Immunological characteristics of patients with latent tuberculosis infection

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Relevance: From the WHO report for 2020 Until now, the problem of tuberculosis has not been solved in any country in the world and remains a priority public health task. According to WHO data, in 2020, 10.0 million people fell ill in the world , including 5.6 million men, 3.2 million women, 1.2 million children. In 2021 - 9.9 million, including : 5.5 million men, 3.3 million women, 1.1 million children, 1.3 million people with HIV-negative status, died from tuberculosis. 214,000 HIV-positive from tuberculosis. The number of patients with MDR and XDR is growing from year to year. Tuberculosis is still one of the 10 main causes of death from a single pathogen.

In our country, special attention is paid to improving the healthcare system, including early diagnosis, treatment and prevention of tuberculosis and its latent (LTBI) forms. Over the past 10 years alone (2012–2022) , tuberculosis incidence rates have decreased by 30% and morbidity by 25%. In January 2021, the President of the Republic adopted Resolution No. 12 “On additional measures for the prevention, diagnosis and treatment of tuberculosis and other lung diseases.”

The implementation of this resolution requires changing the activities of medical services aimed at reducing morbidity; the introduction of high-tech methods of diagnostics and treatment of LTI, home care services and an effective model of medical examination, support for a healthy lifestyle and disease prevention.

The purpose of the study: To increase the efficiency of detection of LTBI among children using immunological methods . To study the immunobiological state in children and adolescents.

Material and research methods. To solve the set tasks, 50 children with LTBI were analyzed; this contingent formed the main group of those observed. For comparative analysis, a control group was formed - 25 children who had contact with patients with tuberculosis and 25 children and adolescents with primary pulmonary tuberculosis who received treatment.

Both immunological and biochemical studies will be carried out in the laboratories of the above-mentioned clinics. A total of 100 children and adolescents will be examined.

Laboratory tests include: general blood and urine tests, biochemical blood tests. Determination of tuberculosis infection activity in children using immunological tests Diaskintest and QuantiFERON test. Bacterioscopic and bacteriological tests, X-ray examination (CT, MSCT of the lungs, as indicated), Immunobiological research, quantitative studies of procalcitonin, immunoglobulins and complement component C3. Quantitative and relative indicators of immunocompetent cells belonging to the T- and B-lymphocyte system, relative indicators of non-specific protective factors and quantitative indicators of humoral immunity parameters.

Results of the study. As a result of the conducted comprehensive examination including radiation methods, children from the main groups were divided into subgroups by the presence of a specific process, which allowed us to compare them. Comparison of subgroups of examined children from family and unspecified contact with various manifestations of tuberculosis infection . In children from family contact, chemoprophylaxis (CP) was carried out with the same frequency both in the A1 and A11 subgroups (35.0% (14) versus 36.7% (44)), however, children developed tuberculosis regardless of its implementation. At the same time, in group B, CP was prescribed to almost all children (82.3 (B1) and 88.9% (B11)). This fact may indirectly indicate the lack of

alertness of phthisiologists for the development of the disease in the presence of contact, while an increase in sensitivity to tuberculin is a justification for prescribing preventive measures.

The analysis of concomitant pathology in subgroups A1 (healthy) and A11 (sick) children from the family focus of infection revealed no significant differences (67.5% and 58.3%, respectively). In group B, the number of children with concomitant pathology was lower, but the prevalence of concomitant pathology in BP (48.1%) compared to B1 (32.1%) was also not found. A significantly high level of concomitant pathology was noted in sick patients from family contact (AII) compared to healthy children from an unspecified contact (B1) (58.3% (AII) versus 32.9% (B1), $X2 = 12.33$ $p < 0.001$).

The changes identified during the radiological examination require comparison with the immunological clinical methods used to determine the activity of tuberculosis infection in order to form a diagnosis.

Thus, the presence of concomitant pathology may be a risk factor for the development of tuberculosis in the presence of contact and does not have a significant impact on the development of tuberculosis in its absence.

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