

ALLERGIC RHINITIS AND QUALITY OF LIFE IN CHILDREN

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Allergic rhinitis is a respiratory disease caused by an inflammatory process related to IgE mediated reaction versus allergens to which the subject is sensitized. Allergic rhinitis is not an isolated disease because the nasal mucosa inflammation involves paranasal sinuses and lower airways, thus worsening the asthmatic symptoms. Recently, a new classification of allergic rhinitis based on the duration and severity of clinical symptoms has been proposed. This classification takes into consideration both the quality of life and the possible impact of the symptoms on school, work and free-time activities. Children's quality of life is severely compromised by frequent night awakenings, easy fatigue, defects of language and irritability, which can have a negative influence on learning abilities. Allergic rhinitis has a negative impact on the quality of life of the whole family because it can cause interference on social life, and financial costs.

Allergic rhinitis is a respiratory disease caused by an inflammatory process related to IgE mediated reaction versus allergens to which the subject is sensitized (1).

The characteristic symptoms of allergic rhinitis are: rinorrhea, sneezing, itching and nasal obstruction. (1) Sometimes there can be also a conjunctivitis characterized by itchy and conjunctival hyperemia (2).

CLASSIFICATION

Usually, allergic rhinitis can be divided into seasonal and perennial rhinitis. However, there are also other forms of rhinitis which are defined as "episodic", because they are related to the occasional exposure to a particular allergen (2).

Recently, a new classification of allergic rhinitis based on the duration and severity of clinical symptoms has been proposed. According to this classification, allergic rhinitis can be divided into persistent and intermittent forms and, in relation to the severity of the symptoms, it can be *mild* and *moderate-severe*.(1)

This classification takes into consideration both the quality of life and the possible impact of the symptoms on school, work and free-time activities.

This classification was published on the ARIA (Allergic Rhinitis and its Impact on Asthma) document. This acronym reflects the spirit and the target of this initiative : the integrated management of the respiratory tract from nose to bronchi. Allergic rhinitis is not an isolated disease because the nasal mucosa inflammation involves paranasal sinuses and lower airways, thus worsening the asthmatic symptoms (3).

DIAGNOSIS

The seasonal variations of symptoms are typical in the diagnosis of allergic rhinitis; in pollen rhinitis symptoms occur mainly in Spring and they worsen outdoor, especially on windy days (2). In allergic rhinitis caused by perennial allergen (house dust mites and animal dander), symptoms occur mainly in pre-school age and they are often exacerbated by living in enclosed and wet environment (2,4).

The clinical symptoms of seasonal allergic rhinitis are characterized by itchy nose, sneezing, runny and watery nose (5). Conjunctival hyperemia, itching and photophobia can also occur (5). On the other hand, the persistent allergic rhinitis is mainly characterized by nasal

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obstruction, which causes sore-throat, cough, headache and tubal dysfunction (2).

From the clinical point of view, children with allergic rhinitis show dark circles under their eyes as a consequence of the venous stasis caused by the edema of the nasal mucosa (2). If eyes are involved, conjunctival swelling and erythema can occur (5). In children with long-lasting forms, the recurrent rubbing of the nose with the palm of the hand, called an "allergic salute", cause a skin fold of the middle third of the nose (6). In children with persistent forms and mouth breathing, often present dental malocclusion, high arched palate, adenoid facies, and language map (7). Anatomical and reactive conditions frequently associated with allergic rhinitis are septal deviation, turbinate hypertrophy, polyps, phlogosis of the paranasal sinuses, adenoiditis and adenoid hypertrophy (8). The physical exam should include otoscopic examination. Children with allergic rhinitis, indeed, have an increased susceptibility to recurrent otitis media with effusion, due to malfunction of the Eustachio's tube as a result of generalized edema of naso-pharyngeal mucosa (9).

The physical examination should always include a careful evaluation of the chest because of the strong relationship between the high and lower respiratory tracts.

Among the laboratory and instrumental tests, the prick tests should be considered the first-line test for the low costs, the sensitivity the specificity and the quick results (10). The specific IgE in serum should be done if there are differences between patients' anamnestic data and prick test results or in children with marked dermographism or in children under antihistamines treatment (10). Spirometry should be performed because of the demonstrated connection between asthma and rhinitis (1). Further investigations might be nasal endoscopy, assessment of olfactory function, the rhinomanometry, acoustic rinometria, audiometric and impedance examination, which may be performed in selected subjects.

Children's quality of life is severely compromised by frequent night awakenings, easy fatigue, defects of language and irritability, which can have a negative influence on learning abilities (11). Some studies have shown that children with allergic rhinitis present significant problems of concentration that can reduce their scholastic performance (12-13). Activity avoidance can be an insidious effect of nasal allergies on children's social lives and contribute to the high prevalence of children who are overweight (14). Nasal symptoms and practical matters may bother school colleagues and cause embarrassment and practical problems (repeatedly

scratching and blowing the nose, carrying handkerchiefs, using medication) (15).

Therapeutic control measures to avoid contact with allergens may limit recreational activities and contact with colleagues, leading to social isolation (16). Allergic rhinitis has a negative impact on the quality of life of the whole family because it can cause interference on social life, and financial costs. There is a reduction (22%) in the amount of time that the parents spent with the child with nasal allergies on daily activities (14). Some parents may feel guilty, become anxious or overprotective, or even hostile towards the child, which may have a negative effect on the family group (15).

INTEGRATED THERAPY

The prevention measures for the child with allergic rhinitis are mainly based on environmental control. The main goal is, above all, to avoid the patient's contact with allergens and other irritative factors. Furthermore, prescription of the appropriate drug therapy and, in selected cases, specific immunotherapy should be useful (1). These measures should be chosen according to the child's age, the specific allergen the child is sensitized to, and severity of its clinical manifestations. The goal of therapy is to avoid any complication derived from the disease, as well as any potential involvement of the lower respiratory tract (1).

Environmental prevention. The best way to prevent allergic rhinitis is to avoid the allergen (17). In children sensitized to house dust mites, it should be useful to put special dust mite covers on mattresses and pillow, to wash floors frequently and to remove any furniture that collects dust (carpets and draperies) (18,19). As for the prevention against pollen, children should be warned to avoid trips to the countryside, sleeping with the windows open and playing in the fields in the pollen season. In children allergic to animal dander, the contacts with the "charged" animal and to reside in places where the animal usually lies should be avoided (20). Cigarette smoking or indoor pollutants could be avoided for their pro-inflammatory effect on the nasal mucosa (21,22). Reducing indoor humidity and excessive rooms heating, by improving ventilation and air exchange, can reduce the allergen charge and promote the nasal mucosa hydration (23).

Nasal hygiene. Some simple measures, such as maintaining proper cleaning of the nasal cavities, are of great utility to relieve symptoms of children with rhinitis. First of all, it would be useful to illustrate both the child (if grown-ups) and his/her parents the correct technique for blowing his/her nose. Frequent and abundant nasal washings with isotonic or hypertonic saline should be always recommended to facilitate the removal of possible

allergens, irritants substances and especially mucus produced in excess (24).

The drugs for the treatment of allergic rhinitis in children are the antihistamines and topical nasal steroids. Oral H1-antihistamines are effective against symptoms mediated by histamine (rhinorrhea, sneezing, nasal itching and eye symptoms) but are less effective on nasal congestion (25). The first-generation oral H1-antihistamines have sedative and anti-cholinergic effects, whereas second-generation antihistamines have a more favorable efficacy/safety ratio.

Intranasal glucocorticosteroids are the most effective medication for the treatment of allergic rhinitis (25). Intranasal glucocorticosteroids are well tolerated but the rate of growth is slightly reduced in children regularly treated with intranasal beclomethasone over one year (26)

Anti-leukotrienes have been proposed as combination therapy with antihistamines and / or topical steroid for the treatment of allergic rhinitis in particular in subjects with asthma and rhinitis (27).

In conclusion, allergic rhinitis is a common disease and the impact on daily life cannot be underestimated, because:

- 1) negatively affect school performances and overall quality of life of children and, consequently, of their parents;
- 2) have important socio-economic implications in terms of medical costs, school absences and days of work lost by parents;
- 3) lead to increased risk of complications in the paranasal sinuses and middle ear, and the inevitable involvement of the anatomical structures of the lower airways.

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