

TOPIC OF THE PRACTICAL LESSON № 1:

Epidemiology of tuberculosis. Etiology, pathogenesis of tuberculosis. Immunity in tuberculosis. Clinical classification of tuberculosis.

Actuality of theme. Tuberculosis is one of the most relevant today medical and social problems not only in Ukraine but all over the world. By according to the WHO, more than a third of the world's population is infected mycobacteria of tuberculosis. Every year in the world of tuberculosis get 7-10 million people, so the WHO in 1993 declared tuberculosis global danger. Tuberculosis affects all organs and systems of the human body. Therefore, doctors of different profiles need knowledge of etiology, pathogenesis and modern classification of tuberculosis.

The purpose of the lesson: to teach students to recognize clinical and radiological forms pulmonary tuberculosis and formulate a diagnosis according to modern classification of tuberculosis.

The student must know:

- main epidemiological indicators of tuberculosis;
- morphological structure and properties of the pathogen of tuberculosis;
- pathogenesis of tuberculosis;
- principles of construction of classification of tuberculosis.

The student must be able to:

- to analyze the main sections of the clinical classification of tuberculosis;
- to identify radiological signs of clinical forms of pulmonary tuberculosis;
- to formulate a clinical diagnosis in accordance with the classification of tuberculosis.

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 of the <i>M. tuberculosis</i> , their methods detection in sputum and others pathological materials.	Collect material for bacteriological research. Evaluate the results obtained.

Radiology	X-ray features chest organs are normal when pathology, radiological symptoms and syndromes.	Reveal 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 shapes tuberculosis.	Differentiate clinical forms tuberculosis, determine the type localization, phase process, display it is in the diagnosis.

Content of the lesson topic:

- The main epidemiological indicators (infection, morbidity, mortality) and their dynamics over the past 10-15 years.
- The causative agent of tuberculosis, morphological structure, properties. Variability MBT monoresistance, polyresistance, multiresistance, extended resistance, its clinical significance. Atypical mycobacteria. Sustainability of MBT in the environment.
- Tuberculosis infection, ways of penetration and spread of MBT in human body. Local and general reactions of the body to tuberculosis infection. Natural resistance to tuberculosis and anti-tuberculosis immunity. Humoral and cellular immunity, their mechanisms.
- Clinical classification of tuberculosis. Principles of classification construction tuberculosis. Sections of the classification that reflect the type of tuberculosis process, the main clinical forms, characteristics of the tuberculosis process and its complications, clinical and dispensary categories of patient registration, the effectiveness of treatment of patients with tuberculosis, the consequences of tuberculosis. Formulation of the diagnosis of tuberculosis according to the classification.

CLASSIFICATION SYSTEM FOR TUBERCULOSIS

According to the ICD 10: International Statistical Classification of Diseases and Related Problems recommended by the WHO, tuberculosis is attributed to the class of infectious and parasitic diseases, having separated five headings:

A 15. Tuberculosis of respiratory organs confirmed bacteriologically or histologically.

A 16. Tuberculosis of respiratory organs not confirmed bacteriologically or histologically.

A 17. Meningeal tuberculosis and tuberculosis of the central nervous system.

A 18. Tuberculosis of other organs and systems.

A 19. Miliary tuberculosis.

In Ukraine somewhat modified clinical classification of tuberculosis was accepted and approved by the order of the MHP of Ukraine of 30.12.1999, No. 311.

A. CLINICAL FORMS

ISCD cipher codes

Revisal D

A 18. Children tuberculous intoxication (tuberculosis of undetermined localization).

A 15-16. Pulmonary tuberculosis.

A 15-16. Primary tuberculous complex.

A 15-16. Tuberculosis of intrathoracic lymphatic nodes.

A 15-16. Disseminated tuberculosis.

A 15-16. Nidus tuberculosis.

A 15-16. Infiltrative tuberculosis.

A 15-16. Caseous pneumonia.

A 15-16. Tuberculoma.

A 15-16. Fibrous-cavernous tuberculosis.

A 15-16. Cirrhotic tuberculosis.

A 15-16. Tuberculous pleurisy (including empyema).

A 15-16. Tuberculosis of bronchi, trachea and upper respiratory tract.

A 15-16. Tuberculosis of respiratory organs combined with professional lung diseases (coniotuberculosis).

A 19. Miliary tuberculosis.

A 17. Meningeal tuberculosis tuberculosis and tuberculosis of the central nervous system.

A 18. Abdominal tuberculosis.

A 18. Bone and joint tuberculosis.

A 18. Genitourinary tuberculosis.

A 18. Lymphatic tuberculosis.

A 18. Eye tuberculosis.

A 18. Other sites (unspecified above).

B. CHARACTERISTIC OF TUBERCULOUS PROCESS

1. Location and spreading: in lungs according to the numbers (names) of segments and lobes.

2. Phase:

- infiltration, destruction, dissemination;
- suction, condensation, scarring, calcination.

3. Method of confirmation:

(MBT +) confirmed bacteriologically

(MBT -) not confirmed bacteriologically

(HIST +) confirmed histologically

(HIST -) not confirmed histologically. If histological examination was not done, so HIST is not written down in an extensive diagnosis.

4. Stage of tuberculous process (date):

First diagnosed tuberculosis –FDT

Tuberculosis exacerbation – TE

Tuberculosis relapse – TR

Chronic tuberculosis - CT.

C. COMPLICATIONS

Tuberculosis of respiratory organs: haemoptysis, lung haemorrhage, spontaneous pneumothorax, lung insufficiency, cor pulmonale, atelectasis, bronchus stenosis, pleura empiema, fistulae (bronchial, thoracic), amyloid disease.

Tuberculosis of other organs: renal insufficiency, sterility etc.

D. TUBERCULOSIS CONSEQUENCES

Residual changes after healed tuberculosis:

1. Of respiratory organs: fibrous, fibrous-nidus, bullous dystrophic, calcinates in lungs and lymphatic nodes, pleuropneumosclerosis, cirrhosis, consequences of surgical intervention (with the indication of the type and date of operation), etc.

2. Of other organs: fibrotic changes in various organs and their consequences, calcinosis, consequences of surgical intervention (with the indication of the type and the date of an operation).

Plan and organizational structure of the lesson:

- Preparatory stage (10-20% of working time): organization of classes, setting educational goals, control of the initial level of knowledge.
- The main stage (60-90% of working time): the formation of professional standards and skills. Students independently and under the supervision of the teacher describe and interpret radiographs, formulate a clinical diagnosis according to classification of tuberculosis
- The final stage (10-20% of working time): level control and correction professional skills, summarizing, homework.

Materials of methodical providing of employment.

Test control.

1. What organs used to be infected by TB in Ukraine mostly?

- A. Lungs
- B. Sexual organs
- C. Kidneys
- D. Bones and joints
- E. Eyes

2. What is definition of the primary TB?

- A. Primarily diagnosed TB
- B. Primary signs of TB
- C. Nondestructive TB
- D. TB to appear right after infecting
- E. TB located in only one organ or a system

3. What is definition of the secondary TB?

- A. Multisystem TB
- B. Destructive TB.
- C. TB which appears in long term after patient being infected.
- D. TB with overall clinical pattern.
- E. Generalized TB.

4. A 45-year-old woman is referred to the health department because she was found to have TB infection. She is an obese woman who has high blood pressure and heart and liver problems. Upon further questioning, she reports that she has injected illicit drugs in the past. What conditions does this woman have that increase the risk that she will develop TB disease?

- a. Injection of illicit drugs
- b. Obesity
- c. High blood pressure
- d. Heart problems
- e. Liver disease

5. According to classification system for TB a person with history of exposure and negative reaction to tuberculin skin test belongs to class:

- a. 0
- b. 1
- c. 2
- d. 3
- e. 4

6. Nodular changes with small intensity and vague contours were revealed on the apex of the lungs in the 19-year-old woman during the x-ray examination. What clinical form of tuberculosis can be suspected?

- a. Infiltrative
- b. Tuberculoma
- c. Nodular
- d. Caseous pneumonia
- e. Primary complex

7. The patient is a 30-year-old woman who was suspected to have disseminated TB when she underwent tuberculosis evaluation prior to employment in a health care facility. Disseminated TB is the result of:

- a. Lymphohaematogenous spreading of infection
- b. Bronchogenous spreading of infection
- c. Air-born infection
- d. Pleural effusion
- e. Cavity formation

8. List characteristics of TB infection (all answers are true except):

- a. Tubercle bacilli are in the body.
- b. The tuberculin skin test reaction is positive.
- c. Usually the chest x-ray is normal.
- d. Are often infectious
- e. Usually the chest x-ray is normal

9. A 5-year-old child complains of having dry cough. Body temperature is 37.1-37.40C. There is some bluntness over the right lung upper part. Much weakened breath without rales is heard. Blood analysis is leucocytes - $9,1 \times 10^9$ /liter, ESR – 21 mm/hour. X-Ray picture shows that the right lung upper part is homogeneously darkened, lessened in size. The lung root is dilated, unstructured, its camber turned outside. Mantoux reaction is 2 TU of PPD-L – infiltrate diameter of 17 mm. 4 years ago the child was Mantoux test negative. What should be a correct diagnosis according to clinic classification?

10. There is a 25-year-old patient who has got a diagnosis of TB meningitis. The lungs X-Ray picture showed alkalized lymphatic nodes. No MBT in liquor appeared. What should be a correct diagnosis according to clinic classification?

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

Educational tasks	Instructions for the task	Answer
Examine: Etiology of tuberculosis	Morphological structure and properties	

	the causative agent of tuberculosis	
Pathogenesis of tuberculosis	Ways of infection, primary and secondary periods of tuberculosis infections, latent microbism, steam -specific reactions.	
Clinical classification of tuberculosis	Name the types and clinical forms of pulmonary tuberculosis. Give characteristics of tuberculosis process: localization and prevalence, phase, confirmation method (bacteriological, histological). Complications, consequences of tuberculosis.	
Radiological signs clinical forms tuberculosis	The concept of "focus", "Infiltrate", "cavity", "fibrosis", their radiological signs. Describe radiograph, indicate clinical form of tuberculosis, localization, process phase.	

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