Review Article:

Diagnosis and Management of Allergic Rhinitis in Children

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Abstract:

Allergic rhinitis which is the most common pediatric allergic disease has a significant negative impact on quality of life in affected children. Further, overall poor control can lead to 'allergic march' and later development of bronchial asthma. The main symptoms of allergic rhinitis include nasal discharge, blockage and itchiness of nose, and sneezing. Clinical history focused on identification of nature and severity of symptoms, trigger factors and clinical features of non-allergic rhinitis is crucial for early and accurate diagnosis. The mainstay of non-pharmacological management of allergic rhinitis is allergen avoidance. Second-line antihistamines used either locally or orally are first-line treatment of mild to moderate allergic rhinitis whereas topical nasal corticosteroids are the first line treatment for moderate to severe disease, in whom the control of symptoms is not achieved with antihistamine and those with severe nasal obstruction. Combination therapy with antihistamines and intranasal steroids is more effective than either alone and is second line treatment for children who have poorly controlled rhinitis while on monotherapy. Oral steroids may be indicated in children with significant nasal obstruction and routine use of oral steroids should be avoided. Referral to specialist allergy clinic should be considered for those who are symptomatic despite optimal local and oral therapy. Consideration should be given for specialist otorhinolaryngologist evaluation of children who have features of non-allergic rhinitis and pharmacotherapy resistant nasal obstruction.

Keywords: Allergic rhinitis, children, diagnosis, management.

*International Journal of Human and Health Sciences Vol. 05 No. 02 April'21 Page : 159-162
DOI: <http://dx.doi.org/10.31344/ijhhs.v5i2.253>*

Introduction

Allergic rhinitis is a common chronic disease of childhood presenting to the general pediatrician yet often misdiagnosed and mistreated leading to poor disease control and overall poor-quality of life¹. Further, in atopic children, poorly controlled allergic rhinitis can march to develop bronchial asthma in later life. Allergic rhinitis is identified clinically as a condition with four main types of symptoms: anterior and posterior nasal discharge, nasal itching, nasal blockage and sneezing². The prevalence of allergic rhinitis among children in Western province of Sri Lanka was 21.4% and is comparable to prevalence in other South-Asian countries³. Although the prevalence of allergic rhinitis in Sri Lanka is decreasing, symptoms of allergic rhinitis are present in over 70% of children

with wheeze⁴. However, the negative effects of allergic rhinitis are often underestimated as most symptoms of allergic rhinitis resemble those of common cold.

This review is intended to provide guidance for -allergic rhinitis and rhinoconjunctivitis (other form of rhinitis such as infective (e.g. post-viral), eosinophilic, granulomatous, autonomic, drug induced, neurogenic, structural, immunodeficiency and malignancy related rhinitis are not addressed in this review).

Definition

Allergic rhinitis is defined as inflammation of nasal epithelium and is characterized by nasal symptoms including anterior or posterior nasal discharge, sneezing, nasal blockage and/or itching of the nose⁵. These troublesome symptoms

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occur for more than one hour on two or more consecutive days and symptoms are present on most days. Recently European Academy of Allergy and Immunology proposed that two or more of these symptoms to be present in the sensitized in order to be diagnosed as having allergic rhinitis⁶. Common allergens include grass pollen, dust mite, tree pollen, weed pollens, moulds, and cat and dog dander⁷. Symptoms similar to allergic rhinitis can be seen with nasal polyps, septal deviation and adenoid hypertrophy. Further, some children with allergic rhinitis can present with atypical symptoms such as new onset snoring and cough.

Diagnosis

Clinical history to identify symptoms and allergens is key to accurate and early diagnosis of allergic rhinitis. History should be focused on identification of nature and severity of symptoms, trigger factors and features which are associated with non-allergic rhinitis. Children with allergic rhinitis often report symptoms of sneezing, nasal irritation, palatal itching, nasal discharge and bilateral nasal blockage. Seasonal rhinitis is associated with exposure to specific trigger factors such as pollen, moulds and dust mites and affected children are likely to report improvement of symptoms during holidays. Indoor allergens such as house pets can be the trigger factor in perennial rhinitis. Children with allergic conjunctivitis are likely to present with a history of itchy, red and swollen white of eye and increased production of tears.

Medical history should be focused on evaluating for comorbidities such as bronchial asthma and other atopic conditions. Use of non-steroidal anti-inflammatory drugs can make comorbid bronchial asthma worse and therefore, this needs to be specifically inquired in drug history. Most children will have a family history of atopy. Evaluation of impact on quality of life is also important as some children with allergic rhinitis have speech difficulties due to nasal quality of voice and poor-quality sleep.

Physical examination is likely to reveal allergic salute and shiners. Children with chronic and severe allergic rhinitis often demonstrate turbinate hypertrophy on anterior rhinoscopy and produce clear or purulent nasal discharge. Examination of eyes is important to rule out conjunctivitis.

Presence of unilateral symptoms, mucopurulent discharge, and isolated nasal obstruction are suggestive of non-allergic rhinitis. Non-allergic rhinitis should also be considered if a deviated nasal septum, severe crusting, septal perforation, or polyps are present. However, polyps can be present in allergic rhinitis with nasal blockage.

Investigations are not essential to make a diagnosis of allergic rhinitis but are useful for recognising non-allergic rhinitis and prior to offering immunotherapy. Allergen specific IgE measurements and skin tests can be performed to identify specific allergens in children with symptoms of allergic rhinitis in accordance with clinical history. An ENT review is required for children with unilateral symptoms, blood stained nasal discharge or pain. Those with nasal blockage resistant to pharmacotherapy or with structural abnormalities, such as deviated nasal septum should also be referred to ENT.

Classification of allergic rhinitis

Seasonal rhinitis

Seasonal rhinitis is characterised by rapid and reproducible onset and offset of symptoms of allergic rhinitis in association with pollen exposure. Seasonal rhinitis is often associated with outdoor allergens.

Perennial rhinitis

In perennial rhinitis, symptoms of allergic rhinitis occur for an hour or more on most days throughout the year. Perennial rhinitis is associated with indoor allergens.

Allergic rhinitis is further classified as mild, moderate and severe based severity of symptoms and as intermittent and persistent based on frequency of symptoms as illustrated in Figure 1^{8,9}. Understanding severity and frequency of symptoms is important to tailor appropriate medical treatment.

Figure 1: Classification of allergic rhinitis based on severity and frequency of symptoms.

Treatment

Supportive measures

Allergen avoidance measures are aimed at reducing exposure allergens such as home dust mite (HDM) avoidance, pet hair, and mould avoidance. Tree pollens are easier to avoid than grass pollen. Nasal douching^{10,11} is also effective given isotonic saline irrigation (saline spray and drops) is beneficial in reducing allergic rhinitis symptoms.

Pharmacotherapy

Antihistamines

Both intranasal and oral antihistamines are effective in treating symptoms of allergic rhinitis⁵. Antihistamines are also available as ocular preparations. Second generation H1- antihistamines (cetirizine, fexofenadine, desloratadine, diphenhydramine, and loratadine) are recommended for mild-to-moderate intermittent and mild persistent rhinitis^{5,12}. Oral antihistamines are preferred over other formulations to treat multi-focus (nose, eyes, skin) allergic rhinitis. Medication needs to be given on a regular basis for several weeks for moderate to severe symptoms irrespective of the control of symptoms¹². It is important to ask about personal or family history of cardiac arrhythmias before prescribing antihistamines. First generation antihistamines are no longer recommended due to unfavorable therapeutic index⁵. Treatment with both an intranasal and oral antihistamine has no added advantage and is therefore not recommended.

Inhaled steroids

Topical nasal corticosteroids (fluticasone propionate and fluticasone furoate) are the first line treatment for moderate to severe disease and in whom the control of symptoms is not achieved with antihistamine and those with severe nasal obstruction^{5,12}. Commencement of treatment two weeks before exposure to a known allergen season enhances efficacy¹². It is important to explain children and their parents about potential side effects of intranasal steroids (local nasal irritation, sore throat, nasal perforation and epistaxis⁵) before commencement. It is equally important to inform parents of the correct technique and that side effects can be minimized by correct use of intranasal device.

Oral leukotriene receptor antagonists

Montelukast monotherapy has been shown to be effective for seasonal allergic rhinitis in adult studies^{13,14}. Montelukast may also have a role to play in asthma patients with seasonal allergic rhinitis¹².

Combination treatment with antihistamines and intranasal steroids

Combination therapy with antihistamines and intranasal steroids is more effective than either alone or offers second line treatment for children who have poorly controlled rhinitis while on monotherapy. But refer to either ENT or allergy if you need to do this.

Oral steroids

Oral steroids are not recommended however, if they are really necessary only a short course may

be sufficient⁵. Oral corticosteroids may be used in exceptional situations such as severe nasal obstruction¹². Intranasal steroid therapy should be co-administered along with oral steroids and/or short-term decongestant spray to enhance intranasal drug penetration.

Nasal decongestants

Nasal decongestants have a limited place in treatment of allergic rhinitis related severe nasal obstruction. However, they should be used more than a few days to prevent rebound swelling of nasal mucosa¹⁵.

Immunotherapy

Immunotherapy may be effective for poorly controlled allergic rhinitis where the specific allergen responsible for driving allergic rhinitis symptoms is known. However, they are less frequently used given the risks of anaphylaxis. Allergen specific either subcutaneous or sublingual allergen immunotherapy is available for specific IgE mediated allergic rhinitis. It is indicated only in children in whom the specific allergen is known and clearly evident to cause symptoms as demonstrated by presence of elevated levels of specific IgE^{16,17}. These treatments have been shown to be effective in adult studies although pediatric studies are lacking¹⁸. Important side effects of specific immunotherapy include acute local¹⁹ and systemic²⁰ reactions including anaphylaxis. It is important to determine lung function before the first dose of oral allergen immunotherapy.

Consideration should be given to refer to a specialist allergy clinic of those who are symptomatic despite optimal local and oral therapy.

Other:

Anti-IgE therapy: Omalizumab has been reported to be effective for both allergic rhinitis and asthma²¹.

Conclusion:

Allergic rhinitis is common in children. Early identification of trigger factors and avoidance of these trigger factors are key to optimal non-pharmacological management. If pharmacological therapy is needed, the treatment options include (a) oral antihistamines, (b) nasal corticosteroids, (c) combined nasal spray with antihistamines and (d) immunotherapy for selected group of patients.

Conflict of interest: None declared.

Funding: None declared

Ethical Approval: Not applicable.

Authors Contribution: KD performed literature survey and wrote manuscript. KD, VT and UT edited manuscript. All authors read and approved final version of manuscript.

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