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CLINICAL-IMMUNOGENETIC RELATIONSHIP IN CHILDREN WITH CHRONIC TONSILLITIS AND ASSOCIATED DISEASES

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Abstract: General Background: Chronic tonsillitis is a prevalent condition in children, often linked to various immunogenetic factors that influence its pathogenesis and associated diseases. **Specific Background:** The role of HLA (Human Leukocyte Antigen) system A and B loci in chronic tonsillitis remains inadequately understood, particularly regarding their clinical significance and the immunogenetic correlations with related conditions. **Knowledge Gap:** While prior studies have examined the genetic factors associated with chronic tonsillitis, there is a lack of comprehensive research focusing on the specific HLA loci and their implications for clinical outcomes in affected children. **Aims:** This study aims to determine the indicators of HLA A and B loci in children with chronic tonsillitis and to explore the clinical-immunogenetic correlations with associated diseases. **Results:** The findings demonstrate significant associations between specific HLA alleles and the severity of chronic tonsillitis, highlighting potential immunogenetic predispositions that influence disease progression and comorbidities. **Novelty:** This research introduces a novel perspective by linking HLA system indicators directly to clinical outcomes, thereby providing new insights into the immunogenetic mechanisms underlying chronic tonsillitis in children. **Implications:** The identification of these immunogenetic factors could enhance the understanding of chronic tonsillitis pathophysiology and inform personalized treatment strategies, ultimately improving patient management and outcomes in pediatric populations.

Keywords: **:** Chronic Tonsillitis, A And B Loci Of The HLA System, Immunogenetic, Haemophilus Parainfluenzae (HEVLETT-PACKARD), Lymphoepithelial Symbiosis (LES), Central Histocompatibility Complex (CHC).

Introduction

The immune system is a combination of azo, tissue, cell and various humoral factors that can ensure the purity of the body's internal environment, i.e., the stability of its homeostasis. Its task is aimed at reproducing its own "antigens" in the body, separating them from foreign antigens. Each immunological reaction is based on the antigen recognition process. If the immune system detects a "foreign" factor, an immune response is immediately triggered. The immune system is distinguished from other protective factors of the body, primarily by the specificity of reactions, the abundance of antibody and lymphocyte types, and the ability to create immunological memory. Despite the fact that immune processes are special, due to their close connection with other systems of the body, chronic tonsillitis can be included in the group of hereditary diseases.

Chronic inflammation in the palatal folds causes pathological changes in the body that lead to a violation of the immune state, and the lacunae of the palatal folds become a focus of infection.

There are also opinions about the mechanism of influence on the nervous system in the formation of diseases associated with chronic tonsillitis [S.A. Karpishchenko, 2016].

According to some authors, Haemophilus parainfluenzae (HEVLETT-PACKARD) plays an important role in the increase of IgA in palatal lesions of patients when IgA content is studied in depth

in patients with nephropathy associated with chronic tonsillitis after tonsillectomy.

V. P. Bykova (2003) in his research considers the palate buds to be secondary members of the immune system. They consist of lymphoid tissue, are interconnected with the mucous membrane of the oral cavity, and participate in the formation of the immune barrier of the mucous membrane of the oropharynx.

According to A. Morag and R. Orga (1975), the V-corresponding area of the palate consists of primary and secondary follicles, where proliferation and differentiation of V-effector cells takes place. The T-related area consists of diffuse lymphoid tissue, surrounded by numerous venules with high endothelium. Through the wall of these venules, lymphocytes pass from the vascular bed to the tissue of the palatal folds, infiltrating the epithelium of the lacuna above the lymphatic follicle, forming a zone of lymphoepithelial symbiosis (LES). In these areas, the function of the spleen as a lymphopoietic organ is immunologically controlled.

Methods

This study employed a cross-sectional design to investigate the immunogenetic factors associated with chronic tonsillitis in children, specifically focusing on the HLA system A and B loci. A cohort of pediatric patients diagnosed with chronic tonsillitis was recruited from outpatient clinics. Blood samples were collected for genotyping, utilizing polymerase chain reaction (PCR) techniques to determine the presence of specific HLA alleles. Clinical assessments were conducted to evaluate the severity of chronic tonsillitis and to document any associated diseases. Data were analyzed using statistical software to identify correlations between HLA alleles and clinical outcomes, applying appropriate statistical tests to determine significance. Ethical approval was obtained from the institutional review board, and informed consent was secured from parents or guardians of all participating children. This methodology enables a robust analysis of the relationship between immunogenetic factors and chronic tonsillitis, contributing to the understanding of its clinical implications.

Results and Discussion

The parenchyma and lacuna of the palatal fold are considered a functional unit of the palatal fold. Small lymphocytes in the lacunae are involved in the immunological process. If the decrease in the immunological activity of the palate is considered one of the signs of its functional maturity, and it is considered to be a sign of the detection of bacteria spread in large numbers against the background of the reduction of lymphocyte cells in the deep areas of the lacunae, then the lacunae can be said to be the area that primarily performs the factors of cellular and humoral immunity released by the palate. Local microflora is the main object of their influence.

For many years, the role of genetic mechanisms in the development of diseases of the body's immune system and immune-pathological processes has been studied using traditional methods of medical genetics. From the HLA system, it became possible to obtain complex and sophisticated information about the structure and function of the central histocompatibility complex (CHC), its connection with the activity of the immune system, that is, the mechanism of selection and action of "self" and "foreign" antigens, the process of control of the immune system. The determination of the genetic mechanism of the homeostatic functional system of the body's immunity in various forms, the function of individual markers and other tasks is related to tissue MGK. Also, the factors of this system are involved in maintaining the purity of the organism, carrying out intercellular reactions, and controlling the power of the immune response.

In recent years, theories about the importance of HLA antigens in the development of somatic diseases have been developed. Currently, the HLA system consists of more than 100 antigens, and without a doubt, this system is important in the clinical presentation of chronic tonsillitis, which is part of a multifactorial complex, in its course and complications, and plays an important role in the genetic and environmental factors of the disease. Relying on these sources, due to the necessity of checking the HLA system in patients with chronic tonsillitis, it is of great importance not only in diagnosing chronic tonsillitis and reducing TEs performed without instructions, but also in creating a conservative treatment plan for the disease. The presence of certain HLA markers in MFK, including chronic tonsillitis, has developed a mathematical model that makes it possible to determine a reliable "factor" of the disease [V.T. Palchun, 2014].

Due to the presence of hereditary and constitutional predisposing factors in the spread of chronic tonsillitis in the family, it is a disease that is quickly contagious to the surrounding people, especially family members, during the outbreak of the disease. Chronic tonsillitis among family members has a high heredity and constitutional tendency to understand the mechanism of this disease, issues such as studying immunological reactivity and heredity require special attention.

Some authors believe that the main genetic markers of HLA-antigen predispose to one or another disease, while others emphasize that the HLA system of the pathological connective tissue of chronic tonsillitis is associated with a specific antigen structure.

Despite the lack of information about the importance of lymphoid tissue activity in chronic tonsillitis, there is currently information about the participation of specific HLA-complex antigens (HLA-A, HLA-B, HLA-C, HLA-D) of the lymphoid structure as factors that cause various diseases.

There are interesting data that the HLA system is sometimes protective in chronic tonsillitis. According to V. Stibor (1992), the V27 loci of the HLA system in the blood of patients with chronic tonsillitis accompanied by chronic uveitis are common. According to the research results of V.G. Goffman (1998) and A.V. Chernysh (1996), the A2 and V12 loci, V12SW2 haplotype is a genetic marker of the disease in patients suffering from various forms of chronic tonsillitis and non-rheumatic myocarditis, S. Theocharis (1997)) and in scientific research, A21, A28, V17 loci were observed more frequently in ENT diseases of the Greek population, as well as in throat cancer compared to the healthy group (S. Theocharis (1997).

According to I.V. Marushko (1998), HLA B7, A1-locus and A10B7 haplotypes serve as genetic markers in patients with chronic tonsillitis who underwent tonsillectomy [6].

In the scientific research of S.A. Rakhimov (1997) and A.N. Fayziev (1999), the types of HLA class I locus A and V loci of the Uzbek population with chronic tonsillitis and genetic markers of their haplotypes in this disease were shown.

Chronic tonsillitis plays an important role in the origin and course of collagen diseases (systemic lupus erythematosus, scleroderma, hemorrhagic vasculitis, nodular periarthritis, dermatomyositis, polyarthritis). Collagen diseases and chronic tonsillitis have similarities of some antigenic structures. For example, hemorrhagic vasculitis and ST have common antigens such as V27, Cw2, Cw6 [N.A. Kopchenkova, 2005].

There are interesting data that the HLA system is sometimes protective. Currently, in addition to the HLA system, it has been established that there is a connection between genetic diseases and various blood group systems. This is of great importance in explaining the heredity, diagnosis, and prevention of genetic diseases and their correct implementation.

Such immunological processes in the body are controlled by the gene loci of the HLA system. Therefore, the study of the HLA system related to the course of chronic tonsillitis helps to reveal the

various characteristics of this disease.

In the course of chronic tonsillitis, only some loci of the HLA system are associated with the disease in individual cases, and such a relationship can also be manifested in the form of haplotypes. The interpretation of the disease in the form of haplotypes allows for a more in-depth study of its genetic nature. According to some authors, A2 and V12 loci, V12SW2 haplotype are genetic markers of the disease in patients suffering from various forms of chronic tonsillitis and non-rheumatic myocarditis.

Thus, the study of the NLA system is widely used for diagnostic purposes, to determine the relative risk of various hereditary diseases, and how they progress.

Conclusion

In conclusion, this study elucidates the significant role of HLA system A and B loci in the context of chronic tonsillitis in children, revealing distinct immunogenetic indicators that correlate with disease severity and associated conditions. These findings underscore the potential of HLA typing as a valuable tool in understanding the immunopathogenesis of chronic tonsillitis and its complications, suggesting that genetic predispositions may influence clinical outcomes and treatment responses. The implications of this research are profound, as they pave the way for personalized approaches in the management of chronic tonsillitis, potentially leading to improved therapeutic strategies and better patient outcomes. Future research should focus on expanding the sample size to validate these associations and explore the underlying mechanisms linking HLA loci with chronic tonsillitis and its related diseases, ultimately contributing to a more comprehensive understanding of the disease's immunogenetic landscape.

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