

Management of allergic rhinitis

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Abstract

In this paper, we review the current management of allergic rhinitis and new directions for future treatment. Currently, management includes pharmacotherapy, allergen avoidance and possibly immunotherapy. The simple washing of nasal cavities using isotonic saline provides a significant improvement and is useful, particularly in children. The most effective medication in persistent rhinitis used singly is topical corticosteroid, which decreases all symptoms, including ocular ones. Antihistamines reduce nasal itch, sneeze and rhinorrhea and can be used orally or topically. When intranasal antihistamine is used together with topical corticosteroid, the combination is more effective and acts more rapidly than either drug used alone. Alternative therapies, such as homeopathy, acupuncture and intranasal carbon dioxide, or devices such nasal air filters or intranasal cellulose, have produced some positive results in small trials but are not recommended by Allergic Rhinitis and its Impact on Asthma (ARIA).

In the field of allergic immunotherapy, subcutaneous and sublingual routes are currently used, the former being perhaps more efficient and the latter safer. Sublingual tablets are now available. Their efficacy compared to standard routes needs to be evaluated. Efforts have been made to develop more effective and simpler immunotherapy by modifying allergens and developing alternative routes.

Standard allergen avoidance procedures used alone do not provide positive results. A comprehensive, multi-trigger, multi-component approach is needed, including avoidance of pollutants such as cigarette smoke.

Introduction

Allergic rhinitis is a major chronic respiratory disease due to its prevalence, its impact on quality of life, performance and productivity at work, its cost to society and its relationship to asthma. It consists of an IgE-mediated inflammation of the nasal mucosa alone or associated with asthma.

Thanks to our better understanding of the inflammatory mechanisms of the upper airways, practice guidelines on allergic rhinitis management have been published recently. One of the major problems in diagnosis is that many patients have difficulty recognizing their condition; they do not consult a doctor and do not use effective treatments. Several practice guidelines have been published and these have been compared in a recent paper [1],

which provides guidelines according to several criteria (scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and editorial independence). The 2010 ARIA guidelines were given the highest positive score in 5 domains out of 5 [1]. The biggest issue lies in the applicability, which was poor for all guidelines. Self-medication and treatments without scientific evidence of effectiveness are also very commonly used [1]. The correct treatment of allergic rhinitis could avoid complications such as asthma, chronic otitis media, rhinosinusitis, and sleep disorders [2].

The purpose of this non-exhaustive paper is to present recent advances in the treatment of allergic rhinitis. The medications currently available are of limited effectiveness [3,4]. Compared to patients' own assessment of

their condition, physicians tend to evaluate their condition as less severe [5]. In this latter paper, there was a poor correlation between patients and physician assessment of disease severity. The management of allergic rhinitis typically combines medication, immunotherapy and allergen avoidance. We will review the available approaches, their limitations, and possible new directions.

Medications

Current use

A simple, safe and inexpensive treatment for allergic rhinitis consists of rinsing nasal cavities using isosaline irrigation [6]. Nasal saline irrigation produced, according to this recent meta-analysis, a 27% improvement in nasal symptoms, a 62% reduction in medicine consumption, a 31% acceleration of mucociliary clearance time, and a 27% improvement in quality of life.

Two medications are currently recommended for the treatment of allergic rhinitis, namely oral antihistamines and local steroids.

Oral antihistamines have been used for 50 years. The second generation of oral antihistamines provides lower anticholinergic and sedative side effects and is more efficient, with a significant reduction of symptoms such as runny nose, nasal itching and sneezing.

Nasal steroids are more effective than antihistamines for controlling nasal obstruction [7].

New directions

Because available medications do not usually control rhinitis well [5], a recent randomized double-blind controlled study [8] evaluated the efficacy of a combination of a nasal antihistamine, azelastine, with a nasal steroid, fluticasone propionate. This new treatment was evaluated in patients with moderate to severe allergic rhinitis according to 2010 ARIA classification. These patients, who represent the majority of allergic rhinitis patients, have a disease which impacts on everyday life [8] (Figure 1). The trial demonstrated a better efficacy of fluticasone propionate combined with azelastine, compared to fluticasone or azelastine alone. The combined medication acted faster than the medications singly. Clinically, symptom relief was obtained 3 days earlier using the combined medication, compared to fluticasone propionate alone, and 5 days earlier, compared to azelastine alone. This rapid improvement could also improve compliance [8].

Alternative therapies have also been evaluated. In a multicentre study [9], it was found that homeopathic treatment of allergic rhinitis may reduce the dosage of

conventional drugs used. However, the effectiveness of homeopathic treatment has not been proven [9]. In a Chinese article, it was found that acupuncture has a short and long-term effect on the symptoms of perennial allergic rhinitis [10]. Nasal air filters have demonstrated some protective results in experiments performed in pollen exposure rooms [11]. Intranasal cellulose powder, which turns into a gel in the nasal cavity, works as a facial mask, preventing allergen and dust exposure. It has demonstrated some efficacy in allergenic challenge tests [12].

Omalizumab is an antibody which binds to IgE and decreases its availability to form complexes with cells involved in allergic reactions, and this ultimately leads to a drop in allergic rhinitis symptoms. Recently, Vashisht and Casale [13] concluded that, despite significant efficacy, this medication should be used for rhinitis that is resistant to conventional therapies, especially when the symptoms are seasonal, because the cost will be less than that for perennial allergic rhinitis [13].

Immunotherapy

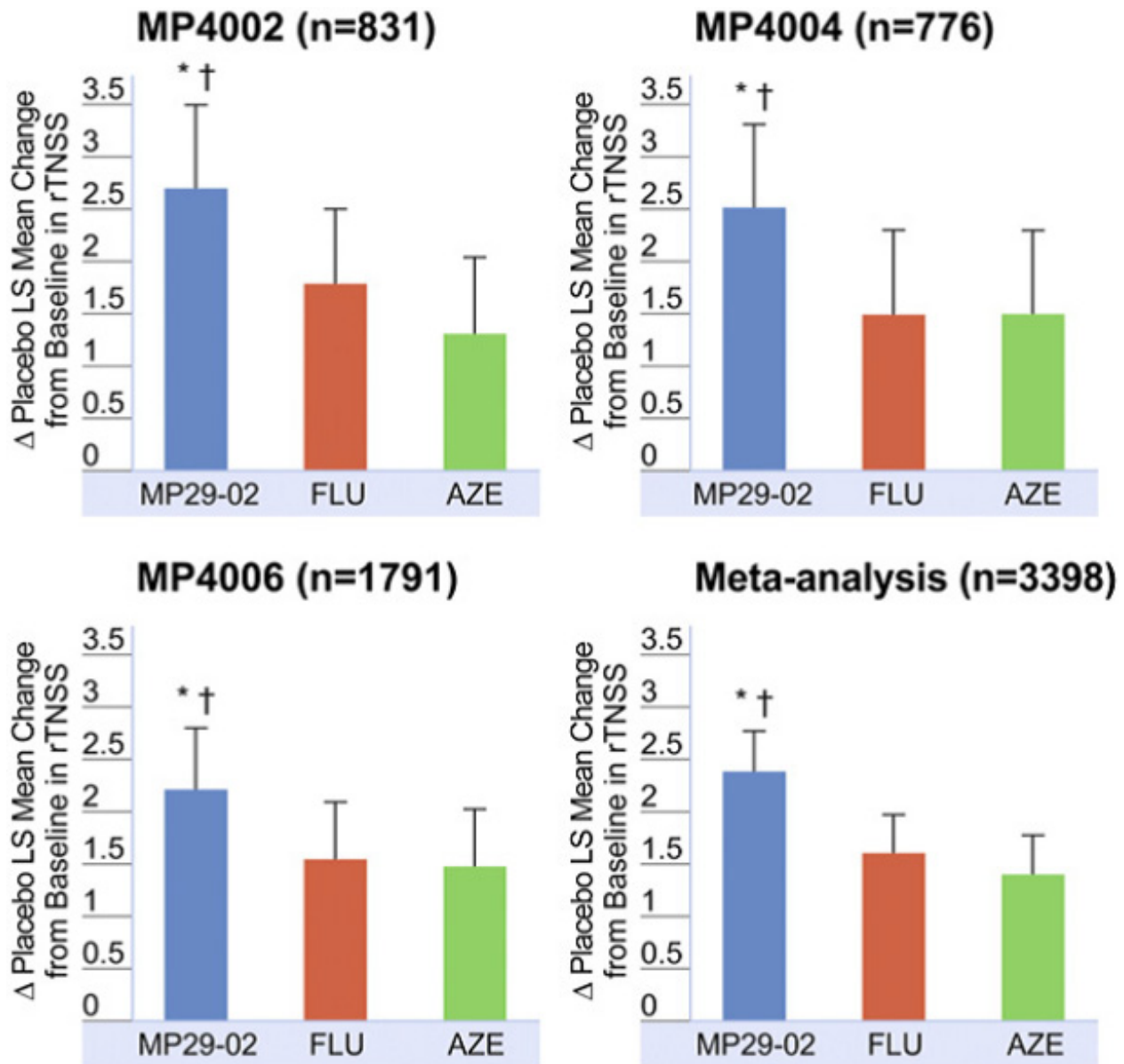
Current use

In 2001, the 100th anniversary of the first use of immunotherapy treatment by Noon and Friedman was celebrated. Since the 1990s, at least in Europe, sublingual immunotherapy has developed rapidly. Immunotherapy is the only treatment with an effect that persists after treatment discontinuation. Subcutaneous immunotherapy is recognized as being effective in the treatment of allergic rhinitis in adults and children for house-dust mites, birch, *Parietaria*, ragweed and grass pollen allergy. A recent review provides low-grade evidence to support that subcutaneous immunotherapy is superior to sublingual immunotherapy for the reduction of asthma symptoms and moderate-grade evidence for the reduction of allergy rhinoconjunctivitis [14]. Sublingual immunotherapy undoubtedly has a better safety profile compared to the subcutaneous route [15]. It could also help prevent incident asthma (new asthma cases in cohorts of patients suffering from allergic rhinitis) [16].

New directions

2011 witnessed an advance in treating allergic rhinitis in the form of sublingual tablets. Today, these tablets are only available for grass-pollen allergy (Figure 2), but there are ongoing clinical trials using house-dust mite and ragweed allergens [17,18]. Using sublingual tablets for adults suffering from mite-allergic rhinitis, Bergmann *et al.* [19] showed that they had significant efficacy on allergic symptoms, and demonstrated an increase in specific IgG, and a decrease in mean wheal diameter to mite-extracts, while there was no significant difference, compared to the placebo group, on use of rescue medication,

Figure 1. Effect of MP29-02, FP (FLU), and azelastine (AZE) on overall rTNSSs (morning plus evening) in patients with moderate-to-severe SAR



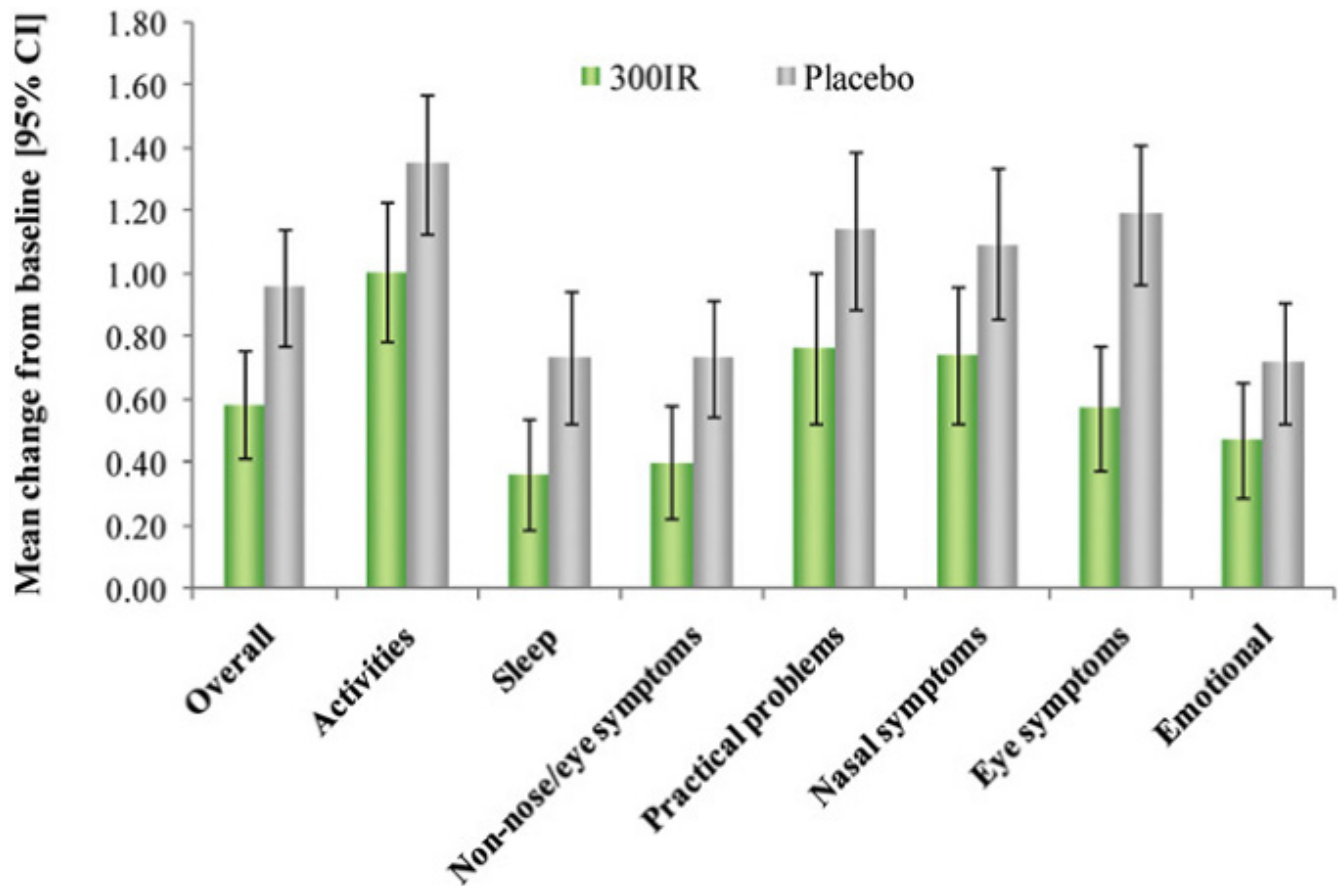
Data are presented as least squares (LS) mean change from baseline derived by means of ANCOVA minus placebo. The precision of these estimates are indicated by the upper bounds of the respective 95% CIs. Study MP4002: n = 831, *P = .034 versus FP; †P = .001 versus AZE; Study MP4004: n = 776, *P = .038 versus FP; †P = .032 versus AZE; Study MP4006: n = 1791, *P = .029 versus FP; †P = .016 versus AZE; Meta-analysis: n = 3398, *P < .001 versus FP; †P < .001 versus AZE. AZE, azelastine SAR, seasonal allergic rhinitis; TNSS, total nasal symptom score.]. Reprinted with permission from Elsevier Inc [8].

which is taken when needed. The decrease in symptom score was still significant one year after treatment discontinuation. The medications available for grass pollen tablet immunotherapy are named Oralair (Stallergenes) and Grazax (ALK) and they offer comparable efficiency on the symptoms of allergic rhinitis (this has not been

demonstrated). Compliance with all forms of immunotherapy is a major problem in the long-term treatment of allergic rhinitis.

Efforts have been made to develop more effective and simpler allergen immunotherapy for inhalant allergies,

Figure 2. Rhinoconjunctivitis quality of life questionnaire scores



Changes from baseline to the expected middle of the grass pollen season. Vertical bars are 95% CIs. CI, confidence interval. Reprinted with permission from Elsevier Inc [17].

by modifying allergens and developing alternate routes of administering treatment. Vaccine modifications, such as T cell epitopes or the use of viral-like particles as an adjuvant, have been shown to provide prolonged clinical benefits after a shorter course of treatment, compared to the currently available allergen immunotherapy treatments, both subcutaneous and sublingual. Intralymphatic allergen injection has been shown to produce similar clinical benefits after three injections to a 3-year course of subcutaneous immunotherapy with the same allergen. Epicutaneous immunotherapy has demonstrated promising results for inhalant allergies as well as for food allergies. These newer approaches may increase the use of and adherence to immunotherapy.

Environmental management of indoor allergy

Current practice

During these last few decades, many intervention programs have been designed to either prevent or manage house-dust mite allergy through avoidance procedures.

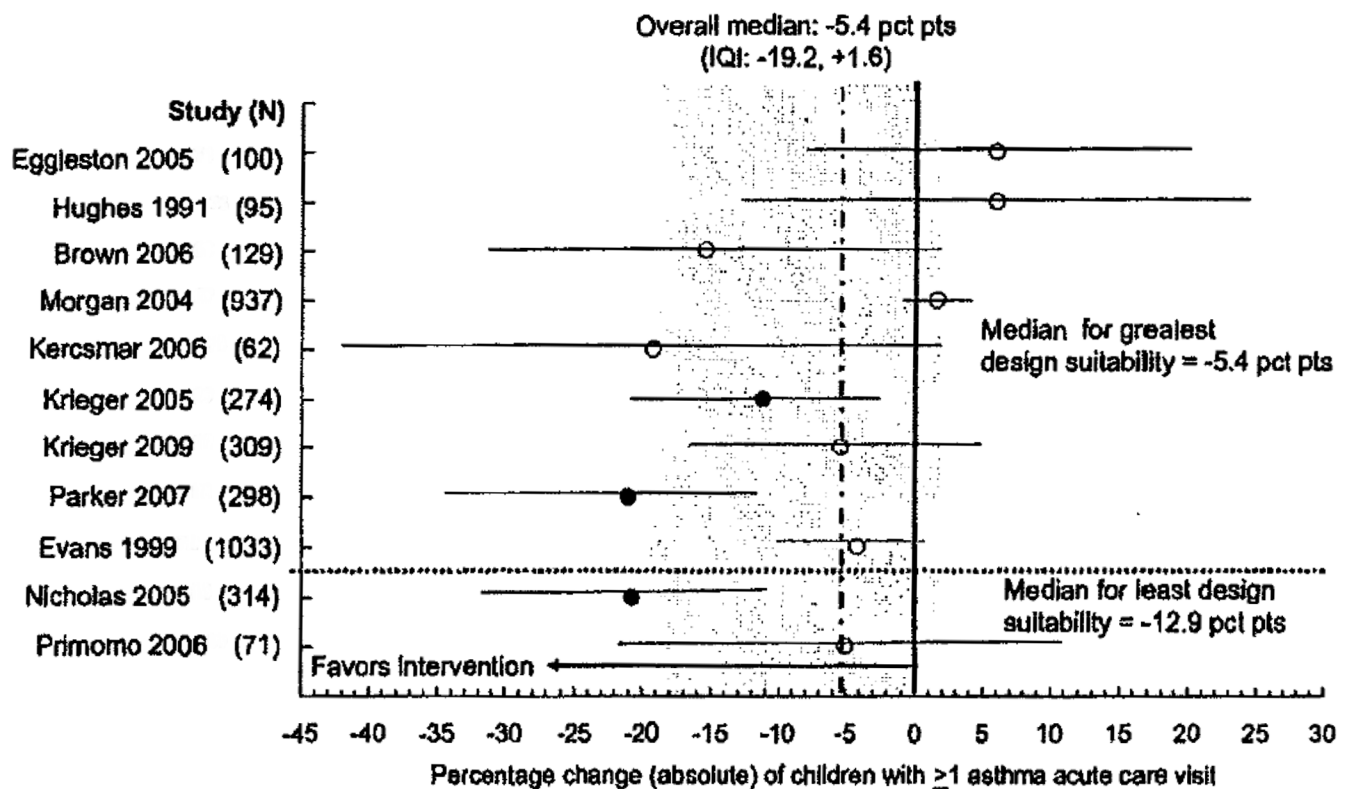
Primary prevention programs, designed to limit the incidence of asthma among atopic families, have not been successful [20]. Recommendations from scientific societies no longer include such advice. Secondary prevention, which aims at favoring disease control in allergic rhinitis or allergic asthmatic patients, has led to contradictory results. Cochrane analyses have concluded that such interventions have not proved to be efficacious [21,22].

New directions

A few avoidance studies have demonstrated a benefit, however, through well-designed and well-managed controlled studies.

It should be stressed that such positive studies included several visits to the family, supplying the family with anti-allergic equipment, providing asthma education both to the asthmatic child and his/her family, and encouraging smoking cessation (Figure 3) [23]. It is thus

Figure 3. Health care utilization, i.e. sum of hospital, emergency department, and unscheduled office visits/year



Percentage of asthmatic children with acute care visits. The gray box represents interquartile interval or range; CIs were added to graph if reported in the study or could be calculated. IQR: interquartile interval; pct pts: percentage points.

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unlikely that advice given by the doctor during an outpatient’s visit or even a single home visit could lead to a significant benefit.

In the field of pet allergy, several epidemiological surveys have suggested that exposure of the newborn baby to animals could act as a protective factor against sensitization to this animal, and even towards asthma in general, but pooled analysis of birth cohorts provided less clear-cut results. Thus, advice from health care practitioners to either avoid or acquire a pet early for primary prevention of allergic disease should not be provided [24]. Of course, if a family member suffers from pet allergy, avoidance should be advised.

Conclusion

Although allergic rhinitis is one of the most prevalent diseases in young people and is responsible for a significant impairment in quality of life, its control is usually far from satisfactory. Medications provide some relief, but improvement is only partial. Anti-IgE shots show better efficacy, but are still very expensive. Anti-allergic

immunotherapy is promising but new, well designed, long-term clinical trials are needed. Avoidance procedures could lead to improvement if they are designed as multi-trigger, multi-component interventions.

Abbreviations

ARIA, Allergic Rhinitis and its Impact on Asthma.

Disclosure

The authors declare that they have no disclosures.

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