Міністерство охорони здоров'я України

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Факультет VI по підготовці іноземних студентів

ЗАТВЕРДЖЕНО

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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

Гострі пневмонії

Харків 2016

Study subject "pneumonia

1. Hours - 4

EPIDEMIOLOGY

The incidence of pneumonia is stable for 30 years and in European countries is 14 per 1,000 people, including non-specific lung diseases, accounting for 40% of cases. The disease is characterized by severe pathomorphological change, etiology and symptoms of acute pneumonia, changed views on some key issues of diagnosis and treatment of disease. Among patients with pneumonia dominated by men - 55%. The incidence of pneumonia increases with age. The highest mortality occurs among people over 55 years.

Learning Objectives:

 teach students to recognize the major symptoms and syndromes of pneumonia;

 acquaint students with physical methods of investigation of pneumonia;

 To introduce students to research methods that are used for the diagnosis of pneumonia; indications and contraindications for their conduct; methods of their implementation; Diagnostic value of each of them;

 teach students to interpret the results of studies;

 teach students to recognize and diagnose complications of pneumonia;

 teach students to prescribe treatment for pneumonia.

What students should know?

  incidence of pneumonia;

 etiological factors of pneumonia;

 pathogenesis of pneumonia;

 main clinical syndromes of pneumonia;

 general signs and symptoms of pneumonia;

 Physical symptoms of pneumonia;

 methods of physical examination of patients with pneumonia;

 diagnosis of pneumonia;

 radiological methods of diagnosis of pneumonia;

 complications of pneumonia;

 pneumonia treatment (change of lifestyle, nutrition, drug therapy).

What the student should be able to?

- remove the main clinical and physical symptoms of pneumonia;
- interpret results of biochemical and immunological studies;
- interpret peak flowmetry data;
- interpret data Spirographн, spirometry, research related flow / volume.
- interpret data radiological methods of diagnosis of pneumonia;
- prescribe treatment for patients with pneumonia.

The list of practical skills that students must master

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

CONTENTS THEME:

Definition.

Pneumonia - an acute infectious disease mainly bacterial etiology, characterized by focal lesions of the lungs and respiratory alveoli with exudation.

Because pneumonia, by definition is an acute infectious disease, the use of the definition of "urgent" diagnosis "pneumonia" is unnecessary especially since the term "chronic pneumonia" is not used.

Etiology and pathogenesis.

The causes of inflammatory reactions in the respiratory regions of the lungs may be the reduction of the protective mechanisms and massive doses of microorganisms and / or increased virulence.

There are 4 ways of infection:

- Aspiration of pharyngeal contents;

- Inhalation aerosol containing micro-organisms;

- Hematogenous dissemination of microorganisms from extrapulmonary foci of infection (endocarditis of tricuspid valve lesions, septic pelvic vein thrombophlebitis);

- Direct infection of the affected tissue adjacent organs (e.g liver abscess) or due to infection in the wounds of the chest.

Aspiration of pharyngeal contents - the main route of transmission of respiratory departments of lungs with pneumonia. Under normal conditions, a number of microorganisms, such as Streptococcus pneumoniae, can colonize the pharynx, but lower airways are thus sterile. Microaspiration content pharynx - physiological phenomenon which occurs in 40-70% of healthy people during sleep. However, the cough reflex, mucociliary clearance mechanism adjusted, antibacterial activity of alveolar macrophages and secretory immunoglobulin ensure the elimination of infected secretions from the lower respiratory tract and their sterility.

In case of violation of these mechanisms "self-cleaning" of the tracheobronchial tree, such as respiratory infections, when disturbed function of cilia bronchial epithelium and reduced phagocytic activity of alveolar macrophages, conditions are favorable for the development of pneumonia. Massiveness single dose and virulence of microorganisms, and direct hematogenous spread of the pathogen from pockets of infection have little value (the frequency detection).

The emergence of pneumonia is often associated with many predisposing conditions or risk factors.

1. Viral upper respiratory tract infection. Often background disease in acute pneumonia is an inflammatory disease of nasal and paranasal sinuses, in which disturbed nasal breathing and conditions for getting infected secretions in the bronchi.

2. Obstruction bronchial tree. In chronic obstructive bronchitis, asthma, bronchial obstruction local tumor, foreign body, pneumosclerosis violated peristaltic contraction of bronchi and mucociliated transport, leading to delay of mucus.

3. Alcohol. In patients with alcoholism impaired pharyngeal reflex, leading to periodic aspiration. Also, they observed a violation mucociliated transport and secondary immunodeficiency states.

4. Smoking and inhaling toxic substances. The damage of ciliated epithelium cause functional insufficiency of alveolar macrophages, reduces the formation of IgG. Some hydrocarbons (gasoline, kerosene), mineral oils, vegetable or animal origin in high concentrations, causing widespread mucosa bronchopulmonary system burn, contribute to its secondary infection. Violation of the drainage function of bronchi (increase of bronchial secretions, increasing its viscosity and damage epithelium), facilitates colonization of microorganisms and bronchogenic spread of infection.

Crucial in causing pneumonia has reduced effectiveness of protective factors organism. In terms of pulmonological pathologies and pneumonia this lead to sickness. Reduced effectiveness of local factors immune protective - lysosomes activity, lactoferrin, secretory IgA, reduced concentration of bacterial antibodies. Often, especially in severe course of pneumonia, a decrease

of humoral immunefactors- IgA, M, G. Indicators of cellular immunity - neutrophils decreased phagocytic activity of granulocytes and alveolar macrophages, which promotes intracellular parasites, viruses and microorganisms, dissemination and progression of inflammation in the lungs.

Pneumonia is secondary, if it occurs on a background of chronic bronchopulmonary disease - bronchiectasis, tumors, - or have complications of other diseases. There are following main causes of secondary pneumonia, circulatory disorders; aspiration, bronchial compression; lung injury or chest; postponed surgery; thermal effects; pathogenic effect of physical factors: radiation, proton; sepsis; exacerbation of chronic obstructive bronchitis.

Classification.

Classification of pneumonia, which best reflects the peculiarities of its course and allow the patient to assign causal treatment should certainly be based on the etiological basis. However, in practice etiologic diagnosis of pneumonia in 50-70% of patients with complications because of insufficient informative and great length traditional microbiology (absence in 20-30% of patients, productive cough, inability selection intracellular pathogens using standard diagnostic approaches, pathogen identification is possible only through a 48- 72 hours after receiving the material, difficulties in distinguishing between "microbe witness" and "causative microbe" widespread practice of using antibiotics to patients seeking medical help). Therefore, many countries use classification, taking into account the conditions of the disease, especially lung tissue infection and the immune responsiveness of the patient. This allows a fairly high degree of probability to predict the possible causative agent.

According to this classification distinguish the following types of pneumonia:

- Community acquired (community-acquired, distributed, outpatient);

- Nosocomial (hospital);

- Aspiration;

- Pneumonia in patients with severely impaired immunity (congenital immunodeficiency, HIV infection, iatrogenic immunosuppression).

The greatest practical importance is community acquired pneumonia division (acquired outside medical institution) and nosocomial (hospital acquired). This division is not associated with the severity of the disease, and the only criterion is that the distribution environment in which developed pneumonia.

Also, depending on the severity of pneumonia distinguish between mild, moderate and severe course. But still not developed clear criteria for the distribution of mild and moderate pneumonia course. Since the volume of diagnostic and treatment of pneumonia severity of almost the same, it is advisable to combine them into one group - pneumonia of mild course.

It should comply with such determination pneumonia with severe course - a special form of disease of different etiology, manifested severe intoxication syndrome, hemodynamic changes,

severe respiratory failure and / or signs of severe sepsis or septic shock, characterized by a poor prognosis and requires intensive care.

Recommend highlight "small" and "large" criteria of severe pneumonia.

"Small" severe pneumonia criteria:

- Respiratory rate 30 per 1 min. and more;

- Impaired consciousness;

- SaO2 less than 90%, partial pressure of oxygen in arterial blood (Pa O2) below 60 mmHg. c .;

- Systolic blood pressure below 90 mmHg.

- Bilateral or multipart lung, oral decay, pleural effusion.

"**Great" severe pneumonia criteria:**

- The need to conduct mechanical ventilation;

- The rapid progression of focal-infiltrative changes in the lungs - increasing the size of the infiltration of more than 50% within the next 2 days;

- Septic shock or need for pressor drugs for 4 hours. and more;

- Acute renal failure (urine less than 80 ml for 4 hours. Or serum creatinine in serum above 0.18 mmol / l concentration of urea nitrogen or above 7 mmol / l (= urea nitrogen urea (mmol / l) / 2,14) for (absence of chronic renal failure).

On the difficult course of pneumonia patients indicates the presence of at least two "small" or a "big" test, each of which significantly increases the risk of fatal outcome. In such cases, it is recommended urgent hospitalization of patients in the department of anesthesiology and intensive care.

Pneumonia is divided into **typical and atypical**.

Typical - infectious inflammatory disease of the lungs, which helps all infectious pathogens, excluding intracellular pathogens.

Atypical - contribute to intracellular bacteria (Mycoplasma pneumoniae, Legionella pneumophila, Chlamydia pneumoniae et psittaci), has features of clinical manifestations.

Common pneumonia pathogens:

community acquired

- Streptococcus pneumoniae

- Staphylococcus aureus

- Haemophilus influenzae

Hospital

- Gram-negative microorganisms:

• Pseudomonas aeruginosa

• Enterobacter aerogenes

• Klebsiella pneumoniae

• Escherichia coli

• Haemophilus influenzae

• Gram-positive Staphylococcus aureus and Streptococcus pneumoniae

Aspiration: bacteroides, fuzobakterii, associations microorganisms

Immunodeficiency, cytomegalovirus, Pneumocystis carinii, fungi pathogens, Streptococcus pneumoniae, Staphylococcus aureus, Pseudomonas aeruginosa

Clinical manifestations.

Infectious-toxic syndrome can be expressed in varying degrees - virtually unchanged from the general state of the development of infectious-toxic shock. Symptoms of the syndrome: fever, severe weakness, loss of appetite, nausea, fever with high - disturbance of consciousness, delirium.

Respiratory distress syndrome. The feeling of shortage of air can be caused by frequent coughing, pain in the chest when breathing. Evidence of respiratory failure – tachypnoe more than 30 breaths per minute, cyanosis - occur in severe pneumonia. In severe cases of severe intoxication and respiratory failure observed fanning wings of the nose, the tension of the respiratory muscles.

Cough is the leading "local" symptom of pneumonia, appears in the first day of the disease. First, dry cough, painful, strong, sometimes to vomit. With the sputum mitigated by a cough.

There is no sputum in the first days of the disease. The character of sputum often change with the development of the disease: first sputum mucus, scanty, often containing blood streaks, sometimes uniformly colored with blood. There may be "rusty" sputum with blood. During pneumonia sputum usually has muco-purulent character. In the final stage of the disease slimy sputum regains character becomes liquid. If pneumonia arising from diseases of the cardiovascular system, sputum may have bloody character throughout the disease

Pain in the chest with pneumonia may have different origins and characteristics.

Parietal pain caused by intercostal neuralgia or myalgia, local, aggravated breathing and movements associated with exercise for this muscle group and parietal zone. The most intense pain parietal at onset.

Parenchyma pain accompanied by a massive thickening in the lungs are unclear character, without a clear localization, but is almost constant.

Pleural pain caused by inflammatory lesions of the pleura, usually with intense, decrease in patient lying on his side, increase with deep breathing and coughing. Any damage to the basal segments can give pain in the abdomen or completely localized there. When inflammation reach, the segments may experience pain in the chest or heart. If inflammation reach the upper segment is often accompanied by reflex tension neck. Diaphragm pleural inflammation can simulate a picture of acute abdomen - severe, acute abdominal pain caused by irritation diaphragm, vagus and sympathetic nerves, sometimes restlessness and vomiting. In engaging in the pleura breathing becomes frequent, superficial, affected half of the thorax behind when breathing, the patient keeps it often holds his hand

Physical examination.

Manifestations of physical examination depend on the clinical and morphological forms of pneumonia. When viewing patients with lobar pneumonia is often a characteristic appearance: a feverish flush on the cheeks, more intense on the affected side as a result of the involvement of the cervical sympathetic nerve node.

Mucous membranes may acquire cyanotic hue. In the elderly with concomitant lesions of the cardiovascular system, there is a pronounced cyanosis of the lips, tips of ears, cheeks, distal phalanges of the fingers. In 30% of patients on the lips, nose wings are herpetic eruptions. Sclera be sub icteric. Forced the patient, lying on the affected side of the chest, raised the head end. Breathing shallow, tachypnea 30-40 per minute. Affected half behind in breathing, auxiliary respiratory muscles tense, intercostal spaces smoothed.

In palpation in the first hours of the disease symptoms are physically seal lung tissue due to congestion and edema microbial - over the area of the affected segments defined bronchial enhancement and voice tremor (in 70-90% of patients). Segments in which inflammation develops, become less saturated air than normal, and better conduct sound vibrations in the chest. Percussion on the stage of hyperemia and edema of microbial affected region segments defined unsharp blunting percussion sound in virtually all patients due to consolidation of lung tissue.

In addition, the percussion sound becomes a kind of tympanic shade as reduced elasticity of the lung tissue and alveolar tone, the last stretch and expand. In light percussion sound becomes more pronounced obtuse nature tympanic component disappears completely or listen locally. Tours of the lower edge of the lung on the affected side dramatically reduced. In the end phase of pneumonia percussion dullness of tympanic shade changes to clear lung sounds. Auscultation lobar pneumonia may appear different sound phenomena depending on the phase of the disease.

On examination, the patient with focal pneumonia common condition can be satisfactory, more moderate. Forced position with raised head end is typical for elderly patients. One-third of patients spontaneously lag in breathing chest on the affected side and reduced mobility of the lower edge of the lungs 2-3 cm.

pneumonia can be detected by the tension and soreness trapezoidal muscle on the affected side. Possible severe paleness of skin on the background acrocyanotic or redness of the cheeks. Herpetic lesions occur in 30-40% of patients. In pneumonic focus area can be determined pain intercostal spaces at pressing by finger or a stethoscope. Any diaphragm damage appears pleural pain during deep palpation in the quadrant. Increased voice trembling determined only 10-15% of patients with pneumonia cryptophagids or flush.

More important symptom is strengthening bronchophony - observed in 2/3 cases. Percussion at finely malformation pneumonia. When placed superficially focal pneumonia shortened percussion sound, and drain big lobular pneumonia characterized by significant dulling of pulmonary sound over a wide area. The most important for the diagnosis of focal pneumonia is auscultative displays.

Small pneumonia characterized by hard breathing and local finely rails wheezing. In middle lobular pneumonia listen to hard breathing and wheezing finely rails in most areas. In big lobular bronchial pneumonia is different or hard breathing, wheezing scattered wet. In the discharge of focal pneumonia, in addition to the above symptoms can be determined by crepitation. Objective data pneumonia depend on the prevalence, localization and stage of inflammation.

Syndrome seal lung tissue appears in the presence of a massive, somewhat superficially placed seal lung tissue. Physical syndrome signs in places determined projection area of inflammation on the surface of the chest. Seals lung tissue can develop quickly, within days. The earliest symptoms are strengthening bronchophony and voice trembling. Percussion is determined blunting percussion tone. Auscultation - bronchial breath, exhale fully extended heard.

Bronchitis syndrome, depending on the viscosity of the fluid that fills the bronchi, dry or wet listen wheezing. Any damage to the small bronchi with dry wheezing or whistling or squeak finely rails. With involvement of major bronchi - dry and large bubbling riles. Wheezing may disappear after coughing sputum or Broncholytic application.

Syndrome of pleural effusion occurs in lobar pneumonia. There is blunting percussion sound over out-side of the lungs, limited slanting line from the highest point of the posterior axillary line. Bronchophonia and voice trembling over the zone of fluid accumulation relaxed vesicular breathing also dramatically weakened.

Atelectasis syndrome sometimes can accompany Syndrome of pleural effusion, rarely develops own. There is a local blunting percussion tone, strengthening local voice trembling and bronchophony, vesicular respiration sharply weakened or absent.

Physical manifestations of pneumonia often depends on the phase of morphological changes.

Phase exudation - the onset of severe exudation place in lung tissue appears tympanic shade percussion tone, due to lower elasticity of lung tissue. The accumulation of fluid in the alveoli leads to a blunting percussion sound. Auscultation in phase over the affected area exudation listen relaxed breathing. In the early days of the disease at an altitude of inspiration can hear the gentle crepitation - crepitation index. It is rare symptom was observed at the surface and frequent

breathing. Filling bronchial exudate causes the symptoms of bronchitis - there are scattered dry and wet wheezing.

Phase seal - 2-3 minutes time of disease observed amplification bronchophonyand trembling voice, expression blunting percussion sound is amplified, though kept tympanic shade.

The stage of completion of pneumonia characterized by a mosaic picture of percussion - blunting percussion sound zones coexist with areas that provide shade tympanic percussion tone. After resorption of fluid percussion determined by clear lung sounds. Recovery weakens bronchial alveolar air breathing, reappears crepitation - crepitation redux. Breathing becomes hard, and then – vesicular often appear voiced finely rails. Often it turns Auxiliary emphysematous expansion of healthy lungs.

Reactive changes in the cardiovascular system most often occur tachycardia 100-120 beats per minute, lower blood pressure. Less often observed expanding the boundaries of right heart enlargement due to acute right ventricular and atrial accent II tone of the pulmonary arteries - signs of acute pulmonary hypertension.

Functional disorders of the digestive system are manifested by nausea, vomiting, anorexia, constipation. Often coated tongue, dry, swollen stomach. In severe pneumonia can appear icteric skin and sclera, the liver increases in size, becomes painful.

The changes in the nervous system appear in debilitated patients with severe disease course, irritability, delusions, phenomena of acute psychosis. There may meningeal symptoms - rigidity neck symptom Kernig , hyperasthenic skin, impaired consciousness, severe headache. In less severe pneumonia may be complaints of headache.

Additional methods.

1. Hemogramm. In patients with pneumonia often observed leukocytosis, often mild (10-12h109 / l) neutrophils 80-90%, stab shift to 7-30%, sometimes there are young forms of leukocytes myelosis. Reduced content in peripheral blood eosinophil, basophil, lympocytes, increased levels of monocytes. Often there trombocytopenia, sometimes combined with hemorrhagic syndrome. Frequently and substantially increased ESR.

2. In the study of biochemical blood tests determined the signs immuno-inflammatory syndrome – dysproteinemia (increase of α-1- and α-2-, γ-globulin), increased C-reactive protein, sialic acids seromucoid, fibrinogen and other haptoglobulin acute phase indicators.

3. In the study of urine may show symptoms of acute kidney toxicity - proteinuria, cylindruria microhematuria

4. Research and sputum microbiological diagnostics.

Of great importance for the treatment of pneumonia should establish etiologic diagnosis - the identification of the causative agent and its sensitivity to antibiotic. Sequence microbiological diagnosis of pneumonia:

- Microscopy (microscopy) smears colored by Gram for gram-positive and gram-negative differentiation microflora (oriented rapid method)

- Planting material (bacteriological method) for isolation and identification of the causative agent, determine its sensitivity to antibiotics

- Microscopic smears (Mycobacterium tuberculosis microscopy)

- Identification of specific antibodies and antigens in serum serological methods (for the verification SARS) - a method of paired sera - 2-time blood tests in the acute phase of the disease and during convalescence - after a few weeks of onset. Microorganisms etiological role in the disease development confirms the growth of microorganism antibodies in sera series of four or more times. For identification antibodies using complement fixation (CFT), response inhibition hemaglutination inhibition test (HIT), neutralization reaction (pH) reaction immunofluorescence (RIF).

5. Immunological studies. Immunological changes can detect various violations of humoral and cellular immunity, assess immune reactivity of the patient. Many patients with pneumonia, a decrease in the number and activity of T-lymphocyte percentage of phagocytic cells, phagocytic index and number lysosomes , lymphocytes and monocytes. Viral and bacterial pneumonia that developed after viral infection characterized by a high content of T-suppressors and decrease the number of T-helper cells. When protracted course of pneumonia immunological greater changes: reduced content of T and B lymphocytes IgA, M, G, reduced activity lysosomes lactoferrin concentration antibacterial antibodies.

6. Spirography. spirometry indicators revealed mixed type ventilation disorders - a combination of restrictive and obstructive changes, even if clinical signs of bronchial obstruction available. Clinical equivalent of bronchial obstruction predispose bronchial cough; at the level of small bronchi - fixed expiratory dyspnea. Scattered dry wheezing with whistling appear in violation of bronchial obstruction at the level of medium and small bronchi.

7. Radiographic study. Radiographic pneumonia symptoms depend on the stage of the disease. Under tide determined on radiographs pulmonary gain figure and reduce the transparency of the background due to overflow of blood vessels of the lung. If the lesion area of less than one share, diagnosis changes difficult. The root of the lung on the affected side extended its structure. Any damage lower segments decrease mobility dome diaphragm.

Under intense hepatisation is homogeneous darkening that resemble the density of atelectasis without destruction. The intensity of the shadows toward the periphery increases. With massive lobar pneumonia involving the fate of a homogeneous light shade all over. The most common lobar pneumonia is to defeat 2-3 segments (70% of patients). 1-3 segments affected only 5% of patients. Right localization pneumonia occurs 1.7 times more frequently than the left hand.

Defeat lung sections along interlobar cracks can be diagnosed only by X-ray - auscultative symptoms appear, because the focus is very deep. Perytsyssuralni pneumonia in lateral projections forming elongated shadows - one path clear, straightforward (from interlobar pleura), another vague outline (with side parenchyma of the lungs). Lobar pneumonia is often

accompanied by reaction interlobar pleura - a third of patients aucultate fluid in interlobar cracks can join pleural effusion.

In the final stage lobar pneumonia there is a reduced intensity of the shadows and its size. Strengthening pulmonary picture on the site of pneumonic focus persists for 3-4 weeks after the dispersal of pneumonia. Diagnosis of pneumonia that is not completely over, made using Valsalva test - the patient is trying to breathe through the nose and nostrils with closed mouth. Used Mueller test - the patient is trying to breathe in a closed glottis - pulmonary picture is enhanced as a result of overflow blood vessels. If the deformation postpneumonic vascular pattern in the area caused by fibrosis, during the trial the severity of vascular pattern will change.

The postpneumonic changes include the extension homogenization appropriate lateral root of the lung, which can be observed within 3-4 weeks. Fluid in pleural cavity after elimination of inflammation resolves during 1-1,5 months.

8. Determination of arterial blood gases.

9. Investigation of pleural effusion.

Community acquired pneumonia. In community acquired pneumonia (NP) is to be understood acute disease that emerged in community-acquired conditions and is accompanied by symptoms of lower respiratory infection (fever, cough, sputum, possibly purulent, chest pain and shortness of breath) and radiographic features new focal-infiltrative changes in the lungs in the absence of obvious diagnostic alternative.

Diagnosis of emergency based on the identification of common (fatigue, weakness, loss of appetite, fever), and local respiratory (cough, sputum, shortness of breath, chest pain) symptoms, as well as of physical data (blunt or dull percussion sound relaxed or severe bronchial breathing, focus voiced finely rails and / or crepitation). The severity of symptoms depends on the patient's condition at onset, disease severity, scope and location of lesions of the lung parenchyma, age, presence of comorbidities. All these symptoms are not specific to the emergency, but sufficient to establish preliminary clinical diagnosis. However, about 20% of patients with objective evidence of emergency may differ from standard or be absent. In older age groups, and / or with inadequate immune response to the picture of the disease can leave confusion, aggravation / decompensation associated diseases, lack of fever.

The most important diagnostic study of patients with NP is a radiography of the chest, which must be performed in two projections (frontal and lateral) to improve the information content of the investigation. Diagnosis of pneumonia almost always involves identifying focal-infiltrative changes in the lungs combined with symptomatic infection of the lower respiratory tract. The value of this research lies not only in the fact of pneumonic infiltration visualization, verify the diagnosis of pneumonia (usually with appropriate clinical signs), assessing the dynamics of pathological process and complete recovery and the possibility of differential diagnosis of other diseases. The degree of radiographic changes (incidence of infiltration, the presence or absence of pleural effusion, cavity decay) corresponds to the seriousness of the disease and can be a criterion when selecting antibacterial therapy. Additional radiographic studies (X-ray, computed

tomography - CT) appropriate for the differential diagnosis of lesions in the upper parts of the lungs, lymph nodes, mediastinum, with a decrease in lung volume share, if the assumption abscess formation, as well as the ineffectiveness of previous antibiotic therapy.

Microbiological research in emergency aimed at identifying the causative agent in the material obtained from the source of infection. Material for the study should be taken before beginning antibiotic therapy. However, despite the difficulties of microbiological examination in full, should not delay the appointment of antibiotics.

Standard research methods are microscopy of Gram-stained sputum smears and sat sputum obtained by deep cough. Conducting this research is required in patients with severe course and optional NP - with mild disease.

The material obtained during the bronchoalveolar lavage (BAL) and bronchoscopy has a high diagnostic value only if the use of "protected" brushes. Material transtraheal aspirate, tracheal swabs from tubes, throat and traheostomy have low diagnostic value.

During the collection and examination of sputum should observe the following rules:

• sputum must be collected before the antibiotic therapy, preferably in the morning before eating, after thoroughly rinsing the mouth with boiled water;

• The patient should be instructed on the need for research to obtain the contents of the lower respiratory tract, but not pharynx - or nasopharynx;

• sputum should be collected in sterile containers, storage period should not exceed 1-2 hours at room temperature.

Before beginning the microbiological examination of sputum smear microscopy is necessary to be stained by Gram. If smears less than 25 leucocytes and epithelial cells over 10 in sight (at least 8-10 study fields of view at low magnification) further investigation is pointless, because in this case, with high probability it can be argued that the material that study is content of the oral cavity.

Identification of a significant number of smears gram or gram-positive bacteria with typical morphology (gram diplococci - S. pneumoniae; clusters of gram-positive cocci in clusters form - S. aureus, gram kokobatsylae - H. influenzae) can be a guide in selecting drugs for the purpose of empirical antibiotic therapy. Interpretation of the results of sputum microscopy and seeding should be done on the basis of clinical data.

Patients with severe course of emergency is also mandatory microbiological blood tests (to be taken 2 samples of venous blood from the different veins at intervals of 10 minutes or more).

In case of severe disease in the patient and inability to obtain suitable samples for the study of sputum for suspected pulmonary tuberculosis in the absence of a productive cough, the presence of "obstructive pneumonia" in the background bronchogenic carcinoma, the aspiration of a foreign body in the bronchi, etc. to apply invasive diagnostic methods: FBS mini-BAL or "protected" brush biopsy, bronchial mucosa, transtracheal aspiration, transthoracic biopsy and

others. The use of invasive research methods appropriate for patients who are on mechanical ventilation. Requirements for the transport and storage of material obtained via invasive method is the same as for sputum. Initial evaluation of the material is carried out according to the analysis of smear, Gram stained, but microbiological studies obtained through invasive method of material should be done regardless of the cellular structure.

Results of the study acknowledge diagnostically significant if the material obtained during the BAL concentration of potential causative agent is 104 CFU / ml or higher and received through "protected" brush - 103 CFU / ml and above.

It should be noted that, according to most experts, fibrobronchoscopy not a routine diagnostic testing in patients with NP, and the need to conduct clinical feasibility is due - to the exclusion of local bronchial obstruction and receiving material from the lower respiratory tract.

These clinical blood is not possible to determine a potential causative agent of pneumonia. However, leukocytosis above 1D-12 * 109 / L indicates a high probability of bacterial infection, and leukopenia below 3.10% or higher leukocytosis 25h109 / l are unfavorable prognostic signs.

Biochemical blood tests (functional tests of liver, kidney, etc.) Do not provide any specific information, but if deviations from normal values indicate the destruction of several organs / systems that have certain clinical and prognostic significance.

Patients with signs of respiratory failure that caused widespread pneumonic infiltration, massive pleural effusion, development of pneumonia with chronic obstructive pulmonary disease should determine oxygen saturation of the blood or arterial blood gases. This Sa02 hypoxemia at least 90% or Ra02 below 60 mm Hg. Art. (When breathing room air) is prognostically unfavorable sign and demonstrates the need for treatment of the patient in the hospital. A common practice study gases in capillary blood relative has diagnostic value and often do not respond to changes in arterial blood gases.

Serological diagnosis of emergency that caused 'M. pneumoniae, S. pneumoniae and L. pneumophila, is not considered as a mandatory method of research because of the need of double study of blood serum in the acute phase of the disease and during convalescence - after a few weeks onset, it mainly epidemiological, clinical level rather than diagnosis.

Suggest using immunochromatographic test for urine specific soluble antigen of L. pneumophila (serotype 1 st) in severe emergency. As promising additional method also consider immunochromatographic test for urinary antigen patient S. pneumoniae. However, available data are insufficient to give unequivocal recommendations on their use. In recent years rapidly developing a new method for the diagnosis of infectious diseases - polymerase chain reaction (PCR). This method may be promising for detecting pathogens such as M. pneumoniae and C. pneumoniae. However, the final stage of PCR in the diagnosis of emergency is not defined, so it can not be recommended for widespread implementation in clinical practice.

If the patient's pleural effusion and conditions for the safe conduct of pleural puncture (visualization on fluid that freely moves with a layer thickness of more than 1 cm) should conduct research pleural effusion specifying the number of leukocytes and leukocyte formula,

pH, activity of lactate dehydrogenase, protein , paint smears for Gram and acid-fast to, to sitting on the identification of aerobic, anaerobic bacteria and mycobacteria.

Clinical diagnostic criteria of community-augured pneumonia. Diagnosis is determined if a patient radiographically confirmed focal infiltration of the lung tissue and at least two of the following clinical signs:

- Acute onset with fever above 38 ° C;

- Cough with sputum;

- Physical signs (or dull percussion sound relaxed or severe bronchial breathing, focus voiced finely rails and / or crepitation);

- Leukocytosis (more than 10 * • 10 9 / L) and / or stab shift (over 10%).

Complications of emergency:

- Pleural effusion;

- Empyema;

- Destruction / abscess of the lung tissue;

- Acute respiratory distress syndrome;

- Acute respiratory failure;

- Infectious-toxic shock;

- Secondary bacteremia, sepsis, hematogenous foci dropout;

- Pericarditis, myocarditis and others.

Most important, including planning antibiotic therapy for purulent destructive and complications of the disease.

Lung abscess - a pathological process characterized by the formation of a limited cavity in the lung tissue resulting in necrosis and purulent fusion. The emergence of lung abscess associated primarily with anaerobic pathogens {Bactetroides spp., F. nucleatum, Peptostreptococcus spp. et al.), often - with enterobacteria (due to aspiration of pharyngeal contents) or S. aureus.

Antibiotic of choice is amoxicillin / clavulanic acid or ampicillin / sulbactam - IV; possible use ceftriacsone / sulbactam intravenously or combination of benzylpenicillin and intravenous metronidazole, and amoxicillin and metronidazole in (step therapy). To alternative treatment regimens include: linkozamin combination with aminoglycoside or cephalosporin III-IV generation; combination of fluoroquinolones II-III generation of metronidazole; fluoroquinolone monotherapy Generation IV or carbapenems. The duration of antibiotic therapy is determined individually, but usually it is 3-4 weeks or more.

Empyema (purulent effusion) - a pathological process characterized by the accumulation of pus in the pleural cavity (the number of white blood cells in the effusion than 25,000 / mL (with a predominance of polymorphonuclear forms) and / or the presence of microorganisms (according microscopy or seeding), and / or pH less 7.1). The main agents of empyema associated with pneumonia (lung abscess with or without) are anaerobes (often in combination with aerobic gram-negative bacteria).

Most patients can carry out targeted antibiotic therapy based on microbiological examination of pleural effusion. If the pathogen of purulent pleurisy is selected, you must assign an antibiotic / antibiotics active against the likely pathogens. In the case of the so-called acute post pneumonic empyema is, first, S. pneumoniae, S. pyogenes, S. aureus and H. influenzae. In this case, preferred cephalosporin II-IV generation.

In subacute / chronic course empyema often etiological importance anaerobic streptococci, gram-negative enterobacteria and bacteroides. In this regard, the drugs of choice is amoxicillin / clavulanic acid or ampicillin / sulbactam; alternative - cephalosporin or carbapenem III-IV generation in combination with metronidazole. Typically, in conjunction with antibiotic therapy torakotomichne drainage and spend less - thoracoscopy and decortication.

Nosocomial (hospital - HP) pneumonia - a disease characterized by the appearance on the radiograph new focal-infiltrative changes in the lungs 48 hours or more after admission in combination with clinical symptoms that confirm their infectious nature (the new wave of fever, purulent sputum or purulent discharge from the tracheobronchial wood, leukocytosis, etc.), to the exclusion of infections were in the incubation period at the time of admission of the patient to the hospital.

Prevalence of HP is not only in different countries or regions, but also in hospitals and even in some offices. In this regard it is important to control the epidemic in a particular hospital and adjust treatment accordingly HP. Especially HP urgent problem in ICU patients, surgical and burn offices, and more.

The criterion for the classification of nosocomial pneumonia is the term of the disease, the presence or absence of risk factors for its development. According to this classification distinguish the following types of nosocomial pneumonia:

- Early - occurs during the first 5 days of hospitalization and caused by pathogens that were still in the patient before admission to the hospital, - S. pneumoniae, H. influenzae, S. aureus (MSSA) and other representatives of the normal microflora pharyngeal cavity. Most of these pathogens susceptible to antimicrobial agents that are traditionally used, and pneumonia has a favorable prognosis;

- Late - growing until day 6 of hospitalization and hospital actually caused by microorganisms with a higher risk of having virulent and multiresistant pathogens such as P. aeruginosa, Acinetobacter spp., Representatives of the family Enterobacteriaceae, S. aureus (MRSA). This pneumonia is characterized by less favorable prognosis.

Given the severity of disease severity and prognosis peculiarities of intensive care patients emit a special form of so-called ventilator-associated pneumonia (VAP) - pneumonia, which occurred after 48 hours from the start of mechanical ventilation in the absence of lung infection at the time of intubation.

Risk factors for HP.

Given the complexity of the pathogenesis of HP, allocate significant number of risk factors for its development. Conventionally, they can be divided into:

- Factors related to the state of the microorganism (age, severity of the underlying disease, the presence of comorbidity, etc.);

- Factors that increase the risk of colonization of the oropharynx and stomach pathogens HP (stay in the intensive care unit, antibiotics, antacids, inadequate technique of therapeutic and diagnostic manipulations, inadequate treatment of the hands of staff and respiratory equipment, etc.);

- Factors that contribute to reflux and aspiration (mechanical ventilation, tracheostomy, use of a nasogastric tube, constant horizontal position of the patient on the back);

- Factors that prevent the normal discharge of phlegm (intubation, use of morphine preparations immobilization).

For the control and prevention of HP greatest practical importance is the definition of endogenous (patient-related) and exogenous (related to the stay of the patient in hospital) the risk factors for HP. The latest greatest role length of stay; of therapeutic and diagnostic manipulations - endotracheal intubation, fibro bronchoscopy, tracheostomy, nasogastric intubation, mechanical ventilation, length and complexity of the surgery, medical therapy.

The risk of increased HP after suffering surgery. This is especially true for patients who underwent surgery on the organs of the chest or abdominal cavity, which are characterized by postoperative pain, development of atelectasis, disturbance of mucociliary clearance. This relatively simple manipulation / approaches significantly reduce the risk of HP:

- Adequate pain relief;

- Regular physiotherapy (massage, breathing exercises);

- Promotion of cough in patients without ventilator;

- Early (if possible) activation of patients;

- Eating a half-sitting position.

FBS is an independent risk factor for HP patients who are on mechanical ventilation. To some extent this may be due to the fact that promotion 'through bronchoscope facilitates colonization of the pharynx lower respiratory tract potentially pathogenic bacteria also shift the bacteria localized on bronchial mucosa. In addition, often a large amount of fluid injected through the bronchoscope, hampers clearance of bacteria from the lower airways.

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Mechanical ventilation. Existing ample evidence 6-21-fold increase in the risk of HP patients who are on mechanical ventilation, as well as the connection between the frequency of HP and duration of mechanical ventilation. Stay endotracheal tube in the airway of the patient gives a lot of local protective mechanisms, such as the integrity of the epithelium of the trachea; complicates or eliminates the allocation of bronchial secretions via mucociliary clearance and cough. Endotracheal tube is a kind of trap for tracheal secretions, localized above the cuff. This may lead to colonization of the pharynx nosocomial bacteria and contaminated secretion that seeps between the inflated cuff and the tracheal wall and penetrate into the lower respiratory tract.

To reduce the likelihood of aspiration of pharyngeal bacteria causes restriction of the use of sedative drugs that suppress the cough reflex, and support pressure cuff endotracheal tube above the 20 mm water column.

It should take into account the possibility of contamination of the humidifier circuit device for mechanical ventilation, resulting in the patient inhales microbial aerosol. The sources of bacteria are surface skin of the patient, the doctor and the hand of a nurse, medical equipment and others. Aspiration, position the patient and enteral nutrition. Position the patient on the back can also contribute to aspiration, the probability of which significantly be reduced by moving the patient in a reclining position. It should be noted a direct relationship incidence of infections in patients in the supine position with the start of enteral nutrition. Most likely, it is associated with an increased risk of aspiration of gastric contents.

The use of certain classes of drugs is accompanied by an increased risk of HP. Thus, sedatives increase the risk of aspiration, reduce cough reflex, thus contributing to the "stagnation" of bronchial secretions. Is most pronounced in the elderly and in patients with dysphagia. The use of antacids and H2-receptor appointed to prevent stress ulcers and gastrointestinal bleeding, by raising the pH of the stomach contents, contributing thus bacterial colonization of its mucosa. The application of sucralfate reduces the risk of HP.

Diagnosis

Despite certain limitations, clinical examination remains a "starting point" HP diagnosis. These other methods of research (including invasive) only interpreted taking into account the

clinical picture HP.

For clinical picture characterized by the appearance of new HP infiltrative changes on radiographs of the chest, coupled with signs of infection like fever, purulent sputum selection and / or leukocytosis. In this regard, the number of HP formal diagnostic criteria include:

• appearance on the radiograph new focal-infiltrative changes in the lungs

• Two of the below symptoms:

1) higher body temperature> 39,3 ° C;

2) bronchial hypersecretion;

3) PaO2 / FiO2 less than 240 (PaO2 - partial pressure of oxygen in arterial blood mmHg .; FiO2 - fraction of oxygen in inhaled air%)

4) cough, tachypnea, local crackling, wet wheezing, bronchial breathing;

5) the number of leukocytes in the blood less 4,0h109 / L or more 12,0x109 / l, stab shift of more than 10%;

6) purulent sputum / bronchial secretion (more than 25 polymorphonuclear leukocytes in the field of microscopy with low magnification x 100).

However, in practice, are clinical, laboratory and radiological diagnostic criteria HP are not always unconditional, especially in patients who are on mechanical ventilation. Such manifestations are: pulmonary thromboembolism branches with the development of pulmonary infarction, atelectasis lung, drug reactions, pulmonary hemorrhage, acute respiratory distress syndrome, and others. These criteria may be too "vague" in patients with underlying cardiovascular or respiratory infection. Therefore, the clinical diagnosis HP in 10-29% of cases is not confirmed at autopsy, on the other hand found at autopsy HP was unrecognized according vivo clinical and radiological examination in 20-40% of cases.

In view of the foregoing, regardless of the clinical situation, the availability of relevant data invasive research methods, the HP suspected in all patients should conduct a survey as follows:

• Studying the history of the disease in order to identify specific clinical situations that determine the likely etiologic role of relevant pathogens HP includes data from local microbiological monitoring and determination of antibiotic resistance in pathogens of nosocomial infection.

• Clinical examination. Clinical diagnosis HP aims to identify general (fatigue, weakness, loss of appetite, fever), and local respiratory (cough, sputum, shortness of breath, chest pain) symptoms, as well as of physical data (blunt or dull percussion sound relaxed or severe bronchial breathing , focus voiced finely rails and / or crepitation). The severity of symptoms depends on the patient's condition at onset, severity of the underlying disease, volume and localization of lung parenchyma, age, presence of comorbidities. All these symptoms are not specific to the HP, but sufficient to establish preliminary clinical diagnosis. However, in some patients objective evidence HP may differ from standard or be absent.

In older age groups, patients with acute cerebrovascular accident and / or with inadequate immune response to the disease pattern in the foreground may make confusion, aggravation / decompensation associated diseases, lack of fever.

HP poorness of symptoms occurs in patients in the postoperative period. The main clinical manifestations of pulmonary complications are often fever, which is not connected to the local process in postoperative wound, general intoxication, dyspnea, tachycardia.

• X-ray examination. All patients with suspected HP should do X-rays of the chest in two projections (frontal and lateral) to improve the information content of the investigation. The value of this research lies not only in the fact of pneumonic infiltration visualization, ie verify the diagnosis of pneumonia (usually with appropriate clinical signs), assessing the dynamics of pathological process and complete recovery and the possibility of differential diagnosis of other diseases. The degree of radiographic changes (incidence of infiltration, the presence or absence of pleural effusion, cavity decay) corresponds to the seriousness of the disease and can be a criterion when selecting antibacterial therapy.

Additional radiographic studies (X-ray, computer tomogram) appropriate for the differential diagnosis of lesions in the upper parts of the lungs, lymph nodes, mediastinum, with a decrease in lung volume share, if possible abscess formation, as well as the ineffectiveness of previous antibiotic therapy.

• Laboratory testing. These clinical blood is not possible to determine a potential causative agent of pneumonia. However, leukocytosis above 10-12h109 / l and leukocyte formula shift to the left (stab neutrophils more than 6%) indicate a high likelihood of bacterial infection, and leukopenia below Zh109 / l or higher leukocytosis 25h109 / l are unfavorable prognostic signs HP.

Blood chemistry (functional liver, kidney tests, glycemia, etc.) Do not provide specific information, but if deviations from normal values indicate the destruction of several organs / systems that have certain clinical and prognostic significance.

Patients with signs of respiratory failure that caused widespread pneumonic infiltration, massive pleural effusion, development of pneumonia with chronic obstructive pulmonary disease should determine oxygen saturation of the blood or arterial blood gases. Hypoxemia - less than 90% SaO2 or PaO2 below 60 mmHg. Art. (When breathing room air) - is prognostically unfavorable sign and indicates the need for treatment of the patient in the ICU conditions. A common practice study gases in capillary blood relative has diagnostic value, lack of reproducibility and often do not respond to changes in arterial blood gases.

If aerograms to pleural effusion (fluid layer with a thickness of 1 cm more freely displaced) to exclude empyema should be diagnostic thoracentesis. Research pleural fluid should include determining the number of white blood cells and leukocyte formula, pH, protein, glucose, lactate dehydrogenase activity, paint smears for Gram and acid-fast on, sat down on the detection of aerobic, anaerobic and M. tuberculosis.

Serological blood tests have limited diagnostic value and usually when examining patients with suspected HP not used. These studies are more epidemiological significance, although in some cases may be useful in retrospective diagnosis, such lehineloz infection.

Currently available commercial kits for determining antigens S. pneumoniae and L. pneumophila in urine. These tests, given the speed of their implementation, can in some cases

choose the adequate antimicrobial therapy starting or explain epidemiological relationships. Tests with high specificity, but because of their relatively low sensitivity even with negative results and the inability to exclude clinically lehinela etiology HP should additionally carry out culture, if necessary - molecular genetic studies.

Microbiological diagnosis. Microbiological diagnostics HP appropriate to establish as soon as possible after clinical diagnosis. Material for research is desirable to take early antibiotic therapy. However, despite the difficulties of microbiological examination in full, should not delay the appointment of antibiotics.

If antimicrobial therapy are conducted, it should not be changed for 72 hours before the collecting of smears. Also impractical temporarily suspend therapy for diagnostic studies.

Microbiological studies must be the blood of the patient (for obtaining blood cultures) and pathological material obtained from the source of infection, ie from distal bronchial tree and alveoli.

According to most authors, the diagnostic value of the material depends on how it is received. The smallest have diagnostic significance of research results transtracheal aspirate, smears derived from tracheal tubes, throat, through tracheal. Further, in order of increasing diagnostic value, followed by sputum obtained by deep expectoration; liquid bronchoalveolar lavage (BAL) and the content obtained by bronchoscopy using the "protected" brushes.

Investigation of blood cultures is required when examining a patient with suspected HP. If possible, before the start of antibiotic therapy should be done sat venous blood (sampling conducted two blood samples from two different veins). When blood collection should follow the classic rules of aseptic and process location sampling 70% ethanol, then 1.2% iodine solution. In adult patients must take at least 20 ml of blood in each sample, as this significantly increases the incidence of infectious agents. Investigation of blood cultures is essential diagnostic and prognostic value. In patients with positive blood cultures increases the likelihood complicated course HP. Unfortunately, the sensitivity of this method does not exceed 10-25% and a specificity confined likely that in hospitalized patients (especially the seriously ill patients) can have numerous sources of bacteremia. Accordingly, the microorganisms isolated from the blood, can be considered as activators HP only in cases where they are found in the study of samples from the lower respiratory tract.

Microbiological sputum (microscopy Gram stained smears sat) remains the most commonly used method to diagnose HP, however, its diagnostic value in identifying the possible etiology of the disease in patients with suspected HP substantially limited. This is very low (0-30%) specificity of this method, because of the sputum microbial contamination of samples that usually colonizes the pharynx / upper respiratory tract in hospitalized patients. Currently, the main purpose of sputum culture results - identifying antibiotic-resistant strains of pathogens likely HP. To increase the information value of this method of research and avoid possible number of errors in strict compliance with the rules of sputum collection and conducting its macro and microscopic evaluation before sitting on nutrient media.

Bacteriological studies conducted after evaluating Gram stained smear upon availability it more than 25 and less than 10 leukocytes epithelial cells at low magnification (x 100). Detection of smear significant number of gram-positive or gram-negative microorganisms with typical morphology can serve as a guide for empirical therapy.

In intubation patients with suspected HP most affordable way to obtain material for microbiological examination is endotracheal aspirate (ETA). Like sputum in patients, the study of material ETA has limited diagnostic value - the sensitivity, reaching 82-88%, specificity does not exceed 27-33%. In this regard the fundamental importance of microbiological studies endotracheal aspirate is uncertain to exclude microorganisms (in the case of negative results of the study) from the list of possible pathogens HP. Thus, the lack of material Pseudomonas spp. indicates a very low probability of Pseudomonas etiology of the disease. When quantify diagnostically significant titers of microbes is 105 CFU / ml and above. In these cases exceeding the limit values of microbial contamination significantly increases the specificity of the study (95%), but also significantly reduced its sensitivity - up to 43%.

The role of invasive diagnostic techniques in the study of patients with clinically predictable HP remains controversial. The most informative of these is "protected" brush-biopsy of the bronchial mucosa. This method is to use a "secure" catheter-brush advanced by about 3 cm on the right end of the bronchoscope subsegmental department bronchial tree. If this is visualized festering secret, then brush rotated it several times; Brush after collection of material drawn into the inner channel, the latter - the outer, then the catheter is removed from the inner channel fibrobronhoskopa.

After cleaning the channels 70% ethanol solution is sterile scissors cut, fit in a vial containing 1 ml of transport medium, and quickly delivered to the microbiology laboratory. Diagnostic significant levels of microbial contamination, separating the "colonization" and "infection" is microbes titer 103 mln / ml and above. Thus the sensitivity and specificity of "protected" brush-biopsy reach 82% and 89% respectively. Unfortunately, the reproducibility of this method in the same patient is low. Another factor that limits the diagnostic value "protected" brush-biopsy - reducing the number of microbes in the case of previous antibiotic therapy.

Unlike the "protected" brush-biopsy in the study sample, obtained from bronchoalveolar lavage (BAL) to judge the microbial infected huge number of alveoli (106). The sensitivity and specificity in the study sample BAL microbes titer above 104 mln / mL reached 91 and 100%, respectively.

Obviously, the role and place of non-invasive and invasive ("protected" brush-biopsy, BAL) diagnostic methods in the study of patients with suspected HP should be determined taking into account the clinical feasibility and possibility of their application. It should be borne in mind that the introduction of microbiological diagnostics to minimize the incidence of false positive cases, HP does not give the expected result if a high probability diagnosis of disease clinical and radiographic positions. "Ultimate limit" that defines the diagnostic value of noninvasive and invasive methods of investigation are the results of treatment. However, until now not received

evidence which would prove the final result of the improvement in patients with HP during the "aggressive" tactics diagnostic.

Aspiration pneumonia. Aspiration pneumonia can result from aspiration of gastric contents or nasopharyngeal, bronchial obstruction or the result of spontaneous pulling lung abscess bronchus. Favorable factors include abuse or pharyngeal cough reflex, which is most common in patients with disorders of the nervous system and is manifested by loss of consciousness, and in patients suffering from epilepsy and alcoholism. Essential in the development of the disease have gastroesophageal reflux, intubation, tracheostomy, poor teeth.

Aspiration pneumonia caused by aerobic bacteria, S. aureus. Aspiration leads to bronchial obstruction, chemical burns the airways and alveoli, chemical pneumonitis (aspiration with vomit, acidic gastric contents), empyema, lung abscess.

Clinical manifestations. The disease develops gradually, a few hours or days after aspiration. With the formation of lung abscess within 1-2 weeks appears shortness of breath, fever (39 ° C), cough with purulent sputum, cyanosis, scattered dry or wet wheezing. Often, the process involved the posterior segment of the upper lobes, basal segments of the upper and lower lobes of the lungs. For the diagnosis of invasive methods are used to obtain specimens.

Pneumonia in patients with immunodeficiency. Character immunodeficiency usually determines the type of pathogen that mainly causes pneumonia. To determine the etiology of the pathogen apply the full range of diagnostic tools, and take specimens, serological tests, invasive methods include bronchoscopy with lavage, lung biopsy. Sometimes a test should begin therapy.

The **differential diagnosis** of pneumonia is held with a number of diseases.

1. Influenza and other respiratory diseases.
2. Acute bronchitis.
3. Chronic bronchitis.
4. Pleural effusion.
5. Atelectasis.
6. Pulmonary tuberculosis.
7. Neoplasm of lungs.
8. Bronchiectasis.
9. Pneumothorax.
10. Lymphogranulomatosis.
11. Alveolitis.
12. Eosinophilic lung.

Algorithm for treatment of pneumonia.

1. Medical treatment.

2. Balanced health food.

3. Causal therapy (antibiotic).

4. Pathogenetic therapy.

5. Symptomatic therapy.

6. Fighting complications.

7. Physical therapy, therapeutic exercise.

8. Spa treatment.

Treatment of pneumonia.

1. ANTIBACTERIAL THERAPY

The diagnosis of CS - absolute indication for antibiotics, which are the mainstay of treatment in these patients. Antibacterial treatment should begin immediately after diagnosis, particularly in those patients with the emergency, requiring hospitalization. Its absolutely unacceptable to delay urgent antibiotics to patients with severe course of disease due to lack of results of microscopy and sputum culture as delay the first dose of antibiotics for 4 hours or more causes a significant increase in the risk of death of patients.

For practical reasons distinguish **empirical antibiotic therapy** (if not defined etiology of the disease) and antibiotic therapy of emergency patients with established etiology. Since at present there is no effective methods of etiological rapid diagnosis of NP, in actual causal initial antibiotic therapy is almost always empirical.

Antibiotics are prescribed for empiric treatment of NP, divided into first-line drugs (drugs of choice and alternative drugs) and the second row.

Early treatment for most patients with pneumonia is antibiotics. Later in patients with clinical efficacy of therapy without dysfunction of the digestive tract, possible use of oral medications that have good bioavailability (eg, fluoroquinolones and linezolid).

An effective approach is also the destination β-lactams by continuous infusion, which has certain pharmacokinetic, economic and possibly clinical advantages over traditional intermittent administration.

Traditional duration of antibiotic treatment of patients with HP is usually 14-21 days. Increasing its duration may result in superinfection multiresistant hospital pathogens, including P. aeruginosa and microorganisms of the family Enterobacteriaceae. When VAP significant clinical improvement observed within the first 6 days of treatment, and increase its duration to 14 days results in P. aeruginosa colonization by microorganisms and the family Enterobacteriaceae.

The need to adjust empirical antibiotic therapy may be after the results of microbiological examination of samples of blood or secretions of the respiratory tract. Therapy changing only the selection pathogen resistant and / or absence of clinical improvement.

In addition, by changing therapy can be prescribed antibiotics more narrow spectrum of action in the absence of pathogens against which was directed empirical therapy (P. aeruginosa, Acinetobacter spp.), Or in the case of selection agent that is sensitive to drugs with a narrow spectrum of activity (isolated E. coli, susceptible to amoxicillin / clavulanic acid, so it is advisable to abolish empirically designed carbapenem).

In any case, the main criterion for changing antibiotic therapy is its clinical inefficiency.

Evaluating the effectiveness of treatment carried out at pneumonia clinical and microbiological criteria. From a clinical perspective there maybe recovery, improvement, deterioration, relapse, lethal. Evaluate the clinical indicators such as fever, number and nature of sputum, leukocytosis or leukopenia, blood oxygenation, radial pattern, and other state organs and systems. Clinical improvement is usually determined 48-72 hours of therapy as initial therapy during this time in most cases do not change. The exception is the progressive deterioration or results of microbiological tests requiring correction.

Main antimicrobials that are used in the treatment of adult patients with pneumonia

The drug dose and route of administration frequency of administration

Natural penicillins

Benzylpenicillin in / in, in / m 1 000 000-3 000 000 IU with an interval of 4 hours

Ampicillin / v, w / d 0.5-1 m intervals 6 hours

Amoxicillin Per os 0,5-1h intervals of 8 hours

Amoxicillin / clavulanic acid / v, rer os 1,2 g at intervals of 8-12 hours 0,625 g at intervals of 8 hours with an interval of 1 g 12 hours

Ampicillin / sulbactam / v, w / d 1.5-3 m at intervals of 6-8 hours

Penicillin resistant to penicillinase

Oxacillin / v, w / m, per os 2 h intervals 4-6 hours

And Cefalosporins I generation

Cefazolin V / V / m 1.2 g intervals 8-12 hours

Cefalosporins II generation

Cefuroxime V / V / m 0,75-1,5 g at intervals of 8-12 hours

Cefuroxime aksetil Per os 0,5 g at intervals of 12 hours

Cefalosporins III generation

Cefoperazone / v, w / m 1.2 g intervals 8-12 hours

Cefotaxime V / V / m 1.2 g intervals 8-12 hours

Ceftriaxone V / V / m 1.2 g intervals of 24 hours

In ceftazidime / w, w / m 2 d at intervals of 8 hours

Cephalosporins Generation IV

Cefepime V / 2-d intervals of 12 hours

Cefpirome V / 2-d intervals of 12 hours

carbapenems

Meropenem in / in, in / m 1 g intervals of 8 hours

Imipenem / tselastatyn V / 0.5 g at intervals of 6 hours

Monobactam

Aztreonam in / in, in / m 2 d at intervals of 8 hours

Aminoglycosides

Gentamicin V / 3-5 mg / kg at intervals of 24 hours

Tobramycin / 5 mg / kg at intervals of 24 hours

Netilmicin V / 4-6 mg / kg at intervals of 24 hours

Amikacin / 15 mg / kg at intervals of 24 hours

Macrolides

Azithromycin Per os, in / 0.5 g at intervals of 24 hours 3 days

Clarithromycin Per os, w / 0.5 g at intervals of 12 hours

Midecamycin Per os 0,4 g at intervals of 8 hours

Spiramycin / v, rer os 1 500 000-3 000 000 IU with an interval of 8-12 hours

Erythromycin / v, rer os 0,5 g intervals of 6 hours

Fluoroquinolones II generation

Ciprofloxacin / v, rer os 0,4 g intervals of 12 hours; 0.5 g at intervals of 12 hours

Ofloxacin / v, rer os 0,4 g intervals of 12 hours

Fluoroquinolones III generation

Levofloxacin sparfloxacin / v, rer os

Per os 0,5 g at intervals of 12-24 hours 0.4 g in 1 day, and - 0.2 g 24 hours intervals

Fluoroquinolones Generation IV

Moxifloxacin / v, per os 0,4 g intervals of 24 hours

Gatifloxacin / v, per os 0,4 g intervals of 24 hours

Preparations of different groups

Vancomycin V / 1 g at intervals of 12 hours

Rifampicin / v, per os 0,5 g intervals of 12 hours; 0,6-0,9 g at intervals of 24 hours

Clindamycin / v, w / m, per os 0,45-0,6 g at intervals of 6-8 hours

The choice of route of administration of antibiotics is determined by the severity of the patients, pharmacodynamic and pharmacokinetic features of products. Some drugs penetrate well and form a high concentration in lung tissue (such as fluoroquinolones), others (eg, vancomycin) - bad. It should also be remembered that some groups of antibiotics (β-lactams) is a "term-dependent" and their effectiveness is determined by a period during which their concentration is above minimum inhibitory concentrations (MIC) of the pathogen, which requires strict compliance with the required frequency of administration or continuous infusion . Other drugs (fluoroquinolones, aminoglycosides) is "concentration-dependent," that is their purpose in high doses leads to increased activity. In addition to aminoglycosides was shown that a single injection correctly calculated daily dose (based on patient body weight and kidney function), raises not only their performance but also the safety of the treatment.

Early treatment for most patients with pneumonia must prescribe antibiotics. Later in patients with clinical efficacy of therapy without dysfunction of the digestive tract, possible use of oral medications that have good bioavailability (eg, fluoroquinolones).

An effective approach is also the destination β-lactams by continuous infusion, which has certain pharmacokinetic, economic and possibly clinical advantages over traditional intermittent administration.

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Microbiological efficacy of treatment is determined according to a study of airway secretions and evaluate as eradication, superinfection (the emergence of a new pathogen), relapse (elimination followed by the appearance of the original pathogen) or persistent. However, microbiological parameters which indicate a need to change therapy, insufficiently studied.

The results of X-ray examinations of the chest are of limited significance in assessing the dynamics HP with severe course, as its often noted initial radiological deterioration, particularly in patients with bacteremia or infection caused by microorganisms. In addition, the elderly or with underlying diseases (eg COPD) positive dynamics radiological symptoms is slower than clinical.

Prognostic unfavorable affection is new particles lung infiltration increase of more than 50% within 48 hours, the emergence of foci of destruction, the presence of pleural effusion.

Clinical signs (such as fever) and laboratory parameters (leukocytosis, oxygen) should be assessed taking into account the dynamics of other forms of Pneumonia.

Sulfanilamides - drugs used to treat pneumonia focal light and medium gravity. Especially prolonged widely used drugs (sulfamonometoksyn, sulfadimetoksyn, sulfapiridazyn) and biseptol (Bactria). The duration of continuous rate of 7-14 days, lasts up to 3-5 days after the removal of the main symptoms of the disease.

Sometimes prescribed nitroksolin, active against gram-negative and gram-positive mikroorhanizmiv and mushrooms. The effective combination of nitroksolin and levorin.

At long antybiotykotherapy conduct prevention kandidozu - appointed levorin, amphotericin B, inside or as inhalations.

2. Dezintoksikatsiyna therapy It is used in severe or complicated course pneumonia. Use intravenously transfusion of reopolihlyukin 400-800 ml / day gemodez 200-400 ml / day. In severe dehydration , symptoms of vascular insufficiency impose a 10% solution albumin, protein.

3. Immunotherapy

Use in severe and destructive pneumonia, comprising administering hyperimmun plasma - for 10-12 days. As nonspecific imunomodulyatory used autohemothrapy.

4. Antishock therapy

If there is evidence introduced prednizolone 60-90 mg or 100-250 mg hidrokortyzonu in 200-400 ml of sodium chloride solution izotonic, 1-2 ml cordiamine. When administered cardiac insufficiency, cardiac glycosides - 0.5 mL of 0.06% or 0.05% of korhlyukon intravenously.

5. Prevention of hypercoagulation

Held at hemoptysis, increasing trombocytopenia, hyperfibrinogenemia, is heparin in 40.000-60.000 IU / day and antiplatelet agents - dypiridamol 25 mg 3 times a day, Xantinol nicotinate 150 mg 3 times daily, pentoksifillin 200 mg 3 times a day 100 mg orally or intravenously 2 times a day. Designed citric acid to 250-500 mg / day, indomethasine 250 mg three times a day. When hemoptysis or pulmonary hemorrhage additionally injected 1 ml of 1% morfinu.

6. Anticough preparations

Assign a dry, unproductive, debilitating cough - Glaucine 50 mg, 100 mg libeksyn, tusupreks 20 mg 3-4 times a day.

7. Bronchodilators

Preparations eliminate reactive bronchospasm, reduces inflammatory swelling of bronchial mucosa have a strong expectorant effect.

Eufillin 5-10 ml of 2.4% solution intravenously. Inhalation aerosols (salbutamol, berotek, Atrovent, Berodual) or solutan of 10-30 drops per os administered 2-3 times a day.

8.Mmucolytics

Used for dilution of sputummukosolvin, bromgecsine, trypsin, himotrypsyn, himopsyn, ribonuclease, deoxyribonuclease. From the first days of the disease used inhalations with sodium chlorides.

9. Anabolic agents

Assign exhaustion, purulent intoxication, destructive processes: Nerobolum 5 mg 2 times a day 4-8 weeks; retabolil 1 ml 1 per day for 7-10 days; Methyluracilum 1.0 g 3-4 times a day for 14 days. When protracted course of acute pneumonia appoint prednizolon by 40-80 mg for 5-10 days.

In the period of remission used herbal immunomodulatory actions that enhance the body's defenses. Appointed physiotherapy, hydrotherapy. Rehabilitation activities are also conducted in sanatorium conditions.

Prevention. There are primary and secondary prevention of pneumonia.

The goal of primary prevention - to prevent the development of acute pneumonia - harmful gases, overheating, hypothermia, physical training, cold shower, smoking cessation, readjustment of foci of chronic infection of the nasopharynx, timely and efficient treatment of acute respiratory diseases, control measures (pneumococcal vaccine at high The risk of pneumococcal disease, influenza vaccine), isolation of patients.

The purpose of secondary prevention - to slow further progression of pneumonia, prevent the development of complications and exacerbations. It includes a set of preventive measures that are held successively at stages of rehabilitation - clinic-hospital-sanatorium.

In the period of remission used herbal immunomodulatory actions that enhance the body's defenses. Appointed physiotherapy, hydrotherapy.

Prevention of Pneumonia. The need for the development and implementation of prevention Pneumonia is due to the high prevalence of Pneumonia, especially among patients with surgical departments, patients with severe mechanical and thermal trauma and among individuals with violation of consciousness, leading to a prolongation of hospitalization, increased costs of treatment and is associated with high mortality. The high cost of treatment with a pneumonia due to the initial severity of patients and features etiological structure of pathogens, which are dominated by bacteria that are multiresistant to antimicrobial agents.

Considering the risk factors and pathogenesis pneumonia, prevention must consist of a set of interrelated activities of organizational, technical, and medical treatment that reduce the likelihood of contamination and infection and enhance anti-infective protection of the patient.

The highest degree of validity are the following areas of prevention Pneumonia.

1. training. Training rules caring for patients with impaired consciousness and bulbar disorders; patients receiving respiratory support nebulayzer or enteral nutrition therapy, prevention from the perspective of factors that encourage the development of pneumonia .

The most important rules of care is to respect the angle of inclination of the head end of the bed (30-40 °), periodic control of the gastric probe, motility and digestion mixture is introduced, the pressure in the cuff endotracheal or tracheostomy tube processing leather cover.

2. Interruption of transmission of infection, including:

- Use sterile disposable consumables in contact with the patient's airways;

- Daily nebulizer sterilization;

- Change the humidifier at its contamination;

- Timely removal of condensate from the respiratory circuit;

- Use sterile solution nebulayzer therapy, humidification, etc .;

- Sterilization of reusable breathing circuit before using it for a new patient. Not often recommended to replace the patient circuit (should be no more than every 48 hours);

- Careful aspiration of secretions, flushing the catheter with a sterile solution;

- Shift capacity to collect aspirate before use with another patient.

3. Preventing the transfer of bacteria by medical personnel , to prevent transfer bacteria from staff includes proper organization of the processing of hands: Use liquid soap, antiseptic wipes and disposable. It is recommended to wash hands before putting on and after removing gloves. Prevent cross-contamination allows change gloves before starting work with a new patient. A very effective measure is to isolate patients with infectious diseases and organization of care in intensive care unit on a "one patient - one sister." This tactic is especially justified with infections caused by multiresistant strains of bacteria.

4. Limit the use of concomitant medications that raise the risk of endogenous infection. The risk of infection of the lower respiratory tract microflora digestive tract and pharynx inevitably increases the excitation of consciousness, cough reflex inhibition, raising the pH of the stomach.

Rational prescribing hypnotics and sedatives, narcotic analgesics, muscle relaxants, antacids significantly reduce the incidence of pneumonia by limiting the process of translocation of microflora in the airways. This important tool is the use of modern assisted ventilation modes and non-narcotic analgesics, fighting intestinal paresis. In order to prevent stress ulcers of the digestive tract preference should be given H2-blockers and sucralfate, and is the first drug of choice.

5. epidemiological control. Epidemiological monitoring is to monitor patients at risk of nosocomial infections; account of the prevalence of these infections; analysis of etiological structure of pathogens, the nature and extent of antibiotic resistance. To control the spread of HP should focus on standardized indicators - expect it to 100 days of hospitalization or 1,000 days of mechanical ventilation.

6. Selective decontamination of the digestive tract and pharynx. The classical scheme selective decontamination (CSP) digestive tract based on a combination of enteral (via probe) appointment of non-absorbent antibiotics (aminoglycosides and polymyxin) with amphotericin B treatment of pharyngeal 2% toothpaste containing these drugs and parenteral administration of broad-spectrum antibiotics (cephalosporins III generation or ciprofloxacin). The main role of To prevent excessive intestinal colonization of the pharynx and Gram-negative aerobes and therefore prevention of primary and secondary endogenous infection.

7. Prophylactic antibiotics. At present there is no substantiated evidence of the effectiveness of the system purpose antibacterial drugs to prevent Pneumonia in patients with risk factors, including those who are on mechanical ventilation. Appointment cephalosporins I-III generation reduces the risk of "early" P, however, is a factor that contributes to the development of "late" pneumonia caused by Gram-negative bacteria. Based adoption of individual decisions should be based on the main character and comorbidity, duration of mechanical ventilation and predicted a risk of aspiration in the prehospital phase.

Control of initial level of knowledge

1. The most common etiological factor community-augured pneumonia are:

A. E. coli.

C. pneumoniae.

S. Mycobacteria.

D. Mushrooms.

E. Viruses.

2. How is dramatically increased respiration (auscultation):

A. Vesicular.

B. Amforyc.

C Fierce.

D. Bronchial.

E. Mixed.

3. Coughing can occur when:

A. Stimulation of the receptors pleura.

V.Receptors respiratory tract irritation.

S.Irritation n. vagus because of mediastinal tumor, aneurysm of the aorta.

D. With all the above-mentioned pathological conditions.

E. No at one of the above-mentioned pathological conditions.

4. Cough pneumonia can be associated with:

A. Pleural lesions.

B. Lesions segmental bronchi.

S.Iirritation reflex zones located in costal-diaphragmatic sinuses.

D. Accumulation of sputum in large bronchi.

E. No one of the above reasons.

5. Radiological signs consolidation phase with lobar pneumonia are:

A. Intensive eclipse inflammatory genesis.

B. Increased pulmonary picture.

C. Increased transparency of the lung fields.

D. Uneven spotty and clearly delineated eclipse.

E. Mesh deformation and increased pulmonary picture.

6. The cause of blood in the sputum may be:

A. A participatory pneumonia.

B. Viral lesions of the mucous trachea-bronchial tree.

C.Mmitral stenosis.

D. Bronchiectasis.

E. All the above-mentioned pathological conditions.

7. Pain in the chest with pneumonia caused by:

A.Iinvolvement in the pathological process of pleural leaves.

B. Obstruction of the bronchial tree.

C. Increased pressure in the pulmonary circulation because of frequent coughing.

D. Hypoxia respiratory muscles.

E. All above mentioned reasons.

8. Shortness of pneumonia can be caused by:

A. The big area of destruction of lung tissue.

B. Intoxication syndrome.

S.Lesions of pleural leaves.

D. A common mucosal swelling of the bronchial tree and hypersecretion of mucus.

E.Aall above mentioned reasons.

9. Which of the following changes in respiratory lung auscultation is most common focal pneumonia?

A. Hard vesicular breathing.

B. Weakened vesicular breathing.

C. Bronchial breath.

D. Amforyc breathing.

E. Hard vesicular breathing with prolonged exhalation.

10. The course of pneumonia can be complicated:

A. Myocardial infarction.

C. Infectious-toxic shock.

S. Asthma status.

D. Gastrointestinal bleeding.

E. Hepatic coma.

Control of final level of knowledge

1. Which of the above definitions of pneumonia are true:

A. Pneumonia - an acute infectious disease of bacterial etiology in which determined auscultation moist rales, crackling.

B. Pneumonia - respiratory inflammatory disease of the lungs of any origin, confirmed radiography.

C. Pneumonia - an acute infectious disease mainly bacterial etiology, characterized by focal lesions of the lungs and respiratory radiography confirmed the presence intraalveolyar exudation.

D. Everything listed above can be considered correct.

E. All above are not true.

2. According to modern classification distinguish the following types of pneumonia:

A. Nonhospital pneumonia CAP.

B Hospital pneumonia.

C. Aspiration pneumonia.

D. pneumonia in people with severe immune defects.

E. All of the above is true.

3. The most common pathogenesis of community-augured pneumonia are:

A. Str. pneumoniae.

B. Haemophilus influence.

S. Mycoplasma pneumoniae.

D. Moraxella cattaralis.

E. Chlamydophyla pneumoniae.

4. Which of the following objective signs are most informative for the diagnosis of pneumonia:

A. Dull percussion sound.

B. Calls wet finelyrails.

P. Crepitation.

D. High leukocytosis, ESR on the background of cough and intoxication syndrome.

E. Radiological established presence intralveolar infiltration.

5. When pneumonia in biochemical blood is determined by:

A. Hypercholesterolemia.

B. Hyperenzymemia.

C. Hyperbilirubinemia.

D. Dysproteinemia.

E. Hyperalbuminemia.

6. What is the nature of sputum of patients with focal pneumonia:

A. Mucopurulent or slimy liquid.

V. Rusty.

C. Abscess.

D There are 3 layers

E. Bloody.

7. **In the presence of any quantity of leucocytes and epithelial cells' should state that further investigation of sputum is not appropriate for the material being studied is the content of the oral cavity:**

A. Leukocyte 10 - 15 more cells 10-20.

B. Leukocyte 30 - 50, cells 5 - 8.

C. Leukocyte P. 50 – 70 cells 5 - 7.

D. All of the above results can be investigated.

E. All of the above results to investigate not appropriate.

8. What criteria should be guided when deciding whether to admit a patient to the hospital:

A. Previous outpatient treatment is not effective.

B. The presence of the patient related chronic diseases.

S. Age older than 50 years.

D. All of the above criteria are entitled in the amount of hospitalized patients.

E. The above criteria are not sufficient to address the issue.

9. Which of the following criteria is an indication for hospitalization in the hospital:

A. Violation of consciousness.

B. Unstable hemodynamics.

C. Tachypnea, hypothermia.

D. Any of the above.

E. Only summation of all the above parameters.

10. Antibacterial drugs which group is most advisable to appoint a patient 30 years when diagnosed with community-augured pneumonia is caused by Mycoplasma pneumonia:

A. Semisynthetic aminopenitsyliny.

B. Protected aminopenitsyliny.

C.Aaminoglycosides.

D. Macrolides.

E. Cephalosporins of II generation.

Situational tasks.

1. The patient is 66 years, which for 16 years of age suffering from chronic bronchitis, hypothermia after pneumonia, it is not difficult to progress. Which category of diseases includes pneumonia, which occurs in this patient?

A. The first category

B The second category.

C.The third category

D.The fourth category

E. Fifth category

2. Patient L., 67 years, during 15 years suffer from chronic bronchitis, after cooling pneumonia, it is not difficult to progress. Which nyzhchepererahovanyh pathogens is the most likely cause of pneumonia in this patient?

A. Str. pneumoniae

B.Homophiles influenza B.

C. Pseudomonas aeuroginose

D. All of the above listed

E. None of the above

3. Patient A., 44, set III category of severity of community-acguired pneumonia . Antibiotic which group is most optimal in this case?

A. Cephalosporin III Generation

C. Aminoglycosides

C. Protected β-lactams + macrolides

D. All above are equally effective

E. All above is not the drug of choice in this clinical situation

4. Patient P., 39 years old, is in hospital with severe community-acquired pneumonia , it is a cross-resistance to macrolides and protected aminopenicillins, allergy to cephalosporins. Drugs which group most efficiently assign in this setting?

A. Aminoglycosides

B. Linkozamids

C. "Classic" fluoroquinolones (tsyprynol)

D. These antibiotics are ineffective group

E. These groups of antibiotics are equally effective

5. The most likely pathogen that has led to the emergence of equity in 31-year-old patient K., debuting body temperature to 39.9 ° C, the appearance of blood in sputum, pronounced intoxication syndrome are:

A. Str. pneumoniae

B. Haemophilus influence

C. Mycoplasma pneumoniae

D. Mor. cattaralis

E. No one of these pathogens

6. Patient A., 28 years, based on clinical, radiological data established community-acquired pneumonia . The patient lives in a dormitory, debuted disease pharyngitis, have been enlarged lymph nodes, hepato- and splenomegaly observed. What is the pathogen most likely caused the disease?

A. Str. pneumoniae

B. Gram-negative bacillus

S. Mycoplasma pneumoniae

D. None of the above mentioned pathogens

E. Each of the above mentioned pathogens can cause this pathology

7. O patient, 43 years old, based on clinical, radiological data diagnosed with community-acquired pneumonia . Before long disease patients living in hotels with air-conditioned stayed at airports. In respiratory complaints pointed to pain in the joints, muscles, diarrhea. What is the pathogen most likely just lead to disease?

A. Str. pneumoniae

B. Haemophilus influencae

C Legionella pneumoniae

D. None of the above mentioned pathogens

E. Each of the above mentioned pathogens can cause this clinical picture

8. Of the patients, 30 years old, diagnosed with community-augured pneumonia caused by Mycoplasma pneumonia. Antibacterial drugs which group to assign the most appropriate?

A. Semisynthetic aminopenitsylin

B. Protected aminopenitsylin

C. Aminoglycosides

D. macrophytes

E. Cephalosporins of II generation

9. Patient A., 38 years, amid community-augured pneumonia category holds exacerbation of duodenal ulcer. What is the optimal "start" antibiotic?

A. Cefazolin

B. Gentamicin

S. Clarithromycin (Fromilid)

D. Cefuroxime

E. Penicillin

10. Patient L., 55, who has repeatedly received antibiotics and a concomitant diabetes, 72 hours after admission to the hospital diagnosed with pneumonia. What are the likely causative agent can be?

A. Str. pneumoniae

B. Haemophilusinfluencae

c. Mycoplasma pneumoniae

D. Each of the above mentioned pathogens

E. None of the above mentioned pathogens

Control questions.

1. Define pneumonia.

2. Etiology and pathogenesis of pneumonia.

3. classification of pneumonia.

4. Define "small" and "large" criteria for severity of pneumonia.

5. Name the common causative agents of pneumonia.

6. Clinical manifestations of pneumonia.

7. Physical data for pneumonia.

8. Investigations tests for pneumonia.

9. community acquired pneumonia, peculiarities and diagnostics.

10. Name the risk factors and risk classes deaths in patients with community acquired pneumonia.

11. Name the risk group of patients with community acquired pneumonia and give them a description.

12. Complications community-augured pneumonia.

13. nosocomial pneumonia peculiarities.

14. Risk factors for nosocomial pneumonia.

15. Diagnosis of nosocomial pneumonia.

16. Aspiration pneumonia.

17. Pneumonia in patients with immunodeficiency.

18. Differential diagnosis of pneumonia.

19. Algorithm for treatment of pneumonia.

20. Treatment of community-augured pneumonia.

21. antibiotic therapy for community acquired pneumonia.

22. Protracted course not nosocomial pneumonia.

23. Treatment of nosocomial pneumonia.

24. Detoxification therapy for pneumonia.

25. Immunotherapy for pneumonia.

26. antishock therapy for pneumonia.

27. Prevention of pneumonia.

28. Antitussive, bronchodilators, mucolytics and anabolic drugs in pneumonia.

29. Preventing pneumonia.

Practical tasks.

1. To provide management of patients with pneumonia.

2. Assess the patient's condition and results of physical examination.

3. Fill minutes Supervision sick with pneumonia.

4. Writing or interpreting received laboratory studies.

5. Give or interpreting received instrumental methods.

6. treatment.

7. prescription for the treatment of pneumonia.

8. Assign rehabilitation and preventive measures.

Tests related to"Pneumonia"

Basic knowledge

1.	B	**6.**	Є
2.	D	**7.**	A
3.	D	**8.**	D
4.	B	**9.**	D
5.	A	**10**	B

The final level of knowledge

1.	C	**6.**	A
2.	E	**7.**	A
3.	A	**8.**	E
4.	Є	**9.**	D
5.	D	**10**	D

Situational tasks

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

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 .-2(

4.Davidson's Principles and Practice of Medicine 22nd Edition .-Walker, Brian R., FRSE.-2014.-1312p.

Website of the departament: http://www. vnmed3.kharkiv.ua/,

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д.м.н. проф.. Журавльова Л.В.