TOPIC OF THE PRACTICAL LESSON № 4:

Treatment of tuberculosis: basic principles. Anti-TB drugs. Standart drug regimens. Chemoresistant tuberculosis.

Actuality of theme. Introduction of etiotropic into medical practice anti-tuberculous drugs changed the prognosis in patients with tuberculosis, led to a significant reduction in mortality, made it possible to cure severe forms of tuberculosis. Cessation of bacterial excretion in most patients reduces their epidemiological danger and becomes an important factor prevention of new cases of infection and tuberculosis.

The purpose of the lesson: to teach students the methods of treatment of patients with tuberculosis.

The student must know:
- the classification of anti-TB drugs, their properties, dosage, side effects;
- the general principles of treatment of patients with tuberculosis;
- the modern regimes of etiotropic chemotherapy of tuberculosis;
- the criteria for clinical treatment of patients with tuberculosis.

The student must be able to:
- prescribe treatment to different categories of patients with tuberculosis;
- diagnose side effects of anti-TB drugs and determine measures for their prevention.

Interdisciplinary integration.

Subject	Know	Be able
Previous:		
Anatomy	The anatomy of the respiratory system.	
Physiology	The physiology of the respiratory system.	
Pathological physiology	The pathophysiology of diseases of the respiratory system.	
Microbiology	The morphological structure, properties, pathogenicity and virulence of MBT, their methods detection in sputum and others pathological materials, methods determination of resistance of MBT to anti-TB drugs.	To collect material for bacteriological research. To evaluate the results obtained.
Pharmacology	The classification and mechanisms of action anti-TB drugs.	To assign antimycobacterial preparations.
Propaedeutics Internal diseases	The methods of objective review.	To make objective examination of the patient, evaluate the results obtained.

Radiology	X-ray features chest organs are normal and in pathology, the radiological syndromes.	To identify and interpret radiological changes in the lungs.
The following:		
Internal medicine	Clinical manifestations, radiosemiotics of diseases respiratory system.	Carry out differential diagnosis lung diseases.
Intra-subject integration:	Different treatment methods clinical forms of tuberculosis respiratory system.	Prescribe treatment patients with various clinical forms tuberculosis of the organs breath.

Content of the lesson topic:
General principles of antimycobacterial therapy: complexity, combination, controllability, two-phase treatment, duration and continuity, stage sequence, individual approach, free of charge. Antimycobacterial (anti-TB) drugs: classification, mechanisms of their action, properties (bacteriostatic or bactericidal activity, ability to penetrate cell membranes), dosage, pathways and multiplicity introduction into the patient's body. Adverse reactions to antimycobacterial drugs, their prevention and methods of elimination.

Classification of antimycobacterial drugs
The most active: isoniazid (H), rifampicin (R);
Secondary activity: ethambutol (E), pyrazinamide (Z).

Standardized treatment regimen recommended for patient categories for sensitive tuberculosis: 2HRZE and 4HR.

Groups of drugs recommended for use in individualized long-term treatment regimens for drug-resistant tuberculosis

Groups of drugs and their purpose	Preparation	
Group A Inclusion of all three drugs	levofloxacin or moxifloxacin	Lfx Mfx
	bedaquiline	Bdq
	linezolid	Lzd
Group B Addition of one or both drugs	clofazimine	Cfz
	cycloserine or terizidone	Cs Trd

Group C Addition to complete the composition of the scheme and if it is impossible to use drugs of groups A and B	ethambutol	E
	delamanid	Dlm
	pyrazinamide	Z
	imipenem-cilastatin or meropenem	Ipm-CIn Mpm
	amikacin (or streptomycin)	Am (S)
	ethionamide or prothionamide	Eto Pto
	paraaminosalicylic acid	PAS

Short-term oral treatment of multidrug-resistant tuberculosis:
4–6 Bdq-Lfx/Mfx-Cfz-Z-E-H_h-Eto / 5 Lfx/Mfx-Cfz-Z-E

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 abilities. Students independently and under the supervision of the teacher carry out supervision of patients: collect anamnesis, master the skills of the objective examination, interpret radiological and laboratory data, substantiate clinical diagnosis, prescribe a comprehensive antimycobacterial, pathogenetic and symptomatic therapy.

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 is the basis for the use of reserve drugs in the treatment of tuberculosis?
A. Prevalence of the process
B. Prolonged chronic course of the process
C. Presence of resistance to basic anti-TB drugs
D. The presence of concomitant pathology
E. Completion of the intensive phase of treatment

2. How often should patients be evaluated for signs and symptoms of adverse reactions during preventive therapy?
A. Every day
B. Every month
C. Every week
D. Every two months
E. Every three months

3. An 18-year-old girl is admitted to the hospital because of miliary tuberculosis. Her grandmother had pulmonary TB and was treated with a 6-month regimen. How long should the child be treated?
A. 6 months
B. 12 months
C. 9 months
D. 24 months
E. 18 months

4. The patient was diagnosed with infiltrative tuberculosis of the upper lobe of the right lung, Destr+, MBT+. Pulmonary tuberculosis was first detected 4 years ago. After successful treatment in the next 3 years there was clinical well-being. According to which category it is necessary prescribe treatment?
A. 1
B. 2
C. 3
D. 4
E. 5

5. Which anti-TB drug for intramuscular injection, can you use?
A. Rifampicin
B. Pyrazinamide
C. Ethambutol
D. Amikacin
E. Levofloxacin

6. Which anti-TB drug for intravenous administration can be used:
A. Streptomycin
B. Pyrazinamide
C. Rifampicin
D. Prothionamide
E. Cycloserine

7. Name the drug that may cause each of the following symptoms or adverse reaction.
A. Eye damage – streptomycin
B. Hepatitis – rifampicin
C. Ear damage – ethambutol
D. Orange discoloration of the urine – isoniazid
E. Polyneuritis – pyrazinamide

8. Name factors that can lead to drug resistance?
A. Using one drug to treat TB
B. An inappropriate regimen for treatment
C. Patients do not follow treatment regimens as prescribed

D. Adverse reactions to TB drugs
E. A,B,C,D

9. What disease is a contraindication to the appointment of ethambutol?
A. Acute conjunctivitis
B. Chronic keratitis
C. Nipple degeneration of the optic nerve
D. Blepharitis
E. Cataract

10. What is the optimal duration of the intensive phase of antimycobacterial therapy of a patient with FBTB (13.08.2022) of the upper lobe of the left lung (infiltrative), Destr-, MBT-, M-, C-, Hist0, Cat3 Coh3 (2022)?
A. 2 months
B. 4 months
C. 6 months
D. 8 months
E. 10 months

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
Examine: Classification antimycobacterial drugs	The classification. Antimycobacterial drugs, their properties, doses, methods and multiplicity of introduction in organism. Side effects, their prevention and elimination methods.	
General principles antimycobacterial therapy	The complexity, combination, controllability, two-phase treatment, duration and continuity, individual approach, stage consistency, free.	
Basic chemotherapy regimens	The categories of treatment of patients with tuberculosis. Treatment regimens for sensitive and chemoresistant tuberculosis. Monitoring the condition of patients with tuberculosis in the treatment process. Criteria for cure of tuberculosis.	

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