

## TOPIC OF THE PRACTICAL LESSON № 5:

### Prevention of tuberculosis

Actuality of theme. The preventive principle of health care in general and with regard to tuberculosis in particular should be a priority. Unfortunately, on at the present stage of development of health care it is given insufficient warning. Deterioration of the epidemiological situation with tuberculosis in Ukraine to some extent associated with a reduction in prevention and reduction preventive surveys of the population.

The purpose of the lesson: to teach students to carry out tuberculosis prevention.

The student must know:

- types of tuberculosis prevention;
- categories of foci of tuberculosis infection;
- methods of BCG vaccination (revaccination);
- complications of BCG vaccination (revaccination);
- indications for chemoprophylaxis.

The student must be able to:

- make a plan of preventive measures in the center of tuberculosis infection;
- determine the indications and contraindications for vaccination and revaccination of BCG;
- to select persons for chemoprophylaxis.

Interdisciplinary integration.

Subject	Know	Be able
<b>Previous:</b>		
Microbiology	Morphological structure, properties, pathogenicity and virulence of the <i>M. tuberculosis</i> complex, their methods detection in sputum and others pathological materials.	Collect material for bacteriological research. Evaluate the results obtained.
Pharmacology	Classification and mechanisms of action anti-TB drugs.	
Epidemiology	Links of the epidemiological process (source of infection, routes of transmission infections).	

General hygiene	Methods of prevention diseases.	
<b>The following:</b>		
Allergology and immunology	Forming mechanisms innate and acquired immunity.	
Pediatrics	Pediatrics Indications and contra-indications to vaccination and revaccination of children and adolescents.	Select people for BCG revaccination.
Social medicine, organization Health Care	Organizational aspects of the event tuberculosis prevention.	

Content of the lesson topic:

Social prevention.

Sanitary prevention, its tasks. The concept of the center of tuberculosis infections. Categories of cells according to the degree of epidemiological danger. Work in the center of tuberculosis infection for tuberculosis prevention. Sanitary - educational work.

Classification of foci of tuberculosis infection

*Group 1* (epidemiologically the most dangerous) - detection in a patient who lives in the cell:

- a) **massive** (permanent or periodic) bacterial excretion;
- b) **scanty** bacterial excretion, if the cell is inhabited by children or adolescents or in the presence of aggravating factors (unsatisfactory living conditions, non-compliance with sanitary and hygienic rules, abuse alcohol).

*Group 2* (epidemiologically less dangerous) - detection of the patient:

- a) **scanty** bacterial excretion, when only adults live in the cell and there are no aggravating factors;
- b) **formal** bacterial excretion, when children live in the cell or adolescents or present in it at least one of the aggravating factors.

*Group 3* (epidemiologically potentially dangerous) - the patient has formal bacterial excretion, and only adults live in the cell and in it has no limiting factors.

The list of activities carried out in the center of tuberculosis infection:

- hospitalization of the patient;
- carrying out final disinfection (by SES forces);
- current disinfection;
- isolation of children from bacterial excreta (hospitalization of patients or placement of children in children's institutions);
- vaccination of newborns or revaccination of uninfected with the vaccine BCG;
- regular examination and conduct of persons in contact chemoprophylaxis;

- sanitary and hygienic education of patients and members of their families;
- improvement of living conditions;
- intensive treatment of the patient in the hospital with the following controlled chemotherapy at the outpatient stage.

BCG and BCG-M vaccination, BCG revaccination. BCG and BCG vaccine -M. Technique of vaccinations and revaccinations. Indications and contraindications to vaccination and revaccination. Complications of TB vaccinations.

Absolute contraindications to vaccination of newborns:

- immunodeficiency states;
- enzymopathy;
- Generalized BCG infection found in other children in the family.

Relative contraindications to vaccination:

- prematurity, when the birth weight is less than 2300 g;
- intrauterine infection;
- birth injuries with neurological symptoms;
- acute diseases;
- purulent-septic diseases;
- hemolytic disease of newborns;
- generalized skin lesions.

Contraindications to revaccination:

- infected children and adolescents or tuberculosis in the past;
- doubtful reaction of Mantoux with 2TU PPD-L;
- complications of the vaccine at birth;
- allergic diseases in the acute stage;
- acute diseases with a period of convalescence;
- chronic diseases in the acute stage;
- malignant blood diseases and tumors;
- immunodeficiency, long-term treatment with immunodepressants.

Chemoprophylaxis of tuberculosis, indications, methods.

Primary chemoprophylaxis is performed on uninfected persons for the purpose prevention of Mycobacterium tuberculosis infection and disease tuberculosis:

- children, adolescents, healthy adults from family contacts with bactericidal or patients with the active form of tuberculosis - prescribe isoniazid at a rate of 5 mg / kg for 3 months. 2 times a year;

- newborns vaccinated with BCG vaccine born from sick mothers, not detected in time - are also used isoniazid (5 mg / kg) for 3 months. Once a year for 2 years.

Secondary chemoprophylaxis is performed to prevent:

1) the disease;

- a) first infected (children and adolescents with tuberculosis reactions);
- b) children and adolescents with hyperergic Mantoux reaction with 2 TU PPD - L;
- c) infected persons who come into contact with the bacterium or patients with the active form of tuberculosis.

Courses of secondary chemoprophylaxis are:

- a) first infected before the age of 30 - a continuous course of isoniazid for 2-3 months;
  - b) with a hyperergic reaction Mantouxoniazid is prescribed for 3 months. Twice for a year;
  - c) infected who have contact - take isoniazid for 3 months. 2 times a year during the entire period of contact and for another 2 years after its termination.
- 2) recurrence of tuberculosis - in persons who have relapsed into tuberculosis and have:
- a) concomitant adverse diseases;
  - b) large residual changes;
  - c) concomitant aggravating diseases;
  - d) HIV - infected with a hyperergic reaction to tuberculin.

In these cases, secondary chemoprophylaxis is performed twice a year (2-3 months). Isoniazid is prescribed at a dose of 5 mg / kg in combination with one of the drugs (ethambutol - 20-25 mg / kg; rifampicin - 10 mg / kg).

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 control of the teacher make the plan preventive measures in the center of a tuberculosis infection, select persons for chemoprophylaxis and revaccination of BCG.

**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 is the dose for BCG vaccination?
  - A. 0.025 mg.
  - B. 0.5 mg.
  - C. 0.25 mg.
  - D. 0.05 mg.
  - E. 0.005 mg.
2. A 7-year-old girl 5 months after revaccination at the injection site BCG vaccine appeared swelling with a bluish tinge to the skin, when palpation - fluctuation? What complication did the girl have?
  - A. Lymphadenitis.
  - B. Cyst.
  - C. Colloidal scar.
  - D. Ulcer.
  - E. Cold abscess.
3. What is meant by primary chemoprophylaxis of tuberculosis?
  - A. Prescribing antimycobacterial drugs to uninfected MBT children and adolescents.
  - B. Prescribing antibacterial drugs to persons with "bend" tuberculin reactions.
  - C. Prescribing antibacterial drugs to persons who have recovered from tuberculosis.
  - D. Prescribing antibacterial drugs to previously infected individuals in the presence of any risk factors for the development of tuberculosis.
  - E. In all these cases, prescribe primary chemoprophylaxis.
4. After what period after BCG vaccination develops a specific anti-TB immunity?
  - A. After 6 months.
  - B. In 6-8 weeks.
  - C. After 1 year.
  - D. In 1-2 weeks.
  - E. After 2-4 months.
5. The child is 6 months old. She has not been vaccinated in the maternity hospital due to disease of acute respiratory viral infection. Now a child healthy and she should be vaccinated. What research does the child need to do to address the possibility vaccination?
  - A. Mantoux test with 2 TU PPD-L.
  - B. General blood test.
  - C. Biochemical analysis of blood.
  - D. X-ray examination.
  - E. And immunological examination of blood.

6. In women with fibro-cavernous pulmonary tuberculosis (MBT +), a healthy, full-term baby, weighing 3800 g, was born, who received 8 points for Apgar scale. Immediately after birth, the child was isolated from the patient mother. What action should be taken against the child?

- A. Carry out chemoprophylaxis.
- B. Make an X-ray.
- C. Vaccinate with BCG vaccine.
- D. Vaccine with BCG-M vaccine.
- E. Carry out a Mantoux test with 2 TU PPD-L.

7. A 44-year-old patient was hospitalized for FDTB (17.10.2019) S1-2 of the right lung (focal), Destr +, MBT + M+ K + Resist-, Hist0, Cat1 Coh4 (2019). In the second month of treatment of bacterial excretion stopped. The patient was discharged home 2 months after the start of treatment with a positive effect. The patient is considered formal bactericidal. He lives with his wife. To which group of TB foci does the patient's apartment belong?

- A. II.
- B. I
- C. III.
- D. IV.
- E. V.

8. What factor is most important in determining the epidemic danger center of tuberculosis infection?

- A. Sanitary conditions in which the patient and his family live.
- B. Massiveness of bacterial excretion.
- C. Presence of children and adolescents in the family.
- D. Clinical form of tuberculosis.
- E. The life of the cell.

9. What is the term of BCG revaccination approved in Ukraine?

- A. 3-5 days after birth.
- B. 3-5 weeks after birth.
- C. In 3-5 years.
- D. At 7, 14 years.
- E. At 17, 30 years.

10. What is the BCG and BCG-M vaccine?

- A. Killed culture of mycobacteria.

- B. Products of mycobacterial activity.
- C. Live weakened culture of mycobacteria.
- D. A mixture of purified tuberculin and killed mycobacteria.
- E. Incompletely purified dry tuberculin.

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
<b>Examine:</b> Social prevention tuberculosis	List of social measures prevention	
The task of sanitation prevention	Classification of cells tuberculosis infection, measures that are held in the cell, current disinfection, final disinfection, sanitary and educational work.	
Vaccination, BCG revaccination	Vaccination and revaccination techniques. Indications and contraindications to vaccination and revaccination. Complications of TB vaccinations.	
Chemoprophylaxis	Indications for conducting primary and secondary chemoprophylaxis. Method carrying out.	

**REFERENCES:**

1. American Thoracic Society/ Centers for Disease Control. Diagnostic standarts and classification of tuberculosis. Am Rev Respir Dis 1990; 142:725-735.
2. Crofton J., Horne N., Miller F. Clinical tuberculosis. 1995. 210 p.
3. David I. Schlossberg. Tuberculosis. Springer-Verlag New York., 1988, 225 p.
4. Isemann, Michael D. A clinicians guide to tuberculosis. Philadelphia. 2000, 460 p.
5. П'ятночка І.Т., Корнага С.І., П'ятночка В.І. Фтизіатрія: Навчальний посібник українською та англійською мовами. – Тернопіль: Укрмедкнига, 2002.- 260 с.