГО ПЛАСТА БРОНХОВ У КРОЛИКОВ С ХРОНИЧЕСКИМ ЭКСПЕРИМЕНТАЛЬНЫМ ЛАРИНГИТОМ. In *Молодежь и медицинская наука в XXI веке* (pp. 51-51).

24. Хамидов, З. З., Амонова, Г. У., & Исаев, Х. Ж. (2019). Некоторые аспекты патоморфологии неспецифических язвенных колитов. In *Молодежь и медицинская наука в XXI веке* (pp. 76-76).

25. Jumanov, Z., Amonova, G., & Ortikov, B. (2023). THE MORPHOLOGICAL FEATURES OF THE STRUCTURE OF THE BRAIN OF NEWBORN, BORN AND DEAD AT DIFFERENT PERIODS OF PREGNANCY IN THE ATELECTATIC FORM OF PNEUMOPATHY. *Oriental renaissance: Innovative, educational, natural and social sciences*, *3*(11), 189-193.

26. Hamidova, F. M., & Amonova, G. U. (2022). CHARACTERISTICS OF PATHOMORPHOLOGICAL CHANGES IN THE LUNGS OF CHILDREN BORN WITH ESOPHAGUS ATRESION. *Conferencea*, 105-109.

27. Amanova, G. U., Eshkabilov, T. Z., Khamidova, F. M., & Abdullayev, B. S. (2020). The Early Diagnosis Of Precancer Of The Cervix. *The American Journal of Applied sciences*, *2*(09), 51-53.

28. Amonova Gulafzal Uzbekboyevna, & Moaz Asif. (2024). PATHOMORPHOLOGY OF BREAST CANCER. *Journal of Universal Science Research*, *2*(5), 328–331. Retrieved from https://universalpublishings.com/index.php/jusr/article/view/5760