

LUNGS AND ITS STRUCTURE, BLOOD CIRCULATION IN THE LUNGS

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Abstract:

Human and animals living on land take in oxygen from the air using their respiratory organs and release carbon dioxide through their respiratory organs. The human respiratory system consists of the nasal cavity, larynx, trachea, bronchus and lungs. These are usually the airways that deliver oxygen to the alveoli of the lungs. This article provides information about the structure of the lungs and blood circulation in the lungs.

Keywords: *Lungs, diaphragm, ribs, lobes, segments, alveoli, the carbon dioxide, bronchioles.*

Introduction

Materials and methods: Lungs (pulmones) are located in pairs on both sides of the chest. Between the right and the left lungs is the heart, blood vessels and chest space. Each lung is cone-shaped and touches the diaphragm from the bottom. The lungs have three surfaces, *facies diaphragmatica* facing the diaphragm, *facies costalis* facing the ribs and *facies medialis* facing the each other. The tip of the lung (*apex pulmonis*) is 3-4 cm above the 1st rib or opposite the 7th cervical vertebra from the back. There is a heart notch (*incisura cardiaca pulmonis*) below the front edge (*margo anterior*) of the left lung. On the lower side, the incision is limited to the *lingula pulmonis*. On the medial surface of the lungs is the *hilus pulmonis*, where the pulmonary artery, vein and bronchi enter. These blood vessels join together to form the pulmonary root (*radix pulmonis*). The right lung is divided into three parts by the horizontal and oblique fissures. The left lung is divided into two parts by the oblique fissure.

Thus, the left lung is divided into upper lobes (*lobus superior*) and lower lobes (*lobus inferior*). The right lung is divided into upper, middle and lower lobes.

Research result. In connection with the development of lungs surgery in recent years, about the structure of the lungs, the available information is no longer sufficient. It was found that the external division of the lungs does not correspond to the internal structure, that is, the division of the bronchi; therefore, in order to operate on the lungs, there was a need to study the anatomy of the lungs in depth. Recent investigations into the structure of the lung have shown that it has a segmental structure and each segment has its own bronchi.

Surgeons, radiologists and anatomists have different opinions about the number and types of lungs segments. According to them, the number of segments is from 4 to 12. According to the anatomical nomenclature adopted in Paris, it is accepted that there are 10 segments in each lung.

Lungs the name of the segments is the location – named after its topography.

Division of bronchi. The bronchus entering the right and left lungs branches off into other bronchi. Each bronchus divides into smaller (chile) bronchi at the end, reaching the tip or base of the lung. The main bronchi are called bronchus principalis dexter et sinister. The right lung is divided into three main bronchi, and the left lung is divided into two lobar lobes. Segmental bronchi, in turn, are divided into segmental bronchi-*bronchi segmentales*, as many segments as there are in the left and right lungs. As the diameter of the bronchi gradually narrows, the rings located on the wall of the bronchus also become thinner and finally, the rings disappear completely in the bronchi with a diameter equal to 1 mm. Bronchi with missing rings do not have mucous glands. But ciliated epithelium is preserved in the mucosa.

The muscle layer consists of circular smooth muscle fibers (these muscles reduction leads to asthma). Bronchi with a diameter of 0.5 mm are called terminal bronchi-*bronchus terminalis*. Each last bronchus, in turn, divides into two respiratory bronchioles-*bronchioli respiratori*.

Blood circulates in the lungs. Gas is exchanged in the lungs, therefore, not only arterial blood, but also venous blood comes to the lungs. After the air exchange in the lungs, the arterial blood vessels branch like the bronchi and pass into the capillaries. Capillaries wrap the air bubbles like a net. When a person breathes, oxygen-rich air is drawn from the alveoli into the capillaries of the arteries.

Carbon dioxide-rich air from the venous blood, on the contrary, passes from the veins to the alveoli. Air rich in carbon dioxide in the venous blood, on the other hand, passes from the venous vessels to the respiratory alveoli. As a result, air exchange occurs in the alveoli. When the fresh air from the arterial blood passes to the alveoli, the carbon dioxide in them is expelled through the respiratory tract. The blood filled with oxygen collects (*v.v. pulmonales*) to the left part of the heart, from there to the body through the aorta.

In the pulmonary loop, deoxygenated blood exits the right ventricle of the heart and passes through the pulmonary trunk. The pulmonary trunk splits into the right and left pulmonary arteries. These arteries transport the deoxygenated blood to arterioles and capillary beds in the lungs. There, carbon dioxide is released and oxygen is absorbed. Oxygenated blood then passes from the capillary beds through venules into the pulmonary veins. The pulmonary veins transport it to the left atrium of the heart. The pulmonary arteries are the only arteries that carry deoxygenated blood, and the pulmonary veins are the only veins that carry oxygenated blood.

In the systemic loop, oxygenated blood is pumped from the left ventricle of the heart through the aorta, the largest artery in the body. The blood moves from the aorta through the systemic arteries, then to arterioles and capillary beds that supply body tissues. Here, oxygen and nutrients are released and carbon dioxide and other waste substances are absorbed. Deoxygenated blood then moves from the capillary beds through venules into the systemic veins. The systemic veins feed into the inferior and superior venae cavae, the largest veins in the body. The venae cavae flow deoxygenated blood to the right atrium of the heart.

Conclusion: The respiratory system is an amazing and complex system. It removes carbon dioxide emissions at the same time provides the body with constant oxygen supply. Understanding its structure and function is essential to understanding the importance of respiratory health. By adopting healthy lifestyle habits and seeking emergency medical care when needed, people can take proactive steps to maintain and improve their respiratory well-being.

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