TOPIC OF THE PRACTICAL LESSON № 3:
Disseminated tuberculosis. Miliary tuberculosis. Tuberculosis of nervous system. Tuberculous meningitis. Pathogenesis, pathomorphology, clinic, diagnosis, differential diagnosis, treatment, consequences.

Actuality of theme. Depending on the severity and virulence of the infection, resistance of the organism develop disseminated processes, different in their own way prevalence and severity - from asymptomatic limited to common, with an acute progressive course. If acute miliary tuberculosis not diagnosed, etiotropic treatment is not performed, the process is continuous progresses and patients die from severe intoxication and pulmonary heart failure after about 30 - 40 days from onset disease. Regarding tuberculous meningitis and meningoencephalitis, then in recent years, their number has increased significantly, especially among children population, and is often the cause of death of children.

The purpose of the lesson: to teach students on the basis of anamnesis, clinical, radiological and other auxiliary methods of examination to diagnose disseminated tuberculosis, tuberculous meningitis and prescribe appropriate treatment.

The student must know:
- pathogenesis of disseminated tuberculosis, tuberculosis of the nervous system and meninges;
- clinical picture, course, diagnostic methods, complications; ëdifferential diagnosis of acute, subacute, chronic disseminated tuberculosis, tuberculosis of the nervous system and cerebral shells;
- principles of treatment of disseminated pulmonary tuberculosis, tuberculosis nervous system and meninges.

The student must be able to:
- collect a history of the disease;
- examine the patient and identify the main symptoms of the disease;
- to detect and interpret pathological changes on chest radiographs, draw up a protocol of X-ray examination;
- evaluate the results of tuberculin tests and other laboratory tests research;
- interpret the results of the study of cerebrospinal fluid;
- substantiate the clinical diagnosis according to the classification;
- to conduct a differential diagnosis of the disease;
- prescribe treatment to the patient.

Interdisciplinary integration.

Subject	Know	Be able
Previous:		
Anatomy	Respiratory anatomy.	
Physiology	Respiratory physiology.	
Microbiology	Morphological structure, properties, pathogenicity and virulence of MBT, their methods detection in sputum and others pathological materials.	Collect material for bacteriological research. Evaluate the results obtained.
Pathological anatomy	Pathomorphological changes in organs breathing in tuberculosis.	
Pathological physiology	Pathophysiology of diseases respiratory system.	
Pharmacology	Classification and mechanisms of action anti-TB drugs.	
Propaedeutics internal diseases	Methodology of the objective examination of the patient.	Make objective examination of the patient, evaluate the results obtained.
Radiology	Radiological signs and syndromes.	Interpret data radiological examination.
The following:		
Internal medicine	Clinical manifestations and radiological picture at ilateral focal pneumonia, alveolitis, collagenosis, circulatory failure..	Differentiate from disseminated tuberculosis.
Oncology	Clinical manifestations and radiological picture of lung carcinomatosis.	Differentiate from disseminated tuberculosis.
Infectious diseases	Clinical manifestations and changes in cerebrospinal fluid in bacterial and viral meningitis.	Differentiate from tuberculosis meningitis.
Intra-subject integration:	Clinical manifestations, radiological picture of other clinical forms tuberculosis.	Differentiate from disseminated tuberculosis.

Content of the lesson topic:

Disseminated pulmonary tuberculosis, pathogenesis, pathomorphology. Clinical variants of the course (acute, subacute, chronic), clinic, diagnosis and treatment of disseminated tuberculosis. Complications of disseminated tuberculosis (pleurisy, lesions

larynx and other organs). Differential diagnosis of disseminated pulmonary tuberculosis with sarcoidosis, bacterial and viral pneumonia, pneumoconiosis, tumor and other disseminations

Pathogenesis of tuberculosis of the nervous system and meninges, features of diagnosis and course. Methods of examination of the patient tuberculous meningitis. Spinal tap and interpretation the results of the study of cerebrospinal fluid. Differential diagnosis of tuberculous meningitis with meningitis of other etiology.

Treatment of patients with tuberculous meningitis.

Plan and organizational structure of the lesson:

Preparatory stage (10-20% of working time): organization of classes, goal setting, control of the initial level of knowledge.

The main stage (60-90% of working time): the formation of professional skills and skills. Students independently and under the supervision of the teacher carry out supervision of the patient, collect the anamnesis, master the skills of the objective review, describe and interpret radiographs, substantiate clinical diagnosis.

The final stage (10-20% of working time): level control and correction professional skills and abilities, summarizing, homework.

Materials of methodical providing of employment.

Test control.

1. What organoleptic properties are most characteristic of the spinal cord fluid in tuberculous meningitis?

A. Clear liquid.

B. Clear or slightly opalescent liquid, fibrin falls out when standing in the form of threads or a thin film.

C. Turbid fluid with flakes or hemorrhagic clots.

D. Purulent fluid, when standing precipitates with the inclusion of green or rusty color.

E. Liquid in the form of meat slops.

2. A 40-year-old patient was referred to a TB doctor with complaints of weakness, fever up to 38.8°C, cough with sputum, pain throat. The condition gradually deteriorated over three weeks. Radiologically: in the lungs of low and medium intensity shadow 5-10 mm in size with fuzzy contours that merge in places. In S1 right lung - a thin-walled cavity. The roots of the lungs are not changed. For which forms of pulmonary tuberculosis are characterized by such clinical and radiological data?

A. Disseminated tuberculosis (chronic).

B. Primary tuberculosis complex.

C. Disseminated tuberculosis (subacute).

D. Miliary tuberculosis (pulmonary form).

E. Miliary tuberculosis (septic form).

3. A 56-year-old patient was diagnosed FDTB (10.10.2020) lungs (disseminated), Destr.(-), MTB+, M-, C+, Hist0, Cat1, Coh3, (2020). Review radiograph: on the background of fibrous altered pulmonary pattern are defined mainly in the upper parts, dense multiple focal shadows of different sizes. Lower pulmonary fields of increased transparency. Roots lungs pulled up. What percussion data will correspond to the radiological changes in the patient?
A. Blunting over the lower lungs, tympanitis over the upper.
B. Blunting over the upper lungs, tympanitis over the lower.
C. Blunting over the entire surface of the lungs.
D. Tympanitis over the entire surface of the lungs.
E. Pulmonary sound is unchanged.

4. What is the result of the Mantoux test with 2 TU is characteristic of the deployed clinical picture of miliary tuberculosis?
A. Negative.
V. Doubtful.
C. Positive.
D. Hyperergic.
E. The results are different.

5. A 35-year-old man was diagnosed with miliary pulmonary tuberculosis infiltration phase, MBT(-). To which category of treatment should be attributed the patient?
A. Up to 3.
B. Up to 1.
C. Up to 2.
D. Up to 4.
E. Up to 5.1.

6. A 48-year-old patient was diagnosed with FDTB (17.02.2021) lungs (disseminated), Destr.+, MTB+, M+, C+, ResistI-, ResistII0, Hist0, Cat1, Coh4 (2021). What treatment regimen should be prescribed in intensive care phase?
A. Isoniazid + Rifampicin + Streptomycin + Pyrazinamide.
B. Isoniazid + Rifampicin + Pyrazinamide.
C. Isoniazid + Ethambutol + Streptomycin + Pyrazinamide.
D. Isoniazid + Rifampicin + Streptomycin.
E. Rifampicin + Streptomycin + Pyrazinamide + Ethambutol.

7. A 45-year-old patient complains of weakness, low-grade fever, weight loss, cough with a small amount of sputum, shortness of breath at physical activity. On the roentgenogram of lungs the center is found shadows of different sizes, medium intensity, which have fuzzy contours and in places merge. In SI-SII of the right lung - a cavity (2,0x2,0 cm). What are the features of the cavity in subacute disseminated pulmonary tuberculosis?
A. Thick-walled with fibrosis around.
B. Thin-walled, placed among fresh foci, infiltrates or little altered lung tissue.
C. Thick-walled, with a perifocal zone of inflammation around.
D. Thin-walled, with fibrosis around.
E. Thin-walled, located on the background of fibrous altered lung tissue and dense foci.

8. The patient is 57 years old. For 4 months notes a dry cough, lethargy, a slight increase in temperature. Blood test: leukocyte formula is normal, ESR - 25 mm/h. Radiologically: in both lungs in upper and middle sections of multiple, medium-sized focal shadows medium and high intensity, diffuse pneumosclerosis. What the disease is most likely found in a patient?
A. Nosocomial pneumonia.
B. Sarcoidosis.
C. Chronic disseminated tuberculosis.
D. Metastatic cancer.
E. Idiopathic fibrosing alveolitis.

9. A 3-year-old child was admitted to the hospital in serious condition: fever 39°C, respiratory rate 35 per minute, dry cough. About: but diffuse cyanosis, pulse - 140 beats per minute. Breathing is weakened. On the review radiograph: during the pulmonary fields symmetrical shadows with a diameter of 1-2 mm, low intensity, with blurred contours. The roots of the lungs do not changed. Mantoux test with 2 TU PPD-L - infiltrate 5 mm. Blood test: L -13.0 x 109/l, item - 10%, l. - 16%, ESR - 35 mm/h. What clinical form tuberculosis detected in a child?
A. Primary tuberculosis complex complicated by hematogenous dissemination.
B. Disseminated (subacute).
C. Tuberculosis of intrathoracic lymph nodes, complicated
bronchogenic dissemination.
D. Miliary tuberculosis.
E. Tuberculosis of the nervous system and meninges.

10. What factor is not a pathogenetic condition for the development of disseminated tuberculosis?
A. Bacteremia.
B. Hypersensitivity.

C. Increasing the permeability of the vascular wall.

D. Bronchial lesions.

E. The presence of a focus of tuberculosis infection in the body.

Approximate map for the organization of independent work of students with educational literature:

Educational tasks	Instructions for the task	Answer
Examine: Disseminated pulmonary tuberculosis	Pathogenesis and pathomorphology disseminated tuberculosis. Clinical variants of the course (acute, subacute. chronic) and them radiological signs.	
Acute (miliary) disseminated pulmonary tuberculosis	Pathogenesis and pathomorphology. Clinical options. Diagnosis. Differential diagnosis with miliary carcinomatosis, sepsis. Treatment. Consequences	
Subacute and chronic disseminated tuberculosis lungs	Pathogenesis pathomorphology. Clinic. Diagnosis. Differential diagnosis with nonspecific pneumonia, pneumoconiosis, carcinomatosis. Treatment. Consequences. Complications (pleurisy, lesions of the bronchi, larynx and others bodies).	
Treatment	Etiotropic chemotherapy, pathogenetic and symptomatic treatment. Residual changes after transferred disseminated pulmonary tuberculosis.	
Tuberculous meningitis	Pathogenesis and pathomorphology. Clinic. Features of diagnostics and current. Methods of examination the patient. Spinal tap and interpretation of results cerebrospinal examination liquid. Differential diagnostics. Treatment. Consequences. Forecast.	

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