

"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 7</i>	Spherical formations in the lungs. 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 № 7: Spherical formations in the lungs. 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, HIV infection 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 tuberculoma.
2. To identify the main syndromes of different clinical forms of tuberculoma.
3. To establish the diagnosis of tuberculoma on the ground of obtained results of the examination.
4. To formulate clinical diagnosis of tuberculoma according to classification.
5. To prescribe complex treatment in different clinical forms of tuberculoma.
6. To diagnose the complications of tuberculoma 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 tuberculoma.

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 tuberculoma.

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. Tuberculoma of the lung Tuberculoma is a clinical form of tuberculosis characterized by the isolated rounded focus of caseous necrosis more than 1 cm in the diameter usually encapsulate with chronic torpid clinical duration.

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 it's clinical form, phase of tuberculosis. Sometimes general and respiratory complains can be absent. When destructive and exudative changes are present manifestations of intoxication and respiratory complains take place.

Tuberculoma imply encapsulate foci of caseous necrosis of different genesis more than 1cm in the diameter with chronic torpid duration. The classification of

tuberculoma suggested by Averbah M.M. is established on ground of morphological principle:

- a) solitary tuberculoma filled in by the caseous mass;
- b) flaky tuberculoma with the layers of caseous necrosis alternated with the layers of connective tissue ;
- c) conglomerated tuberculoma consisting of the group of lesions surrounded by common capsule, this usually takes place in the regression of the process.
- d) “blocked cavern” - is the cavern filled in by caseous mass when the wall of the cavern become the capsule of tuberculoma.

Clinical duration of tuberculoma can be of progressive, stable and regressive types.

Materials for self - control

13

38-year-old patient complains of subfebrile temperature, sweating, productive cough with sputum quantity up to 50 ml. Chest X-ray shows the cavity in the lower zone of right lung containing not much liquid and surrounded by 0.5-1.5 cm satellite shadows. In the right hilum there are calcified lymph nodes. Intensive broad-spectrum antibiotics showed no effect. What's the most likely diagnosis?

- A. Lung abscess.
- B. Tuberculosis.
- C. Bronchoectasis.
- D. Lung cancer.
- E. Suppurated cyst.

18

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.

20.

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.

24.

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.

26.

18-year-old male presented with focal shadows of high density with distinct borders on the right lung apex. Last Mantoux skin test has been performed two year ago; papule size 17 mm. At the moment tuberculin test showed 5 mm result. Clinical and lab examination detected no abnormality. What's the most likely diagnosis?

- A. Focal tuberculosis in the infiltration phase.
- B. Focal tuberculosis in the consolidation phase.
- C. Community acquired pneumonia.
- D. Focal tuberculosis in the calcination phase.
- E. Conglomerative tuberculoma.

27.

32-year-old alcohol abuser fell ill after supercooling. Fever up to 40° C, cough with 200ml/day sputum expectorating appeared. In the right lung lower zone bubbling rales are heard. CBC: WBC – $18.0 \times 10^9/L$, eosinophil -3%, band neutrophil -8%, segmented neutrophil -64%, lymphocyte-15%, monocyte -10%, ESR - 45 mm/hour. Chest X-ray showed 6 cm thick-walls cavity with horizontal fluid level in the right lung S10. What's the most likely diagnosis?

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

54.

45-year-old patient is been treated for caseous pneumonia within 10 month. Now sputum is smear-positive. Chest X-ray shows opacity in diminished right upper lobe, right hilum is elevated. No cavities revealed. Which clinical type of TB is it now?

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

59.

28-year-old symptom-free male presented with several large nodules of moderate density with hazy borders in right lung S1-2. Physical examination, blood test and sputum ZN-staining detected no abnormalities. Mantoux skin test with 5 TU - 15 mm. Pulmonary tuberculosis is suspected. Which clinical form of the disease is the most likely?

- A. Tuberculoma.
- B. Infiltrative tuberculosis.
- C. Focal tuberculosis.
- D. Disseminated tuberculosis.
- E. Tuberculosis residuals.

61.

28-year-old asymptomatic male presented having 2 cm round homogenous shadow with clear borders of high density on the right lung apex. Physical and routine laboratory examination showed no abnormalities. Mantoux skin test - papule 18 mm in diameter. What's the most likely diagnosis?

- A. Lung cancer.
- B. Tuberculoma.
- C. Angioma.
- D. Aspergillus mycetoma.
- E. Community acquired pneumonia.

68.

Screening chest X-ray of 27-year-old symptom-free female detected round 2.5 cm homogenic opacity of high density with distinct regular borders and several foci around in the left lung S1-2. CBC: Hb - 120 g/L, WBC – 6.9×10^9 /L, eosinophil - 3%, band neutrophil - 5%, segmented neutrophil - 65%, lymphocyte-23%, monocyte -4%, ESR - 2 mm/hour. Mantoux skin test showed the papule of 15 mm. What's the most likely diagnosis?

- A. Community acquired pneumonia.
- B. Pulmonary abscess.
- C. Focal tuberculosis.
- D. Lung cancer.
- E. Tuberculoma.

The patterns of answers:

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