ISSN: 2053-3578 I.F. 12.34

CHANGES IN THE CLINICAL COURSE OF ALLERGIC DISEASES IN CHILDREN TASHKENT PEDIATRIC MEDICAL INSTITUTE

Associate Professor of the Department of "Family Doctor No. 1, Physical Education and Civil Protection", Candidate of Medical Sciences.
Devorova Marifat Bakievna
Valijonova Mashhura Shuxratjon kizi
Narzullayeva Nafisa Baxtiyor kizi
e-mail - mdevorova@bk.ru

Annotation: This topic explores the evolving clinical patterns of allergic diseases in children, such as eczema, asthma, allergic rhinitis, and food allergies. It highlights how these conditions often follow the "allergic march," where initial symptoms in infancy, such as eczema and food allergies, may lead to respiratory allergies and asthma as the child grows. By addressing the dynamic nature of these conditions, the study aims to improve diagnostic approaches and management strategies to enhance outcomes for pediatric patients.

Key words: *public health, Phenotype studies, global health burden, "allergy epidemic," "atopic march".*

INTRODUCTION

Allergic diseases are among the most common chronic conditions affecting children worldwide. These diseases include a spectrum of conditions such as asthma, atopic dermatitis (eczema), food allergies, allergic rhinitis (hay fever), and other hypersensitivity reactions. Over the past few decades, there has been a marked increase in the prevalence of allergic diseases in children, leading to a significant public health concern. Allergic diseases in children represent a growing public health concern worldwide, with significant changes observed in their prevalence, clinical presentation, and disease course over the past few decades. This shift is influenced by environmental, genetic, and lifestyle factors.

LITERATURE AND ANALYSIS

Allergic diseases, including allergic rhinitis, asthma, and atopic dermatitis, are common heterogeneous diseases that encompass diverse phenotypes and different pathogeneses. Phenotype studies of allergic diseases can facilitate the identification of risk factors and their underlying pathophysiology, resulting in the application of more effective treatment, selection

of better treatment responses, and prediction of prognosis for each phenotype. Allergic diseases represent a global health burden. Patients with allergic diseases may experience disability, reduced quality of life and productivity, emotional distress, and social restrictions, especially in the most severe cases. Current advances in unveiling the pathogenesis of allergic disorders have paved the way for the development of novel therapeutic strategies. Biological drugs have been widely studied in pediatric allergic asthma, with strong evidence of efficacy and safety. Moreover, promising results derive from studies on other conditions such as atopic dermatitis, chronic spontaneous urticaria, and food allergy. In the early phase of phenotype studies in allergic diseases, artificial classifications were usually performed based on clinical features, such as triggering factors or the presence of atopy, which can result in the biased classification of phenotypes and limit the characterization of heterogeneous allergic diseases. Subsequent phenotype studies have suggested more diverse phenotypes for each allergic disease using relatively unbiased statistical methods, such as cluster analysis or latent class analysis.

Although significant progress has been made in our understanding of allergic diseases, differences in clinical characteristics (phenotypes), treatment response, and disease course have been noted in many patients treated with conventional therapy that is considered the standard of care. Thus, identifying the underlying cellular and molecular pathways (endotypes) of allergic disorders has paved the way for new targeted and specific treatment strategies for individualized therapies[1]. Several biological drugs have been developed, aiming to control symptoms, reverse the disease-related damage, and possibly modify the natural history of allergic disorders. This review analyzes recent evidence on the role of biological therapies for allergic diseases, focusing on the pediatric age Severe asthma in children is characterized by sustained symptoms despite treatment with high doses of inhaled corticosteroid (ICS) or oral corticosteroids; the reported prevalence is 5% in children and 7% in adolescents[2].

The classifications of phenotypes in allergic diseases may overlap or be unstable over time due to their complex interactions with genetic and encountered environmental factors during the illness, which may affect the disease course and pathophysiology. Over the last few decades, the prevalence of allergic diseases in children, including asthma, atopic dermatitis (AD), allergic rhinitis (AR), and food allergies, has significantly increased. This is particularly evident in industrialized countries, although low- and middle-income countries are also experiencing a rise. This trend, often referred to as the "allergy epidemic," is thought to be linked to:

ISSN: 2053-3578 I.F. 12.34

The hygiene hypothesis: Reduced exposure to infections and microorganisms in early childhood may lead to an imbalance in the immune system, promoting allergic responses. Increased exposure to air pollution, urbanization, and dietary changes (e.g., reduced intake of antioxidants and increased consumption of processed foods) contribute to higher risks. Shifts in weather patterns and rising pollen levels have contributed to the severity of allergic diseases like hay fever and asthma. Allergic diseases in children often follow a predictable pattern, commonly referred to as the "allergic march" or "atopic march". This describes the typical progression of allergic diseases over time[3]:

1. Infancy: Atopic dermatitis is often the first allergic condition to appear.
2. Early childhood: Food allergies, especially to milk, eggs, peanuts, and tree nuts, often manifest during this time.
3. Later childhood: Allergic rhinitis and asthma typically develop. Not all children follow the same trajectory, and some may experience resolution or persistence of symptoms into adulthood. Recent studies suggest that the allergic march may vary depending on genetic predisposition, environmental exposures, and comorbidities.

Allergic diseases are immune system disorders characterized by an exaggerated response to harmless substances, such as pollen, dust mites, certain foods, or pet dander. Studies have shown that up to 30-40% of children globally are affected by one or more allergic diseases. Asthma affects approximately 10-15% of children, with higher rates in urban and industrialized areas. Atopic dermatitis is estimated to affect 15-20% of children, often appearing within the first year of life. Food allergies are increasingly common, affecting up to 8% of children in some populations. Allergic rhinitis is reported in 10-20% of children, with symptoms often emerging in school-aged children. Below current statistics on food allergy around the world were given[4]:

	FOOD ALLERGY PREVALENCE IN CHILDREN	FOOD ALLERGY PREVALENCE IN ADULTS
China	8.71%	8.14%
Canada	7.35%	5.36%
Spain	5.23%	4.65%

ISSN: 2053-3578 I.F. 12.34

	FOOD ALLERGY PREVALENCE IN CHILDREN	FOOD ALLERGY PREVALENCE IN ADULTS
United States	4.32%	6.3%
United Kingdom	4.27%	4.63%
Japan	3.9%	2.1%
France	3.61%	2.98%
Italy	3.04%	6.59%

RESULT AND DISCUSSION

The prevalence of allergic diseases in children has increased markedly in the past few decades. According to several published studies in Finland, the total prevalence of allergic symptoms during childhood has risen 8-fold from 1950 to 1995. In 1950, 5% of children had some type of allergic symptom while recent studies report a prevalence of 40% [5]. Similarly, an increase has taken place in all developed highly hygienic countries. In 1976 Canadian paediatrician Gerrard concluded that the increase in allergic diseases is the price to be paid for the relative freedom from diseases due to viruses, bacteria and helminths in infancy and early childhood. The socalled hygiene hypothesis was formulated later by Strachan. Based on the lower prevalence of allergy in families with large numbers of children than in small sibships, he proposed that high prevalence of infections in large families stimulates more Th1 cells, reciprocally inciting the Th2 population. Epidemiologic studies show that a particularly high prevalence of infections such as hepatitis A in the gastrointestinal tract, is associated with lower prevalence of allergies. Several environmental factors encountered in central European farms during infancy have resulted in the lower prevalence of allergic diseases and sensitization in children. However, the defect in the stimulation of Th1 cells in the development of allergic diseases in the same environment and the prevalence of autoimmune diseases has increased in a similar manner. Both arms of effector T cells have been shown to be regulated by T regulatory cells and these cell populations play an important role in the development of autoimmunity, self- tolerance and allergic diseases[6].

Stimulation by the huge and active commensal bacterial flora in the intestine during early life is important in directing the development of regulatory T cells and tolerance. Their

ISSN: 2053-3578 I.F. 12.34

action is probably mediated by the innate immune system. The sterile gut of the newborn is gradually colonized by environmental bacteria. Vaginally born infants acquire the microbiota having the strongest association with mother's colon. Cesarean section delays colonization by Bifidobacteria, Lactobacilli, and Bacteroides. Later, the type of feeding influences the initial colonization (10). Human milk oligosaccharides promote the growth and activity of Bifidobacteria and Lactobacilli[7], which more abundantly colonize breast-fed than formula-fed infants. In unhygienic environments, the commensal gut flora has a high diversity and a high turnover rate. Such conditions, related to decreased risk of allergy, provide continuous exposure to an extensive array of bacteria in drinking water and in the soil and constantly stimulate the immune system .

Ten randomized clinical trials have compared the effect of probiotics with that of a placebo preparation in infants and children with eczema. The first study by Majamaa and Isolauri[8] reported the effect of Lactobacillus rhamnosus strain GG (LGG) in the treatment of eczema in 42 infants referred to a hospital for suspected cow's milk allergy (CMA). LGG was given open-label for one month to 11 breast-feeding mothers or directly to 15 infants receiving extensively hydrolyzed formula (EHF). In the control group delete, 16 infants received only EHF. In the final analysis, 37 of 42 infants undergoing a positive cow's milk challenge after the intervention were included. Among these 37, the SCORAD index improved significantly in the 13 formula-fed infants receiving LGG and in the 10 breastfed infants whose mothers received LGG. In the 14 control infants, the index remained unchanged. However, at 2 months the eczema was healed in both study groups. Isolauri's study included 27 infants suffering from eczema during exclusive breast-feeding. Nine were weaned onto EHF, 9 infants onto the same formula with added LGG, and 9 infants received the formula with added Bifidobacterium lactis Bb12. After 2 months, infants receiving the probiotic-containing formula showed less severe eczema, whereas in the placebo group no improvement was observed. Six months later, eczema had improved in all infants, with no difference in incidence between the study groups. Advances in Diagnosis and Treatment:

- Biomarkers and Precision Medicine:
    - New biomarkers, such as specific IgE panels and component-resolved diagnostics, are improving the accuracy of allergy diagnosis.
- Biologic Therapies:
    - Biologic agents (e.g., omalizumab, dupilumab) are transforming the management of severe asthma and atopic dermatitis in children.

- Allergen Immunotherapy (AIT):
    - Sublingual immunotherapy (SLIT) and subcutaneous immunotherapy (SCIT) are increasingly used to treat allergic rhinitis and asthma in children.

CONCLUSION

In conclusion it should be noted that recent advances in understanding the pathophysiology of allergic disorders have paved the way for identifying novel therapeutic strategies for treating severe and uncontrolled disease phenotypes. Although most studies have been per-formed in allergic asthma, biological drugs targeting other allergic diseases such as CSU, and FA show promising results. However, due to the wide variability in response to treatment, further studies are required to identify the ideal candidates, as well as to optimize the dosage and duration of the treatment. Allergic diseases in children have a profound impact on quality of life. Chronic symptoms, dietary restrictions (e.g., in food allergies), and the stigma associated with visible conditions like eczema can lead to anxiety, depression, and social isolation in children. Early interventions, such as promoting breastfeeding, early introduction of allergenic foods, and exposure to diverse microbial environments, hold promise for reducing the risk of allergies. Studies on how environmental factors influence gene expression in allergic diseases are providing new insights into disease mechanisms.

REFERENCES

1. Licari A, Manti S, Marseglia A, De Filippo M, De Sando E, Foiadelli T, et al. Biologics in Children with Allergic Diseases Curr Pediatr Rev 2020;16:140-7.
2. Global Initiative for Asthma. GINA guidelines. Gl strategy for Asthma Management and Prevention; 2019 [Internet]. Available from: https://www.ginasthma.org [cit 2020, Jan 12
3. Advances in pediatrics in 2023: choices in allergy, analgesia, cardiology, endocrinology, gastroenterology, genetics, global health, hematology, infectious diseases, neonatology, neurology, pulmonology | Italian Journal of Pediatrics | Full Text
4. https://www.researchgate.net/publication/343107192_An_update_on_biological_therapies_for_pediatric_allergic_diseases
5. Siltanen M, Kajosaari M, Poussa T, Saarinen KM, Savilahti E. 2003. A dual long-term effect of breastfeeding on atopy in relation to heredity in children at 4 years of age. Allergy 58: 524–530
6. Sakaguchi S. 2005. Naturally arising Foxp3- expressing CD25+CD4+ regulatory T cells in immunological tolerance to self and non-self. Nat Immunol 6: 345–352.

ISSN: 2053-3578 I.F. 12.34

7. Tuohy KM, Rouzaud GC, Bruck WM, Gibson GR. 2005. Modulation of the human gut microflora towards improved health using prebiotics–assessment of efficacy. Curr Pharm Des 11: 75–90.
8. Majamaa H, Isolauri E. 1997. Probiotics: a novel approach in the management of food allergy. J Allergy Clin Immunol 99: 179–185.