



ALLERGIC DISEASES IN CHILDREN: EXPANDED COMPREHENSIVE CLINICAL REVIEW

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Abstract: Allergic diseases constitute one of the most prevalent chronic conditions in childhood. This expanded review examines the etiology, immunopathogenesis, clinical manifestations, diagnostic methods, management options, and preventive strategies of pediatric allergic diseases. With increasing global prevalence, understanding these disorders is crucial for clinicians, researchers, and healthcare providers involved in pediatric care.

Keywords: pediatric allergy, atopic dermatitis, food allergy, allergic rhinitis, asthma, anaphylaxis, IgE, immunotherapy

Introduction

Allergic diseases in children are increasing worldwide, influenced by environmental, genetic, nutritional, and immunological factors. They significantly affect growth, sleep, cognitive development, and quality of life. The aim of this article is to provide an expanded overview of pediatric allergic diseases.

Materials and Methods

This review is based on studies published between 2015 and 2025 from PubMed, Scopus, Google Scholar, and guidelines from EAACI, WAO, and GINA. Key terms included 'pediatric allergy', 'asthma in children', 'food allergy diagnosis', and 'atopic dermatitis management'.

Results

1. Etiology and Risk Factors

The etiology of pediatric allergic diseases is multifactorial, involving genetic predisposition, environmental exposures, nutritional status, microbiome composition, and perinatal influences.

1.1 Genetic Factors

Genetically predisposed children have higher risks of allergic disease development. Filaggrin gene mutations are associated with atopic dermatitis and secondary food allergies.

1.2 Environmental Factors

Environmental pollution, exposure to tobacco smoke, and urban lifestyle contribute to rising allergy prevalence.



1.3 Nutritional Determinants

Breastfeeding, timing of solid food introduction, and early exposure to allergens influence immune tolerance development.

1.4 Microbiome and Immunity

Alterations in gut microbiota due to antibiotics or cesarean section delivery may increase allergy risk.

2. Immunopathogenesis

Pediatric allergic diseases involve dysregulated immune responses including Th2 activation, IgE production, mast cell activation, and inflammatory cytokine release.

3. Clinical Manifestations

Major clinical allergic diseases in children include atopic dermatitis, food allergy, allergic rhinitis, asthma, and anaphylaxis.

4. Diagnostic Principles

Diagnosis incorporates history, physical examination, IgE testing, skin prick tests, spirometry, oral food challenges, and component-resolved diagnostics.

5. Management Strategies

Management includes allergen avoidance, pharmacotherapy, immunotherapy, biologics, and preventive interventions. Biologic agents such as omalizumab and dupilumab are effective for severe conditions.

Discussion

Pediatric allergic diseases often follow the atopic march. Early diagnosis, proper management, and preventive strategies may improve outcomes.

Conclusion

Pediatric allergic diseases are common but manageable with proper diagnosis and multidisciplinary care. Research continues to expand therapeutic options.

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**AMERICAN
ACADEMIC
PUBLISHER**

INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

ISSN NUMBER: 2692 - 5206

Volume 5. No 11. November ,2025

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