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FEATURES OF C3, C4 COMPLEMENT COMPONENTS AND EFFICIENCY OF IMMUNOTHERAPY IN NEPHROTIC SYNDROME IN CHILDREN WITH LYMPHATIC DIATHESIS

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Abstract:

Currently, a serious attention of nephrologists and pediatricians is attracted by the fact that in the structure of chronic kidney disease (CKD) a special place belongs to the course of chronic glomerulonephritis (CGN) in children with nephrotic syndrome (NS) due to the steady progression towards chronic renal failure (CRF) and other complications leading to an increase in disability and mortality among patients. An increase in the rates of steroid-dependent and steroid-resistant forms of NS is also one of the topical issues, which is determined by the high frequency of poor prognosis of diseases observed in 40-50% of patients within 5-10 years.

Keywords:

INTRODUCTION

Currently, a serious attention of nephrologists and pediatricians is attracted by the fact that in the structure of chronic kidney disease (CKD) a special place belongs to the course of chronic glomerulonephritis (CGN) in children with nephrotic syndrome (NS) due to the steady progression towards chronic renal failure (CRF) and other complications leading to an increase in disability and mortality among patients. An increase in the rates of steroid-dependent and steroid-resistant forms of NS is also one of the topical issues, which is determined by the high frequency of poor prognosis of diseases observed in 40-50% of patients within 5-10 years.

The complement system is a complex of protective proteins that are constantly present in the blood, intended for the humoral protection of the body from the action of foreign agents. The association between NS (nephrotic form of CGN) and low serum levels of complement proteins was first noted over 100 years ago.

An abnormality in the alternative complement pathway can lead to C3 glomerulonephritis (C3GN), which is characterized by the deposition of C3 (not immunoglobulin) in the glomeruli of the kidneys. In this regard, the course of CGN with NS in children suffering from underlying pathology, including lymphatic diathesis (LD), attracts serious attention.

LD is characterized by various phenotypic features, manifested by the following syndromes: lymphoproliferative syndrome: diffuse hyperplasia of lymphoid tissue, generalized, persistent enlargement of peripheral lymph nodes and thymus gland (even in the absence of signs of infection), a peculiar habitus of the child (pallor, lethargy, "adenoid appearance", signs paratrophy); endocrinopathic syndrome: hypoplasia of the internal and external genital organs (vagina, uterus, phimosis, cryptorchidism); dysontogenetic syndrome: hypoplasia of the heart and large vessels, kidneys; syndrome of sympatho-adrenal and glucocorticoid insufficiency: hypo- and dysfunction of the thymus gland, adrenal glands, "status thymico-lymphaticus", thyroid dysplasia, marbling of the skin, arterial hypotension, hyperhidrosis, collaptoid state with reduced adaptation to environmental influences.

Children with LD are often characterized by a high infectious index, insufficiency of local immunity of the respiratory and gastrointestinal tract, anemia, lymphocytosis, dysproteinemia, hormonal imbalance and, in the future, the formation and development of the syndrome of secondary immune deficiency of the body.

Given the above, from a clinical point of view, it is important to improve the methods of immunotherapy for NS (nephrotic form of CGN) against the background of LD, which allow early warning of the risk of developing various complications.

The results of immunological studies confirm that the immune system of the body is closely related to the function of the lymphoid system as a set of all lymphoid organs and clusters of lymphoid cells that play an important role in the immune defense mechanism, manifested in the form of antigen-structural homeostasis (ASH), carrying out specific processes of immunological reactivity.

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It is known that the C3 component of the complement system is an acute phase protein of inflammation, which is an important part of the defense system against infections, which is involved in the classical pathway (its formation is activated by IgG and IgM) and in the alternative pathway (its formation is activated by toxins, endotoxins, IgA) activation complement systems. Due to the activation of C3, histamine is released from mast cells and platelets, leukocyte chemotaxis and the combination of antibodies with the antigen, phagocytosis is maintained, the permeability of the walls of blood vessels increases and smooth muscle contraction.

The component of the C4 complement system is a glycoprotein that is synthesized in the lungs and bones. It is involved only in the classical pathway of activation of the complement system. C4, supports phagocytosis, increases the permeability of the vascular wall, is involved in the neutralization of viruses.

In the body, the regulation of the activation of the complement system is finely balanced; in such cases, glomerular lesions are characterized by dense intramembranous deposits, which are diagnosed only by electron microscopy.

The results of our studies show that in the pathogenesis of C3 glomerulopathy, as well as in immune complex glomerular diseases, an important role is played by a violation of the alternative pathway of complement regulation. In our opinion, with NS, children with LD may develop membranoproliferative GN as part of C3 glomerulopathy, in combination with a low level of serum C3, C4 complement components.

Based on the obtained research results, it can be confirmed that systemic enzyme therapy (SET), including Wobenzym, pathogenetically plays an important role in normalizing immune homeostasis, optimizing inflammation, has a pronounced anti-edematous effect, increases the cytotoxic activity of macrophages, induces or inhibits cytokines, including IL-2 removes immune complexes circulating in the blood and fixed in tissues, inhibits their formation, and also positively affects the function of C3, C4 complement components.

The high therapeutic efficacy of Wobenzym is explained by the fact that the drug contributes to the normalization of platelet aggregation activity, reduces the coagulation potential and activates the fibrinolysis system. The modulating effect of proteolytic enzymes included in SET preparations is to optimize the level of activity of various participants in immunological reactions, such as: vascular endothelium, monocytes-macrophages, platelets, immunocompetent cells, etc. The immunomodulatory properties of enzymes are manifested in their effect on the expression and elimination of cytokines, that is, SET controls the generation of cytokines, which ensures the adequacy of the inflammatory response.

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