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RESPIRATORY SYSTEM AND ITS DISEASES

Students of Tashkent State Medical University, Termez Branch

Mingboyeva Xumora Shuhratovna
Almardanova Shodiyona
Yangiboyeva Marjona
Xursanov Fayozbek Sobir o'g'li
Fayozxursanov2006@gmail.com
Scientific advisor: **Sultonov Sirojidin**

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Abstract:

Respiration is the rhythmic (uniform) expansion and contraction process of the pulmonary alveoli, which ensures the interaction of atmospheric air with the blood in the capillaries of the alveolar walls of the lungs. The respiratory system consists of air-conducting pathways including the nasal cavity, larynx, trachea and bronchi, as well as respiratory sections consisting of pulmonary vesicles – alveoli. In the airways, the air is humidified, warmed, and cleaned from various dust particles. In the respiratory sections, gas exchange occurs between the blood and the alveoli. In the nasal cavity, the vestibule and respiratory parts are distinguished. The vestibule is covered with stratified squamous epithelium, which is a continuation of the skin epithelium. Under the epithelium are sebaceous glands and hair roots. Many hairs located here retain dust particles from the inhaled air. The respiratory system is prone to various diseases. One of the most common diseases is bronchitis, which is characterized by inflammation of the bronchi and manifests with coughing and sputum production. Pneumonia is inflammation of the lung tissue, characterized by fever, shortness of breath and severe cough. Bronchial asthma is a chronic disease in which the bronchi narrow due to allergic or other causes, making breathing difficult.

Keywords:Bronchial asthma, alveoli, bronchi, tuberculosis

Relevance:

Respiratory system diseases are among the most widespread pathologies that pose a threat to public health worldwide today. According to the World Health Organization, chronic respiratory diseases claim the lives of millions of people every year and rank second among the causes of death after cardiovascular diseases.

In particular, the worsening of the modern ecological situation, air pollution, smoking and unfavorable working conditions contribute to the spread of respiratory diseases. In recent years, the COVID-19 pandemic has clearly demonstrated the impact of viral infections on the respiratory system and the importance of preventing and treating respiratory pathologies.

In addition, diseases such as bronchial asthma, chronic obstructive pulmonary disease, pneumonia and pulmonary tuberculosis not only reduce the quality of life of patients, but also cause significant economic damage — the costs of treatment and loss of working capacity are

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serious problems for society. Therefore, studying the respiratory system and its diseases, early diagnosis and development of preventive measures remain urgent tasks of medicine.

Introduction:

The respiratory system is an important system that supplies the body with oxygen (O_2) and removes carbon dioxide (CO_2). This system includes the nasal cavity, pharynx, larynx, trachea, bronchi and lungs. During respiration, air enters the lungs and gas exchange occurs in the alveoli: oxygen passes into the blood and carbon dioxide is expelled. Respiration consists of two phases: inspiration (inhalation) and expiration (exhalation). These processes are carried out by the diaphragm and intercostal muscles. Tuberculosis is a dangerous disease transmitted by Mycobacterium tuberculosis and is characterized by prolonged cough, weight loss and weakness. Another widespread disease is COVID-19, which is transmitted by a virus and damages the lungs. The main causes of respiratory diseases are infections (bacteria, viruses), exposure to cold, dust and toxic gases, smoking, and decreased immunity.

Main part:

For prevention, it is important to walk in fresh air, engage in sports, give up harmful habits, follow hygiene rules and consult a doctor in time. The respiratory process is controlled by the central nervous system. The respiratory centers located in the medulla oblongata and pons regulate the rhythm of breathing. An increase in CO_2 in the blood or a decrease in pH stimulates the respiratory center and increases ventilation. This process is important for maintaining homeostasis. According to etiology, respiratory diseases are divided into infectious, allergic, obstructive and neoplastic groups. For example, bronchitis and pneumonia often develop as a result of bacterial or viral infection. In this case, inflammatory mediators (interleukins, cytokines) are released, leading to swelling of the mucosa and increased secretion. Lung cancer is one of the most severe pathologies of the respiratory system, mainly associated with long-term smoking, exposure to carcinogens and genetic factors. Its development involves uncontrolled cell proliferation and disruption of apoptosis. Preventive measures include maintaining a healthy lifestyle, quitting smoking, protection from air pollutants, vaccination and early diagnosis. Timely detection and treatment of respiratory diseases reduce disease severity and prevent complications.

Conclusion:

The respiratory system is one of the vital systems of the human body, and its main function is to supply tissues with oxygen and remove carbon dioxide. When this system does not function properly, the entire body's activity is disrupted.

Respiratory diseases – such as chronic obstructive pulmonary disease, bronchial asthma, pneumonia, tuberculosis, influenza and COVID-19 – are widespread among the world's population and are among the main causes of disability and mortality. Many of these diseases can be prevented: a healthy lifestyle, quitting smoking, avoiding polluted air, regular medical check-ups and timely vaccination are of great importance.

Also, early diagnosis and proper treatment of respiratory diseases play an important role in maintaining public health. Preventive measures carried out by the government and healthcare

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system, increasing medical literacy of the population and improving the ecological situation are the main directions in combating these diseases.

References:

1. Guyton and Hall Textbook of Medical Physiology — provides in-depth coverage of human physiology, including respiratory system mechanisms.

2. Gray's Anatomy — explains the anatomical structure of the respiratory system in detail.

3. Robbins and Cotran Pathologic Basis of Disease — scientifically describes the pathogenesis and morphology of respiratory diseases.

4. World Health Organization official data — statistical and clinical recommendations on respiratory diseases (including COVID-19 and tuberculosis).

5. Ganong's Review of Medical Physiology — provides information on the neurohumoral regulation of respiration.

6. Centers for Disease Control and Prevention — information on epidemiology and prevention of infectious respiratory diseases.

7. Davidson's Principles and Practice of Medicine — includes clinical features and treatment methods of respiratory diseases.

8. The Lancet Respiratory Medicine — source of scientific articles on modern respiratory diseases.