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CORRELATION OF THE STATE OF THE MICROBIOCENOSIS OF THE LARGE INTESTINE WITH ALLERGIC DISEASES IN CHILDREN

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Abstract
Allergic diseases in children are a pressing issue in modern pediatrics and hygiene. In recent years, particular attention has been paid to the role of the intestinal microbiome in the formation of the immune response and the development of allergic pathology. Disruptions in the composition of the colonic microflora contribute to a decrease in the barrier function of the mucosa, altered immunological reactivity, and an increased risk of allergic diseases. This study examines the correlation between the state of the colonic microbiome and allergic diseases in children and identifies the role of dysbiotic disorders in the development of allergic pathology.

Keywords: Intestinal microbiocenosis, dysbiosis, allergic diseases, children, intestinal microflora, allergic morbidity, immunity, correlation analysis, pediatrics, prevention.

Introduction

The aim of the study was to examine the correlation between the state of the colonic microbiome and the incidence of allergic diseases in children.

Study objectives:

To assess the state of the colonic microbiome in children of different age groups. To study the structure and prevalence of allergic diseases among the children examined. To determine the nature of dysbiotic changes in the intestinal microflora in allergic pathology. To identify a correlation between intestinal microbiome disturbances and the incidence of allergic diseases. To evaluate the influence of dietary, lifestyle, and environmental factors on the development of dysbiosis and allergic diseases.

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Research methods

The study utilized clinical, bacteriological, epidemiological, and statistical methods. Children with and without allergic diseases were examined. The colon microbiome was analyzed using stool culture to determine the quantitative and qualitative composition of the intestinal microflora. Data from the patient's medical history, clinical examination, and medical documentation were used to assess the incidence of allergic diseases. Statistical processing of the results included correlation and comparative analysis of the data obtained.

Study results

The study found that children with allergies were significantly more likely to have colon microbiome disturbances compared to the group of apparently healthy children. The most pronounced changes were characterized by a decrease in bifidobacteria and lactobacilli, as well as an increase in opportunistic microflora.

The most common conditions among the children examined were allergic dermatitis, bronchial asthma, and allergic rhinitis. Analysis showed that the severity of dysbiotic disorders correlated with the severity of the clinical manifestations of allergic diseases. Children with severe dysbiosis experienced more frequent exacerbations of allergic pathology, a longer duration of the disease, and increased sensitivity to allergens.

A correlation analysis revealed a statistically significant relationship between a decrease in normal intestinal microflora and an increased incidence of allergic diseases. Dietary factors, frequent use of antibacterial drugs, and unfavorable environmental conditions were also found to influence the development of intestinal microbiome disturbances.

The obtained results confirm the important role of intestinal microflora in maintaining immunological homeostasis and the development of allergic reactions in children. Carrying out bacteriocorrection in children helps to reduce the severity of dysbiotic conditions; children with intestinal microecology disorders who received probiotics have dysbiotic changes of grade I in 72.7% of cases , while in children who did not receive probiotics, grades II-III dysbiosis were detected in 63.6% of cases . 74.2% of children with intestinal microbiocenosis correction with probiotics in the first year of life, at 2 and 4 years of life suffer from episodic illnesses, which are characterized by a shorter duration and a milder course, less often complicated by bronchitis and purulent tonsillitis. The levels of serum immunoglobulins A, M, G in children who received intestinal microbiocenosis correction with probiotics in the first year of life reach age-related values by 2 years of age. In children with intestinal dysbiosis who did not receive probiotics, levels of immunoglobulins A, M, and G are below the age-appropriate limit and only reach age-appropriate values after reaching 4 years of age. In children with intestinal dysbiosis , succinate dehydrogenase activity increases , which is accompanied by a high degree of lymphocyte diversity with the accumulation of a pool of hyperactive cells. The changes are most pronounced in children who did not receive probiotics. Representatives of opportunistic microflora show positive, stable correlations with the incidence of childhood illness and lymphocyte succinate dehydrogenase activity . Obligate representatives of the intestinal microbiome stimulate the production of serum immunoglobulins A, M, and G.

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A comprehensive examination of children in their first year of life should include testing for intestinal dysbiosis . If dysbiotic changes are detected, probiotic correction (bifidumbacterin) should be recommended.

For children with allergic dermatitis, it is recommended to conduct a microbacteriological examination of the intestine, followed by correction of the symbiotic microflora.

The identification of dysbiotic states of the intestinal microbiocenosis in children in the second and fourth years of life is a prerequisite for conducting an immunological examination.

In a comprehensive examination of children for intestinal dysbiosis , it is recommended to test succinate dehydrogenase for the early detection of impaired cellular respiration of lymphocytes with subsequent metabolic correction.

Conclusions

Children with allergic diseases exhibit significant disturbances in the colonic microbiome. Dysbiotic changes are characterized by a decrease in normal microflora and an increase in opportunistic microorganisms. A statistically significant correlation has been identified between the state of the intestinal microbiome and the incidence of allergic diseases in children. The degree of dysbiosis influences the severity and frequency of clinical manifestations of allergic diseases. A balanced diet, prevention of unnecessary antibiotic use, and timely correction of the intestinal microbiome can help reduce the risk of developing allergic pathologies in children.

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