FEATURES OF THE COURSE OF PULMONARY TUBERCULOSIS IN CHILDREN

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Tuberculosis is a medical and social problem affecting all layers of society and age groups. The disease is especially dangerous for children in the first three years of life. Young children are an age group at risk for tuberculosis, which is due to the anatomical and physiological characteristics of the body. The narrow lumen of the bronchi, soft cartilage, a large number of goblet cells that secrete mucus, and increased viscosity of bronchial secretions contribute to the disruption of bronchial patency. Insufficient production of alveocytes surfactant , deficiency of antitrypsin and cellular lysosome enzymes lead to decreased protection against the microorganism. Imperfection of immunological mechanisms is manifested by a decrease in the mobilization of polynuclear cells in response to inflammatory stimuli by 2-3 times (compared to adults), a decrease in the functional activity of alveolar and interstitial macrophages. It has been established that in young children, CD4 cells produce 10 times less interferon and interleukin-2, which leads to a decrease in the immunological protection of the body [6]. An important preventive measure aimed at increasing the body's resistance is BCG vaccination [1, 4, 8, 11]. BCG vaccination is also of great importance in children with perinatal HIV infection [14]. It is known that risk factors negatively affect the state of defense mechanisms in children and adolescents, and in young children, a combination of risk factors increases the risk of tuberculosis by 17 times [12]. Young children are an "indicator" of familial tuberculosis, as they often fall ill in foci of tuberculosis

infection [5]. Children who have contact with a patient with tuberculosis are diagnosed with severe forms of the disease and complicated course, which indicates the epidemic danger of contact [7, 10]. The purpose of the study: to study the clinical and radiological manifestations of local tuberculosis in young children, to identify risk factors that contribute to the development of the disease and aggravate its course.

Materials and methods. A retrospective analysis of 82 case histories of children under 3 years of age who were treated at the Children's Tuberculosis Hospital in 2013-2015 was conducted. The study included children with an established diagnosis of tuberculosis, in 5 of them the process was combined with HIV infection. Boys and girls were encountered equally often (51.2 and 48.8%, respectively). Patients under 1 year of age accounted for 20.7%, children from 1 to 2 years old - 48.8%, 2-3 years - 30.5%. The data of the epidemiological anamnesis, information on BCG vaccination, clinical and radiological (MSCT), laboratory examination data, the results of immunodiagnostic tests - Mantoux with 2 TE PPD-L and tests with recombinant tuberculosis allergen (ATP) were studied.

Research results

In the structure of clinical forms in the observed children, tuberculosis of the intrathoracic lymph nodes (ITLN) was predominant - 56 (68.3%), in 3/4 of them the process was characterized by multiple lesions of the ITLN (all groups of the mediastinum and roots of the lungs). Primary tuberculosis complex (PTC) - in 16 (19.5%) patients, with localization in the upper lobe of the right lung - in 64%. Caseous pneumonia - in one child. Disseminated pulmonary tuberculosis was registered in 7 (8.4%) patients.

Tuberculous meningitis was observed in 2 patients (2.6%). The localization of specific lesions in the observed children was studied, and it was noted that all patients (100%) had lesions of the intrathoracic lymph nodes, in 53 patients (64.6%) the process was localized in the lungs (primary affect, focal shadows of lymphohematogenous dissemination, bronchogenic seeding), in 6 patients (7.3%) - also extrathoracic localization. In 42 children (51.2%) the course of primary local

forms was assessed as complicated, including patients with tuberculosis of the intrathoracic lymph nodes (n = 36) and with PTC (n = 6). Compression compression of the bronchi with hypoventilation or atelectasis occurred in 11 patients, bronchopulmonary lesions - in 16, the development of pleurisy - in one. Caseous pneumonia was diagnosed in one patient, lymphohematogenous progression - in 13, including the development of disseminated pulmonary tuberculosis, CNS tuberculosis, with damage to the peripheral lymph nodes (n = 2), hip joint (n = 1). Generalized tuberculosis was established in 3 patients, all with HIV infection. Bacteriosis was detected in 17.1% (n = 14) of children, of which 50.0% had multiple drug resistance. All these patients had complicated tuberculosis. Intoxication symptoms of varying severity were observed in 90.2% of patients, bronchopulmonary syndrome (cough, dyspnea, physical changes in the lungs) in 22%, and cough only in 14.6%. The combination of intoxication symptoms and bronchopulmonary syndrome was noted in 30.5% of cases, all these children lived in conditions of family contact, parents did not seek medical attention, and treated children themselves. Local tuberculosis in 58 (70.7%) observed children was detected mainly during preventive measures: during contact examination - in 49 (59.7%), by tuberculin diagnostics - in 9 (10.9%). When seeking medical help, a specific process was detected in 24 (29.3%) patients after an ineffective course of treatment for respiratory diseases (pneumonia, obstructive bronchitis). Immunological tests are of great importance in the diagnosis of tuberculosis in children: tuberculin diagnostics and ATP test [2, 3, 9]. In 69 patients, primary infection with Mycobacterium tuberculosis (MBT) was confirmed by a positive result of the Mantoux test with 2 TE PPD-L. Sensitivity to tuberculin in 82 children according to the Mantoux test with 2 TE PPD-L and the results of the ATP test in 78 patients are presented in Table 1. Negative results of the Mantoux test with 2 TE PPD-L were recorded in 13 patients (15.8 ± 4.0%) and of the Diaskintest test in 16 children (20.6 ± 4.5%), $p > 0.05$. Hyperergic sensitivity to tuberculin - in 21 (25.6 ± 4.8%) and to ATP - in 40 (51.2 ± 5.6%), $p > 0.05$. Comparing the results of the conducted immunodiagnostic tests, it can be noted

that in every third child (n = 25) with a positive normergic Mantoux test, hyperergic reactions to the test with Diaskintest were recorded . Hyperergic results of both tests were noted in every fifth. In every tenth (n = 8) - both tests were negative, of which 6 were diagnosed with tuberculosis of the upper lymph nodes of all groups, complicated by bronchopulmonary lesions, 2 - disseminated tuberculosis with generalization of the process, in 5 of them - tuberculosis was combined with HIV infection. All children are from family contacts, of which 5 were identified by contact, 3 - by complaints.

Conclusion

The main cause of tuberculosis in young children is infection with MBT in conditions of close family contact with parents and/ or relatives sick with tuberculosis. Tuberculosis is characterized by multiple lesions of the intrathoracic lymph nodes, a tendency to a complicated course. Predictors of a progressive course are the absence of BCG vaccination (usually due to perinatal HIV infection), superinfection with MBT (living of children in foci with a tense epidemic situation). Tuberculosis in every tenth child occurs against the background of secondary anergy, as indicated by negative reactions to the Mantoux test and the Diaskintest test , which creates difficulties in diagnosing the disease. Hyperergic results are found 2 times more often on ATP than on tuberculin, which more likely confirms the activity of the process.

References:

1. Авдиенко В.Г., Бабаян С.С.. Количественные, спектральные и серодиагностические характеристики антимикобактериальных IGG-, IGM-и IGA-антител у больных туберкулезом легких/Проблемы туберкулеза и болезней легких. – 2006.– № 10. – С. 47–55.

2. Александров А.А. и др.. Применение полимеразной цепной реакции для диагностики и оценки эффективности химиотерапии туберкулеза легких / Проблемы туберкулеза и болезней легких. – 2006. – №1. – С. 52–55.

3. Алексеева Г.И., Фазульянова И.А., Горохова Т. В.. Микроскопическое выявление кислотоустойчивых микобактерий /Туберкулез сегодня:

материалы VII Рос. съезда фтизиатров. – Москва, 2003. – С. 81.

4. Андрианова А.Ю. и др.. Сочетание рака и туберкулеза / Туберкулез сегодня : материалы VII Рос. съезда фтизиатров. – Москва, 2003. – С. 134.

5. Барканова О.Н., Гагарина С.Г., Калуженина А.А., Попкова Н.Л.. Современный лекарственно-устойчывый туберкулёз легких// Вестник ВолгГМУ. Выпуск 1 (65). 2018. -С. 23-25.

6. Барканова О.Н., Калуженина А.А., Попкова Н.Л., Гагарина С.Г. Некоторые проблемы лекарственно-устойчивого туберкулеза легких // Конференция, посвященная 80-летию ВолгГМУ. – сентябрь 2015.

7. Барканова О.Н., Калуженина А.А., Попкова Н.Л., Гагарина С.Г. Туберкулез легких с множественной лекарственной устойчивостью возбудителя // Заметки ученого. – декабрь 2015. – С. 19–21.

8. Бастиан И., Порталс Ф.. Туберкулез с множественной лекарственной устойчивостью. М.: Медицина и жизнь; 2003.

9. Белиловский Е.М., Якубовяк В., Борисов С.Е. и др. Неоднородность эпидемиологической ситуации по туберкулезу в России: роль анализа данных в системе мониторинга туберкулеза // Туберкулез в России. Год 2007: Материалы VIII Российского съезда фтизиатров. – М. : Идея, 2007. – С. 10–11.

10. Беляева Е.Н., Дьякова М.Е., Эсмедляева Д.С., Сапожникова Н.В., Старшинова А.А.. Маркеры воспалительного ответа у больных туберкулёзом легких с лекарственной устойчивостью mycobacterium tuberculosis/ журнал инфектологии. Том 9, № 4, 2017. С. 31-36.

11. Бородулина Е.А., Бородулин Б.Е.. Дифференциальная диагностика поствакцинальной и инфекционной туберкулиновой аллергии у детей с атопическими заболеваниями / Проблемы туберкулеза и болезней легких. 2006. – № 1. – С. 9–13.

12. Быстрое внедрение диагностического теста Xpert MTB/RIF. Технические и операционные рекомендации; Вопросы практического применения. ВОЗ. Женева, 2011. 41 с.

13. Васильева Е.В. и др. Сравнительная ценность квантиферонового теста, неоптерина и специфических противотуберкулезных антител для клинико-лабораторной диагностики туберкулеза легких / Клин. лаб. диагностика. 2013. – № 5. – С. 21–26.

14. Васильева И.А. Стратегия развития фтизиатрической службы в РФ. X съезд Российского общества фтизиатров «Актуальные вопросы противотуберкулезной помощи в Российской Федерации». Воронеж. 2015. Презентация. Доступно по: http://mednet.ru/images/stories/files/CMT/epid_situaciya_sezd_ftiziatrov.pdf.