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# Community-Acquired Pneumonia: Diagnosis and Treatment

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**Abstract**

Community-acquired pneumonia (CAP) is not only one of the most common acute infectious diseases in humans, but also one of the leading causes of death from infectious diseases.

**Keywords:** pneumonia, cough, pneumococci, antibiotics, penicillins.

In 2016-2020, the registered incidence of pneumonia in Uzbekistan was 4.14%; in persons aged > 18 years-3.44%. However, these figures do not reflect the true picture. According to foreign epidemiological studies, the incidence of CAP in adults (> 18 years) varies in a wide range: in young and middle-aged people-1-11. 6%, in older age groups-up to 25-44%. This discrepancy is primarily due to the low level of diagnosis of pneumonia in our country (in about 60% of cases, the disease remains unrecognized). The real morbidity rate in Russia is 10-15 cases per 1,000 people per year (10-15%). An increase in the average age of the population steadily leads to an increase in the incidence of pneumonia. In addition, almost uncontrolled prescribing of antibacterial drugs and their free release in the pharmacy network lead to an increase in antibiotic resistance of pathogens and a worsening of the course of pneumonia. The mortality rate for CAP in young and middle-aged people without concomitant diseases is 1-3%, and among elderly patients it reaches 46%. Pneumonia is a group of acute infectious diseases that differ in etiology, pathogenesis, and morphological characteristics. (mainly bacterial) diseases characterized by focal lesions of the respiratory parts of the lungs with the obligatory presence of intra-alveolar exudation. Practical recommendations of RPO 5 give the following definition of community-acquired pneumonia: this is an acute disease that has occurred in community-acquired conditions, i.e. out-of-hospital or within 4 weeks after discharge from it, or diagnosed in the first 48 hours after hospitalization or developed in a patient who were not in homes nursing/offices, long-term medical surveillance ≥ 14 days, accompanied by symptoms of infections of the lower respiratory tract (fever, cough, sputum production, possibly purulent, pain in the chest, shortness of breath) and radiological signs of a fresh-focal infiltrative changes in the lungs in the absence of obvious diagnostic alternatives.

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Currently, the so-called etiopathogenetic classification of pneumonia is used: Community-acquired (common, domestic) pneumonia.

■ Hospital settings (nosocomial, nosocomial)

■ pneumonia. Aspiration pneumonia.

■ Pneumonia in persons with severe immune defects.

■ This division was created to predict the most probable etiology of pneumonia based on the pathogenetic model in order to prescribe rational empirical antibacterial therapy. A similar model is used in European countries, but in the United States, a similar category also includes a group of pneumonias caused by so-called atypical pathogens (chlamydia, mycoplasma, legionella).

**ETIOLOGY** The etiology of CAP is directly related to the normal microflora colonizing the upper respiratory tract. Of the numerous microorganisms, only some with increased virulence are capable of causing an inflammatory reaction when they enter the lower respiratory tract. Such pathogens should primarily include pneumococcus (Streptococcus pneumoniae) — 30-50% of cases . Essential importance in the etiology of VP are the so-called atypical microorganisms (Chlamydophila pneumonia, Mycoplasma pneumonia, Legionella pneumophila), which together account for from 8 to 30% of cases of the disease. It should be noted that pneumonia caused by "atypical" pathogens is more common in young people living in organized groups (schoolchildren, students, military personnel). Rare (3-5%) pathogens of EP include Haemophilus influenza, Staphylococcus aureus, Klebsiella pneumoniae, and even less often — other enterobacteria.

**DIAGNOSTICS** In modern guidelines and recommendations, the so-called gold standard for the diagnosis of pneumonia is often mentioned, which consists of the following signs: infiltration of lung tissue according to X-ray examination plus two of the following: body temperature above 38.0 °C.;

■ cough with phlegm;

■ physical data;

■ leukocytosis, rod-shaped shift.

■ This standard is very convenient for the practical work of a doctor. However, it should be recognized that it describes pneumococcal focal pneumonia of the classical course. Meanwhile, quite often there are patients who have very minor X-ray changes, and CT is required to verify the diagnosis. In a significant part of patients, the body temperature does not exceed the subfebrile threshold, and a productive cough appears only a few days after the onset of the disease. Physical signs during percussion and auscultation are often contradictory and unstable, and in elderly patients, the presence of against the background of pneumosclerosis and stagnant phenomena, they are not at

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all informative. Finally, leukocytosis with a "shift" is observed, as a rule, in bacterial infections, and then not always. When atypical agents (chlamydia and mycoplasma) dominate, changes in the general blood count are minimal. For this reason, the optimal diagnostic mechanism is the syndromic approach. In this case, the diagnosis of community-acquired pneumonia, as a rule, is carried out in several stages. Stage I — assessment of primary clinical symptoms, identification of the main syndromes and carrying out a syndromic differential diagnosis. Syndrome of intoxication and general inflammatory changes: chills, fever, general weakness, malaise, asthenia, headache, muscle and joint pain, shortness of breath, tachycardia. This syndrome should be differentiated from many infectious diseases, the primary manifestation of which is general intoxication. The main difference is the absence, as a rule, of the syndrome of damage to the respiratory tract and pleura, as well as the syndrome of inflammatory infiltration of lung tissue. In parallel with the general manifestations of intoxication, determined by anamnesis, it is necessary to evaluate laboratory parameters that objectively confirm the presence of an acute inflammatory process (neutrophilic leukocytosis, usually with a "shift of the formula to the left", acceleration of ESR, an increase in the content of C-reactive protein, etc.). These signs are not specific for pneumonia, but they allow us to differentiate pneumonia from a number of lung diseases of non-infectious origin. Respiratory tract syndrome: cough, with auscultation — change in the nature of breathing (hard, bronchial), local dry wheezing, wet small-and (or) medium-bubbly, crepitation. It is necessary to differentiate also with acute respiratory diseases (cough is usually dry, so-called laryngotracheal), with an exacerbation of chronic bronchitis (with a less sudden onset, a long history, scattered wheezing, less pronounced intoxication, no inflammatory infiltration of lung tissue syndrome), with congestion in the lungs (with symmetrical, silent small-bubble wheezing in the lower parts of the lungs). Sputum when coughing is usually mucopurulent, with croup pneumonia of a brown (rusty) hue. Hemorrhagic sputum is more typical for thromboembolism of the pulmonary branches. arterial diseases (PE), cancer, tuberculosis, and pulmonary destructions. Inflammatory lung tissue infiltration syndrome: physical syndrome of lung tissue compaction (bronchial respiration, shortening of the pulmonary sound during percussion, changes in vocal tremor and bronchophonia), X-ray "shading" of the lung area. It is necessary to differentiate with pulmonary edema, pleural effusion and tumor process. The presence of at least two of the described syndromes makes it possible to establish a preliminary diagnosis of pneumonia. The addition of additional syndromes listed below significantly confirms the diagnosis. Pleural irritation syndrome (pain syndrome): pains

**Treatment**

Antibacterial therapy should be initiated without waiting for the results of a microbiological study, i.e. empirically. For uncomplicated pneumonia, treatment with antibiotics (preferably one drug) is preferable for no more than 5-7 days under conditions of rapid normalization of the general condition

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and the absence of negative dynamics during radiography. Subfebrility, acceleration of ESR, as well as persistent radiological changes in the form of increased pulmonary pattern, and others are not indications for continuing antibiotic therapy.

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