MINISTRY OF HEALTH PROTECTION OF UKRAINE

Vinnytsia National Medical University named after M.I. Pirogov

“AGREED”

Head of Department of Tuberculosis,
Clinical Immunology and Allergy



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GUIDELINES

FOR STUDENTS' INDEPENDENT WORK

DURING PREPARATION AND FOR WORK AT THE CLASS

Academic discipline	Physiology
Module #1	Physiology
Content module No. 7	The importance of concomitant pathology in the course of tuberculosis. Complications of tuberculosis.
The subject of the lesson	Modern methods of diagnosis of coniotuberculosis.
Course	4th
Faculty	Medical

1. **Actuality of theme:**

Tuberculosis is currently a global problem throughout the world. The number of patients with this terrible disease in the world reaches about 60 million, of which 10 million are patients with bacterial secretion, which poses a significant danger to the people around them. Annually, 9-10 million tuberculosis patients are registered in the world and 3-4 million patients die annually as a result of this disease. One sick person with bacteremia can infect 15-20 people annually.
Some groups of the population, whose professional activities are associated with certain harmful factors, have an increased risk of contracting tuberculosis. In such patients, there are often forms that occur with a hidden, asymptomatic clinical course, or there are certain diagnostic difficulties for timely detection of tuberculosis against the background of changes in the lungs due to the influence of occupational factors. In this regard, for the timely detection of tuberculosis and the appointment of an adequate scheme of therapy, it is necessary to be able to correctly collect complaints, life history and disease data, to conduct a physical and necessarily X-ray examination
Koniotuberculosis isan occupational disease that occurs with long-term exposure to industrial aerosol and mycobacterium tuberculosis and is characterized by various X-ray and pathomorphological changes in the lungs; this is a form of pneumoconiosis complicated by tuberculosis infection.
The incidence of coniotuberculosis (CTB) in Ukraine is 1.4% of all other occupational diseases (5.0% among patients with pneumoconiosis). On average, 104 cases of CTB are registered annually in Ukraine (cumulative number of patients for the period 1993-2008 — 1,673). The majority of patients with TB are male (92.9%). The maximum cumulative number of patients with CTB was registered among people older than 50 years (79.4%), with a work experience of 5-29 years (78.4% of all cases) with a maximum of 10-14 years. Cases of TB were registered in: mining industry (coal mining) (70.8%), metallurgical production (12.3%), machinery and equipment production (8.3%), construction (1.2%), chemical production (0 .7%), in other industries (6.8%).
In-depth knowledge among doctors of all specialties in the discipline "Physiology" is an important step in overcoming the increase in the incidence of coniotuberculosis throughout the world, and in Ukraine in particular.

2. Educational goals:
The teacher's task is to teach the student responsibility for the diagnosis. The future specialist must be able to explain the diagnosis to the patient and his relatives in accordance with the norms of hospital ethics.

Students must:

1. To teach students to collect complaints, medical history and life of patients with harmful working conditions.
2. Carrying out an objective examination of patients with a history of harmful working conditions.
3. Palpate and assess the state of the peripheral lymphatic glands.
4. Study of X-ray forms of tuberculosis of patients with harmful working conditions.
5. Collect sputum or bronchial lavage from patients with pulmonary tuberculosis.
6. 2. What are bacterioscopic and bacteriological research methods at the MBT.
7. Determination of changes in hemogram and urine.
8. Determination of the main principles, goals, methods and conditions for the implementation of DOTS therapy. The future specialist should be familiar with the basic issues related to the diagnosis and treatment of tuberculosis patients using the DOTS system.
9. To study radiological manifestations of silicosis, anthracosis, asbestosis.
10. Determine the necessary level of laboratory diagnostics, be able to evaluate spirometry data, changes on the ECG.

Learn the stages of the diagnostic process of koniotuberculosis

3. Basic knowledge, abilities, skills necessary for studying the topic (interdisciplinary integration)

Names of previous disciplines	Acquired skills
1. Human anatomy	General plan of the structure of the lungs. The structure of the walls of the airways.
2. Normal physiology	Importance for breathing of the body. Ventilation of the lungs and alveoli, its unevenness in different parts of the lungs.
3. Pathological physiology	General pathology, pathology of external breathing. Ways of penetration and spread of mycobacteria in the human body.
4. Microbiology, virology and immunology	Teaching about the infectious process. The causative agent of tuberculosis, its structure, properties, resistance. Types of mycobacteria, their epidemiological significance. Immunological changes in the body during tuberculosis infection.
5. Pharmacology	Pharmacokinetics of medicines. Antituberculosis antibiotics and chemopreparations, classification, doses, methods of administration.
6. General hygiene	The concept of occupational hazards and occupational diseases. The increase in the incidence of tuberculosis among medical workers. Basics of rational nutrition, physical education and hardening in the prevention of tuberculosis.
7. Pathological anatomy	Tuberculosis as an infectious disease. Etiology, pathogenesis. Productive granulomatous inflammation. The structure of a specific granuloma in tuberculosis.
8. Radiation diagnostics, radiation therapy and radiation medicine	Decipher the shadow formation on the chest X-ray with pathological changes: focus, infiltrative darkening, spherical shadow, ring-shaped shadow, dissemination, fibrous changes, impoverishment and absence of lung pattern, lung root pathology syndrome.

4. Tasks for independent work during preparation for class

1.1. A list of the main terms, parameters, and characteristics that the student should learn when preparing for the class:

Term	Definition
Tuberculosis	An infectious disease caused by tuberculosis mycobacteria and characterized by the formation of specific granulomas in various organs and tissues, as well as a polymorphic clinical picture.
Ways of infection	Aerogenic, alimentary, contact.
The main elements of the characteristics of the tuberculosis process	Localization and prevalence, phase of the process, method of confirming the diagnosis, stage of the disease.

The main signs of combined pathology	The main methods of detecting coniotuberculosis: physical, laboratory, X-ray.

4.2. Theoretical questions for the lesson:

1. Under what circumstances was tuberculosis detected: during a professional examination or when contacting a doctor. For persons with a history of harmful working conditions, it is mandatory to take into account the professional route.
2. The nature and development of the first signs of the disease for the time elapsed from the moment of detection to the detection of tuberculosis.
3. What was the diagnosis when tuberculosis was detected and how much time had passed since the last X-ray examination, which preceded the detection of changes in the lungs.
4. With a chronic course of tuberculosis, it is necessary to identify the features of the course of the disease, the nature and results of the previous treatment (where and under what conditions the treatment was carried out, with what methods, drugs) and why the need for treatment arose again.
5. Peculiarities of collecting anamnesis of the disease and life in patients with coniotuberculosis.
6. Main clinical symptoms in patients with coniotuberculosis.
7. X-ray methods of research (fluorograph, inspection X-ray, tomogram) in coniotuberculosis.
8. Main X-ray syndromes in coniotuberculosis.
9. Stages of establishing the diagnosis of "coniotuberculosis".

1.3.Practical works (tasks) performed in class:

1.3.1. Fill in the table:

	Task	Answer standard
1.	List the main complaint syndromes in children and adolescents with tuberculosis.	
2.	List the laboratory methods for detecting MBT.	
3.	Name the bacteriological methods of finding MBT.	
4.	What types of mycobacteria do you know?	
5.	Name the sources of infection of people with tuberculosis?	
6.	Name the most characteristic changes in the hemogram in active tuberculosis?	
7.	What are the main methods of laboratory diagnostics used when examining a patient with koniotuberculosis?	
8.	What express methods are used to confirm the diagnosis of coniotuberculosis?	
9.	What X-ray methods are used for timely detection of coniotuberculosis?	
10.	What is the DOTS strategy.	
11.	What are the main principles, goals and objectives of DOTS.	
12.	What categories of patients does the DOTS system provide for standard treatment?	
thirteen.	What schemes of DOTS therapy exist for certain categories of patients?	

14.	What does the DOTS strategy for the diagnosis and therapy of tuberculosis, adapted to the conditions of Ukraine, provide for?	
15.	What is the role of the general practitioner in the early detection of tuberculosis?	
16.	Are complaints mandatory for a patient with coniotuberculosis?.	
17.	What depends on the presence of complaints in the patient.	
18.	What complaints does the intoxication syndrome include.	
19.	What complaints does bronchopulmonary-neo-pleural syndrome include.	
20.	What are the properties of enlarged peripheral lymph glands in patients with coniotuberculosis.	

1.3.2. Solve test tasks:

Solve test tasks:

1. Who and when discovered the causative agent of tuberculosis?
2. What percentage of the world's population is infected with tuberculosis?
3. How many people can be infected annually by a patient with pulmonary tuberculosis?
4. What percentage of infected MBTs get tuberculosis?
5. Name the main clinical forms of primary tuberculosis.
6. What phases are characteristic of the progression of the tuberculosis process?

2. Practical tasks performed in class:
5.1. Describe the X-ray examination of the organs of the chest cavity in direct projection.

3. Materials for self-control and the final level of learning the material:
Questions for self-control:

1. Define coniotuberculosis as a disease.
2. What are the risk factors for coniotuberculosis?
3. What indicators reflect the epidemiological situation with coniotuberculosis?
4. Analyze the main epidemiological indicators of the prevalence of coniotuberculosis.
5. What are the main sources of tuberculosis infection?
6. Name the ways of infection of MBT?
7. What are the population groups with an increased risk of coniotuberculosis?
8. What are the features of the pathomorphosis of koniotuberculosis in Ukraine at the current stage?
9. 9. Peculiarities of collecting anamnesis of the disease and life in patients with coniotuberculosis.
10. Main clinical symptoms in patients with coniotuberculosis.
11. X-ray methods of research (fluorograph, inspection X-ray, tomogram) in coniotuberculosis.
12. Main X-ray syndromes in coniotuberculosis.
13. Stages of establishing the diagnosis of "coniotuberculosis".
14. How can changes in the root of the lung in koniotuberculosis manifest radiologically?

15. Name the main X-ray syndromes in coniotuberculosis of the lungs?
16. What type of spirogram abnormalities are observed in a patient with koniotuberculosis of the lungs and what type of shortness of breath is most characteristic of such patients?
17. At what stages of the development of koniotuberculosis are changes observed in the root of the lung?
18. What invasive method allows you to confirm the diagnosis of coniotuberculosis

Tests for self-control:

1. Define what is disseminated tuberculosis?
a) This is a clinical form of tuberculosis in which lung tissue changes in size up to 10 mm in 1-2 segments.
b) This is a clinical form of tuberculosis in which lung tissue changes in size up to 10 mm in 3 segments or more.
c) This is a clinical form of tuberculosis, in which changes in the size of more than 10 mm are detected in the lung tissue.

2. What clinical forms of disseminated tuberculosis can be detected?
a) instant
b) acute
c) subacute
d) chronic
e) all answers are correct
3. Choose the described radiograph corresponding to acute disseminated tuberculosis:
a) foci are small, 1-2 mm in diameter, symmetrical, monomorphic, located on the entire surface of the lung field
b) foci are large, 7-10 mm in diameter, symmetrical, monomorphic, sometimes combined into conglomerates located at the apex of the lungs. possible decay of lung tissue
c) foci of different size and intensity, asymmetric, polymorphic, there are areas of pneumosclerosis and decay of lung tissue, located in the upper and middle parts of the lungs
d) foci of different size and intensity, located in the upper and middle lobes of the lungs, asymmetric, polymorphic, there are areas of pneumosclerosis, pneumofibrosis, bronchogenic spread of infection, formation of thick-walled cavities is observed

4. Select the described radiograph corresponding to subacute disseminated tuberculosis:
a) foci are small, 1-2 mm in diameter, symmetrical, monomorphic, located on the entire surface of the lung field
b) foci are large, 7-10 mm in diameter, symmetrical, monomorphic, sometimes combined into conglomerates located at the apex of the lungs. possible decay of lung tissue
c) foci of different size and intensity, asymmetric, polymorphic, there are areas of pneumosclerosis and decay of lung tissue, located in the upper and middle parts of the lungs
d) foci of different size and intensity, located in the upper and middle lobes of the lungs, asymmetric, polymorphic, there are areas of pneumosclerosis, pneumofibrosis, bronchogenic spread of infection, formation of thick-walled cavities is observed

5. Choose the described radiograph corresponding to chronic disseminated tuberculosis:
a) foci are small, 1-2 mm in diameter, symmetrical, monomorphic, located on the entire surface of the lung field
b) foci are large, 7-10 mm in diameter, symmetrical, monomorphic, sometimes combined into conglomerates located at the apex of the lungs. possible decay of lung tissue
c) foci of different size and intensity, asymmetric, polymorphic, there are areas of pneumosclerosis and decay of lung tissue, located in the upper and middle parts of the lungs

d) foci of different size and intensity, located in the upper and middle lobes of the lungs, asymmetric, polymorphic, there are areas of pneumosclerosis, pneumofibrosis, bronchogenic spread of infection, formation of thick-walled cavities is observed

6. List the diseases that require differential diagnosis to confirm disseminated tuberculosis:
a) bilateral focal pneumonia
b) bronchiolitis
c) metastatic lung cancer
d) sarcoidosis of the 2nd century
e) pneumoconiosis
e) all answers are correct

7. List the signs of fibrous-cavernous tuberculosis:
a) fibrous cavity
b) fibrotic degeneration of lung tissue

literature

1. Phthysiatry: a textbook / V. I. Petrenko, L. D. Todoriko, L. A. Hryshchuk, etc.; under the editorship V. I. Petrenko. - Kyiv: Medicine, 2015. - 471 p.
2. Phthysiatry: manual / V. I. Petrenko - Kyiv: VSY "Medicine", 2016. - 439 p.
3. Phthisiology: textbook (III—IV al) / VI Petrenko, OK Asmolov, MG Boyko et al.; edited by VI Petrenko. — 2nd edition. - Kiev, 2018. - 416 p.

Prepared methodical recommendations
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Methodological recommendations were revised and approved at the meeting of the department "29" on August 2025. Protocol No. 1.