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Atopic dermatitis and the condition of the intestine in children

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Атопический дерматит и состояние кишечника у детей

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Summary

Purpose of the study. To study the functional state of the digestive system in children with atopic dermatitis.

Materials and methods: 40 children with atopic dermatitis aged 6 months were examined. up to 3 years. The comparison group consisted of 20 children without hereditary burden of allergies. Clinical and anamnestic studies supplemented by studying the composition of the intestinal flora in children, the dynamics of the level of eosinophils, total Ig E.

Results. The first complaints of mothers, along with a skin rash in a child, were intestinal dysfunction, manifested by intestinal colic, the presence of pathological impurities in the form of greenery, streaks of blood, foam, or delayed stools up to several days.

Keywords: children, atopic dermatitis, intestines, diagnostics

Резюме

Цель исследования. Изучение функционального состояния пищеварительного тракта у детей с атопическим дерматитом

Материалы и методы. Обследованы 40 детей с атопическим дерматитом в возрасте от 6 месяцев до 3 лет. Группу сравнения составили 20 детей без наследственной отягощённости к аллергии. Клинико-анамнестические исследования дополнялись изучением состава кишечной флоры у детей, динамики уровня эозинофилов, общего Ig E.

Результаты. Первыми жалобами матерей, наряду с кожной сыпью у ребенка с атопическим дерматитом, были кишечная дисфункция, проявляющаяся кишечной коликой, наличием патологических примесей в виде зелени, прожилками крови, пены или задержкой стула до нескольких дней.

Ключевые слова. дети, атопический дерматит, кишечник, диагностика

Introduction

The multiplicity of the pathogenesis of atopic dermatitis (AD) in children necessitates the study of various aspects of this pathology. An important role in the formation and maintenance of the pathological process on the skin during AD is a change in the state of the digestive system [2, 5, 8].

Atopic dermatitis is a multi-factorial inflammatory skin disease, characterized by pruritus, chronic recurrent course and age-related features of localization and morphology of lesions. Atopic dermatitis (AD) in typical cases begins in early childhood, may continue or recur in adulthood, and significantly disrupts the quality of life of the patient and his family members. In most cases, it develops in individuals with a hereditary predisposition and is often combined with other forms of allergic diseases, such as bronchial asthma (BA), allergic rhinitis (AR), allergic conjunctivitis, food allergies (FA).

The appearance of atopic dermatitis, pollinosis and bronchial asthma in a child is often preceded by gastrointestinal food allergies. Although it is well established that atopic dermatitis is a multifactorial disease, according to various authors [2], in about 20–50% of cases it may be associated with food allergies. Among the various clinical manifestations of food allergy in children, gastrointestinal lesions (GL) occupy one of the leading places [5]. There is evidence of [1, 8], that gastrointestinal allergy is diagnosed in 92.8% of children suffering from various clinical forms of food allergy. At the same time the nature of the lesion GL, the level of its specific and non-specific protection largely determines the severity and prognosis of an allergic disease. Undiagnosed allergic inflammatory process in the digestive tract leads to the development of severe, long-term current forms of gastrointestinal allergies and the formation of chronic organ pathology [3, 6].

There is evidence that a change in the relationship between the composition of the intestinal microbiota and the human body is accompanied by the development of allergic and immunopathological states [1, 4, 7]. A significant role in the formation of the body's immune response in recent years has been assigned to the development of intestinal microflora. This process, which takes place in the first year of a child's life, has a long-term effect, laying the characteristics of the body's immune response to external antigens, both infectious and food, predetermining the development of a particular pathology in the future. The process of formation of the intestinal biocenosis in a child is individual and depends on many factors: the state of health of the mother, the mode of delivery, the type of feeding, the use of antibiotics, etc.

By controlling the functional state of the intestines of a child during the first months of life, it is possible to prevent the realization of a hereditary predisposition to allergies in the atopic phenotype.

Purpose of the study: To study the functional state of the digestive system in children with atopic dermatitis.

Materials and methods

In order to achieve the goal, 40 children were selected, who at the time of the first treatment were diagnosed with AD. Of these, 63.7% of patients had a combined allergic skin and gastrointestinal lesion.

The first manifestations of AD in the age from 6 to 12 months turned 21 children (average age of 7.09 months.) and 19 children aged 1 to 3 years (average age 22.8 months). The maximum of initial complaints about the clinical signs of AD was registered at the age of 6–10 months (38.6%) and 1–2 years (36.3%), 2–3 years (25.1%). The comparison group consisted of 20 children aged from 6 months to 3 years who did not have a hereditary burden of atopy (mean age 24.10 ± 0.43 months).

Research methods included determining the qualitative and quantitative composition of intestinal micro flora in children, the study of the dynamics of the number of eosinophil using immersion microscopy of Romanovskiy-Giemsie stained smears and the level of total immunoglobulin E (IgE) using enzyme immunoassay in accordance with the manufacturer's recommendations. The incidence of somatic and infectious nature was assessed using a survey of parents and an analysis of outpatient cards of the child's development (Form No. 112). Statistical processing of the results was carried out using the computer program "STATISTICA for WINDOWS6.1".

Results and discussion

All children with AD had a hereditary predisposition for allergies, more often on the maternal line (67.6%). Among the relatives of children of both groups, a high prevalence of gastrointestinal diseases (27.5%) and helminth-protozoal infections (8.9%) was recorded.

The presence of allergic and somatic diseases in most mothers has led to a high incidence during pregnancy. Women with AD children had chronic tonsillitis significantly more often than women in the comparison group (25% vs. 3.33%, p = 0.011) and four of them (6.66%) had exacerbations during pregnancy. Against the background of chronic pyelonephritis, pregnancy proceeded in 13 out of 40 women of the main group (32.5%) and in 4 out of 20 comparison groups (20.0%), while exacerbation was recorded only in women of the main group (n = 10, p = 0.017).

Statistically more often, women in the main group suffered from ARVI (71.66% versus 20% in the comparison group, p = 0.000). Every second woman in the main group was diagnosed with giardiasis (25% vs. 8% in the comparison group, p = 0.034), who was not treated during pregnancy. Pregnancy in women of the main group proceeded significantly more often against the background of the threat of interruption (48.7% versus 22% in the comparison group, p = 0.025) and statistically significantly more frequently in the study

were diagnosed with the presence of CMV (23% in the main group versus 4.6% in the comparison group, p = 0.034). The discharge from the cervical canal Candida albicans, diagnosed only in 8 women of the main group (p = 0.017), was attributed to the use of antibacterial drugs for the treatment of chronic diseases. The pregnancy ended in urgent childbirth in 70% of women in the main group, and in six (30%) – abdominal delivery. In the comparison group, urgent labor was given to 19 women (47.5%), in 5 cases (25%) – abdominal delivery.

All children had a state of health at birth as satisfactory. Significant statistical differences in the average anthropometric indices were not revealed. Work with the mothers of children with AD, began with the maximum preservation of lactation. The leading line of the parties to interacting with parents was teaching them the basics of rational nutrition, taking into account atopy.

During the first year of treatment, 18 children (45%) had exacerbations of the skin syndrome in the form of a generalized erythematous rash associated with errors in the diet or against the background of the use of drugs in the treatment of ARVI. Over the next 2 years, exacerbations persisted in 7 children (17.5%) in the form of localized areas of rash and were caused by a violation of the diet. Exacerbations were stopped by the appointment of N1 blockers of histamine receptors and topical glucocorticosteroids with a course of no more than seven days. Further observation in follow-up to 3 years of age did not reveal exacerbations of AD.

The first complaints of mothers, along with a skin rash in a child, were intestinal dysfunction, manifested by intestinal colic, the presence of pathological impurities in the form of greenery, streaks of blood, foam, or delayed stools up to several days. When bacterial study of feces statistically significant difference in the allocation of conditionally pathogenic flora (CPF) in children of the main group and the comparison group were not identified, however, higher titers of Staphylococcus aureus and Klebsiella pneumonieae in the main group (10^5–10^{10}) paid attention, in the comparison group they did not exceed 10^3. Clinical manifestations of the debut and course of the allergic process depending on the type of CPF were significantly different. The presence of Staphylococcus aureus in the first month of life was manifested by intestinal dysfunction, which was accompanied by intestinal colic, secretion of mucus and greenness with feces. In the second month of life, a rash appeared in typical places (cheeks, neck, buttocks, and places of natural folds) with subsequent spread throughout the body. The rash was erythematous and erythematous-squamous. The presence in the intestine of Klebsiella pneumonieae caused manifestations of hemocolitis of varying degrees of intensity (from single blood veins to abundant discharge). Skin syndrome was characterized by the appearance of areas of compaction and desquamation of the epithelium on the lateral surface of the legs and thighs at 2–3 months of life.

Total immunoglobulin E was investigated at the initial circulation, by the end of the second year of observation. In the first study, IgE averaged 392.050 ± 134.626 g / l, with repeated a year later – 101.014 ± 87.630 g / l (p = 0.002), which indicated a regression of the allergic process (p = 0.017).

The eosinophil content in children of the main group reached 3.93 ± 0.23%, in the comparison group – 1.21 ± 1.34% (p = 0.001). The statistically significant predominance of eosinophils in children of the main group was maintained for up to 6 months, there was no further statistically significant difference until two years of age, when the level of eosinophils was recorded higher in children of the comparison group and was due to a higher infestation of helminthic invasion.

Conclusions

1. Thus, the intestinal microbiota in recent years has been considered as a key etiological factor in the development of allergic and immunopathological conditions, including AD, in children. Available data indicate the need for further study of both the microbial community as a whole and its individual representatives.
2. Secondary prevention of AD should begin in the first months of life. The trigger mechanism for the development of the atopic process in children during the first months of life is endotoxemia, caused mainly by hospital-type strains of CPF. Clinical manifestations of AD depend on the nature of the pathogenic flora.
3. The main marker controlling the allergic process in children during the first months of life with hereditary burden is the level of eosinophil and total Ig E.

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