

TOPIC OF THE PRACTICAL LESSON № 2:

Management of revealing of tuberculosis. Methods of detecting and diagnosing tuberculosis (x-ray, tuberculin skin test, gamma interferon test). Treatment of tuberculosis: basic principles. Anti-TB drugs. Standards drug regimens.

Actuality of theme. In recent years, tuberculosis has been on the rise in Ukraine threatening medical - social and national - economic problem, which is a national danger. Doctors of different profiles need it knowledge of recognizing this disease to prevent its spread tuberculosis and unification of approaches to the provision of tuberculosis care for the sick.

The purpose of the lesson: to teach students the methods of clinical examination of patients on pulmonary tuberculosis and correct interpretation of the obtained data; elements of deontology in communication with patients; develop skills recognition of clinical and radiological forms of pulmonary tuberculosis in accordance with modern classification. Introduce students to radiological, laboratory methods of tuberculosis diagnosis lungs, to teach students tuberculin diagnosis, staging techniques tuberculin tests, evaluate their results, help to master skills of functional research of the external respiratory system.

The student must know:

- local and general symptoms of pulmonary tuberculosis;
- X-ray image of the chest in different projections norm;
- the concept of “focus”, “infiltrate”, “cavity”, “fibrosis”, them radiological signs,
- clinical forms of pulmonary tuberculosis in the X-ray image;
- methods of bacteriological research;
- types of tuberculin and their features;
- indications and contraindications for Mantoux tuberculin tests and Koha;
- criteria for negative, positive and hypersensitive tuberculin reaction;
- tuberculin bend, definition, characteristics;
- post-vaccination and post-infection reaction to tuberculin;
- indicators of peripheral blood are normal and in inflammatory processes.

The student must be able to:

- collect patient complaints, medical history and life;
- identify people at increased risk of tuberculosis;
- examine the patient and identify the main symptoms of the disease;
- palpation, percussion and auscultation of the chest, interpret the obtained results;
- identify and explain pathological changes on radiographs;

- to study a smear from the patient's sputum under a microscope;
- evaluate the results of sputum sowing;
- to conduct and evaluate the Mantoux tuberculin test, based on its results identify individuals who need additional screening at tuberculosis;
- to estimate indicators of the general analysis of peripheral blood at various forms and phases of the tuberculous process;
- evaluate the results of spirometry;
- substantiate the clinical diagnosis according to the classification.

Interdisciplinary integration.

Subject	Know	Be able
Previous:		
Anatomy	Respiratory anatomy.	
Physiology	Respiratory physiology.	
Pathological physiology	Pathophysiology of diseases respiratory system.	
Microbiology	Morphological structure, properties, pathogenicity and virulence MBT, methods of their detection in sputum and other pathological materials.	Collect material for bacteriological research. Evaluate the results obtained.
Allergology and immunology	Immunity in tuberculosis. Immunological reactions are increased delayed type sensitivity. The concept of infectious and post-vaccine allergy.	Conduct and evaluate the Mantoux tuberculin test.
Propaedeutics internal diseases	Methodology of the objective examination of the patient. Methodology functional examination external respiratory system.	Make objective examination of the patient, evaluate the results obtained. Conduct functional pulmonary examination ventilation, gas exchange.
Radiology	X-ray features chest organs are normal and in pathology, radiological syndromes.	Detect radiological changes in the lungs.
The following:		
Internal medicine	Clinical manifestations and radiological picture respiratory diseases.	Do differential diagnostics lung diseases.
Intra-subject integration:	Clinical manifestations, radiological picture of different	Differentiate clinical forms tuberculosis, determine the

	shapes tuberculosis.	type localization, phase process, display it is in the diagnosis.
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Content of the lesson topic:

Methods of clinical examination of the patient.

Questioning. The variety of manifestations of pulmonary tuberculosis in depending on the stage and spread of the process. Clinical symptoms of the disease: a) associated with intoxication syndrome (fever, weakness, reduced efficiency, sweating, loss of appetite, loss body weight, sleep disturbances, irritability); b) local manifestations of the disease,

associated with lung damage (cough, sputum production, hemoptysis, chest pain, shortness of breath).

Anamnesis. The onset of the disease. Diseases transferred in the past ("Flu", recurrent pneumonia, concomitant diseases). Value contact with persons allocating MBT. Working and living conditions of the patient. Smoking, alcohol, drug addiction. Results and date preliminary fluorographic examination (in adults), information about BCG vaccination and the results of tuberculin testing (in children).

Objective survey data. Review. General condition. Provisions in bed. Body temperature. Consciousness, skin, visible mucous membranes. Subcutaneous fat. Edema. Peripheral lymph nodes. Head, neck, condition of the thyroid gland. Chest: shape, symmetry, uniformity of participation in the act of breathing. Palpation data (pain, tremor). Topographic and comparative data chest percussion. Auscultation: strength and nature of breathing, wheezing, crepitation, their localization, bronchophonia. Cardiovascular system. Apical push. Epigastric pulsation. Borders of the heart. Data auscultation. AT. Pulse.

Diseases of other organs that are accompanied by relevant clinical symptoms.

X-ray examination. Methods of X-ray examination patients with respiratory tuberculosis. X-ray -, tomo -, fluorography, radioscopy. X-ray image of normal breast organs cells in different projections. X-ray image of partial and segmental structure of the lungs. Clinical forms of pulmonary tuberculosis in X-ray image. Analysis of radiographs, tomograms, fluorogram. Computed tomography, bronchography, indications for their use, diagnostic value.

Tuberculin diagnosis. Mantoux tuberculin test with 2 TU PPD-L. Staging technique. Application of the Mantoux test to determine primary infection, early detection of tuberculosis. Selection of persons to be revaccinated. Using the Mantoux test for detection persons at increased risk of tuberculosis and those who require examination and supervision by a tuberculosis specialist. Infectious and post-vaccination sensitivity to tuberculin, differential diagnosis. Use of tuberculin tests for differential diagnosis tuberculosis with other diseases. Koch's test.

Microbiological research. Methods for detecting mycobacteria tuberculosis in sputum and other pathological materials, their significance results to confirm tuberculosis and differential diagnosis. Indications for microbiological examination of sputum and urine in persons with risk of tuberculosis. Variability of mycobacteria and their significance for the clinic and treatment tactics. Determination of the sensitivity of MBT to anti-TB drugs.

Tracheobronchoscopy. Methods of research by a bronchoscope. Indications for bronchoscopy in tuberculosis and other respiratory diseases. Histological and cytological examination of biopsies. Therapeutic bronchoscopy.

Blood and urine tests. Diagnostic value of changes of elements peripheral blood and ESR in different forms and phases of tuberculosis process. Study of urine analysis of patients with pulmonary, urinary and tuberculosis genital system, as well as patients with tuberculosis complicated by amyloid them nephrosis.

The value of *immunological tests* in the diagnosis of tuberculosis and determination activity.

Cytological and histological examination. Cytological examination pleural exudate, punctate, lymph node, lung and histological examination of lung tissue and other organs in tuberculosis and non-tuberculous lung diseases.

Functional study of the external system breathing. Functional tests of pulmonary ventilation, gas exchange and them use in the diagnosis of respiratory failure.

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 data are not taken into account when conducting differential diagnosis between infectious and post-vaccine reactions to tuberculin?

- A. Contact with patients with tuberculosis.
- B. The intensity of the reaction to the Mantoux test in previous years.
- C. The presence of a post-vaccine scar.

- D. Time of BCG vaccination.
- E. Presence of pneumonia in the anamnesis.

2. A two-year-old child has a reaction to the Mantoux test with 2 TU PPD-L - infiltrate with a diameter of 7 mm, in three years - 3 mm. Post-vaccination scar size 4 mm. What is the nature of the reaction to tuberculin is observed in children?

- A. Infectious allergies.
- B. "Turn" of the tuberculin reaction.
- C. A child with tuberculosis.
- D. Post-vaccination allergy.
- E. Mantoux reaction is positive.

3. A 35-year-old patient is being treated for TB dispensary for infiltrative tuberculosis of the upper left lobe lungs (lobite) in the decay phase. At physical inspection changes do not detected. How to properly breathe the patient to raise informativeness of the auscultation method?

- A. Breathe often.
- B. Breathe deeply.
- C. Strongly cough.
- D. Lightly cough and take a deep breath.
- E. Breathe with open mouth.

4. In a patient with pulmonary tuberculosis under the left shoulder blade are listened to mid-bubble rales. What do such changes indicate?

- A. Focal changes in lung tissue.
- B. Bronchitis.
- C. The presence of decay cavities.
- D. Spontaneous pneumothorax.
- E. Atelectasis.

5. At the patient of 20 years at fluorographic inspection at the apical-posterior segment of the left lung revealed an area of eclipse low intensity with fuzzy contours up to 1 cm in diameter. To which X-ray syndrome belongs to the identified education?

- A. Clarification syndrome.
- B. Round shadow syndrome.
- C. Focal shadow syndrome.
- D. Syndrome of altered pulmonary pattern.
- E. Dissemination syndrome.

6. The patient is 43 years old. Undergoing a course of antimycobacterial therapy with drive CTB (12.12.2019) of the upper lobe of the left lung (fibrocavernous, infiltration and contamination phase), Destr +, MBT + M + C+ Resist0, Hist0, Cat4 Coh4 (2019). What research is needed first to spend to the patient for appointment of an optimum combination chemotherapy?

- A. Determine the type of office.
- B. Determine the presence of secondary flora.
- C. Determine the sensitivity of MBT to antimycobacterial drugs.
- D. Determine the massiveness of bacterial excretion.
- E. Determine the virulence of MBT.

7. A 32-year-old patient was diagnosed with pulmonary TB (disseminated, phase of infiltration and decay), Destr + MBT+ M+ C+ Resist0, Hist0, Cat1 Coh1 (2020). Which method allows you to determine the sensitivity mycobacteria to anti-TB drugs?

- A. Bacterioscopic.
- B. Bacteriological.
- S. PCR.
- D. ELISA.
- E. Biological.

8. What is the value of vital capacity of the lungs in healthy people?

- A. 1000 - 3000 ml.
- B. 1500 - 3500 ml.
- S. 3500 - 5000ml.
- D. 6000 - 8000 ml.
- E. 500 - 800 ml.

9. The child is 3 years old. Vaccinated in the maternity hospital. On the left shoulder there is post-vaccination scar with a diameter of 7 mm. In 1 year Mantoux test with 2 TU PPD-L was 10 mm, at 2 years - 8 mm, at 3 years - 14 mm. What about most likely such dynamics of tuberculin test testifies?

- A. The child's disease of the secondary form of pulmonary tuberculosis.
- B. The presence of post-vaccination immunity.
- C. The presence of infectious immunity.
- D. The presence of a hyperergic reaction to tuberculin.
- E. Formation of negative energy.

10. The patient is 45 years old. He is being treated for anti-tuberculosis dispensary for recurrence of tuberculosis S2 of the left lung (infiltrative tuberculosis). In the patient's sputum, MBT is detected, although the review radiograph does not show destructive changes. Which X-ray examination should be performed on the patient for detection sources of bacterial excretion?

- A. Tomography.
- B. Bronchography.
- C. Aiming radiography.
- D. Radioscopy.
- E. Lateral radiography.

Materials of methodical maintenance of self-preparation of students

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

Educational tasks	Instructions for the task	Answer
<p>Examine: Examination methods patients with respiratory disease</p>	<p>Ways and methods of tuberculosis detection. Population categories with increased risk of disease tuberculosis. Complaints, medical history, course, epidemiological anamnesis, transferred diseases, working and living conditions. Physical examination methods: palpation value, percussion and auscultation</p>	
<p>Tuberculosis clinic</p>	<p>Name the clinical signs caused intoxication syndrome, local manifestations of the disease associated with respiratory lesions.</p>	
<p>Radiological signs clinical forms tuberculosis</p>	<p>Methods of X-ray examination patients with respiratory tuberculosis and intrathoracic lymph nodes. X-ray, tomo-, fluorography, computed tomography, radioscopy. Radiological syndromes: lesions of the root of the lungs, dissemination, infiltration, spherical shadow, cavity, fibrosis. Clinical forms of pulmonary tuberculosis in radiology image. The concept of “focus”, “Infiltrate”, “cavity”, “fibrosis”, them radiological signs. Population groups subject to mandatory annual fluorographic examination.</p>	
<p>Indications for application of the Mantoux and Koch test</p>	<p>The purpose of tuberculin testing. The concept of tuberculin. Modern tuberculin tests. Mantoux test with 2 TU PPD - L: indications, technique conducting, evaluation of results.</p>	

	The concept of "turn" of tuberculin samples. Differential diagnosis post-vaccination and post-infectious immunity.	
Methods of detecting MBT in sputum and others pathological materials	Microbiological diagnostics: methods bacterioscopic, bacteriological and biological detection of MBT, value their result for the diagnosis of tuberculosis. Rules of material collection. Accelerated methods for detecting MBT: BACTEC, enzyme-linked immunosorbent assay, polymerase chain reaction (PCR). Variability of MBT, its significance for treatment tactics. Determination of sensitivity MBT for anti-TB drugs. Dynamics of research in the process treatment.	
Methods instrumental (invasive) research	Indications for bronchoscopy. Bronchoscopy with biopsy. Histological and cytological examination of biopsies. Therapeutic bronchoscopy. Mediastinoscopy. Transthoracic puncture of the pleura and lungs. Thoracoscopy. Diagnostic thoracotomy with open biopsy.	
Blood and urine tests	Diagnostic value of quantity changes shaped peripheral elements blood and ESR in different forms and phases tuberculosis. Indicators of urine analysis patients with pulmonary tuberculosis as well on tuberculosis complicated by amyloid nephrosis.	
Biochemical analysis of blood	Biochemical methods of studying the condition liver, kidney organs in patients with tuberculosis.	
Functional system research external respiration	Spirography, pneumotachometry, general plethysmography, research gas content and acid – basic blood condition. Obstructive and restrictive respiratory failure.	

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