SCHOLASTIC:
Journal of Natural and Medical Education
Volume 2, Issue 5, Year 2023 ISSN: 2835-303X
https://univerpubl.com/index.php/scholastic

The Main Function of the Lungs

Kurbanova Gulbaxor Aslamovna
Assistant of Pathophysiology Department of the State Samarkand Medical University

Article Information

Received: March 15, 2023
Accepted: April 13, 2023
Published: May 6, 2023

Keywords
mucociliary system.

ABSTRACT

The main function of the lungs is the exchange of gases: the absorption of oxygen from the environment and the removal of carbon dioxide from the body. These processes are necessary for cellular metabolism. Effective gas exchange is possible with the integration and coordination of the functions of various organs. The outside air is pumped to the lung surface through which gas exchange takes place, while the alveolar gas, "loaded" with carbon dioxide, is removed from the lungs using the same pumping mechanism.

Pulmonary circulation provides blood flow through the lungs for continuous absorption of oxygen, its delivery to the tissues and, at the same time, for the removal of carbon dioxide into the alveoli. The close coupling between ventilation and blood circulation is the basis for maximum efficiency of gas exchange. Ultimately, the system gas exchange should be monitored, regulated and continuously adapted to a wide range of metabolic changes that occur during exercise and various diseases. In addition to gas exchange, the lungs perform a number of metabolic functions, including the synthesis of surfactant and other substances, as well as the metabolism of many chemical mediators. The disorder of these functions can significantly affect the gas exchange in the lungs. Normally, the lungs have a remarkable ability to maintain the required levels of oxygen uptake and carbon dioxide removal under various conditions. Lung disease, however, can selectively or totally affect the physiological processes involved in gas exchange. For example, obstructive diseases of the airways (VP) prevent the flow of air to the alveoli and in the opposite direction, while restrictive lung diseases (Chapter 7) violate the relationship between ventilation and blood flow or create a barrier to the diffusion of gases. The function of the lungs is closely related to their structure, and the structure is determined by function. This chapter provides an overview of the structure of the lungs. Description of the shape of the chest and its contents precedes consideration of the structure of the VP and alveoli. Then the anatomical relations between the VP, the alveoli and the small circle of blood circulation are considered. Finally, brief data on the pulmonary lymphatic system, lung innervation and VP are given. The general shape of the chest and its contents. The lungs are surrounded by the walls of the chest and the diaphragm from below. The mechanical properties of the chest wall and diaphragm affect the gas exchange function of the lungs. The movement of the lungs inside the chest cavity during inhalation and exhalation is facilitated by the space between these two structures – the pleural cavity formed by touching surfaces. One lines the chest from the inside – the parietal pleura, and the other covers the lungs from the outside – the visceral pleura. The parietal and visceral pleura are separated by a thin layer of fluid that serves as a lubricant. The mechanism of pleural fluid formation has not been sufficiently studied. Its removal partly depends on the pulmonary lymphatic system. Changes in pressure inside the pleural cavity cause inspiratory and expiratory air flow in the lungs in normal and pathological conditions. The pleural membranes surrounding each lung, extending medially, form the mediastinum — a centrally located receptacle of large VP and vessels, including the pulmonary arteries and veins. The main bronchi, pulmonary arteries and veins penetrate into each lung through their gates. The point of bifurcation of the trachea into the left and right main bronchi – the keel – lies in close proximity to the aortic arch and the division of the main trunk of the pulmonary artery into branches supplying the left and right lungs. The diaphragmatic nerves formed from the third, fourth and fifth cervical nerve roots innervate the diaphragm and are located along the lateral surfaces of the trachea. The structure of airways in connection with their function. The airways can be considered as a series of dichotomically branching tubes: each "parent" VP gives rise to two "daughter" branches. There are an average of 23 in a person's lung generation of VP. The first 16 are known as conductive VP, since they provide access to the gas flow to the lung areas where gas exchange occurs, and in the opposite direction. These VP include bronchi, bronchioles, and terminal bronchioles. The last seven generations consist of respiratory bronchioles, alveolar passages and alveolar sacs. Each of these formations gives rise to alveoli. The respiratory bronchiole of the first order (Z = 17 in Fig. 1 - 3) and all distally located gas-exchanging VP form a pulmonary acinus. The structure of the walls of conducting VP is significantly different from the structure of the walls of the respiratory tract, in which the exchange of gases takes place (Fig. 1-4). The walls of conductive VP consist of three main layers: the inner mucosa; the smooth muscle layer separated from the mucosa by a connective tissue submucosal layer; and the outer connective tissue layer containing cartilage in the large bronchi. The bronchial epithelium is pseudo-layered, containing high and low basal cells, each of which is attached to the basement membrane. The bronchioles are lined with a simple epithelium. Epithelial VP cells carry cilia on their apical surface, which are important elements of the mucociliary system. The cilia oscillate rhythmically in the direction of the nasopharynx, promoting a protective layer of mucus secreted by goblet cells located between the ciliated cells of the epithelium. The mucociliary "escalator" is an important mechanism for the purification of VP and part of the protection of the respiratory system of the body. The smooth muscles of the VP, collected in continuous bundles inside the connective tissue submucosal layer, extends from the main bronchi to the respiratory bronchioles. Muscle bundles also penetrate into the gas exchange zones, located in the walls at the entrance to the alveoli. Structure of the gas exchange zone The gas exchange zone should ensure effective diffusion of oxygen and carbon dioxide through the alveolar and capillary walls. It should support the exchange of gases throughout life and withstand the mechanical effects accompanying the expansion and collapse of the lungs, as well as the influence of pulmonary blood flow. The location of the vascular endothelium and the alveolar epithelium in the supporting connective tissue stroma seems to ideally meet these requirement. The alveolar epithelium consists of two types of cells: flat lining (type I) and secretory (type II). Cells of the first type, although much smaller in number, occupy up to 95%

of the alveolar surface area. Cells of the second type produce and secrete a surfactant consisting of proteins and phospholipids. It is distributed over the alveolar surface and reduces surface tension (Chapter 2). The capillary endothelium also consists of a layer of flat lining cells located on the endothelial basement membrane. In part of the alveoli, the basement membranes of the epithelium and endothelium are soldered to each other, which creates an ultra-thin barrier for gas exchange (Chapter 9). In contrast to the close contact of neighboring epithelial cells forming an impenetrable barrier, the connections between endothelial cells are rather weak, which allows water and substances dissolved in it to move between plasma and interstitial space. The latter is the area between the epithelial and endothelial. Gas flow in airways Airways, as a system of dichotomically branching tubes, represent a rather complicated path for the movement of gas to gas exchange zones and back. Although the diameter of each child branch is smaller than the diameter of the parent VP from which it originates, the total cross-sectional area of each subsequent generation of VP increases due to a significant increase in the total number of VP.

Literature:

1. Kurbonova, Gulbahor Aslamovna, and Zebiniso Khidirovna Lapasova. "CURRENT VIEWS ON IRON DEFICIENCY ANAEMIA IN PATIENTS WITH CARDIOVASCULAR DISEASE." *The American Journal of Medical Sciences and Pharmaceutical Research* 4.03 (2022): 59-64.
2. Kurbonova G. A., Lapasova Z. K. CURRENT VIEWS ON IRON DEFICIENCY ANAEMIA IN PATIENTS WITH CARDIOVASCULAR DISEASE //The American Journal of Medical Sciences and Pharmaceutical Research. – 2022. – Т. 4. – №. 03. – С. 59-64.
3. Kurbonova, G. A., & Lapasova, Z. K. (2022). CURRENT VIEWS ON IRON DEFICIENCY ANAEMIA IN PATIENTS WITH CARDIOVASCULAR DISEASE. *The American Journal of Medical Sciences and Pharmaceutical Research*, *4*(03), 59-64.
4. Kurbonova G. A., Lapasova Z. K. CURRENT VIEWS ON IRON DEFICIENCY ANAEMIA IN PATIENTS WITH
5. CARDIOVASCULAR DISEASE //The American Journal of Medical Sciences and Pharmaceutical Research. – 2022. – Т. 4. – №. 03. – С. 59-64.
6. Sherali K., Zebiniso L., Gulbahor K. Features Of Anthropometric Indicators Of Children Of The First Year Of Life Born Of Mothers In The State Of Hypothyrozis //The American Journal of Medical Sciences and Pharmaceutical Research. – 2020. – Т. 2. – №. 09. – С. 64-68.
7. ЛапасоваЗ. Х. идр. ЮракқонтомиркасалликлариривожланишигаолибкелувчихавфомилларинийрганишБиологияватиббиётмуаммолари //Халкароилмийжурнал. – 2019. – С. 213-215.
8. Лапасов С. и др. Кишлокврачликпунктишароитида 45-65 ёшлиюракишемиккасалигигамойиллиги бор ахолиниэртааниклашжараёнисифаткурсаткичинияхшилаш //Журнал проблемы биологии и медицины. – 2013. – №. 1 (72). – С. 50-53.
9. Лапасов С. и др. Кишлокврачликпунктишароитида 45-65 ёшлиюракишемиккасалигигамойиллиги бор ахолиниэртааниклашжараёнисифаткурсаткичинияхшилаш //Журнал проблемы

биологии и медицины. – 2013. – №. 1 (72). – С. 50-53.
10. Лапасов С. и др. Кишлокврачликпунктишароитида 45-65 ёшлиюракишемиккасалигигамойиллиги бор ахолиниэртааниклашжараёнисифаткурсаткичинияхшилаш //Журнал проблемы биологии и медицины. – 2013. – №. 1 (72). – С. 50-53.
11. Лапасова З. Х. и др. Юракқонтомиркасалликларииривожланишигаолибкелувчихавфомилларинийурганиш Биология ватиббиётмуаммолари //Халкароилмий журнал. – 2019. – С. 213-215.
12. Юлдашова Н. и др. Диагностика и лечение осложнений сахарного диабета на основе принципов доказательной медицины //Журнал проблемы биологии и медицины. – 2018. – №. 3 (102). – С. 192-197.
13. Khidirovna L. Z. et al. Significance of Syndrome Teetering in Development of Residual Pain Syndrome in Patients Operated for Lumbar Osteochondrosis //Texas Journal of Multidisciplinary Studies. – 2022. – Т. 6. – С. 59-63.
14. Nematjon M. УМУМИЙАМАЛЁТШИФОКОРИШАРОИТИДААРТЕРИАЛГИПОТЕНЗИЯША КЛЛАНИШИНИНГХАТАРОМИЛЛАРИГАБОҒЛИҚЛИГИДАРАЖАСИҚИЁСИ ЙТАВСИФИ //УЗБЕКИСТОНКАРДИОЛОГИЯСИ. – 2019.
15. Sherali K., Zebiniso L., Gulbahor K. Features Of Anthropometric Indicators Of Children Of The First Year Of Life Born Of Mothers In The State Of Hypothyrozis //The American Journal of Medical Sciences and Pharmaceutical Research. – 2020. – Т. 2. – №. 09. – С. 64-68.
16. Kurbonova, Gulbahor Aslamovna, and Zebiniso Khidirovna Lapasova. "CURRENT VIEWS ON IRON DEFICIENCY ANAEMIA IN PATIENTS WITH CARDIOVASCULAR DISEASE." *The American Journal of Medical Sciences and Pharmaceutical Research* 4.03 (2022): 59-64.
17. Kurbonova G. A., Lapasova Z. K. CURRENT VIEWS ON IRON DEFICIENCY ANAEMIA IN PATIENTS WITH CARDIOVASCULAR DISEASE //The American Journal of Medical Sciences and Pharmaceutical Research. – 2022. – Т. 4. – №. 03. – С. 59-64.
18. Kurbonova, G. A., & Lapasova, Z. K. (2022). CURRENT VIEWS ON IRON DEFICIENCY ANAEMIA IN PATIENTS WITH CARDIOVASCULAR DISEASE. *The American Journal of Medical Sciences and Pharmaceutical Research*, *4*(03), 59-64.
19. Шодиев А. и др. К особенностям клинического течения и лечения нетравматических внутримозговых кровоизлияний у детей //Журнал проблемы биологии и медицины. – 2018. – №. 2.1 (101). – С. 128-131.
20. Шодиев, А., et al. "К особенностям клинического течения и лечения нетравматических внутримозговых кровоизлияний у детей." *Журнал проблемы биологии и медицины* 2.1 (101) (2018): 128-131.
21. Абдувалиев Ш. И., Шодиев А. Ш., Пардаева З. С. НЕКОТОРЫЕ ОСОБЕННОСТИ КЛИНИЧЕСКОГО ПРОЯВЛЕНИЯ НЕТРАВМАТИЧЕСКИХ ВНУТРИМОЗГОВЫХ КРОВОИЗЛИЯНИЙ У ДЕТЕЙ //XX ДАВИДЕНКОВСКИЕ ЧТЕНИЯ. – 2018. – С. 9-10.

22. Абдувалиев, Ш. И., А. Ш. Шодиев, and З. С. Пардаева. "НЕКОТОРЫЕ ОСОБЕННОСТИ КЛИНИЧЕСКОГО ПРОЯВЛЕНИЯ НЕТРАВМАТИЧЕСКИХ ВНУТРИМОЗГОВЫХ КРОВОИЗЛИЯНИЙ У ДЕТЕЙ." *XX ДАВИДЕНКОВСКИЕ ЧТЕНИЯ*. 2018.
23. Шодиев А. Ш., Абдувалиев Ш. И., Пардаева З. С. К ВОПРОСУ КЛИНИЧЕСКОГО ТЕЧЕНИЯ И ЛЕЧЕНИЯ НЕТРАВМАТИЧЕСКИХ ВНУТРИМОЗГОВЫХ КРОВОИЗЛИЯНИЙ У ДЕТЕЙ //XX ДАВИДЕНКОВСКИЕ ЧТЕНИЯ. – 2018. – С. 441-442.
24. Шодиев, А. Ш., Ш. И. Абдувалиев, and З. С. Пардаева. "К ВОПРОСУ КЛИНИЧЕСКОГО ТЕЧЕНИЯ И ЛЕЧЕНИЯ НЕТРАВМАТИЧЕСКИХ ВНУТРИМОЗГОВЫХ КРОВОИЗЛИЯНИЙ У ДЕТЕЙ." *XX ДАВИДЕНКОВСКИЕ ЧТЕНИЯ*. 2018.
25. Саркисова В., Абдурахманова К. Астено-вегетативные нарушения, оценка качества жизни у женщин климактерического возраста с гиперпластическими процессами в матке //Журнал вестник врача. – 2014. – Т. 1. – №. 01. – С. 163-166.
26. Саркисова, В., and К. Абдурахманова. "Астено-вегетативные нарушения, оценка качества жизни у женщин климактерического возраста с гиперпластическими процессами в матке." *Журнал вестник врача* 1.01 (2014): 163-166.
27. Саркисова, В., & Абдурахманова, К. (2014). Астено-вегетативные нарушения, оценка качества жизни у женщин климактерического возраста с гиперпластическими процессами в матке. *Журнал вестник врача*, *1*(01), 163-166.
28. Vladimirovna S. V. Epidemiology, Theories Of The Development, Conservative And Operative Treatment Of The Endometriosis //The Peerian Journal. – 2023. – Т. 15. – С. 84-93.
29. Vladimirovna, Sarkisova Viktoriya. "Epidemiology, Theories Of The Development, Conservative And Operative Treatment Of The Endometriosis." *The Peerian Journal* 15 (2023): 84-93.
30. Vladimirovna, S. V. (2023). Epidemiology, Theories Of The Development, Conservative And Operative Treatment Of The Endometriosis. *The Peerian Journal*, *15*, 84-93.
31. Vladimirovna S. V. et al. Analysis of Women's Reproductive and Somatic Health, Hospitalized for Endometrial Hyperplasia and Uterine Bleeding //Eurasian Medical Research Periodical. – 2023. – Т. 17. – С. 91-96.
32. Vladimirovna, Sarkisova Viktoriya, et al. "Analysis of Women's Reproductive and Somatic Health, Hospitalized for Endometrial Hyperplasia and Uterine Bleeding." *Eurasian Medical Research Periodical* 17 (2023): 91-96.
33. Vladimirovna, S. V., Vladimirovna, M. E., Xidirovna, L. Z., & Shaukatovna, I. M. (2023). Analysis of Women's Reproductive and Somatic Health, Hospitalized for Endometrial Hyperplasia and Uterine Bleeding. *Eurasian Medical Research Periodical*, *17*, 91-96.
34. Vladimirovna S. V. About the Causes of Endometrial Hyperplasia and Forms of Endometrial Hyperplasia //Global Scientific Review. – 2023. – Т. 12. – С. 25-32.
35. Vladimirovna, Sarkisova Viktoriya. "About the Causes of Endometrial Hyperplasia and Forms of Endometrial Hyperplasia." *Global Scientific Review* 12 (2023): 25-32.
36. Vladimirovna, S. V. (2023). About the Causes of Endometrial Hyperplasia and Forms

of Endometrial Hyperplasia. *Global Scientific Review*, *12*, 25-32.

37. Vladimirovna S. V. et al. Hyperplastic Processes of the Endometrium: Issues of Ethiopathogenesis, Clinic, Diagnosis, Treatment //Scholastic: Journal of Natural and Medical Education. – 2023. – Т. 2. – №. 3. – С. 72-77.
38. Vladimirovna, Sarkisova Victoria, et al. "Hyperplastic Processes of the Endometrium: Issues of Ethiopathogenesis, Clinic, Diagnosis, Treatment." *Scholastic: Journal of Natural and Medical Education* 2.3 (2023): 72-77.
39. Vladimirovna, S. V., Safoyevna, K. D., Anvarovna, S. L., & Olegovna, X. R. (2023). Hyperplastic Processes of the Endometrium: Issues of Ethiopathogenesis, Clinic, Diagnosis, Treatment. *Scholastic: Journal of Natural and Medical Education*, *2*(3), 72-77.
40. Саркисова В. В. Патогенетические отношения артериальной гипертензии и сопротивления инсулина //IQRO JURNALI. – 2023. – Т. 2. – №. 1. – С. 727-731.
41. Саркисова, Виктория Владимировна. "Патогенетические отношения артериальной гипертензии и сопротивления инсулина." *IQRO JURNALI* 2.1 (2023): 727-731.
42. Саркисова, В. В. (2023). Патогенетические отношения артериальной гипертензии и сопротивления инсулина. *IQRO JURNALI*, *2*(1), 727-731.
43. Vladimirovna S. V. PATHOGENETIC RELATIONSHIPS OF ARTERIAL HYPERTENSION AND INSULIN RESISTANCE //IQRO JURNALI. – 2023. – Т. 2. – №. 1. – С. 685-691.
44. Vladimirovna, Sarkisova Victoria. "PATHOGENETIC RELATIONSHIPS OF ARTERIAL HYPERTENSION AND INSULIN RESISTANCE." *IQRO JURNALI* 2.1 (2023): 685-691.
45. Vladimirovna, S. V. (2023). PATHOGENETIC RELATIONSHIPS OF ARTERIAL HYPERTENSION AND INSULIN RESISTANCE. *IQRO JURNALI*, *2*(1), 685-691.
46. Vladimirovna S. V. ABOUT THE CAUSES OF ENDOMETRIAL HYPERPLASIA AND FORMS OF ENDOMETRIAL HYPERPLASIA //ResearchJet Journal of Analysis and Inventions. – 2022. – Т. 3. – №. 11. – С. 66-72.
47. Vladimirovna, Sarkisova Victoria. "ABOUT THE CAUSES OF ENDOMETRIAL HYPERPLASIA AND FORMS OF ENDOMETRIAL HYPERPLASIA." *ResearchJet Journal of Analysis and Inventions* 3.11 (2022): 66-72.
48. Vladimirovna, S. V. (2022). ABOUT THE CAUSES OF ENDOMETRIAL HYPERPLASIA AND FORMS OF ENDOMETRIAL HYPERPLASIA. *ResearchJet Journal of Analysis and Inventions*, *3*(11), 66-72.
49. Vladimirovna S. V. et al. Adenomyosis as an Independent Unit of Dysfunction of the Endometrium and Uterine Myometrium //Scholastic: Journal of Natural and Medical Education. – 2023. – Т. 2. – №. 3. – С. 85-91.
50. Vladimirovna, Sarkisova Victoria, et al. "Adenomyosis as an Independent Unit of Dysfunction of the Endometrium and Uterine Myometrium." *Scholastic: Journal of Natural and Medical Education* 2.3 (2023): 85-91.
51. Vladimirovna, S. V., Shoukatovna, I. M., Ulugbekovna, R. F., & Olegovna, X. R. (2023). Adenomyosis as an Independent Unit of Dysfunction of the Endometrium and Uterine Myometrium. *Scholastic: Journal of Natural and Medical Education*, *2*(3), 85-91.

52. Sarkisova V. et al. UTERINE ARTERY EMBOLIZATION AS A METHOD OF TREATMENT OF UTERINE FIBROIDS //Science and innovation. – 2023. – T. 2. – №. D3. – C. 115-121.
53. Sarkisova, V., et al. "UTERINE ARTERY EMBOLIZATION AS A METHOD OF TREATMENT OF UTERINE FIBROIDS." *Science and innovation* 2.D3 (2023): 115-121.
54. Sarkisova, V., Muradova, E., Saurabh, S., & Sarang, M. (2023). UTERINE ARTERY EMBOLIZATION AS A METHOD OF TREATMENT OF UTERINE FIBROIDS. *Science and innovation*, *2*(D3), 115-121.