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APPLICATION OF NEW LABORATORY METHODS IN DIFFERENTIAL DIAGNOSIS OF CHRONIC CHLAMYDIA AND MYCOPLASMAL PNEUMONIA WITH PULMONARY TUBERCULOSIS

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Abstract:

It is generally recognized that in recent years the role of chlamydia and mycoplasmas in the respiratory pathology of adults and older children has increased markedly, but information on their importance in children of the first years of life is quite contradictory. Thus, according to K.A.Okhlopkova 2008, Chlamydophila pneumoniae, which is associated with 24.7%, and mycoplasma pneumonia in 13.2% of community-acquired lower respiratory tract infections, currently has a dominant role in the structure of respiratory chlamydia in hospitalized young patients. Approximately one third of these cases are due to chronic forms of infection.

The problem of pneumonia is constantly being studied in research laboratories, in practical healthcare, both in the Russian Federation and abroad, and the research results are periodically widely discussed at congresses and workshops, which indicates the continuing relevance and social significance of this problem.

Keywords: Human immunodeficiency virus, World Health Organization, medical and labor expert commission, preschool institutions, metered-dose inhaler, children's educational institutions

RELEVANCE. According to WHO, almost a third of the world's population is infected with MBT. About 8.7 million people get tuberculosis every year, 1.4 million of them die. Of the cases of tuberculosis reported annually, about 0.5 million occur in children under 15 years of age.

Taking into account these data, the goal of the Stop Tuberculosis strategy is to provide all tuberculosis patients with equal access to medical care in accordance with international standards, regardless of age, epidemiological danger, status with respect to human immunodeficiency virus (HIV), as well as in cases of drug-resistant tuberculosis (WHO's Stop Tuberculosis Strategy, Geneva 2006.)

As a rule, infection with mycobacterium tuberculosis occurs as a result of airborne droplets entering the lungs, which are released when a patient coughs with pulmonary tuberculosis. For children, the source of infection is usually an adult patient who is in close contact with a child (most often living in the same family). As a result of infection, primary specific inflammation develops and a complex is formed consisting of the affected area of the pulmonary parenchyma (then a focus of Rut is formed) and a zone of tuberculous inflammation in the regional lymph nodes. The immune response (delayed hypersensitivity and cellular immunity) develops 4-6 weeks after primary infection with Mycobacterium tuberculosis. Most often, the immune response suppresses the growth of M.tuberculosis, while the presence of infection in the body can only be indicated by a positive result of a tuberculin skin test (TCP).

If the body's immune response is not strong enough to stop the development of the infectious process, then tuberculosis develops after a few months.

Tuberculosis occurs in children at any age, but most often between the ages of 1 and 4 years. The risk of developing the disease also increases in children with weakened immune systems. Young children (0-2 years old) belong to the risk group for the development of disseminated pulmonary tuberculosis with high mortality.

Primary tuberculosis usually develops in childhood within two years after infection, although the exact time interval cannot be determined. Adolescent children, like adults, get sick most often with post-primary (secondary) tuberculosis with a positive sputum smear. Therefore, teenage children can often be contagious. Secondary tuberculosis is the result of reactivation of latent tuberculosis infection.

The development of the disease can occur in several ways:

a) the progression of the primary focus in the lung with or without formation
cavern formations;

b) progression of the pathological process in the lymph

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nodes;
c) the spread of the process by hematogenic and/or lymphogenic pathways;
The number of detected cases of childhood tuberculosis depends on the prevalence of the disease among the population, the age structure of the child population, the diagnostic tools used, as well as the intensity of work to identify contacts.
Due to the fact that the concepts of "multidrug-resistant tuberculosis (MDR-TB), a combination of TB and HIV infection" appeared and modern methods of diagnosing TB of various organs and systems were introduced, changing views on the problem of prevention and treatment of tuberculosis in children, as well as taking into account the epidemiological situation of tuberculosis in the Republic of Uzbekistan, there was a need making additions to national guidelines and standards for the control of tuberculosis in children.
The child population of the Republic of Uzbekistan is 10, 202, 194 which is 1/3 of the total population. Anti-tuberculosis work among children is carried out on the basis of the "Law on the Protection of the Population from Tuberculosis" Order No. 383 of the Ministry of Health of the Republic of Uzbekistan and the National Tuberculosis Control Program in the Republic of Uzbekistan.
Despite the stabilization of intensive rates of tuberculosis in children in the Republic of Uzbekistan in recent years, the structure of newly diagnosed patients remains severe, i.e. generalized, complicated, secondary and destructive forms of the disease are diagnosed, which indicates the untimely detection of tuberculosis in children. The role of tuberculin diagnostics in the detection of tuberculosis in children has been reduced due to a deficiency of the drug tuberculin.

THE PURPOSE OF THE STUDY. Improving the effectiveness of methods of differential diagnosis of chlamydial and mycoplasma pneumonia in children and pulmonary tuberculosis.

RESEARCH MATERIALS AND METHODS. In the management of patients, along with general clinical studies, special research methods were used, including both routine methods and innovative research.
We studied 67 sick children who were sent for examination to an antitubercular dispensary for the diagnosis and differential diagnosis of tuberculosis in children with chronic pneumonia. The reason for referral to a tuberculosis facility was the similarity of clinical symptoms, ineffective treatment with broad-spectrum antibiotics. The clinical symptoms were also very similar to tuberculosis: prolonged subfebrility, cough with a small amount of sputum, weakness, weight loss, decreased appetite, and most importantly, various changes were radiographically revealed on the overview radiograph: the presence of focal, focal shadows, areas of infiltrates, changes in the root of the lung.

THE RESULTS OF THE STUDY. Among all types of pneumonia, the practitioner most often has to deal with community-acquired pneumonia. According to the official statistics of the Ministry of Health of the Russian Federation, the incidence of community-acquired pneumonia in Russia among people over the age of 18 is 3.9%. Foreign researchers have found that the incidence of community-acquired pneumonia among young and middle-aged people varies from 1 to 11.6%, and in the older age group reaches 25-44%.
The most common cause of community-acquired pneumonia is Streptococcuspneumoniae (30-50%). However, in recent years, the so-called atypical microorganisms, primarily Mycoplasmapneumoniae and Chlamydophila (Chlamidia) pneumoniae, which account for 8 to 25% of cases, have become increasingly important among the etiological factors of community-acquired pneumonia.
Mycoplasmapneumoniae in the structure of community-acquired pneumonia varies between 5-50%. Mycoplasma pneumonia is most often diagnosed in children over 5 years of age and young people (under 25 years of age). Every 3-5 years, there are epidemiological increases in morbidity, which last for several months. Outbreaks of the disease are typical for isolated and semi-isolated groups of the population (military personnel, students, schoolchildren, etc., family outbreaks). The presence of seasonal fluctuations is recognized, namely the high prevalence of infection in the autumn-winter period.
The "radius of damage" of mycoplasmas includes not only the genitourinary tract, but also the respiratory system. When infected with mycoplasmas, the patient may experience symptoms of inflammatory processes in the throat, lungs and bronchi. With weakened immunity, chlamydia and mycoplasma will immediately make themselves felt, and in the most unexpected form, for example, chlamydia type – pneumonia - is the causative agent of chronic diseases of the upper and lower respiratory tract – mycoplasmic bronchitis, atypical pneumonia, etc. Currently, the most effective ways to perform such an analysis are the ELISA method and the PCR method. The ELISA method examines antibodies produced by the body to fight intracellular parasites. The material for performing a blood test for chlamydia and mycoplasmosis is blood serum taken from a vein. For the reliability of the results of the study, it is necessary to take an analysis on an empty stomach.

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Decoding the blood test for chlamydia and mycoplasma allows you to determine the type of infection and assess the dynamics of the disease. The accumulated statistics of the results of the analyses performed by the ELISA method will be indicative in assessing the effectiveness of treatment. Decoding of the blood test for chlamydia and mycoplasma by ELISA At the beginning of the disease, a blood test for chlamydia or mycoplasmosis shows the presence of IgM antibodies. The duration of the initial stage of the disease depends on the type of infection and the individual characteristics of the human immune system, but usually ranges from one to three weeks after infection. If IgM antibodies are detected in the blood test for chlamydia or mycoplasmosis, the doctor diagnoses the acute phase or recurrence of a chronic disease. A month after infection with cellular parasites, IdA antibodies begin to be produced in the body. Last of all (on average, after about four weeks), IgM antibodies appear in the blood test results. A decrease in the number of these antibodies is an indicator of the effectiveness of treatment. Thus, the following indicators are displayed in the decoding of the blood test for chlamydia and mycoplasma: anti-Chlamydia pneumonia IgM, anti-Chlamydia pneumonia IgA, anti-Chlamydia pneumonia IgG and, anti-Mycoplasma pneumonia IgM, anti-Mycoplasma pneumonia IgA, anti-Mycoplasma pneumonia IgG. Decoding of the blood test performed by the CPR method The PCR (polymerized chain reaction) method is currently recognized as the most effective for the diagnosis of infectious diseases. Based on microbiological analysis, it works with genetic material, thereby providing the highest sensitivity of the study. Minimal amounts of biological material are sufficient to diagnose the type of infectious agent, assess its quantity and localization. In the decoding of the blood test for chlamydia and mycoplasma, you will see indicators of Chlamydia trachomatis DNA, Chlamydia pneumonia DNA, Mycoplasma trachomatis DNA, Mycoplasma pneumonia DNA. As you understand, despite the achievements in the field of molecular biology and medicine, the results of the analyses may not adequately reflect the picture of what is happening. And situations in which the results of high-precision analyses for the same indicators differ significantly can confuse even a real professional. Thus, in the diagnosis of chlamydia and mycoplasmosis, the results of blood tests performed using ELISA and PCR techniques may give different results. This can happen for the following reasons. After recovery, IgG antibodies may persist in the blood serum for a long time. Found in the transcript of a blood test for chlamydia or mycoplasmosis, they can be mistakenly interpreted as signs of infection in the body.

What kinds of blood tests do not exist! A simple and affordable laboratory study is able to identify a variety of changes in the state of the body, starting from the first symptoms of viral diseases, ending with oncological markers. The subject of our consideration will be intracellular parasites living in every organism – chlamydia and mycoplasma - and the diseases caused by them. Chlamydia is a whole class of pathogens that cause a variety of diseases. For example, ornithosis is a disease that occurs in a form close to pneumonia. The pathogens of ornithosis are staphylococci and streptococci, a type of chlamydia found in wild and domestic birds. Infection occurs by airborne droplets or through the mouth, after contact with feathers or surfaces on which sick birds were located. Another common carrier of chlamydia infection is cats, which transmit the infection through scratches. Chlamydia is a very common urogenital sexually transmitted infectious disease. Patients with chlamydia infection experience pain and itching in the urethra and genitals, pulling pains in the lower abdomen and groin area. Chlamydia requires immediate treatment. Untimely or incorrect therapy of chlamydia infection can cause various complications, ranging from the appearance of inflammatory foci on the skin and inflammation of internal organs, ending with infertility. Chlamydia poses a huge threat to pregnancy, increasing the risk of miscarriage, contributing to premature birth and infection of the fetus. The "radius of damage" of mycoplasmas includes not only the genitourinary tract, but also the respiratory system. When infected with mycoplasmas, the patient may experience symptoms of inflammatory processes in the throat, lungs and bronchi. Despite the fact that both infections are transmitted through direct contact, a certain number of intracellular parasites are also found in healthy organisms. If the immune system is strong enough, then they do not pose any threat to health. However, with a weakening of the immune system, chlamydia and mycoplasma will immediately make themselves felt, and in the most unexpected form. Many mothers are surprised when a doctor prescribes a blood test for chlamydia and mycoplasma pneumonia to a child exhausted by regular ARVI. "What does sexual infection have to do with a child?"- Mom will think. Nevertheless, it is this type of these intracellular parasites – pneumonic - that is the causative agent of chronic diseases of the upper and lower respiratory tract – mycoplasma bronchitis, atypical pneumonia, etc. Only complete or partial (up to the state of immune control) elimination of pneumonic mycoplasma will lead to the long-awaited healing. The main tool for the diagnosis of chlamydia and mycoplasmosis is a blood test. Currently, the most effective ways to perform such an analysis are

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the ELISA method and the PCR method. The ELISA method examines antibodies produced by the body to fight intracellular parasites

CONCLUSION. The clinical picture of pneumonia caused by Mycoplasma pneumoniae and Chlamydophila pneumoniae, in contrast to that of extrapulmonary bacterial pneumonia, is characterized by a gradual onset of the disease against the background of lesions of the mucous membranes of the upper respiratory tract, the presence of unexpressed intoxication and fever, prolonged paroxysmal cough, frequent extrapulmonary manifestations, relatively meager physical and radiological symptoms of pneumonic infiltration and the absence of significant inflammatory shifts in the peripheral blood. These features provide the basis for further laboratory research in order to etiologically verify the diagnosis.

LITERATURE

1. Belova E.V. Improving the comprehensive diagnosis of tuberculosis infection in children and adolescents. [Text]/ E.V. Belova, V.A.Stakhanov // Tuberculosis and lung diseases. – 2011. - No.4. - pp. 52-53.
2. Bogdanova E.V. Concomitant diseases in tuberculosis in children of early and school age [Text]/ E.V. Bogdanova, F.A. Batyrov, O.K. Kiselevich // Proceedings of the XV National Congress on respiratory organs. – M., 2005. – p.158.
3. Borodulin, B.E. Phthisiology [Text]/B.E. Borodulin, E.A. Borodulina- M.: Publishing Center "Academy", 2004.- 240 p.
4. Budritskiy A.M. The clinical course of tuberculosis of the respiratory organs in children and adolescents [Text]/ A.M. Budritskiy et al. // Materials of the All-Russian conference "Improving medical care for tuberculosis patients". - St. Petersburg. - 2011. - pp. 340-341.
5. Volchkova I.L. Analysis of risk factors that form tuberculosis in contact children and adolescents [Text] / I.L. Volchkova et al. // Tuberculosis and lung diseases. - 2011. - No.4. - p.94.
6. Gubkina, M.F. The main risk factors for tuberculosis in children and adolescents [Text] / M.F. Gubkina, E.S. Ovsyankina // Problems of tuberculosis. - 2005. - No. 1. - pp. 10-13.
7. Gubkina M.F. New technologies in the diagnosis of tuberculosis in children and adolescents from risk groups [Text] / M.F. Gubkina et al. // Tuberculosis and lung diseases. - 2011.- No. 4. - p.112.
8. Zorkaltseva E.Y. Risk factors for infection and tuberculosis of children in the Irkutsk region [Text] / E.Y. Zorkaltseva // Materials of the 2nd All-Russian conference "Healthy child". – Chita, 2004. - No. 3. – pp. 112-116.
9. Iconina I.V. The study of tuberculosis infection in children in the Voronezh region [Text] / I.V. Iconina // Materials of the VIII Russian Congress of phthisiologists "Tuberculosis today". – M., 2007. - pp. 217-219.
10. Klochkova L.V. Clinical and diagnostic aspects of tuberculosis infection in children from various social and epidemic groups [Text]/ L.V. Klochkova // Tuberculosis and lung diseases. - 2011. - No.4. - p.194.
11. Kopylova I.F. Analysis of the causes of high incidence of tuberculosis in children in the context of its epidemic [Text]/ I.F. Kopylova I.V. Efimova N.A. Kuzmich// Tuberculosis and lung diseases. - 2011. - No.4. - pp.206-
12. Korol O.I. Modern aspects of tuberculosis infection in young children [Text]/ O.I.Korol et al.// Materials of the VIII Russian Congress of phthisiologists "Tuberculosis today". – M., 2007. - pp. 253-254.
13. Krivokhizh V.N. The influence of concomitant somatic pathology on the development of tuberculosis infection in children from tuberculosis foci [Text]/ V.N. Krivokhizh, S.V. Mikhailova // Materials of the All-Russian scientific and practical conference "Improving medical care for tuberculosis patients". – St. Petersburg, 2011. - p.354.