

**"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 8</i>	Fibro-cavernous and cirrhotic lung 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 № 8: Fibro-cavernous and cirrhotic lung 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 fibro-cavernous and cirrhotic 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 fibro-cavernous and cirrhotic tuberculosis.
2. To identify the main syndromes of different clinical forms of fibro-cavernous and cirrhotic tuberculosis.
3. To establish the diagnosis of fibro-cavernous and cirrhotic tuberculosis on the ground of obtained results of the examination.
4. To formulate clinical diagnosis of fibro-cavernous and cirrhotic tuberculosis according to classification.
5. To prescribe complex treatment in different clinical forms fibro-cavernous and cirrhotic tuberculosis.
6. To diagnose the complications of fibro-cavernous and cirrhotic 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 fibro-cavernous and cirrhotic 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 fibro-cavernous and cirrhotic 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. Fibrous cavernous pulmonary tuberculosis Fibrous-cavernous tuberculosis characterized by the presence of an old fibrous cavern, gross fibrosis changes in lung parenchyma around the cavity and lesions of bronchogenic dissemination. This clinical form is distinguished by chronic duration with periods of remission and exacerbation, persistent or periodical bacilli excretion.

3. Cirrhotic pulmonary tuberculosis Cirrhotic pulmonary tuberculosis characterized by the extensive development of the connective tissue in the lungs due to the involution of different clinical forms of tuberculosis or tuberculous pleurisy with the remaining of clinical and laboratory signs of active tuberculous disease.

**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.

The final stage of secondary pulmonary tuberculosis duration is fibrous-cavernous tuberculosis characterized by the presence of old fibrous capsule, gross fibrous changes in surrounded lung parenchyma, bronchogenous dissemination and chronic wavy duration. Clinical duration has 4 variants as following:

1. Self-limited and relatively stable process.
2. Slowly progressive process.
3. Fast progressive process.
4. Fibrous-cavernous tuberculosis followed by different complications: chronic cor pulmonale; amyloidosis of internal organs; haemoptysis; lung hemorrhage; spontaneous pneumothorax; pleural empyema.

Other clinical form of chronic secondary tuberculosis is cirrhotic tuberculosis characterized by extensive development of connective tissue as a result of involution of different clinical form of tuberculosis or specific pleurisy with the remaining of the clinical and laboratal sighs of active pulmonary tuberculosis. Scanty bacilli excretion periodically is present. There are bronchial deformation with bronchiectasis and emphysematous bullas within the cirrhosis. These changes frequently complicate the duration of the disease by spontaneous pneumothorax, haemoptysis, the hypertension in pulmonary circulation of the blood due to the reduction of the vessels with the formation of chronic cor pulmonale.

Clinical picture of cirrhotic tuberculosis is varied. There are 5 variants of cirrhotic tuberculosis:

1. Self-limited cirrhotic tuberculosis with a few symptoms.
2. Self-limited or wide-spread cirrhotic tuberculosis with frequent exacerbations.
3. Cirrhotic tuberculosis with bronchiectasis and periodical haemoptysis and lung hemorrhage.
4. Cirrhotic tuberculosis with the presence of "chronic cor pulmonale" and different manifestations of lung and pulmonary-cardiac insufficiency.
5. "Destroyed lung" with the progression of tuberculous process and different manifestations of metatuberculous syndrome.

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

1

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.

2

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.

3.

Screening chest X-ray of 36-year-old man revealed bilateral dissemination mostly in upper zones with polymorphous nodules of different density on the pneumosclerotic background. Which clinical type of TB is the most probable?

- A. Subacute disseminated.
- B. Chronic disseminated.
- C. Miliary.
- D. Residuals.
- E. Fibrous-cavernous.

4.

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 – 18.0×10<sup>9</sup>/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.

5.

50-year-old patient complains of fever up to 38°C, cough with mucous sputum, dyspnea. Hasn't undergone X-ray examination for 7 year. Chest X-ray

showed thick-walls 3×5 cm cavity on the right lung apex. The interlobar fissure and right hilum are elevated. Mediastinum is shifted to the right. In the lower zones of both lungs there a lot of low-density focal shadows. The diagnosis of pulmonary tuberculosis established. What's the most likely clinical type of the disease?

- A. Infiltrative.
- B. Chronic disseminated.
- C. Cirrhotic.
- D. Fibrous-cavernous.
- E. Subacute disseminated.

6.

48-year-old patient complains of dyspnea, fever up to 38°C, weight loss, weakness, productive cough with mucoid sputum. The condition worsened gradually within a year. Hasn't undergone screening X-ray for 6 year. On examination: right hemithorax lags behind the breathing, percussion revealed dull sound over right upper lung zone, auscultation showed bronchial breathing and rare moisture rales in this area. ZN sputum test showed positive result. CBC: Hb - 100 g/L, WBC –  $9.0 \times 10^9$  /L, eosinophil - 3%, band neutrophil - 7%, segmented neutrophil - 65%, lymphocyte - 20%, monocyte - 5%, ESR - 28 mm/hour. Chest X-ray revealed cavity 5×4 cm in diameter with thick walls surrounded by advanced fibrotic area and polymorphic foci in the diminished right upper lobe. Which tuberculosis clinical type is the most likely?

- A. Subacute disseminated. 14
- B. Fibrous-cavernous.
- C. Caseous pneumonia.
- D. Infiltrative.
- E. Chronic disseminated.

7.

38-year-old patient is complaining of dyspnea, subfebrile temperature, weight loss, weakness, productive cough with mucoid sputum for 4 months. Hasn't undergone screening X-ray for 7 year. On examination: auscultation showed bronchial breathing, rare moisture and dry rales throughout lung fields. CBC: Hb - 100 g/L, WBC –  $9.0 \times 10^9$  /L, eosinophil - 3%, band neutrophil - 7%, segmented neutrophil - 65%, lymphocyte - 20%, monocyte - 5%, ESR - 32 mm/hour. Chest X-ray: multiple polymorphic foci of different shape, size and density at the advanced fibrotic background. Which of tuberculosis clinical types is the most likely?

- A. Fibrous-cavernous.
- B. Chronic disseminated.
- C. Caseous pneumonia.
- D. Infiltrative.
- E. Subacute disseminated.

8.

40-year-old patient presented with fever up to 38°C, chest pain, cough with muco-purulent sputum, sweating, weakness. Fell ill 3 weeks before. On examination: RR 20/min, P 98/min. On auscultation: moisture rales at a weakened breathing background in the right subclavian area detected. CBC: Hb 100 g/L, WBC –  $13.4 \times 10^9$  /L, eosinophil - 3%, band neutrophil - 10%, segmented neutrophil - 58%, lymphocyte - 24%, monocyte - 5%, ESR - 35 mm/hour. Sputum ZN-staining showed negative results. Mantoux skin test showed papule of 15 mm. Chest X-ray detected nonhomogenous opacity of the right lung upper lobe with hazy borders and lucency inside. A group of small low density foci is detected left-side, in the S1-2. What's the most likely diagnosis?

- A. Infiltrative tuberculosis at the phase of decay and dissemination.
- B. Disseminated tuberculosis at the phase of the decay.
- C. Fibrous-cavernous tuberculosis at the phase of the dissemination.
- D. Suppurated lung cyst.
- E. Community acquired pneumonia.

9.

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.

10.

42-year-old patient presented with subfebrile temperature, malaise, shortness of breathing on moderate exertion, dry cough within 3 month. Physical examination detected mixed breathing over lung fields. Plain X-ray showed fusing foci of moderate density throughout upper lung zones and symmetric thin-walls cavities on both apices. Sputum ZN-staining showed positive result. Which clinical type of tuberculosis is the most probable?

- A. Subacute disseminated.
- B. Miliary.
- C. Fibrous-cavernous.
- D. Chronic disseminated.
- E. Cirrhotic.

**The patterns of answers:**

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