Name of the discipline: Phthisiology

Code of discipline:Fti 4315

The name of the EP: Medicine

Amount of study hours/credits: 120/4

Course and semester of study: 4/8
The volume of lectures: 10 hours.

The lecture complex was developed in accordance with the OP "Medicine" and discussed at a meeting of the department

Minutes No. 11 dated "26" 06 2025.

Head of the Department of Phthisiopulmonology and Radiology _____ Kassayeva L.T.

1. Topic № 1: Integrated tuberculosis control. Epidemiology of tuberculosis in the Republic of Kazakhstan. Etiology, pathogenesis and pathomorphology of tuberculosis.

2. Goal: Medical education in Phthisiology includes the acquisition of new theoretical knowledge by bachelors necessary to provide qualified phthisiological care to the patient, to conduct preventive anti-TB measures in accordance with modern principles of evidence-based medicine**.** To get to know with the epidemiological situation in the world, in the country, and in the service region. To reveal the etiology, pathogenesis, pathomorphology, methods of detection and diagnostic algorithm of tuberculosis.

3. Abstract of lecture:

The main goal of the National TB control program is to expand the coverage of detection of cases and detect more patients in the early, less infectious stages. Expanding the detection of new patients should be carried out only after achieving a high rate of curability of already identified patients. In this case, medical institutions will attract more patients due to the good results of already treated patients.

The epidemiology of tuberculosis, as a section, an integral part of Phthisiology, studies the sources of tuberculosis infection, transmission routes, the prevalence of tuberculosis as an infectious disease among the population and the most threatened groups of the population, among which there is the greatest risk of tuberculosis. It should be borne in mind that tuberculosis is not only a medical and biological problem associated with the interaction of the human body and the causative agent, but also a social problem, since social factors affect the state of health of the population as a whole and its individual groups. In particular, the material standard of living, sanitary literacy and culture, occupation, housing conditions, provision of medical care, etc. are of great importance. Demographic features should also be taken into account while studying tuberculosis from epidemiological points of view: age composition of the population, including the proportion of children, distribution by sex, fertility, population density, etc Tuberculosis pathogens - acid-resistant mycobacteria discovered by R. Koch in 1882. Several types of mycobacteria of tuberculosis are known: Mycobacteriumtuberculosis (human species), Mycobacteriumafricanum (intermediate species) and Mycobacteriumbovis (bovine species), which belong to the genus Mycobacterium, families Mycobacteriacae, order Actinomycetalis. The pathogens of TB in humans are most often (in 92% of cases) mycobacteria of human tuberculosis, mycobacteria of bovine and intermediate species cause the development of tuberculosis in humans in 5 and 3% of cases, respectively. In the modern microbiological classification mycobacteria of avian species (M. avium) is referred to as non-tuberculosis mycobacteria of the avium - intracellulare complex, which can be causative agents of mycobacteriosis in humans and animals.

Human infection with tuberculosis occurs in most cases
cases (90-95%) through the respiratory tract (aerogenic pathway).

The aerogenic transmission mechanism is implemented by air-drop and air-dust routes. When coughing or sneezing, droplets of mucus or sputum containing MBT get into the air and fly at a distance of up to one meter, so microbes can easily get into the respiratory tract of a person. Large drops settle on the floor, dry out, then turn into dust containing viable MBTS, which can rise into the air and infect people if inhaled. Contamination through dust in the open air is almost non-existent, as under the influence of sunlight or daylight MBT quickly die.

Infection through infected dust occurs mainly in the homes of patients who do not perform wet cleaning. In addition, tuberculosis infection can be transmitted by food (alimentary) means, through the gastrointestinal tract with infected dairy products, which are most often infected with Musobacteriumbovis. There are cases of infection through damaged skin and mucous membranes, the so-called contact pathway, it is found in surgeons and pathologists. As a result of the penetration of MBT through the damaged placenta in a woman with tuberculosis, intrauterine infection of the fetus is possible. The spread of tuberculosis by direct contact can only be when the patient is extremely untidy, when his hands are dirty with phlegm, or when kissing. In foci of tuberculosis, where the sanitary and hygienic rules are not observed, the contact and household path of transmission of infection is also possible, while infection occurs through personal hygiene items, dishes, toys, and underwear.

The diagnostic process includes several stages. The first is the selection of patients with various lung diseases among those who have sought medical help. This selection takes place, as a rule, in polyclinics and is carried out by doctors of the General medical network. It is recommended to use fluorography. The latter allows you to identify even minor changes in length, both fresh and old. It is recommended to apply fluorography to all persons who have applied to the clinic for the first time in this year for any reason. It should be emphasized that the specified method examinations in those people who are suspected of having a pulmonary disease after the selection of persons with pulmonary pathology, the selected persons are assigned to conduct other studies.

Detection of patients with pulmonary tuberculosis can also be carried out by examining sputum for the presence of mycobacteria and in relation to children and adolescents – tuberculinodiagnostics

4. Illustrative material: presentation, slides, charts

5. Literature:

1. Phthisiology. Rakisheva A. S., Tsogt G., Almaty, 2014
2. Order No. 214 of november 30, 2020. "On approval of the Instructions for the organization of medical care for tuberculosis»
3. Rakishev G. B., Abildaev T. sh., Abdukarimov H. H. and others. Diagnostics and treatment of extrapulmonary treatment, Almaty, 2015.

6. Main questions:

1. Policy documents on the organization of anti-tuberculosis measures
2. Basic epidemiological indicators for tuberculosis.
3. Priorities of bacterioscopic sputum examination on MBT
4. Advantages and disadvantages of cultural research of pathological material
5. Correct choice of instrumental examination for clarification and differential diagnosis of various forms of tuberculosis
6. Difficulties of extrapulmonary tuberculosis.

1. Topic № 2: Methods for detecting tuberculosis. The diagnostic algorithm.

2. Purpose: To familiarize bachelors with methods of early detection and diagnostic algorithm of tuberculosis, as well as with methods of tuberculin diagnostics.

3. Lecture theses:

The diagnostic process includes several stages. The first is the selection of patients with various lung diseases among patients who have sought medical help. This selection takes place, as a rule, in polyclinics and is carried out by doctors of the general medical network. It is recommended to carry out it using fluorography. The latter makes it possible to identify even minor changes in length, both fresh and old. It is recommended to apply fluorography to all persons who have applied to the polyclinic for the first time this year for any reason. It should be emphasized that the specified methodexaminations in those people who are suspected of having a pulmonary disease after the selection of persons with pulmonary pathology, the selected persons are assigned to conduct other studies.

Detection of patients with pulmonary tuberculosis can also be carried out by sputum examination for the presence of mycobacteria and, in relation to children and adolescents, tuberculin diagnostics.

4. Illustrative material: presentation, slides, diagrams

5. Literature:

Main:

Main:

1. Koshechkin, V. A. Phthisiology: textbook / V. A. Koshechkin. - ; Min. education and science of the Russian Federation. Recommended by GBOU DPO "Russian med. acad. postgraduate education". - M. : GEOTAR - Media, 2016. - 304 p.
2. Phthisiology : textbook / V. Yu. Mishin [et al.]. - 2nd ed., reprint. and additional - M. : GEOTAR - Media, 2016. - 520 p.
3. Perelman, M. I. Phthisiology : textbook / M. I. Perelman, I. V. Bogadelnikova. - 4th ed., reprint. and additional; Ministry of Education and Science of the Russian Federation. Rec. GO VPO "Mos. med. I. M. Sechenov Academy of Sciences." - Moscow : GEOTAR - Media, 2015. - 448 +e. opt. disc (CD-ROM).
4. Phthisiology: Textbook / Rakisheva A.S., Tsogt G.; Ministry of Health of the Republic of Kazakhstan Kazak National Medical University named after S.D. Asfendiyarov; – Almaty, 2014. – 420s.

6. Security questions:

1. Policy documents on the organization of anti-tuberculosis measures
2. The main epidemiological indicators of tuberculosis.
3. Priorities of bacterioscopic sputum examination on MBT
4. Advantages and disadvantages of cultural examination of pathological material
5. The right choice of instrumental examination for clarification and differential diagnosis of various forms of tuberculosis
6. Difficulties of extrapulmonary tuberculosis.

1. Topic number 3: Principles of tuberculosis treatment in modern conditions. Anti-tuberculosis drugs. Drug-resistant tuberculosis. Treatment monitoring.

2. Purpose: To acquaint students with the principles of tuberculosis treatment in modern conditions, anti-tuberculosis drugs, drug-resistant tuberculosis and monitoring of treatment.3.

Theses of lectures: Tuberculosis is a general disease of the body, in which the MBT bacterial toxins and tissue decay products cause a variety of disorders of normal life and pathological changes in various organs.

Therefore, tuberculosis therapy should be comprehensive and should include, first of all, the impact on the causative agent of tuberculosis, as well as on various factors affecting the development and outcome of the pathological process, with the obligatory consideration of the presence of concomitant and concomitant diseases.

The penetration and reproduction of MBT is the main condition for the development of tuberculosis, although the onset and course of the disease is determined by the relationship between MT and a macroorganism in certain conditions of the biological and social environment, therefore, the most important is etiotropic therapy.

1) 1. Treatment of tuberculosis with antibacterial drugs should not vary depending on the main localization, form, phase, prevalence, severity of the process, the severity and consistency of the protective structures and functions of the macroorganism, etc. It is determined by the fact of the presence of tuberculosis infections, the degree of sensitivity (resistance) of mycobacteria, tolerance or intolerance of the patient to certain drugs and implements the "all or nothing" attitude.

2) 2. A single intake of the maximum tolerated daily dose of the anti-tuberculosis drug in order to achieve the highest peak drug concentration in the blood, tissues and lesions.

3) 3. Chemotherapy is carried out strictly according to standard schemes defined by the DOTS strategy recommended by the WHO and applied for the entire specified period.

4) 4. Facilitating the access of antibacterial agents to target mycobacteria by partially disrupting and slowing down the formation of tissue barriers that the macroorganism erects around microorganisms in the process of combating them to protect against them.

5) 5. Organization of treatment in such a way as to ensure the bactericidal effect, biological sanitation of the patient in one course, thereby preventing the education and selection of forms of mycobacteria resistant to anti-tuberculosis drugs, accelerating the patient's cure.

6) 6. Facilitating the tolerance of anti-tuberculosis drugs through the use of protectors that protect the most suffering during treatment.

7) 7. Timely exclusion of drugs to which the mycobacteria of this patient turned out to be resistant, as well as those drugs that are contraindicated for him in the presence of serious premorbid lesions.

8) 8. Timely surgical elimination of violations of the outflow of pus, sputum, urine, blood supply disturbances, ventilation, timely removal of organs or parts thereof hopelessly destroyed by the process, in which they hide from the effects of bactericidal factors of mycobacterium tuberculosis.

9) 9. Early and decisive suppression of the so-called secondary microflora, willingly vegetating and disfigured by tuberculosis organs and tissues.

10) 10. Careful objective monitoring of drug intake, drug tolerance and assessment of immediate and long-term results of treatment.

11) Registration and treatment of patients with tuberculosis is carried out in 3 categories:

I (first) category - all new cases of pulmonary and extrapulmonary tuberculosis with or without bacterial excretion;

II (second) category - repeated cases of tuberculosis ("relapse", "treatment failure", "treatment after a break", "others");

IV (fourth) category - cases of tuberculosis with laboratory-confirmed multidrug-resistant or extensively drug-resistant tuberculosis, with multidrug-resistant tuberculosis with a “failure of treatment” outcome in modes I, II, and IV categories.

When registering, cases of tuberculosis are divided into the following types:

1) "new case" - a patient who has never previously taken anti-tuberculosis drugs or has been taking them for less than one month;

2) "relapse" - a patient who previously received treatment with first-line anti-tuberculosis drugs with the outcome "cured" or "treatment completed", but who subsequently had bacterial excretion;

3) "failure of treatment" - a patient after an ineffective first or repeated course of treatment with first-line anti-tuberculosis drugs;

4) "treatment after a break" - a patient with a positive sputum smear microscopy, resuming treatment after a break of 2 months or more;

5) “transferred” - a patient arriving for treatment or continuing treatment from another institution with TB-09 form approved by Order 907 and (or) an extract from an outpatient card or medical history, where he was registered as a patient with tuberculosis. Upon completion of treatment, his outcome is sent to the primary registration anti-tuberculosis organization;

6) “other” - all repeated cases of tuberculosis that do not fit the above types of registration (pulmonary tuberculosis without bacterial excretion and extrapulmonary tuberculosis). Each such case requires histological and / or bacteriological confirmation.

The management of anti-tuberculosis drugs is carried out in accordance with the current legislation of the Republic of Kazakhstan.
Treatment of patients with tuberculosis is carried out continuously in two stages:
1) the first stage: the intensive phase is carried out in the hospital; subsequently, after reaching the conversion of the smear, it continues on an outpatient basis. Patients without bacterial excretion are initially referred for treatment in outpatient settings, as well as in hospital-substituting conditions, by decision of the centralized medical advisory commission;
2) the second stage: the supporting phase is carried out in an outpatient, inpatient setting. The maintenance phase of treatment in a hospital for clinical and social reasons is decided by a centralized medical advisory committee.
Classification of anti-tuberculosis drugs:
1) group 1 - first-line oral anti-tuberculosis drugs: isoniazid (N), rifampicin (R), pyrazinamide (Z), ethambutol (E);
2) group 2 - injectable drugs: kanamycin (Km), capreomycin (Cm) or amikacin (Am);
3) group 3 - drugs from the group of fluoroquinolones: levofloxacin (Lfx), moxifloxacin (Mfx);
4) group 4 - other second-line anti-tuberculosis drugs: prothionamide (Pto), cycloserine (Cs), paraminosalicylic acid (Pas);
5) group 5 - Bedaquiline (Bdq), Delamanid (Dlm), (Linezolid (Lzd), clofazimine (Cfz), imipinem-cilastatin (Imp / Cls), amoxicillin-clavulanate (Amx / Clv).
Treatment of tuberculosis patients, including monitoring the intake of all prescribed medications, is carried out under the direct supervision of a qualified healthcare professional. Before starting treatment, the patient is interviewed about the need to take prescribed anti-

tuberculosis drugs, followed by the signing of an informed consent form No. TB 14 / approved by Order 907.

The drugs are taken according to the standard regimen on a daily basis 7 calendar days a week in the intensive phase, 6 calendar days a week in the maintenance phase of treatment. If the intensive phase is carried out on an outpatient basis - 6 calendar days a week.

he appointment and treatment regimen for category I is determined by the centralized medical advisory committee, which approves the treatment regimen, doses and frequency of administration of anti-tuberculosis drugs.

A short-term treatment regimen is prescribed for patients with multidrug-resistant tuberculosis with limited specific lesions in the lung tissue, mainly without bacterial excretion, with preserved sensitivity to fluoroquinolones and second-line injectable anti-tuberculosis drugs, or in the absence of suspicions of pre-extensively drug-resistant tuberculosis and extensively drug-resistant tuberculosis stability. In the intensive phase with a short-term regimen, from 4 to 6 months are prescribed Cm / Km / Am + Mfx + Pto (Cs) + H (high doses) + E + Z + Cfz. In the maintenance phase from 5 to 6 months Mfx + Pto (Cs) + E + Z + Cfz.

The short-term treatment regimen is being used in pilot projects.

An individual regimen is used to treat patients with multidrug-resistant tuberculosis, pre-extensively drug-resistant, extensively drug-resistant tuberculosis, and the treatment regimen consists of bedaquiline and (or) delamanid, as well as anti-tuberculosis drugs of all 5 groups, to which the sensitivity of mycobacterium tuberculosis is preserved. Individual treatment regimen is used in the framework of pilot projects.

The daily dose of anti-tuberculosis drugs in a hospital is taken in one or two doses, on an outpatient basis - in one dose. Patients receiving anti-tuberculosis drugs fractionally in the hospital, at least 2 weeks before discharge, are transferred to. In the process of treating patients, weight control and adjustment of doses of drugs are monthly carried out.

Outcomes of treatment of patients with tuberculosis:

1) “cured” - the results of sputum bacterioscopy are negative at the end of treatment and at least in one previous study;

2) “treatment completed” - the patient has taken all prescribed doses of anti-TB drugs for the intended period of time, but does not meet the criteria of “cured” or “treatment failure”;

3) "failure of treatment" - in a patient:

a positive sputum microscopy result remains at the end of the intensive phase with a preserved sensitivity of mycobacterium tuberculosis to at least rifampicin, in the absence of drug susceptibility test data and in case of multidrug resistance;

bacterial excretion resumes after sputum smear conversion;

an initially negative microscopic result became positive by the end of the intensive phase of treatment with a preserved sensitivity of mycobacterium tuberculosis to at least rifampicin, in the absence of drug susceptibility test data and in case of multidrug resistance;

an initially negative microscopic result became positive on maintenance phase therapy, regardless of drug susceptibility test data;

4) "died" - the patient died during treatment, regardless of the cause of death;

5) "violation of the regime" - the patient interrupted treatment for two or more months;

6) “transferred” - a patient who left for the appointment or continuation of anti-tuberculosis treatment in another institution with the TB09 form / approved by Order 907 and an extract from the medical record of an inpatient or outpatient patient;

7) "transferred to category IV" - a patient with laboratory-confirmed tuberculosis with multiple or extensive drug resistance, a patient with suspected multidrug-resistant or extensively drug-resistant tuberculosis with extrapulmonary tuberculosis and a sick child from contact with multidrug-resistant tuberculosis without bacterial excretion.

The outcome of "failure of treatment" in patients with extrapulmonary tuberculosis, as well as in children with pulmonary tuberculosis without bacterial excretion, is determined by the results of clinical and radiological studies. And “Therapeutic success” is the number of cases with reported treatment outcomes “cured” and “treatment completed”.

4. Illustrative material: presentation.

5. Literature:

1. Phthisiology. Rakisheva A.S., Tsogt G., Almaty, 2014
2. Order No. 214 of november 30, 2020. "On approval of the Instructions for the organization of medical care for tuberculosis»
3. Perelman, MI Phthisiology: textbook. - 4th ed. revised and add. - M.: GEOTAR - Media, 2013. _ 446 + e. wholesale, disk (CD-ROM).

6. Control questions:

1. Basic principles of tuberculosis treatment.
2. Classification of anti-tuberculosis drugs.
3. Drug-resistant tuberculosis.
4. Monitoring of treatment.

1. Topic number 4: Allergy and anti-tuberculosis immunity. Immunoprophylaxis of tuberculosis. Primary tuberculosis. Pathogenesis, pathomorphology. Clinical forms.

2. Goal: to reveal the basics of the formation of acquired infectious and artificial sterile immunity, the development of allergies. Analyze the features of primary forms of tuberculosis (toxic-allergic, paraspecific diseases, complications, etc.), diagnosis and differential diagnosis.

3. lecture Theses:

Immunity -(from the Latin word immunitas-deliverance , liberation)- the body's resistance to the pathogen or poison. Immunity to tuberculosis is due to the totality of all inherited and individually acquired adaptations of the body. Preventing the penetration and reproduction of Mycobacterium tuberculosis and their secreted products.

Different representatives of the animal world have different resistance to tuberculosis infection. Guinea pigs, rabbits, monkeys, cattle are particularly sensitive, and rats, dogs, horses, and goats are resistant. They have sharply limited reproduction of MBT and special. beating is characterized by limited defeat**.**

A person is usually naturally resistant to tuberculosis. This is proved by the fact that the introduction of infection does not always cause the disease.

In addition to natural (innate) resistance in response to the introduction of infection develops - acquired immunity, which can be either infectious, in response to infection with infectious material or post-vaccination.

Infectious (or non-sterile) is caused by the presence of the causative agent of tuberculosis in the body in the absence of clinical manifestations.

The acquired immunity in tuberculosis is based on various mechanisms that lead primarily to the delay of MT at the site of introduction. When entering the internal organs, there is a delay

in their reproduction and an increase in the process of destruction by phagocytes. As the immune system fades, MT regains the ability to multiply and cause pathological processes.

The emergence of immunity after an infection (primary disease) it served as the basis for numerous experiments to create artificial immunity with the help of specific anti-tuberculosis vaccination.

Due to the penetration of Mycobacterium tuberculosis into the body and the development of specific diseases in it, a specific Allergy occurs.

An allergized body shows increased sensitivity to repeated administration of MT or their vital products.

This feature of an infected organism is used in Phthisiology to determine the infection or allergic state of tuberculosis patients.

The allergen used is not live MT, but tuberculin.

Specific actions of tuberculin are manifested in the fact that when small doses are injected into an infected body, a response occurs, while an organism that is not infected with tuberculosis does not react even to large doses of tuberculin.

Hypersensitivity to tuberculosis infection occurs not immediately after infection, but after a certain incubation period. Allergic reactions enhanced by the development of the pathological process and can be pronounced (hyperergy).

Primary tuberculosis

By primary tuberculosis, we mean tuberculosis that occurs as a result of primary infection with MBT.

Primary tuberculosis is a disease mainly of children and adolescents. It is much less common in adults.

Primary tuberculosis also develops as a result of infection at an older age. The frequency of its occurrence in adults depends on the degree and dynamics of infection in the population and the ongoing tuberculosis epidemic in the region.

Therefore, the greater the infection rate of children and adolescents, the less primary tuberculosis in adults and Vice versa.

The clinic of primary tuberculosis is diverse. The classic form of primary tuberculosis is the primary complex. In 85-90 % of cases, it is localized in the lung and only in 10-15 % in other organs. In the pulmonary component, as a rule, they find MBT of the human type. The pathways of infection are aerogenic and alimentary (through the intestinal mucosa to the mesenteric lymph nodes, and then through the thoracic duct to the General flow of blood circulation, through the mucosa of the oral cavity or tonsils, from here along the lymphatic pathways to the lungs).

In the pathological study of lungs that died of tuberculosis and other causes, 89-92 % of the primary affect is isolated, localized in well-ventilated areas, closer to the pleura (3-8-4-5 segments).

The primary focus is an exultative-pneumonic focus, alveolitis, then the infection penetrates through the lymph vessels to the regional lymph nodes (bronchial lymph glands-the mirror of the lungs).

Evolution of the primary focus-progression or resorption with dehydration (Rut focus).

4. Illustrative material: presentation, slides, diagrams, x-ray images.

5. Literature:

1. Phthisiology. Rakisheva A. S., Tsogt G., Almaty, 2014

2. Order No. 214 of november 30, 2020. "On approval of the Instructions for the organization of medical care for tuberculosis»
3. Perelman, M. I. Phthisiology: textbook. - 4th ed. pererab. and DOP. - M.: GEOTAR-Media, 2013. _ 446 +e. opt, disk (CD-ROM).

6. Main questions:

1. The role of Allergy and immunity in tuberculosis.
2. Immunoprophylaxis in tuberculosis.
3. Primary tuberculosis, pathogenesis and classification.
4. Diagnosis and differential diagnosis of primary tuberculosis.

1. Theme 5: Disseminated tuberculosis of the lungs. Pathogenesis, pathomorphology, clinic, diagnostics, differential diagnostics

2. Goal: to Familiarize students with disseminated pulmonary tuberculosis. The lecture contains data on the epidemiology, etiology and pathogenesis of the disease, its clinical manifestations, differential diagnosis, complications and treatment.

3. Abstract lectures:

Disseminated pulmonary tuberculosis is characterized by the presence of multiple tuberculosis foci formed as a result of the dispersion of MBT in the lungs.

Among the newly identified patients with pulmonary tuberculosis, disseminated tuberculosis is diagnosed in 5 -9 %, among those registered in antitubercular dispensaries-in 12-15 %. Children and adolescents rarely develop disseminated tuberculosis. Identification of patients with this form of tuberculosis among them indicates a high prevalence of tuberculosis infection among people around them. Disseminated tuberculosis is often detected in elderly and senile people who receive immunosuppressive drugs for various diseases. As a cause of death, disseminated tuberculosis accounts for 3-10 % of all forms of pulmonary tuberculosis.

Disseminated tuberculosis caused by M. tuberculosis transmission in lungs hematogenous, lymphogenous, rarely lymphohematogenous lymphobronchial ways. Generalization of the tuberculosis process is possible with a complicated course of primary tuberculosis, when the bacteremia characteristic of this form is manifested by multiple focal dissemination in the lungs. In active primary tuberculosis, the source of MBT spread (early generalization) is caseosally altered intra-thoracic lymph nodes that are topographically and functionally closely related to the circulatory system. Disseminated tuberculosis can develop many years after spontaneous or drug treatment of primary tuberculosis (late generalization). The dispersion of the Among the newly identified patients with pulmonary tuberculosis, disseminated tuberculosis is diagnosed in 5 -9 %, among those registered in antitubercular dispensaries-in 12-15 %. Children and adolescents rarely develop disseminated tuberculosis. Identification of patients with this form of tuberculosis among them indicates a high prevalence of tuberculosis infection among people around them. Disseminated tuberculosis is often detected in elderly and senile people who receive immunosuppressive drugs for various diseases. As a cause of death, disseminated tuberculosis accounts for 3-10 % of all forms of pulmonary tuberculosis.

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bacteremia characteristic of this form is manifested by multiple focal dissemination in the lungs. In active primary tuberculosis, the source of MBT spread (early generalization) is caseosally altered intra-thoracic lymph nodes that are topographically and functionally closely related to the circulatory system. Disseminated tuberculosis can develop many years after spontaneous or drug treatment of primary tuberculosis (late generalization). The dispersion of the MBT comes from the affected lymph nodes, Gon's lesions of extrapulmonary tuberculous lesions. comes from the affected lymph nodes, , Gon's lesions of extrapulmonary tuberculous lesions.

Mycobacteria from the lymph node enter the blood when tuberculosis inflammation spreads directly to the wall of the pulmonary vessel, through the thoracic lymphatic duct, subclavian vein, right heart, pulmonary veins and further into the lungs. From the extrapulmonary focus, MBTS enter the lung vessels after previous bacteremia. With hematogenic dissemination, tuberculosis foci are detected in both lungs symmetrically throughout or in the upper parts. From the mediastinal lymph node, MBT can spread retrograde to the lungs through the lymphatic vessels. In this case, there is mainly unilateral lymphogenic disseminated tuberculosis.

Getting MBT into the blood and lymph is not enough for the occurrence of disseminated tuberculosis - it is necessary to reduce the natural resistance of the body and anti-tuberculosis immunity, as well as increase the reactivity of the lung tissue and lung vessels to tuberculosis infection. Disseminated tuberculosis develops in children who are not vaccinated with BCG, in people with congenital or acquired immunodeficiency, in patients who have taken immunosuppressants for a long time, during natural hormonal restructuring of the body, during fasting, exogenous MBT superinfection, infectious diseases, when using physiotherapy procedures (quartz, mud, etc.), insolation.

Simultaneous administration of a large dose of MBT to the blood, for example, when the caseous lymph node breaks through into a blood vessel, can cause the development of generalized disseminated tuberculosis with lung damage.

Disseminated tuberculosis in 2/3 of patients is detected during examination due to the appearance of various complaints, in 1/3 - during preventive fluorographic examinations.

With all the variety of clinical manifestations of disseminated tuberculosis, several clinical variants can be distinguished:

1) acute disseminated (miliary) pulmonary tuberculosis;
2) subacute disseminated pulmonary tuberculosis;
3) chronic disseminated pulmonary tuberculosis.
4) generalized form of disseminated tuberculosis

At the acute onset of the disease, the temperature rises to 39-40 °C, shortness of breath, dry cough, sometimes with the release of a small amount of mucosal sputum. In patients, during examination, there is cyanosis (lips, fingertips).. Percussion of the lung is detected with a tympanic tone sound, auscultatory auscultated hard or loose
breathing, a small amount of dry or small wet wheezing, especially in the paravertebral space.Marked labile pulse and tachycardia.

Tuberculin tests are usually false-negative (negative anergy).

Changes in the blood are characterized by leukocytosis, monocytosis, eosinopenia, neutrophilic shift to the left, increased ESR. Protein is detected in the urine.

The radiological picture of miliary tuberculosis in the first days of the disease is expressed by a diffuse decrease in the transparency of the lungs with a blurred vascular pattern, the appearance of a fine-grained mesh due to inflammatory compaction of the interstitial

cloths. Only on the 7th-10th day of the disease on the survey x-ray, you can see multiple, rounded, well-defined and arranged in a chain foci the size of a millet grain, followed by total symmetrical seeding of the pulmonary fields in both lungs with small similar foci. All important signs of miliary lung damage can be detected by using CT. If the process progresses, the pleura and meningeal membranes are affected.With the reverse development of miliary tuberculosis, the foci can completely resolve or calcify. The number of calcified foci is less than during the rash period, since focal changes partially resolve.

The differential diagnoses. The largest group of lung diseases that should be compared with disseminated forms of tuberculosis is lobular bronchopneumonia of various etiologies (post-acne, influenza, septic, etc.).

Treatment. Disseminated tuberculosis is curable even if the meningeal membranes are affected. Treatment should be comprehensive, taking into account all pathophysiological disorders

4. Illustrative material: presentation, x-ray images.

5. Literature:

1. Phthisiology. Rakisheva A. S., Tsogt G., Almaty, 2014
2. Order No. 214 of november 30, 2020. "On approval of the Instructions for the organization of medical care for tuberculosis»
3. Perelman, M. I. Phthisiology: textbook. - 4th ed. pererab. and DOP. - M.: GEOTAR-Media, 2013. _ 446 +e. opt, disk (CD-ROM).

6. Control question:

1. Methods for detecting disseminated tuberculosis?
2. Pathogenesis of disseminated tuberculosis?
3. Forms of disseminated tuberculosis?
4. Differential diagnostic signs of disseminated tuberculosis?

1. Theme 6: Tuberculous meningitis. Pathogenesis, pathomorphology, clinical picture, diagnostics, differential diagnostics.

2. Purpose: To acquaint students with tuberculous meningitis. The lecture contains data on the etiopathogenesis of the disease, its clinical manifestations, diagnostic methods and differential diagnosis, complications and treatment.

3. Abstract lectures: Etiology and pathogenesis. Tuberculosis of the meninges, or tuberculous meningitis, is mainly a secondary tuberculous lesion (inflammation) of the membranes (soft, arachnoid, and less hard) that occurs in patients with various, more often active and common forms of tuberculosis. Tuberculosis of this localization is the most difficult. In adults, tuberculous meningitis is often a manifestation of an exacerbation of tuberculosis and may be its only established localization. The localization and nature of the main tuberculous process affect the pathogenesis of tuberculous meningitis. In primary disseminated pulmonary tuberculosis, mycobacterium tuberculosis penetrates into the central nervous system by the lymphohematogenous route, since the lymphatic system is associated with the bloodstream. Tuberculous inflammation of the meninges occurs with the direct penetration of mycobacteria into the nervous system due to a violation of the vascular barrier. This occurs when the hyperergic state of the vessels of the brain, membranes, vascular plexuses, caused by nonspecific and specific (mycobacterium) sensitization. Morphologically, this is expressed by fibrinoid necrosis of the vessel wall, as well as their increased permeability. The resolving factor is tuberculous mycobacteria, which, existing in the lesion focus, cause an increased

sensitivity of the body to tuberculosis infection and, penetrating through the altered vessels of the vascular plexus of the ventricles of the brain, lead to their specific damage.

Tuberculous meningitis is the most severe form of tuberculosis, which in case of untimely diagnosis in 100% of cases gives rise to death and complications. Tuberculous meningitis is terrible for its complications, such as blindness, deafness, hydrocephalus, decreased intelligence, paresis, paralysis. Therefore, the most important thing for a doctor (PHC, pediatrician, infectious disease specialist, neuropathologist) is to suspect tuberculous meningitis in time, assess the clinical symptoms, cerebrospinal fluid and call a phthisiatrician in time.

4. Illustrative material: presentation, X-ray tomograms.

5. Literature:

1. Phthisiology. Rakisheva A.S., Tsogt G., Almaty, 2014
2. Order No. 214 of november 30, 2020. "On approval of the Instructions for the organization of medical care for tuberculosis»
3. Perelman, MI Phthisiology: textbook. - 4th ed. revised and add. - M.: GEOTAR - Media, 2013. _ 446 + e. wholesale, disk (CD-ROM).

6. Control questions:

1. Causes of tuberculous meningitis
2. Clinic of tuberculous meningitis
3. The value of the lumbar puncture, its technique
4. Differential diagnosis of tuberculous meningitis
5. Peculiarities of treatment of tuberculous meningitis

1. Topic number 7: Pathogenesis of secondary tuberculosis. Focal, infiltrative pulmonary tuberculosis. Pulmonary tuberculoma. Pathogenesis, pathomorphology, clinic, diagnostics, differential diagnostics

2. Purpose: To acquaint students with the clinical forms of secondary pulmonary tuberculosis. The lecture contains data on etiology and pathogenesis, clinical manifestations of focal, infiltrative tuberculosis and pulmonary tuberculosis, their differential diagnosis and treatment.

3. Theses of the lecture: Secondary tuberculosis develops in the conditions of the existing immunity to tuberculosis. It occurs in previously infected people.

The reasons:

-endogenous (reactive old focus in the body);

-exogenous (repeated massive penetration into the body from the external part);

The disease is latent at the beginning; patients have no complaints. There is a long course with periods of exacerbation and remission.

With tuberculosis, the lung loses its normal structure. Fibrosis develops, the volume of the lung decreases and the lung is pulled up.

One of the main signs of secondary forms of tuberculosis is cough. The amount of sputum secreted is scanty, it is not purulent in nature.

Hemoptysis is rare, pulmonary hemorrhage develops with advanced destructive processes.

In secondary tuberculosis, usually specific changes are limited to the limits of any one organ (often the lungs). Therefore, secondary tuberculosis is also called organ tuberculosis.

In the pathogenesis, the so-called foci of dropout or after primary foci, which are formed at different periods of primary tuberculosis, are of great importance. Studies by many authors have

established that such foci are usually multiple, located in the upper (S-S), bronchopulmonary segments of the lungs in the under pleural regions. (Strukov A.I. 1935; Gordon G.Ya., 1951; Levenbruk I.S., 1962, etc.). These foci are often accidental findings during X-ray anatomical studies of people who do not suffer from active forms of tuberculosis.

Focal tuberculosis is the earliest form of secondary tuberculosis in older children and adolescents. Currently, in newly infected adolescents, tuberculosis often occurs in the form of focal and infiltrative forms. In the structure of pulmonary tuberculosis in adolescents, focal tuberculosis occupies an average of 33%, in children it is much less common.

Differential diagnosis of focal tuberculosis is carried out with bronchopneumonia, peripheral and metastatic lung cancer.

Clinical and morphological feature of infiltrative tuberculosis is a widespread lung disease with a tendency to rapid progression. Infiltrative tuberculosis occurs against the background of specific hypersensitization of the lung tissue, proceeds with a pronounced exudative tissue reaction in the inflammation zone and a tendency to disintegration of lung tissue.

It is diagnosed in 65-75% of newly diagnosed patients with pulmonary tuberculosis.

The development of infiltrative tuberculosis is associated with the appearance and increase of the infiltration zone around fresh or old tuberculosis foci, which are more often localized in the 1st, 2nd and 6th segments of the lung. Subsequent development is associated with an increase in caseous-necrotic tissue reaction. Caseous masses are melted and rejected through the draining bronchus. Multiple or single are formed in the decay cavity. Conditions arise for the bronchogenic spread of MBT, which leads to the appearance of new foci and infiltrates.

Differential diagnosis of infiltrative tuberculosis is carried out most often with pleuropneumonia, pulmonary eosinophilic infiltrate, lung infarction, lung cancer, actinomycosis, candidomycosis.

Lung tuberculomas were observed by phthisiatricians until recent years in the form of a round dense tuberculous infiltrate in the lung, chronically proceeding for years. Sometimes, like a pneumothorax, superimposed over a round subclavian infiltrate, only simulated a round, dense, large focus of darkening, which did not change its appearance in a compressed lung, even after many years of inception. The name of this focus was usually given "Chronic infiltrate", "infiltrate in the phase of fibrotization", "infiltration in the phase of compaction". Now some of these tuberculous formations are called tuberculomas, lung caseomas. Modern antibiotic therapy, sometimes against a background of special reactivity of the macroorganism, acts on the pulmonary infiltrate (it will be more often subclavian) in the following form: treatment protects the infiltrate from decay and cavernization, but does not create conditions for resorption, then a sluggish chronic process of caseization begins - tissue death with some mummification in the form of dry caseosis surrounded by a fibrous capsule-barrier.

Most often, the differential diagnosis of tuberculoma is carried out with peripheral lung cancer, tumor metastases in the lungs, benign tumors, retention cysts, and aspergilloma.

4. Illustrative material: presentation, X-ray tomograms.

5. Literature:

1. Phthisiology. Rakisheva A.S., Tsogt G., Almaty, 2014

2. Order No. 214 of november 30, 2020. "On approval of the Instructions for the organization of medical care for tuberculosis»

3. Perelman, MI Phthisiology: textbook. - 4th ed. revised and add. - M.: GEOTAR - Media, 2013. _ 446 + e. wholesale, disk (CD-ROM).

6. Control questions:

1. The causes of secondary tuberculosis
2. Features of the course of secondary forms of tuberculosis
3. Diagnostics and differential diagnosis of secondary forms of tuberculosis.
4. Roentgenosemiotics of secondary forms of tuberculosis

1. Theme number 8: Cavernous, fibrocavernous, cirrhotic pulmonary tuberculosis. Pathogenesis, pathomorphology, clinic diagnostics, differential diagnostics.

2. Purpose: To acquaint students with the clinical forms of secondary pulmonary tuberculosis. The lecture contains data on the etiology and pathogenesis, clinical manifestations of cavernous, fibrous-cavernous and cirrhotic pulmonary tuberculosis, their differential diagnosis and treatment.

3. Theses of lectures:

Cavernous pulmonary tuberculosis is an intermediate stage in the course of destructive tuberculosis.

Cavernous tuberculosis occurs in isolated cases. In 2/3, cavernous develops against the background of foci of secondary infection, more often from infiltrative forms of pulmonary tuberculosis, more often from a focal process and is the result of a progressive course of infiltrative or focal tuberculosis.

With active foci of infection, as a rule, an acute development of diseases is observed, and with inactive foci - gradual or asymptomatic. In recent years, the clinical syndrome has changed. Chest pain, shortness of breath, severe cough, pulmonary hemorrhage (symptoms of cavernous processes in the pre-antibacterial period) are rarely observed at present (in 12.8%). Physical signs of cavitary changes in the lungs are determined by the physical method only before the start of treatment. They are not sharply expressed and quickly disappear during treatment.

Radiographically, cavernous pulmonary tuberculosis is represented by a formed cavity of disintegration - a cavernous - with a relative stabilization of the process, which will be confirmed by dynamic observation data. The extent of tuberculous changes within one or two bronchopulmonary segments. The dominant feature in the picture is a cavity with mild changes in the surrounding lung tissue in the form of local limited pneumosclerosis and a few tuberculous foci of a predominantly productive nature.

Differential diagnosis of cavernous pulmonary tuberculosis in the carotid is carried out with a congenital cyst, an uncomplicated cyst.

Fibrous-cavernous tuberculosis is a chronic cavernous process, characterized by the presence of cavities, pronounced fibrosis and foci of seeding. It is a far-reaching and epidemiologically most dangerous form, since patients with FCT in most cases excrete bacteria.

FKT is characterized by the presence of a cavity with a pronounced fibrous capsule, fibrotic changes in the lung on the side of the process, displacement of the mediastinal organs to the diseased side, bronchogenic dissemination in the lungs and the duration of the disease.

The pathogenesis of FCT and the formation of cavities consists mainly in the purulent fusion of the area of caseous pneumonia, the rejection of necrotic masses (their release often occurs with sputum through the bronchi - a companion path) and the formation of a cavity, the wall of which consists of several layers: a layer of caseous-necrotic masses (curd character, contain a large amount of BC - up to 10 million, in the cavity), granulation and fibrous. With the development of FCT from tuberculoma, its decay is observed. Formation of granulation in the

presence of fibrosis. The process of cavity formation takes on average 2 to 3 weeks. The course depends on the reactivity of the patient's body.

With involution of caverns, several outcomes are possible:

the formation of a scar, tuberculoma or a sanitized cavity. In case of an unfavorable course of the disease, it is possible that the bronchi, pleural sheets are involved in the process, and the development of bronchiectasis.

All cavities that develop in PCT can be divided into several types, depending on the structure of their walls:

• Fresh - represent a cavity in caseous masses without signs of limitation.
• Elastic - the wall of which consists of caseous-necrotic granulation and fibrous layers.
• Capsulated (and whether or not) - the 3rd layer - fibrous, joins the previous 2 layers.
• Fibrous - characterized by the presence of a dense fibrous capsule.
• Sanitized - formed with effective treatment, lined with epithelium from the inside.

Depending on the size, they are distinguished: small cavities (2-4 cm), medium (4-6 cm), large (6-8 cm), cavummagna (more than 8 cm), destroyed lung.

The destruction of the lung tissue and the formation of a cavity can be with any clinical form of tuberculosis, but the transition to the fibrous-cavernous form is determined not by the fact of destruction, but by a change in the nature of the morphological process in the cavity and in the lung, and often by a change in the entire clinical course of the disease.

FCT symptoms are cough with scanty phlegm, chest pains, weakness, weight loss, poor sleep and appetite, fever, night sweats, and hemoptysis.

The cavity in FKT has characteristic features on the roentgenogram. Surrounded by low-elastic lung tissue, the cavity rarely retains the correct rounded shape, it can be irregular in shape, with a dense inner capsule and often in an inflammatory area around. One lung can have several cavities, cavities can be of various sizes: giant, large and small.

Fibrous-indurative changes, pleural layers, dense or calcified foci are also radiologically determined, and against their background, mainly in the upper parts of the lungs, cavities of various sizes are irregular, sometimes bean-shaped with a fibrous wall. With exacerbation, in addition, visible "soft" recently arisen foci, more often in the middle or lower parts of the lungs. This form is more often observed in ineffectively treated patients, persons suffering from alcoholism and drug addiction.

In the sputum of patients with FCT, a large amount of CD is found, as well as coral elastic fibers characteristic of this clinical form. During an exacerbation, the number of leukocytes increases to 10,000 - 12,000. Higher numbers are observed with a secondary infection located in the purulent contents of the cavity. There is also a shift in the leukoformula.

Complications.

A. Nonspecific complications.

1. Development of pulmonary heart disease (cor pulmonale), shortness of breath, enlarged liver, ascites, arrhythmias.
2. Pulmonary bleeding caused by the development of a pulmonary artery aneurysm.
3. Amyloidosis of internal organs.
4. Spontaneous pneumothorax - collapse of the lung - pleurisy - pleural empyema.
5. Accession of a secondary bacterial infection.

B. Specific complications.

1. Sputtogenic intracanallicular spread of infection.
2. Tuberculosis of the larynx.
3. Tuberculosis of the intestine.

4. Genitourinary tuberculosis.
5. Tuberculous empyema.

Pulmonary hemorrhages and spontaneous pneumothorax are most common.

The most common cause of death in fibrocavernous tuberculosis is its progression and pulmonary heart failure.

FKT has to be differentiated from bronchiectasis, lung cancer, pneumosclerosis of various etiologies.

Cirrhotic pulmonary tuberculosis.

It is characterized by massive proliferation of connective tissue at the site of the pulmonary parenchyma and is accompanied by impaired lung function. Cirrhosis is defective healing of pulmonary tissue affected by the tuberculous process.

Pathogenesis: cirrhosis is the result of the development of gross deforming sclerosis in the lungs and pleura and depends on the initial form of pulmonary tuberculosis.

There are: 1. Bronchogenic cirrhosis. With tuberculosis of the intrathoracic lymph nodes, complications of atelectasis, after a month or more, massive fibrosis develops in the atelectised area. The upper and middle lobes of the right lung are more often affected.

2. Pneumogenic cirrhosis develops with pneumonia,

infiltrative tuberculosis as a result of the germination of foci and foci with scar tissue.

3. Bilateral coarse trabicular cirrhosis develops with a long course of disseminated tuberculosis with connective invasion of foci, lymphoengenitis and waxing.

4. Pleurogenic cirrhosis develops in persons who have undergone exudative pleurisy, pneumopleuritis, who have been treated for a long time with the help of artificial pneumothorax. In this case, fibrosis from the pleura spreads to the lungs.

Along with the development of connective tissue at the site of the affected and unaffected parts of the lungs, vicar emphysema develops. Often, such emphysema in the form of bullous swellings can also occur in the affected parts of the lungs and develops as a result of sclerotic changes in the interstitial tissue and lesions of the walls of the alveoli. The area of the lung affected by cirrhosis decreases in volume, the pleura over it thickens. The development of connective tissue in the lungs leads to a change in the position and structure of the bronchi and blood vessels. Bronchial tissue is replaced by scar tissue, metaplasma of the epithelium occurs, atrophy of elastic and smooth muscle fibers, deformation of the bronchial lumen by scar tissue occurs, motor and drainage function of the bronchi is impaired. The bronchi change their position, are deformed, as a result of which bronchiectasis develops. All this creates conditions for stagnation of secretions in them, reproduction of phlegm and the development of inflammation. In the area of lung damage, blood vessels are partially obliterated, and in places they expand, vessels are damaged and granulation is the cause of frequent bleeding and hemoptysis.

The clinical picture depends on the phase of the process and the severity of functional disorders and complications from other organs. Patients complain of shortness of breath, palpitations, which are noticeably intensified with physical exertion. Often they are worried about weakness and poor health.

Cirrhosis can be unilateral, involving a larger or smaller area of the lung and bilateral, limited or diffuse, limited unilateral cirrhosis, are affected in the lobes, cirrhosis of the middle lobe is possible with the development of a mid-lobe syndrome.

The affected lobe is reduced in volume, darkening in it of high intensity in some of its areas is determined by an oval strip-like form of enlightenment. Among the compacted areas, denser

calcified tuberculous foci are determined. The root of the lung and mediastinum are displaced towards cirrhosis, emphysema in the other lung.

Diffuse cirrhosis is usually bilateral after disseminated pulmonary tuberculosis. In both lungs, multiple well-defined linear, intense, intertwining shadows are determined. Both roots are pulled up, the vessels extending from them are located vertically (symptom <(weeping willow "). The contour of the diaphragm on the affected side is also pulled up, uneven. Respiratory excursions of the diaphragm are limited. Changes in the pleura in the form of thickening of the pleural sheets, pleural adhesions are always determined.

The main signs of the activity of tuberculous changes in the lungs:

1. A set of radiological signs.
2. Bacterial excretion.

H. Positive results of therapy

4. Tuberculosis of the bronchi.
5. Results of a retrospective analysis of the X-ray fluorographic archive.

Additional changes:

1. Leukogram and ESR.
2. Some biochemical sheets (enlarged sialic cells, the appearance of SRV, etc.).

Z. Immunological indicators (hyperergic Mantoux reaction, tuberculin provocation tests and hemotuberculin tests).

4. Detection of limited pituitary endobronchitis.

If there is at least 1 of the main signs, then the process is considered active.

Pneumofibrosis (fibrosing alveolitis, spread of bronchiectasis, pneumoconiosis) can also be mistaken for cirrhotic tuberculosis.

Treatment of patients with destructive forms of tuberculosis is carried out in a hospital setting according to categories in accordance with the results of sputum smear microscopy, molecular genetic methods, drug sensitivity test and the prescribed therapy regimen.

4. Illustrative material: presentation, X-ray tomograms.

5. Literature:

1. Phthisiology. Rakisheva A.S., Tsogt G., Almaty, 2014
2. Order No. 214 of november 30, 2020. "On approval of the Instructions for the organization of medical care for tuberculosis»
3. Perelman, MI Phthisiology: textbook. - 4th ed. revised and add. - M.: GEOTAR - Media, 2016. _ 446 + e. wholesale, disk (CD-ROM).

6. Control questions:

1. Characteristics and causes of the formation of destructive forms of the disease.
2. Pathogenesis of caverns, X-ray semiotics of caverns.
3. Differential diagnosis of the annular shadow.
4. Cirrhotic tuberculosis and post-tuberculous cirrhosis.