Western European Journal of Medicine and Medical Science
Volume 3, Issue 03, January 2025
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

THE EFFECT OF APTIN ON MYOCARDITIS IN PATIENTS WITH JUVENILE RHEUMATOID ARTHRITIS

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Relevance: Juvenile rheumatoid arthritis (JRA) is a chronic autoimmune disease that is often accompanied by extraosseous manifestations, including cardiovascular disease. Myocarditis is one of the serious complications that aggravate the course of the disease. Aptin, as a protein involved in the regulation of the actin cytoskeleton, has potential significance in the pathogenesis of inflammatory processes and tissue remodeling. Studying its role in the development of myocarditis in JRA may contribute to the development of new therapeutic strategies.

Objective: To evaluate the effect of aptin on the development and course of myocarditis in patients with juvenile rheumatoid arthritis.

Objectives:

1. To study the level of aptin expression in the myocardium and blood of patients with JRA.
2. To assess the correlation between the level of aptin and the degree of inflammatory changes in the myocardium.
3. To analyze the role of aptin in the mechanisms of cellular damage and myocardial remodeling.
4. To investigate the possibility of using aptin as a biomarker or therapeutic target.

Methods:

- Immunohistochemical study of myocardial tissue: The method is based on the specific binding of antibodies to antigens. Antibodies are able to recognize unique antigen molecules, which ensures high specificity of the test.

Analysis of aptin levels using the ELISA method:

ELISA (Enzyme-Linked Immunosorbent Assay) is an enzyme-linked immunosorbent assay used for the quantitative and qualitative determination of specific proteins, peptides, antibodies or antigens in biological samples (serum, plasma, cell lysates, etc.).

1. Immunological interaction. The method is based on the specific binding of antibodies to antigens. Antibodies are able to recognize unique antigen molecules, which ensures high specificity of the test.
2. Enzymatic reaction. An enzyme is attached to antibodies or antigens, which catalyzes a chemical reaction. This reaction leads to a color change in the solution, which can be measured spectrophotometrically.
3. Quantitative analysis. The intensity of the color is directly proportional to the concentration of the test substance in the sample.

Steps of ELISA:

1. Coating the well with antigen/antibody: Either the antigen or antibody is applied to the surface of the microplate and fixed to the bottom of the well.
2. Adding the sample: A sample (e.g. serum) containing the target antigen or antibody is added.

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3. Adding the labeled antibody: A second antibody is added, linked to an enzyme (usually horseradish peroxidase or alkaline phosphatase), which binds to the target substance.
4. Adding the substrate: The enzyme substrate reacts with the enzyme, causing the formation of a colored product.
5. Reading the result: The color intensity is measured using a spectrophotometer, which allows the concentration of the substance to be determined.
Types of ELISA:
1. Direct ELISA: The antibody with the enzyme binds directly to the antigen.
2. Indirect ELISA: Uses a secondary antibody linked to an enzyme to amplify the signal.
3. Sandwich ELISA: The antigen is captured by an antibody fixed to a plate and then detected by a second antibody.
4. Competitive ELISA: Based on competition between antigens for binding to a limited number of antibodies.
- Echocardiographic assessment of the heart.
- Statistical analysis of the correlation of clinical and laboratory data.

Expected results:

It is assumed that elevated aptine levels will be associated with more pronounced inflammation and myocardial fibrosis in patients with JRA, which will confirm its role in the pathogenesis of myocarditis. This will allow considering aptine as a potential target for early diagnosis and treatment.

Conclusion:

Studying the role of aptine in the pathogenesis of myocarditis in JRA is a promising direction that can not only deepen the understanding of the mechanisms of the disease, but also open up new approaches to the treatment and prevention of cardiac complications.

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