

**"Approved"**  
**at a meeting of the Department of General  
Surgery, Radiation Medicine and Phthisiology**

Protocol № \_\_\_\_\_

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**METHODOLOGICAL RECOMMENDATIONS FOR TEACHERS  
FOR THE PRACTICAL STUDIES OF PREPARATION FOR  
PHTHISIOLOGY GENERAL PRACTITIONERS**

<i>Academic discipline</i>	Phthisiology
<i>Subject lesson number 5</i>	Infiltrative pulmonary tuberculosis. Pathogenesis, pathomorphism, clinic, diagnostics. Peculiarities of diagnostics and treatment in HIV-infected persons. Current treatment regimens according to the spectrum resistance MBT.
<i>Course</i>	4

**Topic № 5: Infiltrative pulmonary tuberculosis. Pathogenesis, pathomorphism, clinic, diagnostics. Peculiarities of diagnostics and treatment in HIV-infected persons. Current treatment regimens according to the spectrum resistance MBT.**

***Currency of the topic***

Nowadays tuberculosis is one of the most actual problem of the humanity because the increasing of the morbidity is marked all over the world. Everyday approximately 10 millions new cases of tuberculosis are found that's why WHO declared tuberculosis as a global danger in 1993. Tuberculosis is the most wide-spread infectious disease and takes the first place in the structure of mortality from the infectious pathology .The morbidity increases mainly due to secondary destructive forms of tuberculosis, including the cases with bacilli excretion. The frequency of drug- resistant tuberculosis also increases. It' s well known that secondary forms of tuberculosis develop in previously infected body as a result of endogenous reactivation of old calcified tuberculous lesions. Reactivation of post-tuberculous changes is caused by the reversion of Mycobacterium tuberculosis (MBT) as a result of malnutrition, stress situations, hyper-solaration, debilitating diseases, HIVinfection and other medical and social provoked factors leading to the immunity decreasing.

Timely detection of secondary tuberculosis, adequate intensive treatment and the prevention of the disease allow decreasing the morbidity of tuberculosis.

**General goal** to create the conditions for students ensuring the successful getting of the knowledge and skills allowing to diagnose infiltrative tuberculosis and analyze obtained results.

**The concrete aims:**

1. To generalize results of the interrogatory of a patient, data of physical examination and investigations with infiltrative tuberculosis.
2. To identify the main syndromes of different clinical forms of infiltrative tuberculosis.
3. To establish the diagnosis of infiltrative tuberculosis on the ground of obtained results of the examination.
4. To formulate clinical diagnosis of infiltrative tuberculosis according to classification.
5. To prescribe complex treatment in different clinical forms infiltrative tuberculosis.
6. To diagnose the complications of infiltrative tuberculosis and to perform a first aid in urgent states of a patient.

**4. Basic knowledge and skills are necessary for topic studying**

To achieve the concrete aims the student has to muster following knowledge and skills:

1. To be able to perform the interrogatory of TB- patient.
2. To be able to carry out the inspection of the chest;
3. To define the chest's form;

4. To detect the chest's deformation, the lagging of one side during the breathing.

5. To be able to carry out the palpation, percussion and auscultation of the chest.

6. To give clinical estimation of the obtained data and to define the pathogenesis of revealed symptoms.

7. To be able to generalize obtained results.

8. To know the genesis of every clinical form of infiltrative TB.

9. To be able to define the concrete syndromes of the involvement of the lungs in secondary tuberculosis.

10. To identify the causative organism of tuberculosis, their types. To describe the main properties of Mycobacterium tuberculosis (MBT), to apply methods of the detection of MBT.

11. To describe the peculiarities of path morphological changes in internal organs in tuberculosis.

12. To classify antituberculous drugs and to use them in the treatment of infiltrative tuberculosis.

### **The tasks for student's independent work during the preparation for the class.**

The list of the main terms, parameters, characteristics which a student has to muster during the preparation for the class.

1.Secondary tuberculosis Secondary tuberculosis is a disease developing in previously TB-infected body.

2.Infiltrative pulmonary tuberculosis Infiltrative pulmonary tuberculosis is a clinical form of tuberculosis characterized by the presence of the focus of specific inflammation more than 1 cm in the diameter mainly of exudative type tending to the fast formation of the necrosis and the cavern.

4.Caseous pneumonia Caseous pneumonia is a clinical form of pulmonary tuberculosis characterized by an acute specific inflammation with fast increasing of caseous-necrotic changes involving the lobe of the lung or a whole lung, severe clinical duration frequent fatal outcome.

### **Practical tasks, which are doing withing the class.**

1. To work out the plan of the talk with the patient suffering from pulmonary tuberculosis; to reflect in it the cause of the disease, the peculiarity of the disease duration, the necessity of prolonged treatment, treatment response.

2. To put the questions for the examination of the patient: to analyze general and respiratory complains, the peculiarities of the start and further development of the disease in concrete patient.

3. To perform physical examination of the patient suffering from pulmonary tuberculosis and to work out the plan of patient's examination.

4. To make the diagnosis on the ground of the data of examination and investigations indicating the type of tuberculous process, localization, clinical form, presence of the cavern, bacilli excretion, drug sensitivity of MBT, results of histological confirmation of the diagnosis, category, cohort and complications.

### **Contents of the topic**

Secondary tuberculosis develops in body previously infected by MBT, clinical manifestations of secondary tuberculosis mostly depend on its clinical form, phase of tuberculosis. Sometimes general and respiratory complaints can be absent. When destructive and exudative changes are present manifestations of intoxication and respiratory complaints take place.

Infiltrative pulmonary tuberculosis is a clinical form of tuberculosis characterized by the prevalence of exudative inflammatory reaction and significant clinical manifestation with the tendency to cavitation. There are 6 types of infiltrates: round, lobar, lobular, cloud-like, false-tumorous ones and periscissuritis. The progression of the infiltrate can lead to cavitation and seeding tuberculous lesions both in lungs and in other organs and systems.

One of the most severe clinical forms of secondary tuberculosis is caseous pneumonia presenting as an acute specific inflammation characterized by fast developing caseous-necrotic changes and sometimes leading to a fatal outcome. Benign outcome of this clinical form can be its conversion into chronic fibrocavernous pulmonary tuberculosis.

### **Materials for self - control**

1.

35-year-old woman suffering from diabetes mellitus presented with a fever up to 38°C, dry cough. Broad-spectrum antibiotics showed no effect but produced a rash. CBC: RBC -  $4.2 \times 10^{12}$  /L, Hb - 130 g/L, WBC -  $99 \times 10^9$  /L, eosinophil -3%, band neutrophil -4%, segmented neutrophil -67%, lymphocyte-18%, monocyte -8%, ESR - 32 m.m/hour. Chest X-ray shows a consolidation area 3 cm in diameter in the left upper zone with hazy borders, not homogenous, connected to the lung root. Auscultation revealed diminished breath sounds in the same area. What's the most likely diagnosis?

- A. Eosinophilic pneumonia.
- B. Tuberculoma.
- C. Infiltrative tuberculosis.
- D. Lung abscess.
- E. Lung cancer.

2.

65-year-old woman suffering from diabetes mellitus presented with a fever up to 38°C, dry cough. Chest X-ray shows a triangular opacity in the right upper zone which apex is turned to the hilum. The lower border of the opacity is clear whereas upper - hazy. Around there are some satellite foci of low density and hazy borders. What's the most likely diagnosis?

- A. Interlobar pleurisy.
- B. Lung abscess.
- C. Lung cancer.
- D. Community acquired pneumonia.
- E. Infiltrative tuberculosis.

3.

50-year-old patient is brought to the emergency care unit complaining of pain in the left side, dyspnea, fever up to 38°C, dry cough. The disease started gradually two weeks before. In childhood suffered from tuberculosis of bronchial lymph nodes. Affected side is behind the breathing. Percussion and auscultation revealed dullness and absent breathing in this area correspondently. Right heart border is shifted to the right. P 98/mm, constant fibrillation. AFB haven't been revealed in sputum. Mantoux skin test 5 TU PPD-S – papule 16 mm in diameter. What's the most likely diagnosis?

- A. Tubercle pleurisy.
- B. Lung cancer.
- C. Infiltrative tuberculosis.
- D. Pulmonary embolism.
- E. Community acquired pneumonia.

4.

27-year-old patient complains of malaise, weight loss, productive cough with the mucoid sputum, T 37.2-37.5°C. On examination no abnormalities have been revealed. CBC: WBC -  $9,2 \times 10^9/L$ , lymphocyte-14%, ESR - 25 mm/hour. Mantoux skin test 5 TU PPD-S – papule 10 mm in diameter. Chest X-ray: several nodules of low density and hazy borders in the I-II right segments. What disease must be suspected?

- A. Infiltrative tuberculosis.
- B. Community acquired pneumonia.
- C. Focal tuberculosis
- D. Disseminative tuberculosis.
- E. Tuberculosis residuals.

5.

20-year-old patient has been ill for a week. Presented with complaints of fever up to 38.2-39.5°C, constant dry cough, night sweating, dyspnea. The disease started suddenly from sharp pain in chest right side aggravating while coughing, deep breathing. At the moment pain is much weaker. On examination: left side the dull percussion sound is heard up to IV rib, where the breathing is weakened significantly. Chest X-ray showed right side subtotal homogenous opacity with the upper oblique border. Mediastinum is shifted to the left. What's the most likely diagnosis?

- A. Community acquired pneumonia.
- B. Pleurisy.
- C. Pleurocirrhosis.
- D. Infiltrative tuberculosis.
- E. Spondylitis.

6.

22-year-old patient presented with right-side pleurisy. Chest X-ray showed left side opacity up to the IV rib with the upper oblique border. In the left lung S2 several foci of moderate density with hazy borders are visible. Mantoux skin test – 14 mm

papule with vesicles around. Pleural fluid test: protein level increased, lymphocytes are the predominant cell type. What is the most likely etiology?

- A. Tuberculosis.
- B. Lung cancer.
- C. Community acquired pneumonia.
- D. Collagenosis.
- E. Pleural mesothelioma.

7

26-year-old coal miner with the occupational seniority of 4 years has been complaining of dyspnea and malaise for several weeks. Chest X-ray revealed total nodulation with the nodule diameter up to 4 mm. In right S1 an infiltrative area of 3 cm in diameter with hazy borders appears. What could it be more likely due to?

- A. Disseminated lung cancer.
- B. Sarcoidosis.
- C. Pneumoconiosis.
- D. Coniotuberculosis.
- E. Tuberculosis.

8 At 38-year-old symptom-free man solitary 5 cm opacity of moderate density with the crescent lucency and defined borders in the left lung S2 the has been revealed. Which clinical type of TB is the most probable?

- A. Fibrous-cavernous.
- B. Infiltrative.
- C. Focal.
- D. Residual.
- E. Tuberculoma.

9.

40-year-old patient fell ill after supercooling. Fever up to 39°C, cough with sputum of stinking odor appeared. In the right upper zone bubbling rales are heard. CBC: WBC –  $17.9 \times 10^9 / L$ , eosinophil -3%, band neutrophil -12%, segmented neutrophil -60%, lymphocyte-17%, monocyte -8%, ESR - 52 mm/hour. Chest X-ray showed 3 cm opacity in the right lung S3 of moderate density with hazy regular borders and lucency inside. What's the most likely diagnosis?

- A. Destructive pneumonia.
- B. Infiltrative tuberculosis.
- C. Lung cancer.
- D. Tuberculoma.
- E. Lung cyst.

10.

22-year-old smoker complains of malaise, weakness, tiredness, sweating. On physical examination no abnormality detected. Chest X-ray showed an opacity in the left lung apex of moderate density with hazy borders and several satellite foci of low density around. What's the most likely diagnosis?

- A. Focal pulmonary tuberculosis.
- B. Infiltrative tuberculosis.
- C. Community acquired pneumonia.
- D. Primary tubercle complex.
- E. Tuberculoma.

11.

Patient is presented with tuberculosis. Chest X-ray showed 3.5 cm opacity in the right lung S2 with hazy borders and lucency inside. Define the process phase.

- A. Infiltration.
- B. Consolidation.
- C. Infiltration and decay.
- D. Decay.
- E. Dissemination and decay.

**The patterns of answers:**

**1 C 2E 3A 4C 5 B 6A 7 E 8 E 9 A 10 B 11 C**