Volume 4, Issue 2, February – 2026 **ISSN (E):** 2938-379X

THE IMPORTANCE OF AUTOIMMUNE MARKERS IN THE DIAGNOSIS AND PROGNOSIS OF CARDITIS IN CHILDREN

Юсупова Гуласар Комилжон кизи
Ассистент кафедры пропедевтики детских болезней,
Государственный медицинский университет Узбекистана

Abstract
In the current context of medical development, the issues of early diagnosis and prognosis of inflammatory heart diseases in children are becoming increasingly important. A particularly significant role in this process belongs to autoimmune markers, which make it possible to identify not only the presence of immunological damage to heart tissue but also to assess the risk of complications, predict the course of the disease at early stages, and personalize treatment approaches. Cardiovascular diseases in children, especially conditions such as carditis, involve a variety of pathogenetic mechanisms, among which autoimmune processes play a leading role. Their significance is due to the fact that a child's immune system, due to physiological immaturity, often gives excessive or atypical responses to external and internal stimuli, thereby stimulating the production of autoantibodies.

Keywords: Autoimmune markers, carditis, children, autoantibodies, diagnosis, prognosis, immunopathogenesis, rheumatic heart diseases, immunological studies.

Introduction

The study of carditis in the pediatric population shows that the autoimmune processes underlying inflammatory lesions of the myocardium, endocardium, and pericardium are characterized by the formation of specific autoantibodies that can be detected using modern laboratory methods. Autoimmune markers are certain protein molecules or immunoglobulins, the presence and level of which is associated with the development of autoimmune inflammation in heart tissues. These markers include antinuclear antibodies, myosin antibodies, heart muscle cell antibodies, anticardiolipin antibodies, rheumatoid factor, anti-streptolysin O, and some other components. In the pathogenesis of carditis, an important role is played by the cross-response between streptococcal antigens and the myocardial antigens, which triggers an autoimmune cascade leading to damage to cardiac structures. As a result of such immunization, T- and B-lymphocytes are activated, producing specific autoantibodies that directly interact with components of cardiac muscle tissue, causing chronic inflammation, progressive fibrosis and impaired heart function. In this regard, determining the level of autoimmune markers is fundamentally important for establishing a diagnosis and controlling the dynamics of the disease.

LITERATURE ANALYSIS AND RESEARCH METHODOLOGY

Modern methods of laboratory diagnostics make it possible not only to detect the presence of certain autoantibodies in the child's blood, but also to quantify the intensity of the immune process. High titers of antinuclear antibodies, anticardiolipin antibodies, anti-streptolysin O or C-reactive protein indicate a pronounced or active autoimmune inflammation, which requires more careful monitoring and timely prescription of pathogenetic therapy. Moreover, the spectrum of autoimmune markers makes it possible to distinguish between different forms of carditis, for example, post-infectious, rheumatic, idiopathic, which greatly facilitates the differential diagnosis [1].

In recent years, modern molecular genetic and immunological methods have been increasingly used in pediatric practice, which make it possible to detect early signs of an immune response. Particular attention is paid to the study of the role of cytokines, such as interleukins, tumor necrosis factors, an increased number of which may indicate an aggressive course of the disease and an unfavorable prognosis. Monitoring the dynamics of autoimmune markers helps to adjust treatment regimens in a timely manner, assess the risk of relapse, and monitor the effectiveness of specific therapy. Autoimmune carditis in children is distinguished by the specificity of clinical manifestations and a tendency to frequent relapses, which is due to continuous autoimmune aggression towards heart tissues. Immunopathological processes that form after viral or bacterial infections in some cases can be latent, which makes it difficult to make a timely diagnosis. In such a situation, the determination of autoimmune markers becomes an indispensable tool in early diagnosis. Detection of even slightly elevated titers of autoantibodies at the preclinical stage often makes it possible to suspect the onset of a pathological process, which is important for the prevention of severe heart muscle lesions [2].

DISCUSSION AND RESULTS

It should be emphasized that the level of autoimmune markers correlates with the severity of morphological changes in the heart, the activity of the inflammatory process and the degree of functional disorders. Increased titers of anticardiolipin antibodies, C-reactive protein, as well as rheumatoid factor are often associated with a severe course of the disease, the formation of valvular defects, progressive dilatation of the heart chambers and the development of heart failure. Accordingly, regular determination and dynamic monitoring of changes in the level of autoantigens in children with carditis makes it possible to adjust the therapeutic strategy in a timely manner, prevent the development of irreversible morphological changes and reduce the risk of death. The clinical and laboratory significance of autoimmune markers in the diagnosis of carditis in children is confirmed by numerous studies, which noted that the presence of specific autoantibodies may outstrip the appearance of symptoms, and their dynamic decrease indicates the effectiveness of the therapy. Among the most informative markers are antinuclear antibodies, anticardiolipin antibodies, rheumatoid factor, as well as class M and G immunoglobulin titers.

When analyzing the importance of autoimmune markers in the prognosis of carditis in children, it is necessary to focus on the fact that their high level during remission or in the absence of a pronounced clinical course often indicates the risk of chronicity of the process, the possibility

of late complications in the form of myocardial fibrosis, valvular lesions or the formation of secondary dilated cardiomyopathy. In this aspect, regular laboratory observation is of key importance for the organization of dispensary supervision and long-term rehabilitation of patients who have suffered autoimmune carditis. In addition, a combined assessment of autoimmune markers and ultrasound signs of altered cardiac blood flow helps to identify signs of subclinical hemodynamic abnormalities. Immunological advances in recent years have made it possible not only to identify known markers, but also to discover new classes of autoantibodies that can be associated with different phenotypes of carditis in children. This expansion of the range of laboratory tests contributes to a more personalized approach to patient management, minimizes overprescription of drugs and contributes to improving the safety of therapy. At the same time, the determination of autoimmune aggression plays an important role in assessing the effectiveness of preventive measures, including secondary prevention of rheumatic carditis in pediatric practice [4].

However, it should be borne in mind that the level of autoimmune markers does not always strictly correlate with the severity of the clinical picture, and a comprehensive assessment is required to objectify the data: analysis of laboratory test results, echocardiographic data, hemodynamic status, as well as immunogenetic characteristics of the patient. Such a multi-level approach provides the most accurate determination of the nature of the disease, allows you to predict its course and avoid the development of irreversible complications. The use of autoimmune markers in the clinical practice of pediatricians and cardiologists provides a number of advantages. Firstly, it is the possibility of early detection of heart damage in the latent or asymptomatic course of the process, which significantly reduces the burden on the child and prevents the formation of severe defects [5].

CONCLUSION

Regular determination of autoimmune marker titers should be included in the mandatory list of examinations for all children with suspected carditis, especially in cases where the disease develops after angina, scarlet fever, other streptococcal infections or viral diseases. This makes it possible to carry out timely correction of treatment and prevent the progression of structural changes, irreversible damage to the heart valves and the formation of chronic heart failure. Thus, the role of autoimmune markers in the diagnosis and prognosis of carditis in children cannot be overestimated. Their determination indicates not only the presence of an inflammatory process, but also its activity, prognosis, risk of complications, as well as the validity of the prescription of specific therapy. This approach provides a modern and safe level of medical care, helps to reduce disability and mortality among children with inflammatory heart disease, and also helps to improve the quality of their future life.

REFERENCES

1. Demyanova V.I., Ashrafyan L.A. Pathogenetic aspects of autoimmune processes in carditis in children. Issues of Modern Pediatrics, 2021.
2. Kolesnik N.A. Autoimmune markers in the clinical practice of a pediatric cardiologist. Cardiology, 2019.

3. Sergeev A.S., Vishnevsky V.A. Immunological features of diagnostics of inflammatory heart diseases in children. Journal of Children's Diseases, 2020.
4. Lebedeva I.Yu., Orlova N.F. Possibilities of laboratory diagnostics of rheumatic heart injuries in children. Practical Medicine, 2022.
5. Ivanov P.L. Autoimmune mechanisms in pediatric myocarditis. Russian Journal of Paediatrics, 2018.
6. Baranova T.P., Zhumatova U.K. Immunological markers for childhood cardiac diseases. International Journal of Cardiology Science, 2020.
7. Efimova I.A., Kravtsov A.S. Monitoring of autoimmune processes in heart pathology in children. Pediatric Cardiology, 2023.

Web of Teachers: Inderscience Research
webofjournals.com/index.php/1