UDC 616.24-002-07/0025-036.3

LUNG INFILTRATE: SOME ASPECTS OF DIFFERENTIAL DIAGNOSIS

Yevstihnieiev Ihor Volodymyrovych
c.m.s., assistant
State Institution «Dnipropetrovsk medical
academy of the Ministry of Health Ukraine»
Dnipro, Ukraine

Annotation. The article highlights the most pressing issues of differential diagnosis of infiltrative tuberculosis, community-acquired pneumonia and pulmonary adenocarcinoma with creeping cancer (bronchoalveolar cancer) in adults. Although pulmonary infiltrate syndrome can occur with a large number of diseases, primary care physicians are primarily involved in differential diagnosis of these three diseases. Hypodiagnosis of oncological diseases of the lungs, exogenous allergic alveolitis, sarcoidosis is observed. Primary care physicians often have difficulties in diagnosing and differential diagnosis of diseases with pulmonary infiltrate, errors occur primarily due to the non-specificity of clinical symptoms and radiological changes. It is necessary to increase the level of knowledge of doctors in assessing risk factors, clinical manifestations, and the results of instrumental and laboratory research methods. Especially important is the timely referral of patients by primary care physicians for consultations with an oncologist, TB specialist, pulmonologist.
Key words: pulmonary infiltrate, infiltrative tuberculosis, community-acquired pneumonia, pulmonary adenocarcinoma, diagnosis, differential diagnosis.

Infiltration of lung tissue is its compaction, the morphological basis of which is penetration into the alveolar tissue and / or lung stroma of fluid (sputum, blood, pus), cells (neutrophils, lymphocytes, macrophages, fibroblasts, tumor cells), connective tissue fibers. Several radiation patterns correspond to pulmonary infiltrate syndrome:

– *Ground glass opacity* («frosted glass» interstitial infiltration);

– *Air space consolidation* (consolidation, alveolar infiltration).

The difficulties of differential diagnosis in the presence of infiltrates in the lungs are due to the following:

– for most lung diseases with infiltrates, specific clinical and unambiguously interpreted radiological patterns are not observed;

– atypical radiological changes in lung diseases;

– a limited number of radiological symptoms in radiologists;

– differential diagnosis of lung diseases with infiltrate syndrome is very extensive, can manifest itself in different patterns, including *mass* (solid volume formation of more than 3 cm).

Differential diagnosis of infiltrative pulmonary tuberculosis is often performed with community-acquired pneumonia, peripheral and central lung cancer, exogenous allergic alveolitis, stage 2 sarcoidosis, atelectasis and pulmonary infarction, eosinophilic infiltrate, lung actinomycosis. A special place among diagnostic errors during differential diagnostics is occupied by the problem of timely detection of ***infiltrative pulmonary tuberculosis***. Several causes of errors in the diagnosis of this disease should be highlighted:

– Low sanitary culture of the population;

– Late patient access in the debut of infiltrative pulmonary tuberculosis to primary care physicians;

– Self-medication by patients without a prescription of antibacterial drugs, including those with a tuberculostatic effect (aminoglycosides, fluoroquinolones);

– Lack of alertness of primary care doctors in relation to this pathology;

– Incomplete analysis of risk factors, medical history, clinical symptoms, data from instrumental and laboratory studies;

– Frequent «pseudopneumonic» onset of infiltrative pulmonary tuberculosis;

– Masking the clinical symptoms of this disease against a background of comorbid diseases and syndromes (chronic obstructive pulmonary disease, chronic heart failure, etc.);

– Failure at the stage of primary health care of an X-ray examination of the chest organs in 2 projections and sputum bacterioscopy with a Ziehl-Nielsen stain of 3 times for *Mycobacterium tuberculosis*.

It is especially difficult to detect infiltrative tuberculosis in elderly patients with comorbid conditions, the presence of chronic heart and respiratory failure [1, p.3378].

Infiltrative pulmonary tuberculosis accounts for 60-85% of newly diagnosed tuberculosis, which emphasizes the social significance of this disease. The lesion process is characterized by an exudative type of inflammation along the periphery of new and / or old tuberculous foci with a tendency to rapid progression. Given the volume of tuberculous infiltrate in the lungs, there are:

– *Limited infiltrates* (broncholobular, rounded);

– *Common infiltrates* (cloud, periscissuritis, lobitis).

An X-ray examination in patients with infiltrative pulmonary tuberculosis can be visualized:

– typical localization of foci in C1, C2, C6 (optional);

– focal and / or solitary infiltrate;

– perifocal foci;

– destruction;

– foci of screening in other parts of the lung;

– polymorphism of changes in the lungs.

The latter involves the heterogeneity of infiltrative changes and foci, calcification, a combination of exudative and delimited changes.

It is extremely rare to observe a special type of infiltration in tuberculosis according to the type of «frosted glass» with a focal nodular structure. It occurs with the lymphogenous spread of mycobacteria with the formation of interstitial granulomas. Also, in some cases, it is necessary to conduct differential diagnosis with sarcoidosis

and idiopathic fibrous alveolitis [2, p. 358]. After multispiral computed tomography, a reversed halo sign pattern can be determined. Visually, changes can be similar to manifestations of adenocarcinoma (creeping type, formerly called bronchoalveolar cancer).

Adenocarcinoma of the lung with creeping growth (the old name is bronchoalveolar cancer) is characterized by the following manifestations:

– Symptom of «frosted glass» with or without a solid component;
– Symptom of «air bronchography», air cavities, cellular structure;
– Consolidation of varying degrees of prevalence;
– Contours in the form of rays, cords towards the root of the lung and pleura.

The main pattern of these changes in creeping adenocarcinoma is "frosted glass", this type of oncological process presents significant difficulties in differentiating with infiltrative pulmonary tuberculosis and community-acquired pneumonia

A feature of creeping adenocarcinoma in the onset of the disease and as it progresses is the presence of intoxication and respiratory syndromes with multifocal lesions of the lungs, the clinical course is often assessed as community-acquired pneumonia. Progression of the process against the background of adequate antibiotic therapy involves consultation of an oncologist and a TB specialist. Also, the presence of central lung cancer can lead to bronchial obstruction with the development of pneumonia. Radiography at the first stage in 2 projections makes it impossible to obtain more complete information about changes in the lung tissue, at the same time, multispiral computed tomography with contrast is an expert method that allows us to decide whether morphological confirmation of the diagnosis after transbronchial biopsy is advisable.

Community-acquired pneumonia can manifest itself in three radiological syndromes: bronchopneumonia, pleuropneumonia and interstitial pneumonia. Typical differential diagnostic signs of community-acquired pneumonia are:

– clinical signs of acute respiratory disease with intoxication and respiratory syndromes at the time of the examination or shortly before the examination;

– positive dynamics in 2-3 weeks with x-ray confirmation after antibiotic therapy.

Depending on the results of the adequate treatment, the following variants of the course of pneumonia can be distinguished: with an adequate response to treatment, slowly resolving, without response to treatment (persistent and progressing).

For slowly resolving / not resolving community-acquired pneumonia, the following is characteristic:

– on radiographs, focal-infiltrative changes in the lungs persist for a long time (more than 4 weeks);

– slow regression of radiological changes in immunocompetent patients with adequate antibiotic therapy (reduction of pneumonic infiltration by less than 50% by the end of the second week and incomplete resolution by the end of the 4th week from the onset of the disease).

The main causes of "slowly resolving / not resolving community-acquired pneumonia are:

– *Properties of the pathogen itself* (special virulence, co-infection, resistance to antibacterial drugs, etc.);

– *Patient-related risk factors*:

— age over 50 years;

— the presence of concomitant diseases (chronic heart failure, diabetes mellitus, chronic obstructive pulmonary disease, chronic renal failure, etc.);

— smoking, alcoholism;

— immunodeficiency conditions / diseases;

– *Related to the disease itself*:

— severe course of community-acquired pneumonia;

— the presence of complications (pleurisy, empyema, abscess);

— secondary bacteremia;

Alternative diagnoses also exist. For example, infiltrative pulmonary tuberculosis, adenocarcinoma with creeping growth (bronchoalveolar cancer), lung metastases,

lymphoproliferative diseases, pulmonary embolism and pulmonary infarction, immunopathological diseases (lupus pneumonitis, eosinophilic pneumonia [3, c. 129], systemic heart failure, drug pneumonitis, sarcoidosis, atelectasis, primary immunodeficiency states [4, p. 1837].

Nodular (focal) organizing pneumonia is formed against a background of protracted infectious pneumonia, characterized by the following manifestations:

– infiltrate or single focal formation;
– more often located in the upper lobe of the lung;
– a cavity may form inside the formation.

With organizing pneumonia, a delay in sputum evacuation is observed, the inflammatory process continues, in the bronchioles and alveoli, growths form in the form of polyps, and sputum evacuation is difficult. Organizing pneumonia as a pattern is a chronic inflammatory process with microabscesses and fibrosis. This clinical form may pose a problem in the differential diagnosis of infiltrative pulmonary tuberculosis.

Thus, in false cases, cooperation of doctors of several specialties is necessary, first of all, a family doctor, therapist, TB specialist, oncologist, pulmonologist, endoscopist, thoracic surgeon to establish the final clinical diagnosis as soon as possible [5, p. 828]. Morphological verification is necessary if previous research methods do not confirm the diagnosis.

REFERENCES

1. Jared Eddy, Taimur Chan, Frank Schembry. Medical management of drug-sensitive active thoracic tuberculosis: the work-up, radiographic findings and treatment. J Thorac Dis. 2018 Oct; 10 (Suppl 28): S.3378-91. doi:10.21037/jtd.20ual 18.08.84.

2. Patompong Ungprasert, Jay H. Ryu, Eric L. Matteson. Clinical Manifestations, Diagnosis and Treatment of Sarcoidosis. Mayo Clin Proc Innov Qual Outcomes.

2019 Sep ; 3(3): 358-375. Published online 2019 Aug 2. doi: 10.1016/j.mayocpigo 2019.04.

3. Nives Zimmermann, Kathryn A Wikenheiser-Brocamp. Hypereosinophilic Syndrome in the Differential Diagnosis of Pulmonary Infiltrates with Eosinophilia. Asthma Immunol; 121(2): 179-85. Doi: 10.116/j.anai.2018.05.014.

4. Ulrich Baumann, John M. Routes, Pere Soler-Palasin. The Lung in Primary Immunodeficiencies: New Concepts in Infection and Inflammation. Front Immunol. 2018; 9:1837. Published online 2018 Aug 8. doi: 10.3389/fummu.2018. 01837.

5. Muacevic A, Adler J R. A Case of Enigmatic Pulmonary Infiltrate. Current. 2016 Oct; 8(10): e 828. Published online 2016 Oct 13. doi: 10. 7759/cureus. 828.