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Харківський національний медичний університет

Кафедра Внутрішньої медицини №3
Факультет VI по підготовці іноземних студентів

ЗАТВЕРДЖЕНО

на засіданні кафедри внутрішньої медицини №3

«29» серпня 2016 р. протокол № 13

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МЕТОДИЧНІ ВКАЗІВКИ

для студентів англійською мовою

з дисципліни «Внутрішня медицина (в тому числі з ендокринологією)
студенти 4 курсу I, II, III медичних факультетів, V та VI факультетів по підготовці
іноземних студентів

Інфекційно-деструктивні захворювання легень.

Харків 2016

Study subject "**Infectious-destructive pulmonary disease.**"

1. Hours - 4

Topicality. Acute suppurative lung disease, accompanied by the destruction of lung tissue from exposure to various infectious agents, with the exception of specific micro-organisms, including abscesses, gangrene, destructive pneumonia, abscessed pneumonia. They are characterized by severe and often life-threatening patient. Destructive abscessed pneumonia and pneumonia are not separate diseases.

Learning Objectives:

- To teach students to recognize the major symptoms and syndromes of infectious-destructive diseases of bronchopulmonary system;
- To acquaint students with physical methods of research in infectious and destructive diseases of bronchopulmonary system;
- To acquaint students with research methods that is used to diagnose infectious destructive diseases of bronchopulmonary system;
- To teach students to interpret the results of studies;
- To teach students how to prescribe treatment for infectious and destructive diseases of bronchopulmonary system;

What the student should know?

- The frequency of the incidence of infectious and destructive diseases of bronchopulmonary system;
- Etiology and pathogenesis of infectious and destructive diseases of bronchopulmonary system;
- Basic clinical syndromes of infectious and destructive diseases of bronchopulmonary system;
- Physical symptoms of infectious and destructive diseases of bronchopulmonary system;
- methods of physical examination of patients with infectious and destructive diseases of bronchopulmonary system;
- diagnosis of infectious and destructive diseases of bronchopulmonary system;
- treatment of infectious and destructive diseases of bronchopulmonary system;

What the student should know how to do?

- Identification of the main clinical and physical syndromes of infectious and destructive diseases of bronchopulmonary system;
- Interpretation results of additional research;
- Prescription of treatment for patients with infectious and destructive diseases of bronchopulmonary system.

The list of practical skills that students must learn

external examination of the patient
examination of the chest;
percussion;
auscultation of the lungs.

CONTENTS OF THE ME:

lung abscess (LA) - a disease characterized by lung necrosis which is limited (usually within the segment), with the formation of one or more destructive cavities, filled with pus and surrounded by peri-focal infiltration due to putrid or purulent melting of lung tissue under the influence of infection.

Gangrene of lungs (GL) - A putrid purulent necrosis of large areas of lung tissue or the entire lung collapse and rejection, with no limitation of viable parenchyma (without signs of demarcation), which has a tendency to spread. Gangrene of the lungs is a serious disease that occurs in people with impaired immunity, usually caused by association of microorganisms, including anaerobic microflora.

Etiology and pathogenesis. The reasons that lead to the development of destructive lesions of the lung varies. However, the main interaction is a combination of the following factors: acute infectious inflammation in the lung parenchyma; bronchial patency; poor circulation of blood flow and the formation of necrosis of lung tissue. Most *bronchogenic* lung tissue infection causes inflammation of the parenchyma and small bronchi. Violation of bronchial patency through spasm, edema or lung atelectasis leads to obturation. Infiltration and swelling of the tissues which progresses, leads to compression of blood vessels and capillaries by infiltrates causing disorder of blood flow that reaches stasis and thrombosis. Hematogenous or lymphogenous penetration of pathogenic microorganisms from obturated bronchus, from upper respiratory tract, from mouth in the necrotic regions of the lung lead to the purulent disintegration. If there is satisfactory immune defense, low virulence of microorganisms, adequate drainage function of bronchi, rational drug therapy, there is resorption of infiltrates, reduction of wound abscess cavity and recovery occurs. At high virulence of microflora, suppression of immune responses, there is a sudden start of progressing purulent necrotic process beyond the primary lesion development and spread of gangrene.

The development of pulmonary suppurations occurs due to various reasons, the main ones except pus-like presence of pathogenic organisms, acute inflammation in the lung tissue, bronchial obstruction is a violation of local disorder and pulmonary circulation that leads to necrosis of lung tissue. With the release mechanism of bronchopulmonary (including aspiration) haematogenously-embolic, posttraumatic lymphogenous abscesses and empyema.

A favorable background for the development of lung abscesses are chronic bronchopulmonary disease - chronic obstructive bronchitis (smokers), bronchiectasis, asthma. Lung abscess complicating the course of pneumonia mainly in immunocompromised people - alcoholics, drug addicts, HIV-infected. Dramatic violation of the body's resistance promotes the development of lung abscess by infectious diseases (such as flu), severe trauma, blood diseases, vitamin deficiencies, diabetes. Acute lung-pleural suppuration - is mostly polymicrobial infection that is caused by associations of anaerobic-aerobic microorganisms.

Most lung abscesses are rare; multiple abscesses are usually unilateral and may occur simultaneously or in one focus. Abscesses of aspiration origin are localized mainly in the upper segment of the lower lobe and posterior segment of the upper lobe. Solitary abscess caused by bronchial obstruction or infected embolus is characterized by necrosis which begins in the most affected bronchopulmonary segment. Base segment normally adjacent to the chest wall and pleural cavity at this location is often obliterated. Hematogenous dissemination characterized by multiple scattered foci can be connected with tricuspid valve endocarditis, particularly in injecting drug users. Embologenic lung abscess may occur as a result of aerobic or anaerobic bacterial infection that may cause suppurative thrombophlebitis.

An abscess usually bursts into the bronchi, with cough and is forming a cavity filled with air and liquid. In some cases, abscess bursts into the pleural cavity, causing empyema, sometimes bronchopleural fistula. Burst of large abscess in the bronchus or vigorous attempts to drain can

lead to massive bronchogenic dissemination. Erosion of vessels may cause excessive bleeding. Occasionally septic emboli migrate through the pulmonary veins into the arterial system and cause secondary brain abscess. Rare late complications are bronchiectasis and amyloid.

Classification. At present there is no uniform classification of destructive lung diseases that would meet both theoretical and practical requirements. According to *Boiko VV, AK Florykyanom (2007) working classification*, the acute purulent diseases of lungs and pleura is as follows:

1. *For pathogenesis:*
 - postpneumonic
 - aspiration-obstructive
 - haematogenous-embolic
 - traumatic
 - lymphogenous
2. *The nature of the process:*
 - Purulent abscess
 - Gangrenous abscess
 - spread gangrene
 - pneumoempyema
3. *Localization process:*
 - lung segments
 - lobe
 - the entire lung
4. *With the prevalence of the process:*
 - Single abscess
 - Many numerous abscesses
 - Bilateral abscesses
5. *The degree of severity:*
 - mild
 - moderate
 - severe
6. *In the presence of complications:*
 - without complications
 - with complications: pulmonary hemorrhage, pleural empyema (limited or total) pneumoempyema (limited, pervasive, intense), sepsis (pyosepticemia)

Clinical manifestations of lung abscess. During acute infectious the destruction of lung is conventionally distinguished by two periods that differ by clinical and laboratory manifestations.

1. The initial period- infiltrative-necrotic - from inception to the rupture of abscess in the draining bronchus.

2. The period of abscess drainage in the draining bronchus.

With symptoms of intoxication at the beginning of development of the disease. Increasing malaise, weakness, and adynamia. The body temperature rises to 39 C and more with chills. Sometimes symptoms of low-entry period are - Without malaise, cough and shortness of breath, with low-grade fever. "Blurred start" can be caused by low immune reactive patient (diabetes, alcoholism), or primary anaerobic nature of the pathogen. In both cases the prognosis is grave.

Pleural syndrome is characterized by sub-pleural localization of abscess: sharp pain in the chest, which reinforced with a deep breath. Localized pain localization corresponds to

suppuration. Any damage to the basal segments results in irradiation of pain in the neck - phrenic phenomenon.

Cough; it can be expressed in different degrees - from low, moderate to severe. Increased strength of cough is often a harbinger of a breakthrough of abscess in bronchus for cough is caused by irritation of the ulcer and the content of inflammatory exudate of receptor zones in bronchial wall.

Shortness of breath is caused by a respiratory process of excluding a significant amount of lung tissue and decrease pulmonary ventilation - deep breaths significantly reduced, much as a deep breath causes pain.

The disease usually occurs in the background single or bilateral pneumonia, often aspiration genesis or influenza. Clinical stage in the formation of purulent cavities in the lungs is determined dominance symptoms of purulent-resorptive fever associated with suppuration, resorption and tissue decay products of microbial life and significant loss of protein. Patients in this period have a high, sometimes hectic fever, chills, excessive sweating, and signs of intoxication, a cough, chest pain. Purulent sputum can be seen, unless the abscess is not completely insulated from the bronchi. Sometimes the veins are blood. Chest pain indicates pleural lesions.

Clinical manifestations GL. The disease is characterized by hectic fever, chills, profuse sweating, and intoxication. There is pain while coughing; phlegm with an unpleasant odor, foul breath smells. In light large area is determined blunting and weakening wind. Blood shows leukocytosis with the appearance of young forms of leukocytes, it sometimes progresses to leukopenia, progressive anemia. Very quickly develop symptoms of purulent-resorptive exhaustion, septic condition.

Physical examination. In the AL appears small shortening percussion and weakened breathing, possible middle bubble crepitation. If the cavity is large, and can manifest tympanic breathing.

If the abscess perforated bronchial wall for several hours or days to cough up a large number of purulent, occasionally smelly phlegm, often - with gangrenous lung tissue. Characteristic are fever, lack of appetite, weakness and disability. **The expressed protein and electrolyte loss in the acute phase of inflammation in low their compensation and lead to fluid and electrolyte disorders and decreased muscle mass of patients.** Thus there may be swelling of the lower extremities. Amid progressive hypoproteinemia patients lose weight and are depleted. High temperature varies sub febrile or normal which is an unfavorable sign, as evidenced by a sharp decline in reactivity.

If the *abscess* becomes *chronic*, possible weight loss, anemia, and hypertrophic pulmonary osteoarthropathy. Physical examination of the chest in the chronic phase sometimes shows no abnormalities, but mostly listened dry and wet wheezing. In severe form, when the lung tissues continue to decay against the background of strengthening intoxication, functional disorders of the cardiovascular system, liver and kidneys appear. With the progression of the disease, there can be organic changes of internal organs which are a characteristic of septic condition.

Additional methods of research in LA.

1. *Hemogram:* Changes in the acute period, haemogram shows typical severe inflammation - leukocytosis with a marked shift to the left. In patients with low immunoreactivity, especially those who have had the flu, the anaerobic nature of the process is often observed, leukopenia, which is an unfavorable prognostic sign. The shift to the left leukocytosis with presence of myelocytes and promyelocytes accurately reflects the gravity of the process and it is a reliable criterion dynamics of the patient. Relative and absolute lymphopenia is typical for severe course of the process.

Hypochromic anemia is often accompanied by pulmonary destruction, especially gangrenous character.

2. *Biochemical research*: Violation of protein metabolism, evident reduction of total protein, especially plasma albumin. Hypoproteinemia caused by loss of protein and liver dysfunction. The level of α -globulin (glycoproteins, indicator of "acute phase inflammation") and γ -globulin (immunoglobulin and immune complexes). Changing the relationship between the main fractions of the serum protein albumin-globulin ratio rate.

Increased concentration of glycoproteins, the components of the basic substance of connective tissue, "acute phase indicators" - sialic acid S-protein, mucin, ceruloplasmin, and haptoglobin.

3. *Urine analysis*. Changes in urine may appear due to "toxic kidney" - moderate proteinuria (selective albuminuria), cylindruria, and micropoteinuria. Reduced renal excretory function appears isosthenuria, reduced diuresis, increased levels of serum creatinine.

4. *Sputum analysis*: Research of sputum is important to diagnose destructive pulmonitis and monitoring the process. Every day, collect all the phlegm and fix its amount and organoleptic properties - putrefactive, purulent, and mixed with blood.

In defensing the sputum of patients with abscesses divided into 3 layers. The top layer of foam - slime additives with pus. The middle layer - opaque viscous liquid, mix saliva with serous fluid. The bottom layer - a mixture tissue detritus, dilapidated pieces of lung tissue (cork Detritus) and large amounts of manure. The bottom layer is heterogeneous, consisting of fragments of white-yellow-gray-brown. In microscopic sputum sediment reveal leukocytosis, scraps of lung tissue, elastic fibers, crystals of cholesterol, fatty acids, hematoidin.

5. *Bacteriology research*. Bacteriological studies are conducted to identify the causative agent of pulmonary fester. Bacterioscopy smear of the previous color allows a variety of means identification of different microorganism and their morphological features. The method is accurate but not sensitive.

Planting of sputum for various nutrient media for culture, allows identification of the etiology. For differentiation of microbial contamination of mouth cavity using a quantitative method of sputum: only meaningful etiological microorganism concentration of more than 10 million microbial bodies in 1 mL of sputum or 10,000 microbes per 1 ml flushing of the bronchial tree. The most reliable information about the "microbial landscape" navigates, gets the study punctate or aspirate area of inflammatory infiltrates.

Cultivation of asporogenous anaerobic microorganism has some difficulties. The Material must be selected under anaerobic conditions (direct puncture, piercing the trachea, with airless syringe), kept "under the oil" in the sealed samples no more than 2 hours. Sowing is carried out on special elective environment; culture should be performed in strictly anaerobic conditions.

Technically more simple and sufficiently reliable method of gas-liquid chromatography application - for the metabolite anaerobes composition (fatty acids) is determined by the type of pathogen.

6. *Immunological tests*. Immunological research is needed to assess the reactivity of patients to its appropriate correction. Violation of cellular immunity shows a significant reduction of the number of T-lymphocytes, peripheral blood of a marked reduction of T-Active lymphocytes. The changes are more pronounced in patients with severe disease course. Humoral immunity. Level of antibodies rises at the very onset. At congenial disease immunoglobulin number continues to grow for 2-3 months, at worst - is sharply reduced.

The content of circulating immune complexes (CIC) in patients with a favorable course of the disease at the beginning of increased several times. In severe suppuration CIC level early in the process is not high enough, and then it gradually increases.

7. *X-ray study*. Beginning to suspect abscess in a patient with severe pneumonia can change basis of the clinical picture and physical data, but x-ray plays the main role in the

diagnosis of lung abscesses, which carry preferably upright patient. In the early period of the disease, on chest X-rays one can see segmental consolidation or equity, which becomes spherical due to the spreading process. The appearance of one or more clarifications on the background of homogeneous eclipse indicates the formation of solitary or multiple abscesses. Further multiple small cavities can merge into larger, which, after a rush abscess in the bronchus and expectoration of sputum, are beginning to determine the level of the liquid.

8. *Computed tomography of lung.* For more information on the number and location of abscesses, as well as the appearance of concomitant pleural effusion, which is difficult to see on X-rays can be obtained at CT of the lungs. Apply as usual and computer abscessography - transthoracic introduction into the cavity, a roentgen contrast soluble degradation products. Location of the purulent center near the chest wall allows its puncture under ultrasound guidance.

9. *Thoracoscopy.* If empyema or pneumothorax perform thoracoscopy, which often can detect the presence of fistulas of bronchopleural, their location and size, do a biopsy of the pleura or lung to clarify the etiology of the disease.

These additional methods of research at GL. Diagnosis of gangrene of the lungs based on clinical and radiographic manifestations. Gangrene of lung *radiography*, characterizes inflammatory infiltration and darkening of the lung tissue that has no clear boundaries and captures more than one share, often the entire lung. Sometimes variegated find enlightenment in place of pockets of decay, the largest of which can be visualized area of tissue that dead - pulmonary sequesters. Characteristic is fast joining radiological signs of pleural effusion, and then pneumoempyema.

Differential diagnosis. Differential diagnosis should be made with bronchogenic cancer, bronchiectasis, empyema, bronchopleural fistula, tuberculosis, coccidioidomycosis and other fungal diseases of the lungs, infected lung or air cyst, decaying, pulmonary sequestration, sub diaphragmatic or hepatic (amebic, echinococcal) abscess, perforations in the bronchus, and Wegener's granulomatosis.

By ***complications*** of lung abscess include empyema of pleura, pneumoempyema, pulmonary hemorrhage and septic condition. The consequence of acute lung abscess, in addition to full recovery of scarring (obliteration) cavity may be "clinical recovery" of cleaning cavity, well drained bronchus through its stabilization and transformation at the Air bone. With small size such cysts may be asymptomatic, but under adverse circumstances (infection, drainage violation) it can have fluid and cause a relapse fester.

Chronic lung abscess. The main criterion for chronic forms of lung abscess is the disappearance of acute fester while maintaining the same cavity against the background of pneumosclerosis. The main reasons for the transition of acute abscess to chronic sequestration, is the presence it in the oral cavity and lack of drainage through the bronchi. Perhaps matter and especially flora and reactivity microorganism. Symptoms depend on the clinical phase of the disease - exacerbation or remission. During remission manifestations of the disease are minimal. Aggravation can be triggered by a viral infection, hypothermia, fatigue, stress. In these patients, there is rise in body temperature, increased cough, and shortness of breath, chest pain, and malaise. The number of specimens that gets an unpleasant smell. Often presence of hemoptysis. Prolonged disease in patients developing hypoproteinemia, there are signs of chronic hypoxia and intoxication (thickening of the nail phalanges as "drumsticks" nails or watch glass nails). X-rays shows intrapulmonary one or more cavities with thick walls, irregular contours, empty or liquid (an exacerbation) which are surrounded by pneumosclerosis area. At Bronchography or CT, bronchi or lung sections is deformed, enlighten them evenly narrowed or expanded.

As for ***complications***, in addition to local (lung) complications of chronic abscess typical extra pulmonary: amyloidosis of the kidneys and other organs, pyosepticemia, subcutaneous and intramuscular emphysema, mediastinal emphysema, pulmonary heart disease. After contact with

pus in the blood vessels of the systemic circulation possible abscesses in the kidneys, liver, adrenal glands, brain..

Treatment: Patients with acute purulent-destructive lung disease should be given comprehensive intensive care, which includes:

- Ensure optimal drainage cavities decay;
- Antibiotic therapy;
- Correction of blood volume violations;
- Detoxification therapy (plasmapheresis, indirect electrochemical oxidation of blood using sodium hypochlorite)
- If indicated - parenteral nutrition, infusion of blood components and so on.

To restore patency of the bronchial tubes that drain the abscess, conduct their reorganization, in which the leading role is *bronchoscopy*. Taking into account the data of the previous X-ray, fibro-bronchoscopy allows you to perform catheterization bronchus that drains purulent fireplace, wash it and give antiseptic, proteolytic enzymes, antibiotics.

To improve sputum discharge (mucolytic, bronchodilators), therapeutic exercise, breathing exercises, physiotherapy.

By selection agent (from sputum, BAL fluid, blood) and its verification is carried out using empirical *antibiotic therapy*. Further selection of antibiotics depends on their sensitivity to the identified pathogens. In severe disease, recommend intravenous antibiotics, and to create maximum concentration in the inflammation - catheterization of bronchial arteries followed by regional antibiotic therapy. The antibiotic of choice is amoxicillin / clavulanic acid or ampicillin / sulbactam - IV; possible use of cefoperazone / sulbactam / v; benzyl penicillin + metronidazole, then amoxicillin + metronidazole inside (step therapy). By alternative drugs include: lincosamide, cephalosporin (of third or fourth generation) + aminoglycoside; fluoroquinolone II or III + metronidazole; fourth generation fluoroquinolone; carbapenem. Duration of treatment is determined individually, but usually it takes 3-4 weeks or more. Treatment should continue for resolution and liquidation of cavity.

Use of anti-inflammatory therapy to relieve pain and swelling appropriate destination, best option is *NSAID* with selective action; it is used for a period of not less than 5 days.

Weakened or paralyzed patient sometimes needs a *tracheotomy* and suctioning pus. Sometimes drainage is easier after bronchoscopy with aspiration. Surgical drainage is rarely used because antibiotics are usually quite effective.

The indications for surgical treatment of acute infectious destructions are: ineffectiveness of complex conservative and minimally invasive surgical treatments; development of complications (pulmonary bleeding, recurrent hemoptysis, persistent bronchopleural fistula); transition to a chronic abscess. Resection of the affected parts of the lungs is indicated in cases where an abscess in the lungs are clearly limited, and the volume of the parts that are sufficient for normal life. Lung resection is indicated after failure of antibiotic therapy and particularly for suspected bronchogenic cancer. **Pulmonectomy** is necessary when multiple abscesses or gangrene of the lungs is resistant to medical treatment.

Bronchiectasis (BE) is acquired (and in some cases it is from birth) disease characterized by localized chronic suppurative process, irreversibly changed (expanded and deformed) and functionally disabled bronchi, preferably lower parts of the lungs.

Actuality. The so-called primary bronchiectasis, usually result from childhood acute infectious diseases of bronchopulmonary system. Secondary bronchiectasis occur as a complication or manifestation of a disease. The prevalence bronchiectasis is found in 5% of population. Among patients with Bronchiectasis 60-65% is men.

Etiology and pathogenesis. A key role in the emergence bronchiectasis plays a mix of action of pathogens and genetic inferiority of the bronchial tree. In the pathogenesis impaired patency large (lobar, segmental) bronchi, causing deterioration of their drainage function, delay the formation and secretion obstructive atelectasis plays a major role. Obstruction of bronchi and retention of bronchial secretions lead to the development of purulent process. Gradually, the wall

of the bronchial mucosa change with complete or partial loss of ciliated epithelium, which provides bronchial drainage, degeneration of cartilage plates of smooth muscles and replacement by fibrous tissue. Reduce resistance to bronchial walls leads to increase endobronchial pressure due to coughing, stretching, increased intrapleural pressure due to reduced lung volume particles leads to sustained expansion of the lumen of the bronchi. An important pathogenic role in the formation of bronchiectasis is impaired patency of smaller bronchi, which are located more distal to the extensions that are formed. The extent and nature of the bronchi obstruction may be accompanied by the development of atelectasis, emphysema. Pathogenesis is upper respiratory tract (tonsillitis, sinusitis, adenoids), which is a constant focus of infection of the respiratory tract, expiratory stenosis of the trachea and bronchi, violation of pulmonary circulation.

The shape of bronchiectasis produces cylindrical Bursiform, fusiform bronchiectasis and mixed, which may be single or bilateral.

Clinical manifestations. Patients complain of wet cough with mucus or mucopurulent sputum, which gradually increases to 200-500 ml per day. Sputum discharge is mainly in the morning, ("mouth full"), it has an unpleasant odor, may be accompanied by hemoptysis or pulmonary hemorrhage. When checking the specimens, they are divided into three layers: the top - frothy, medium - impurities of yellow-green pus and brown blood and the bottom - crumblike mass, which is destroyed lung tissue slices. In patients with reduced body weight, no appetite, increased body temperature, especially in the allocation of sputum retention, sweating, shortness of breath, can be a pain in the chest. Along described typical form there is a special "dry" form of bronchiectasis, characterized by the presence of a single symptom - periodic hemoptysis.

At **physical examination**, reveals pale skin and cyanosis of the fingers as a "drumstick phalanges" and nails as "watch glass" percussion over the affected area marked dull sound, auscultation - finely permanent - and middle bubble wheezing over the lower part of the lungs.

These additional methods.

1. *Clinical analysis of blood.* a leukocytosis with stab shift, increased ESR, anemia.

2. *Biochemical analysis of blood.* Increase in CRP, Increase in serum content of sialic acids, seromucoid.

3. *Clinical urine analysis.* Urine may be the same, but the development of renal complications causes proteinuria.

4. *In the clinical analysis of sputum, there are red blood cells, white blood cells, detritus, a Ditryhs bungs ("casts" bronchial tubes that contain cholesterol, soap, elastic fibers), elastic and collagen fibers.*

5. *Sputum microscopy* can detect a large number of microbes.

6. *In the study of lung function* show signs of obstructive disorders by type, and in advanced process - reducing the VC.

7. *Plain radiographs* revealed focal pulmonary deformation figure, cystiform clarification, on tomograms - areas calcifications, thin-walled cavity, and cylindrical bronchiectasis. In *bronchogram*, visualized pathology of regional bronchus, atelectasis of specified type.

8. *Bronchoscopy* is important for assessing the severity fester (endobronchitis) for dynamic monitoring of the endobronchial process.

9. *Angiopulmonography* helps identify anatomical changes in the blood vessels of the lungs, reveal hemodynamic disturbances in the pulmonary circulation.

10. *Bronchial arteriography* allows detecting of shunting of blood through the bronchial-pulmonary anastomoses.

11. *CT-scan of lungs* can detect violations of capillary blood flow.

Differential diagnosis BE - bronchogram quality usually does not cause difficulties. The presence intoxication, prolonged cough, and hemoptysis make you differentiate BHE from destructive forms of *pulmonary tuberculosis* and lung cancer. When fibro-cavernous forms of pulmonary tuberculosis mainly affects the upper lobe, sputum reveals mycobacterium

tuberculosis, there is mostly positive tuberculin tests, there is a discrepancy between auscultatory bit of numerical data and radiological symptoms.

Cancer that affects the principal, equity or segmental bronchi, called central. It occurs in almost 80% of lung cancer patients. The tumor that occurs in the bronchi of smaller caliber than segmental, called peripheral cancer. More localized lung tumors in the upper lobes, "favorite" localization - bronchus third (front) segment. The lower lobe malignancy is more common in the sixth segment.

Central Cancer can grow into the lumen of the bronchus (endobronchial growth) or outside (peri bronchial growth). Unlike the central, peripheral cancer that is placed in the pulmonary tissue, it grows uniformly in all directions and is a globular or oval formation with irregular contours (Balloon Shaped tumor). The central part can decay to form cavities. Cough, hemoptysis, shortness of breath and chest pain are the most common local symptoms of lung cancer. Symptoms of Central cancer caused by tumor growth in the lumen of major bronchi and atelectasis:

1. Pain in the chest caused by tumor growth in the lumen of the bronchi and germination of nerve endings in the bronchi.
2. Cough caused by tumor growth in the lumen of the bronchi and irritation of the nerve endings in bronchi (foreign body).
3. Hemoptysis - the disintegration of the tumor and the allocation of sputum with streaks of blood.
4. Shortness of breath - the bronchial obstruction tumor, exclusion from the act of breathing and gas exchange of large areas of the lung parenchyma.
5. Hyperthermia - blockage of the bronchus tumor hypoventilation, developing pneumonia.

Peripheral cancer is very poor on the symptoms, the tumor is often found incidentally during x-ray, but there may be complaints of chest pain, cough, and hemoptysis. If the tumor invades in the pleura – there are symptoms of pleurisy.

Mediastinal form of cancer characterized by lesions of the mediastinum, accompanied by damage to the turntable, laryngeal and phrenic nerves (hoarse voice, dysphonia, dysphagia), compression of the esophagus, swelling of the neck veins. Any damage to the apex of the lungs due to compression of tumor can lead to involvement of cervical and brachial plexus, clavicle, ribs, spine, pain in the hand (Pancoast syndrome). On the affected side, there may be a narrowing of the pupil, optic fissure; ptosis of eyelid (Horner's syndrome). sputum may contain atypical cells. Crucial differential diagnostic significance is from results of Bronchography and bronchoscopy.

Complications can be *pulmonary (local) and extra-pulmonary (general)*. Pulmonary complications include chronic bronchitis, emphysema, respiratory failure, hemoptysis and pulmonary hemorrhage, fibrosis, and lung abscess, empyema, pulmonary atelectasis, pneumonia, spontaneous pneumothorax. Extra-pulmonary complications may be metastatic abscesses of brain, amyloidosis, focal nephritis, pulmonary heart, anemia, chronic renal failure.

Secondary pulmonary hypertension can be one of the complications of Bronchiectasis. Secondary pulmonary hypertension is characterized by unpleasant sensations in the heart and chest. Feature of pain is that it is tolerant to nitroglycerin. Hypercapnia causes a compensatory increase in heart. This is accompanied by tachycardia, jumping a full pulse, increased systolic blood pressure.

Renal amyloidosis develops with chronic infections (tuberculosis), purulent processes (osteomyelitis, empyema, lung abscess, BE) and rheumatoid arthritis, actinomycosis, ulcerative colitis. Amyloid is a glycoprotein, the main component of which is fibrillary proteins. Amyloid is deposited in tissues (spleen, intestines, etc.), and the main mesangial membrane of the glomeruli, tubules and vessels in the interstitium. The clinical pictures of renal amyloidosis are of three stages: proteinuria, nephrotic syndrome, and azotemia. Disease for many years may show only mild proteinuria and may be clinically asymptomatic. Nephrotic syndrome is manifested

particularly with significant hypoproteinemia, hypergammaglobulinemia, hypercholesterolemia, puffy syndrome. Proteinuria of nephrotic syndrome is characterized by harsh severity. Affected kidneys can cause hypertension, but often hypotension occurs, which explains the occurrence of concomitant adrenal lesions. In most cases, chronic renal failures develop within at least 8-10 years of onset and tend to have rapid progression. Recognition of secondary amyloidosis contributes to Data about specific etiologic factors, identify related hepato- and splenomegaly in urine for proteinuria background contains a small number of red blood cells, there is no bacteriuria. Diagnosis of secondary amyloidosis is carried out by testing with Congo-red and methylene blue. Very important is histological examination of renal tissue puncture.

Empyema . The presence of lung abscess, septic pulmonary cysts, echinococcal suppurations, pulmonary infarction, lung cancer in a phase of necrosis and bronchiectasis can lead to purulent pleurisy (empyema). Also empyema may be due to purulent processes in the abdomen, injuries, injuries. In most cases, agents are streptococcus, staphylococci, pneumococci, and mycobacteria tuberculosis. In most cases, empyemais preceded by sero-fibrinous pleural effusion. The clinical picture may begin gradually or sharply. Acute onset is accompanied by chest pain, high body temperature (39-40 ° C) chills and signs of intoxication. If the pleural cavity accumulates a significant amount of pus, it leads to compression of the lungs, mediastinum displacement of the healthy side and manifests shortness of breath, pale skin, and cyanosis of visible mucous membranes. An especially severe clinical pattern develops when there is a quick break of a cavity or abscess into the pleural cavity, and during the break of pus in the lung. In such cases, there is a quick respiratory and heart failure. Physical examination can detect lag affecting part of the chest during respiration, weakened voice trembling, blunting percussion sound and the weakening of vesicular breathing above the accumulation of pus. In peripheral blood, there is high blood neutrophilic leukocytosis with a left shift, increased ESR, anemia can occur. Chronic empyema external appearance can be complicated, with bronchopleural and pleuromediastinal fistula and the development of amyloidosis of internal organs. A fairly reliable method of diagnosis is purulent pleurisy pleural puncture, which makes it possible to obtain a cloudy fluid or pus, which when grown on a nutrient media allows you to establish an etiological diagnosis and determine susceptibility to antimicrobial agents.

Pulmonary hemorrhage - the allocation of portions of pure blood from 10/05/50 ml or more, and often stands frothy blood. The amount of blood poured into the bronchi depends on the caliber vessels, blood, blood pressure and coagulation capacity of blood. But the average volume (50-500 ml), large and profuse pulmonary hemorrhage (500 ml for a short period) can create emergency conditions, which is based on obstructive respiratory failure and acute hypovolemia (massive hemoptysis arbitrarily defined as cough more as 100-600 ml of blood for 24 hours). Bronchial artery, like the artery system, is a system of high pressure. Most cases are the result of rupture of bronchial arterial tree branches causing hemoptysis.

Common causes of hemoptysis. Infectious: chronic bronchitis, bronchiectasis; TB infection, not mycobacterium; lung abscess, necrotizing pneumonia; mycetoma; cystic fibrosis.

Cardiovascular: severe left ventricular failure; mitral stenosis; pulmonary embolism or pulmonary infarction; septic pulmonary embolism or right heart endocarditis; aortic aneurysm or Broncho vascular fistula.

Tumor: lung cancer, bronchial adenoma.

Metastases: osteogenic sarcoma, choriocarcinoma.

Vasculitis: Wegener granulomatosis, systemic lupus erythematosus.

Other: idiomatic pulmonary hemosiderosis; foreign body aspiration; tear or lung injury; condition after transthoracic or trans bronchial fine needle biopsy of lung; "Cocaine lung"; fake coughing up blood.

The most important step in diagnosis is the *differentiation between light and massive hemoptysis*. The magnitude of bleeding can be defined through careful survey of the patient. Patients who have lost more than 30-50 ml of blood in the previous 24 hours are at increased risk, they should be hospitalized for examination. Blood in the sputum at first is bright

red. In the following days can produce dark blood, sputum turns brown. If you cough up blood in large numbers stopped at once, which means that drainage bronchus contains blood clot. The appearance in sputum, along with the old dark blood impurities also brightly colored blood indicates bleeding recurrence. In severe cases, profuse pulmonary hemorrhage can cause sudden death caused by asphyxia due to widespread blockage of airways and associated bronchospasm. Less importance is falling as a result of cardiac critical blood loss. While recurrent bleeding may cause severe anemia there is appearance of paroxysmal syncope. Clinical signs of severe acute anemia are weakness of the patient by dizziness, tinnitus, blurred vision to amaurosis, tachycardia and a significant reduction in blood pressure. Symptoms of hemorrhagic shock: a sharp pallor, peripheral cyanosis, a symptom of "white spots" (more than 2 cm), sweating, sometimes vomiting, dizziness, convulsions, rapid pulse shock while the index of 1.5 or more - occurs when blood loss 1- 1,5 l. If the doctor is not presented with the symptoms of hemorrhage, in the history he addresses the following *differential-diagnostic signs of pulmonary bleeding*: 1) identification paroxysms of coughing blood stream or from mouth; 2) Blood light, foamy or dark, sometimes with clots, often mixed with sputum; 3) blood from the nose does not stand out, except for massive bleeding when blood simultaneously released from the mouth and nose; 4) possible pulmonary history, pain in the side, feeling of fullness in the chest, dyspnea, wheezing on auscultation of the lungs.

Streaks of blood or a large amount of blood in purulent sputum suggest pneumonia or lung abscess. Hemoptysis in association with dyspnea or pleuritic chest pain indicating the likelihood of pulmonary embolism or heart attack lungs. The patient should be asked about the history of tuberculosis or contact with TB patients, occupational hazards, use of certain medications, especially anticoagulants (warfarin), drugs (cocaine, "crack"), and other diseases such as rheumatic heart disease and pulmonary embolism. On physical examination pay attention to cervical, supraclavicular, axillary adenopathy that suggests internal thoracic malignant tumor. Thickening terminal phalanges as "drumsticks" may be in patients with lung cancer, lung abscess or bronchiectasis. Auscultation of the chest may reveal moist wheezing due to pneumonia or aspirated blood and dry wheezing as a manifestation of focal endobronchial lesions - such as lung cancer. Doctor should also carefully examine the cardiovascular system to identify gallop rhythm, heart murmurs, expansion jugular veins and edema, which suggests the idea of valvular heart or congestive heart failure. It is necessary to make a standard anteroposterior and lateral radiographs of the chest. Important findings include:

- Fibro-cavernous diseases (tuberculosis, necrotizing bacterial or fungal pneumonia);
- Segmental or lobular atelectasis (lung cancer, bronchial adenoma, foreign body);
- Fungal mass in the cavities (aspergillosis);
- An increase in left atrium size (mitral stenosis);
- Bronchiectasis;
- Lymphadenopathy and infiltrates.

It should be noted that 30% of patients with hemoptysis will have normal chest radiographs. The list of necessary research also includes:

- Complete blood count, coagulation and urinalysis to detect changes that indicate pulmonary-renal syndromes;
- Cytology specimens;
- Bronchoscopy in all smokers over the age of 40 years (lung cancer is diagnosed in 3-6% of patients with mild hemoptysis and a normal X-ray);
- Computed tomography of lung and fibro-bronchoscopy if hemoptysis lasts 1-2 weeks, recur, blood loss volume is over 30 ml per day, the patient smokes and is more than 40 years of age, or bronchiectasis is supported.

Some patients in the morning cough 1-2 times spitting blood or detect blood on the pillow. This indicates the presence of capillary bleeding gums, tonsils, nasopharynx, in which blood is stored at night in the upper respiratory tract. When bleeding from the tonsil patients spit pus mixed with

blood, from the pharynx - a secretion mixed with mucus and a small amount of blood, and with maxillary cavities - mucous or purulent secretion streaked with blood. In case of bleeding from the nose stands out dark blood with clots, no cough.. In the case of bleeding from the nose there is dark blood with clots, cough is absent. Usually unilateral nasal bleeding, but bleeding blood through the nasal passages can get to the other half of the nose. From 70 to 95% of nasal bleeding arises from anterior-lower part of the nasal membrane. The most severe is posterior bleeding from the nose, where the main blood stems, which is observed mainly in patients with hypertension and atherosclerosis. Bleeding from esophageal varices usually begin abruptly, mostly with profuse nature and sometimes simulating pulmonary bleeding. Diagnosis of esophageal bleeding becomes much easier with signs of cirrhosis. If there is vomiting, gastric bleeding with its dark blood impurities including gastric juice, and sometimes food remnants can be seen. Blood does not foam, its appearance resembles coffee grounds. Gastrointestinal bleeding is often preceded by nausea and a history of complaints about the dysfunction of the stomach. If it is difficult to distinguish between lung and gastrointestinal bleeding (due to aspiration of blood in the event of ingestion gastric bleeding and blood in the lung) then use fibrogastroscopy and bronchoscopy. According to the analysis of blood, urine, sputum cytology, conditions like coagulopathy or immunopathological conditions (type Goodpasture syndrome) can be suspected.

Pneumothorax. The primary pneumothorax is often caused by a rupture of subpleural emphysematous cavities, located mainly at the top of the lungs, limited adhesions in the pleural cavity, pulmonary infarctions, pneumoconiosis, and tumors of the lung and pleura. Pneumothorax also develops in BE, a breakthrough in the pleural cavity cavitation, abscess cyst or lung injury lung fragment edges.

Treatment. Treatment Program for patients with BE consists of:

- 1) Antibiotic therapy in acute diseases;
- 2) Sanation of the bronchial tree, the allocation of purulent sputum and bronchial content;
- 3) Detoxification therapy (Neohaemodes 5% glucose solution, isotonic sodium chloride solution);
- 4) immunomodulation therapy (levamisole, Thymalinum, Diuciphonum, Tactivinum, Extractum Eleutherococcifluidum, propolis, Pantocrinum, albumin transfusion, intralipid etc.);
- 5) Reorganization of upper respiratory tract infections (treatment of chronic tonsillitis, pharyngitis, etc.);
- 6) Exercise, massage, breathing exercises, physical therapy, spa treatment);
- 7) Surgical treatment in the form of lobe resection (contraindications are renal amyloidosis with signs of chronic kidney failure, chronic bronchitis with emphysema, uncompensated pulmonary heart disease);
- 8) Clinical examination of patients.

Control of initial level of knowledge

"Infectious-destructive lung disease."

1. The clinical and pathogenic periods of lung abscess include everything except:

- A. Period infiltration.
- B. Period drainage of abscess in the bronchus.
- C. The period of convalescence.
- J. Period mental well-being.

2. Before clinical manifestations of infectious destruction lung include all the features listed below, except:

- A. syndrome intoxication.
- V. pain.
- S. respiratory distress syndrome.
- D. Cough branch of a large number of purulent sputum.
- E. Violation of cardiac rhythm and conduction.

3. The main clinical symptom of lung gangrene is:

- A. The attacks of breathlessness.
- B. Dry cough.
- S. cough with purulent sputum allocation morning mouth full.
- D. Cough with sputum layered release.
- E. Intense pain in the chest when breathing.

4. What additional methods is most informative for lung abscess:

- A. Clinical (blood, urine, sputum).
- B. The study of lung function (Spirograph, spirometry).
- C. X-ray.
- D. bacteriological examination of sputum.
- E. cytological examination of sputum.

5. The characteristic X-ray picture of lung abscess includes:

- A. focal Syndrome seal lung tissue.
- V. Syndrome accumulation of fluid in the pleural cavity.
- S. syndrome formation of cavities in the lungs.
- D. None of the above.
- E. All of the above.

6. The most common complication of infectious destruction lung are:

- A. Myocardial infarction.
- B. Hemorrhagic stroke.
- C. Infectious-toxic shock.
- D. asthmatic status.
- E. Spontaneous pneumothorax.

7. Obstructive respiratory failure type is formed by:

- A. Violation of air breathing passage ways.
- B. decreased ability to falling of lung and smoothing.
- C. Reducing the amount of oxygen in inhaled air.
- D. The presence of anemia.
- E. circulatory disorders.

8. Restrictive type of respiratory insufficiency is formed by:

- A. Violation of air breathing passage ways.
- B. decreased ability to falling of lung and expansion.
- C. Reducing the amount of oxygen in inhaled air.
- D. The presence of anemia.
- E. destructive disorders

9. "Lung" of the heart is characterized by:

- A. The right ventricular failure.
- B. left ventricular failure.
- C. total heart failure.
- D. Violation of rhythm and conduction.
- E. None of the above.

10. The clinical signs of respiratory distress include all of the above except:

- A. Dyspnea.
- B. Tachycardia.
- C. cyanosis.
- D. Feeling short of breath.
- E. crackling.

Control of final level of knowledge

1. Which diseases should conduct a differential diagnosis of lung abscess in the first place?

- A. Asthma.
- B. Gangrene lung.
- C. Infective endocarditis.
- D. Chronic bronchitis.
- E. emphysema.

2. Treatment of patients with lung abscess should begin with the application of?

- A. Antibacterial and detoxification therapy.
- B. Only antibiotic therapy.
- C. Only detoxification therapy.
- D. antibiotics and sulfonamides.
- E. antibiotics and bronchodilators.

3. The main method for diagnosing of lung gangrene is:

- A. X-ray.
- B. Spirography.
- C. Bronchography.
- D. Fluoroscopy WGC.
- E. Analysis of clinical sputum.

4. The changes in the general analysis of sputum characteristic of lung abscess include:

- A. purulent sputum with an unpleasant odor.
- B. When standing separated into two layers.
- C. Spiral curshmann.
- D. A & B.
- E. A & C.

5. The changes in the general analysis of sputum, characteristic for lung gangrene include:

- A. purulent sputum dirty gray.
- B. When standing three layers formed.

- C. The presence of Charcot-Leyden crystals.
- D. A & B.
- E. A & C.

6. The main areas of treatment of respiratory failure are:

- A. Treatment of the underlying disease that caused the DL.
- B. Provide adequate gas exchange.
- C. Support of lung function.
- D. all of the above is true.
- E. None of the above.

7. A typical clinical syndrome of lung gangrene are all listed below except:

- A. intoxication.
- B. Main inflammatory changes.
- C. inflammatory changes in the lung tissue.
- D. hepatolienal syndrome.
- E. Syndrome of respiratory failure.

8. Syndrome formation of cavities in the lung characteristic:

- A. lung abscess.
- B. Pneumonia.
- C. asthma.
- D. bronchiectasis.
- E. pulmonary infarction.

9. What stage of lung abscess is full mouth phlegm discharge a characteristic?

- A. Stage of formation of cavities in the lungs.
- B. Stage breakthrough into bronchus.
- C. The stage of convalescence.
- D. all of the above.
- E. none of the above.

10. Which elements sputum probably indicates the destruction of lung tissue?

- A. Charcot-Leyden crystals.
- B. leukocytes.
- C. Spiral curschmann.
- D. The elastic fibers.
- E. Red blood cells.

Situational tasks.

1. Patient '40 complains of paroxysmal cough with sputum yellow-brown, pain in the right side, associated with deep breathing, sweating. Sick 6 days after hypothermia. OBJECTIVE: body temperature - 39.6 °C. BH - 26 per min., Pulse - 110 per min., Blood pressure - 110/70 mmHg Right in the lower lung - wet **sounding smallbubble wheezing**. Radiological findings: right at the bottom of the lungs - a massive infiltration of inhomogeneous areas enlightenment sine differentiated. What complication most likely evolved in the patient?

- A. fibrinous pleurisy**
- B. abscess**
- C. empyema**
- D. Spontaneous pneumothorax**
- E. lung atelectasis**

2. Woman '42 ill two weeks ago, cough, weakness, fever to 38.0 °C. Condition deteriorated until the end of 1 week, when there was a fever, nasty sweat towards evening the temperature rose to 39.0 °C. 2 days before admission, the patient coughs evolved plenty of fetid sputum with blood, after which her condition improved, Pulse - 80 per min, BH - 20 per min, T - 37.6 °C, which changes are possible on the radiograph chest cavity?

- A. mediastinal shift toward a homogeneous shade**
- B. Homogeneous round shadow in the pulmonary field**
- C. The presence of cavities with horizontal fluid level**
- D. Shade in the lower section of the oblique upper limit**
- E. Eclipse lobe**

3. Patient L., 54 years old, entered the hospital on the 10th day after onset complaining of fever to 38.5 °C, severe weakness, pain in the right shoulder blade when breathing, dry cough. BR - 28 per min. Pulse - 100 min, signs of intoxication. In the area of the right shoulder blade blunting percussion, bronchial breathing, wheezing single **smallbubble wheezing** and crackling. After three days of cough attack came with the release of 200 ml purulent sputum, then body temperature decreased. At the level of the blade angle detected against the background of lung infiltration rounded enlightenment with horizontal fluid level. Your diagnosis?

- A. lung cyst**
- B. Acute lung abscess**
- C. Cancer of lung**
- D. Bronchiectasis**
- E. Limited empyema pleural cavity**

4. Patient D., 34 years old, was diagnosed with pneumonia. Despite treatment, appeared hectic fever, and allocation of specimens "mouth full." What disease should be suspected?

- A. Lung abscess**
- V. Bronchiectasis**
- C. Chronic bronchitis**
- D. Pulmonary tuberculosis**
- E. staphylococcal pneumonia**

5. Patient A. complained of intolerable cough with allocation of 600 ml per day of purulent sputum chocolate color with a putrid smell. Ill acutely, the body temperature - 39 °C, fever incorrect type. On the radiograph eclipse of the cavity in the center, with irregular contours and fluid level. What disease should be suspected?

- A. Pulmonary tuberculosis**
- B. Lung abscess**
- C. Gangrene lung**
- D. Bronchiectasis**
- E. Cancer of lung collapse**

6. Male 58 years old alcoholic, suddenly fell ill, the temperature rose to 40 °C, weakness, cough with sputum discharge dark. OBJECTIVE: T - 39.5 °C, BH - 30 per min, heart rate - 100 min, blood pressure - 110/70 mmHg In case the lung wet loud wheezing. Heart sounds are muffled, the right rhythm, mild tachycardia. On radiographs of the lungs, there is shading right upper lobe. What is the most likely complication can develop in the patient?

- A. Endocarditis**
- V. Bronchiectasis**
- C. Pericarditis**
- D. Lung abscess**

E. Pulmonary hemorrhage

7. During the flu epidemic, patient Z., 60 years after reduction of fever appeared chest pain, cough with sputum yellow-green 100 ml per day, sometimes mixed with blood. OBJECTIVE: BH - up to 36 min., under the shoulder blade on the lungs right blunt percussion sounds, breathing hard, medium and large **bubble wheezing**. An. Blood: A - $18,6 \times 10^9 / l$, ESR - 64 mm / h. An. sputum: A - 80-100 in n / s, Er - 40-50 in n / s, elastic Fiber coca. Radiological findings: dilated roots, bottom right nonuniform obscured fate of two sections enlightenment. Indicate the most likely diagnosis?

- A. Peripheral Cancer lower lobe of the right lung**
- V. lung infiltrative tuberculosis in a phase of disintegration**
- C. pleural effusion**
- D. Right sided pneumonia with abscess formation**
- E. infarction, pneumonia**

8. Patient A., 32 years old, is at the dispensary with chronic lung abscess with frequent exacerbations for 5 years. Guided inpatient survey to determine the most effective treatment. In the hospital diagnosed: abscess upper lobe of the right lung with moderate course in remission. What treatment is most effective?

- A. Operational**
- B. antibiotics**
- C. bronchodilators**
- D. Physiotherapy**
- E. Spa treatment**

9. The patient B., 26 years, had an increase in temperature to 38 °C, cough with purulent sputum, severe weakness, shortness of breath, chest pain while breathing. Shorten percussion sound in the lower left lung, listen **smallbubble wheezing** wet wheezing. What diagnostic method is the most important for diagnosis?

- The analysis of sputum microflora**
- B. Spirography**
- C. Pneumonometry**
- D. Bronchography**
- E. X-ray examination**

10. Patient M., 34, who abused alcohol, had massive pneumonia, his condition worsened with increased body temperature of 39-40 °C, patient bad breath, increased number of purulent sputum; increased erythrocyte sedimentation rate and number of stab leukocytes. On radiographs of the lower lobe of the right lung, there was massive infiltration of enlightenment in the center. What kind of complications can be suspected?

- A. Bronchiectasis**
- B. acute lung abscess**
- C. pneumonia, heart attack**
- D. Lung gangrene**
- E. empyema**

Control questions.

1. Define the abscess and gangrene of the lungs.
2. The etiology and pathogenesis of abscess and gangrene of the lungs.

3. Classification destructive diseases of bronchopulmonary system.
4. Clinical manifestations of lung abscess.
5. Clinical manifestations of lung gangrene.
6. Physical data when an abscess and gangrene of the lungs.
7. More methods for lung abscess.
8. Additional methods with gangrene of the lungs.
9. Complications of lung abscess and gangrene.
10. Chronic lung abscess and its complications.
11. Treatment of lung abscess and gangrene.
12. Indications for surgical treatment.
13. Bronchiectasis. Definition.
14. The etiology and pathogenesis of bronchiectasis.
15. Clinical manifestations of bronchiectasis.
16. Physical data in bronchiectasis.
17. Additional methods of examination of patients with bronchiectasis.
18. The differential diagnosis of infectious and destructive diseases of bronchopulmonary system.
19. Complications of bronchiectasis.
20. Treatment of bronchiectasis.

Practical tasks.

1. To provide curation of patients to infectious and destructive diseases of bronchopulmonary system.
2. Assess the patient's condition and results of physical examination.
3. Fill Supervision protocol for patient with infectious-destructive disease.
4. Dates received or interpret laboratory studies.
5. Give or interpret results of instrumental tests .
6. Treatment.

Tests answersof

" Infectious-destructive lung disease and pulmonary insufficiency "

Basic knowledge

- | | | | |
|----|---|----|---|
| 1. | D | 6. | C |
| 2. | E | 7. | A |
| 3. | D | 8. | B |
| 4. | C | 9. | A |
| 5. | C | 10 | E |

The final level of knowledge

- | | | | |
|----|---|----|---|
| 1. | B | 6. | D |
| 2. | A | 7. | D |
| 3. | E | 8. | A |
| 4. | D | 9. | B |
| 5. | D | 10 | D |

Situational tasks

- | | | | |
|----|---|----|---|
| 1. | B | 6. | D |
| 2. | C | 7. | D |
| 3. | B | 8. | A |
| 4. | A | 9. | E |
| 5. | C | 10 | B |

RECOMMENDED BOOKS:

1. Clinical Pulmonology - 2016 (The Clinical Medicine Series Book 19).-343h.
- 2 .Pulmonary Disorders [Sect. 5, Merck manual] 2010.-123p.
3. Pulmonary Pathophysiology : The Essentials by (author) [John B. West](#) 2012 .-20
4. Davidson's Principles and Practice of Medicine 22nd Edition .-Walker, Brian R., FRSE.-2014.-1312p.

Website of the department: <http://www.vnmed3.kharkiv.ua/>

Методичні вказівки склав: доц.. Федоров В.О.

Методичні вказівки переглянуто і затверджено на засіданні кафедри: 31 серпня 2016р. протокол №13.

З доповненнями (змiнами).

Завiдувач кафедри
внутрiшньої медицини №3
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Журавльова Л.В.