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**Ι. Introduction.**

Various specialists of a medical structure often use concept " bronchopulmonary system " at an estimation and interpretings of the work of researches, etc. Diseases and pathologies of bronchopulmonary system are separately represented in a propedeutics of internal diseases and clinical diagnostics of a pathology of system of organs of respiration of the person.

In anatomical andphysiological aspect we can represent bronchopulmonary system as a combination of separate organs and functional subsystems, accordingly, in united functional system of organs of respiration of the person. It in common with circulatory system provides respiration in all senses of this word.

So, the functional plan bronchopulmonary the system is formed by the inferior pneumatic ways, a transitive zone and gas exchange area. The pneumatic way is a space which carrying out transport of atmospheric air in gas exchange area. These ways are presented by a trachea, two primary bronchuses and bronchioles up to 16 generations. The trachea begins at the lower part of a larynx and goes down in a thoracic cavity. Tracheal wall is formed by a connecting tissue and a cartilage. Cartilages form incomplete rings. The parts adjoining an esophagus, are replaced by fibrous ligament. There is a bifurcation of a trachea in the region of 4 thoracic vertebra. Two main bronchuses right and left depart under a right angle from trachea. The right bronchus usually more shortly and more widely left. Bronchuses dihotomical share on segmentary, subsegmentary and so up to 16 orders, finally it is formed trachebronchial "tree". Bronchioles up to 16 generations have not got alveoluses . Tubes beginning from a larynx up to final bronchioles are covered by a ciliary epithelium. The capacity of pneumatic ways is enlarged as a result of a bronchiectasia, aerodynamic resistance decreases, there is act of an inspiration. Air passage ways are narrowed at end act of experation.

Transitive zone - respiratory bronchioles (17-19 generations), they have alveoli, air in them on a chemical compound is close to alveolar. The zone of gas exchange - last four generations of bronchioles (20-23), gas exchange occurs there between alveolar air and a blood. There is this zone in lungs. As a whole, lungs look like spongiform, porous conoideum corpuses laying on both half of a thoracic cavity. The least structural element of a lung - a lobe consists of the final bronchiole leading in a pulmonary bronchiole and an alveolar bag. Walls of a pulmonary bronchiole and an alveolar bag form excavations-alveoluses. Such structure of lungs enlarges their respiratory surface which in 50-100 times exceeds a surface of a body. Walls of alveoluses consist of one layer of epithelial cells and are surrounded by pulmonary capillaries. Air in an alveolus is separated from a blood in a capillary:

Wall of an alveolus,

Wall of a capillary and in some cases

Intermediate layer between them.

These structures also called as aerohematical barrier. The internal surface of an alveolus is covered by surface-active substance surfactant. This substance does not allow alveoluses to be fallen down.

Lungs are outside covered by a thin connective tissue environment a-pleura. The external (parietal) leaf of a pleura adjoins an internal surface of a thoracal wall and a diaphragm, internal (visceral) covers a lung. The between leaves refers to as a pleural cavity. At movement of a thorax the internal leaf usually easily slips on external. Pressure in a pleural cavity always less atmospheric (negative). The interpleural space between lungs refers to as a mediastinum; in itself there is a trachea, thymus and heart with vessels, lymph nodes and an esophagus.

In common with all other elements of respiratory and circulatory systems, bronchopulmonary system carries out series of the important functions:

1. The Exchange of gases between medium and lungs, that usually designate as " pulmonary ventilation ".
2. The Exchange of gases between alveoluses of lungs and a blood (pulmonary respiration).
3. The Exchange of gases between a blood and tissues.
4. At last, gases pass inside of a tissue to places of consumption (for O2) and from places of formation{education} (for CO2) (cellular respiration). Abaissement of any of these four processes lead to disturbances of respiration and frames danger to human life.

**ΙΙ. Features bronchopulmonary systems of the newborn.**

Already to the end of 5-th month of fetal development there are weak respiratory movements and later more frequent - till 30-40 in a minute. Lungs of the newborn inelastic. Respiratory movements of the newborn should be very frequent because requirement of an organism for oxygen is higher. At rest their frequency is 50-60 in a minute, and the minute volume of respiration exceeds 600 ml. Changes of frequency of respiratory movements can be observed not only at exaltation of the child, but also during rest. The irregular rhythm of respiratory movements is characterased for all 1 age. In 8-10 days after a birth the volume of lungs is a little enlarged. Body height of lungs increases basically due to branching fine bronchuses and especially genesis of new pulmonary alveolus. To the end of 1-st year the weight of lungs reaches up to 150 г, and their volume up to 250-280 ml.

**ΙΙΙ. A congenital pathology and diseases bronchopulmonary systems:**

1. The Combined disturbance of several structures

1. 1. An agenesia of a lung or a share. An aplasia of a lung or a share.

1. 2. Additional shares of a lung

2. Disturbances bronchoepithelial branchings

2. 1. Tracheabronchomegalia

2. 2. Stenoses of a trachea and bronchuses

3. Anomalies of pulmonary and bronchial vessels

The child can be infected fetally at presence at mother of diseases of the genitourinary tract, the certain role has the hypoxia or an asphyxia, a pathology of respiratory system of the child. Frustrations of respiration are pointed first minutes of a life at a fetally infection . As a rule, there is an asphyxia, at once occurs a dyspnea, noisy respiration, rise in temperature within the first 2-3 days. At the pneumonias caused by respiratory infection (a type of a virus), often there is a difficulty of respiration; at an adenoviral infection - a conjunctivitis, a rhinitis, wet tussis, plentiful rhonchuses; at a flu - the nervous system is amazed. The forecast depends on gravity of a condition, presence of accompanying diseases. At adequate treatment and absence of other pathology within 2-3 weeks there comes improvement of a condition.

 One of the most frequent diseases of respiratory system is the dyspnea characterised changing of frequency, deepth and a rhythm of respiration. The dyspnea can be accompanied as a sharp acceleration of respiration, and degreasing it up to stopping. Pointed an inspiratory dyspnea(it is shown by difficulty of an inspiration, for example, at a tracheostenosis and large bronchuses), an expiratory dyspnea(are characterized by difficulty of an expiration, in particular, at a spasm stricture of fine bronchuses and admixed type. The dyspnea presents at many acute and chronic diseases of respiratory system. The cause occurrence in most cases arises with change of gas structure of a blood - incresing of the contents of a carbon dioxide and depression of the contents of the oxygen, accompanied shift pH bloods in the acidic side. The dyspnea is leading display of a respiratory insufiention - a condition at which the system of external respiration of the person cannot provide normal gas structure of a blood or when this structure is supported only by to excessive strains of all system of external respiration. The respiratory failure can arise was acutely (for example, at closing respiratory ways by an alien body) or to proceed chronically, for a long time (for example, at an emphysema of lungs).

Pneumorrhagia and a pulmonary bleeding. The pneumorrhagia represents an expectoration with an impurity of the blood added in regular intervals (for example, a "rusty" sputum at a lung fever, a sputum in the form of « crimson jelly » at a cancer of a lung) or located by separate streaks). Allocation through respiratory ways of a significant amount of a blood are worn with the name of a pulmonary bleeding. The pneumorrhagia and a pulmonary bleeding meets more often at malignant tumours, a gangrene, an infarct of a lung, a tuberculosis, a bronchoectatic disease, traumas and wounds of a lung, and also at mitral heart diseases.

The failure of cardiovascular system at diseases bronchopulmonary the apparatus the majority of authors designates the term pulmonary heart. Chronic pulmonary heart is developed approximately at 3 % persons suffering by chronic lung diseases, and in the common structure of a mortality from a stagnant heart failure on a share of chronic pulmonary heart 30 % of cases are necessary.

 Pulmonary heart is a hypertrophy and dilatation or only dilatation of a right ventricle occurs as a result of a hypertonia of a small circle of the circulation, caused by diseases of bronchuses and lungs, deformation of a thorax, or a primary lesion of pulmonary arteries.

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