CAP, Uppsala, Sweden) and skin prick testing was performed (Soluprick, ALK-Abello United Kingdom). One hundred fifty-six repeat operations were performed on this cohort. Patients were designated latex-allergic (LA) if they had a history of typical symptoms after latex exposure and they demonstrated either a positive skin prick test or in vitro test for latex. Patients without a latex allergy history but with a positive test for latex were designated as latex-sensitive (LS). A multiple regression model was used to assess the prevalence of latex sensitivity as a function of age, number of prior surgeries, and age at the first operation.

**Results.** Six cases of latex allergy (LA) were identified (0.47%). Fifty additional patients were LS. Latex seroconversion occurred in 3 of 144 (2.1%) patients who required repeat operations. Each of these 3 patients had >3 surgeries before their enrollment in the study. Statistically significant differences occurred between the 6 LA patients and the 50 LS patients. LA patients were older (13.8 vs 9.5 years), had more operations (25 vs 5) and had higher latex-specific IgE levels (5.62 vs 0.86 kUA/L). Data from the LA and LS patients were pooled and compared with data from the 1207 non-LA/LS patients. Significant difference was observed between LA/LS patients when they were older, had more surgeries, a higher rate of atopy, higher total IgE, had more past or current asthma and or rhinitis, and a higher incidence of allergy to kiwi fruit, banana, and peanut.

**Conclusions.** Previous surgery increased the odds ratio 13-fold. A 16% increase in risk for latex sensitization occurred for each year increase in age. Latex seroconversion occurred in 2% of repeat operations. In this study physician review combined with tests with high specificity and negative predictive value ruled out false-positive questionnaire responses.

**Reviewer’s Comments.** Although the actual incidence of LA reaction was low in this study as well as other reports, the incidence of sensitization can be high for children with spina bifida or urogenital malformations. Potential life-threatening intraoperative anaphylaxis is avoidable by latex prophylaxis. This study differs from previous reports that the risk of LA reactions correlates with the absolute number of repeated surgeries. In this study even 1 prior surgery increased the risk and there was no correlation with increasing number of repeat surgeries. Initial and sustained avoidance of latex devices may be prudent for children with spina bifida or urogenital defects.

Michael S. Kaplan, MD
Los Angeles, CA

**IMMUNOTHERAPY**

**SAFETY AND EFFICACY OF AN IMPORTED FIRE ANT RUSH IMMUNOTHERAPY PROTOCOL WITH AND WITHOUT PROPHYLACTIC TREATMENT**


**Purpose of the Study.** To evaluate the safety and efficacy of rush immunotherapy (RIT) with imported fire ant (IFA) whole body extract and to determine if prophylactic pretreatment with antihistamines and steroids reduces the rate of associated systemic reactions.

**Study Population.** Patients, 18 to 65 years old, with IFA hypersensitivity were enrolled from August 1996–June 1999. Hypersensitivity was defined as history of systemic reaction to IFA sting and positive IFA skin test result.

**Methods.** IFA-allergic patients enrolled in the RIT protocol were randomized in a double-blind manner to one of 2 prophylaxis regimens: 1) placebo pretreatment and 2) pretreatment with twice-daily treatment of terfenadine 60 mg, ranitidine 150 mg, and prednisone 30 mg. The pretreatment was begun 2 days before protocol start and continued through the evening of the last RIT dose. The RIT protocol included hourly injections on days 1, 2, 8, and 15. Protocol efficacy was determined on day 22 using a pair of IFA sting challenges 2 hours apart.

Fifty-eight patients (age range: 18–49 years) entered the 2-day RIT. Only 5.2% experienced mild systemic reaction during the protocol. There was no statistical difference between the 2 pretreatment groups (3.6% active vs 6.7% placebo; \( P = .87 \)). Efficacy was 98.2% in 56 patients undergoing sting challenge.

**Conclusions.** The authors conclude that RIT is both safe and efficacious for adults that have IFA hypersensitivity. The rate of systemic reactions is low and pretreatment with a combination of H1 and H2 antihistamines and oral corticosteroids is not necessary.

**Reviewer’s Comments.** One limitation of traditional immunotherapy is the long build-up period required for desensitization. This not only serves to discourage some patients but provides an additional hazard for patients with hypersensitivity reactions to insect venom and continual exposure. These authors have effectively demonstrated that RIT is safe and efficacious in adult patients. Although encouraging, additional studies are needed in children to confirm the same safety and efficacy parameters in fire ant-hypersensitive individuals.

Stacie M. Jones, MD
Little Rock, AR

**POLLEN IMMUNOTHERAPY REDUCES THE DEVELOPMENT OF ASTHMA IN CHILDREN WITH SEASONAL RHINOCONJUNCTIVITIS (THE PAT-STUDY)**


**Purpose of the Study.** To determine if specific immunotherapy can prevent the development of asthma and reduce bronchial hyperresponsiveness in children with seasonal allergic rhinoconjunctivitis.

**Methods.** A total of 205 children, 6 to 14 years old, from 6 European pediatric centers were enrolled from 1992–1994. All children had a clinical history of moderate-to-severe rhinoconjunctivitis caused by birch and/or grass pollen allergy, as well as positive skin testing and a conjunctival provocation test to birch and/or grass pollen. At enrollment, none had asthma requiring daily controller therapy. Patients were randomized to 1) active treatment group receiving specific immunotherapy (SIT) to birch and/or grass pollen for 3 years or 2) an observational control group. Symptomatic treatment was limited to loratadine, levocabastine, sodium cromoglycate, and nasaludesonide. Patients were evaluated based on the following: 1) asthma diagnosis, symptoms, and peak flow; 2) methacholine provocation during the pollen season(s) and winter; and 3) visual analog scale (VAS) for rhinoconjunctivitis after every season.

**Results.** Of the 205 patients, 43 were allergic to birch, 124 were allergic to grass, and 41 were allergic to both. Ninety-seven children received SIT while 94 served as controls. At study enrollment, 40 (20%) children had mild seasonal asthma symptoms despite negative histories of asthma. After 3 years, 38 of 40 with asthma still had symptoms. Among those with asthma, the SIT group had fewer asthma symptoms after 3 years of therapy as evaluated by
clinical diagnosis (odds ratio: 2.52; \( P < .05 \)). Bronchial hyperresponsiveness was significantly reduced in the SIT group, both in and out of season, when compared with controls (\( P < .05 \)). Of nonasthmatics, asthma developed in 19 of 79 in SIT group and 32 of 72 controls. Children receiving SIT had improved VAS scores for conjunctivitis (\( P < .001 \)) and rhinitis (\( P < .01 \)).

Conclusions. This study indicates that specific immunotherapy for seasonal rhinoconjunctivitis can reduce development of asthma. The authors also demonstrate a reduction in symptom profiles and medication usage in the active treatment group.

Reviewer’s Comments. Allergic rhinitis is a known risk factor for the development of asthma. Additionally, other investigators have demonstrated a link between upper airway disease and bronchial hyperresponsiveness. This study profiles a group of children with clinically relevant seasonal rhinoconjunctivitis and suggests that specific immunotherapy may have a role preventing the development of asthma. This study challenges clinicians to evaluate children with significant upper airway disease and consider the benefits of allergen immunotherapy. Additional work is needed to further define the role of allergen immunotherapy in the prevention of asthma development in children with both seasonal and perennial disease. Additionally, this study highlights the importance of surveillance for asthma symptoms in children with allergic rhinoconjunctivitis.

Stacie M. Jones, MD
Little Rock, AR

LOW-DOSE LOCAL NASAL IMMUNOTHERAPY IN CHILDREN WITH PERENNIAL ALLERGIC RHINITIS DUE TO DERMATOPHAGOIDES


Purpose of the Study. To assess the safety and clinical efficacy of low-dose nasal immunotherapy (LNIT) in children with dust mite allergy.

Study Population. Thirty-two symptomatic children between the ages of 4 and 14 years with perennial allergic rhinitis to dust mites.

Methods. This was a multicenter, randomized, double-blind, placebo-controlled study conducted over a 2-year period. After baseline evaluation and 1-month washout period, participants were randomized to the placebo or modified LNIT group. Participants in the active group received increasing nasal doses of dust mite allergen to a maintenance dose of 80 allergen units (AU). The maintenance dose was given at home on a weekly basis for 18 months. Clinical symptoms, medication scores, threshold dose with specific nasal provocation test (NPT) (dose required to elicit 2 of 4 nasal symptoms including itching, sneezing, rhinorrhea, and obstruction), and serum immunoglobulins IgE and IgG4 were followed. Statistical analyses were done to compare symptom and medication scores during period 1 (November 1994–March 1995) and period 2 (November 1995–March 1996). Results of NPTs and immunologic assays were compared at baseline, 5 and 18 months.

Results. Twenty-six participants completed the study (12 active and 14 placebo), and there were no serious local or systemic reactions. At baseline, the groups were similar in age, sex, duration of rhinitis, and results of NPT. There was no significant difference between groups in symptom or medication scores during the first period, however, participants in the active treatment group had significantly lower mean nasal symptom scores and mean medication scores during the second period. The threshold dose of allergen at NPT was significantly increased in the active treatment group when baseline and 18-month NPT results were compared. Also, the increase in the NPT threshold dose was significantly higher in the active treatment group when compared with placebo at the end of therapy. There was no statistically significant difference observed in IgE or IgG4 immunoglobulin levels between groups throughout the trial.

Conclusions. LNIT may be a safe and effective alternative to traditional immunotherapy in children with mild allergic rhinitis attributable to dust mites.

Reviewers’ Comments. Few studies have assessed the clinical efficacy of nasal immunotherapy in children, and previous adult studies have had limited success resulting from increased symptoms of rhinitis associated with high-dose nasal immunotherapy. The current study utilizes a low maintenance dose in children with perennial allergic rhinitis and suggests a clinically significant reduction in symptoms and medication use as well as a significant increase in allergen threshold dose. The participants in this study had very mild symptoms of rhinitis, and it is unclear if similar results would be found in patients with moderate to severe disease. Additionally, participants were told to follow their normal cleaning habits and dust mite exposure was not assessed in either group. Therefore, it is difficult to say whether the apparent improvement observed in the active treatment group was entirely attributable to the effect of LNIT rather than differences in exposure between groups or changes in the level of exposure during the study.

Stacie M. Jones, MD
Robert A. Wood, MD
Baltimore, MD

The Upper Airway

EFFECT OF OMALIZUMAB ON SYMPTOMS OF SEASONAL ALLERGIC RHINITIS: A RANDOMIZED, CONTROLLED TRIAL


Purpose of the Study. Seasonal allergic rhinitis is a common immunoglobulin E (IgE)-mediated disorder that produces troublesome symptoms. A recombinant humanized monoclonal anti-IgE antibody (omalizumab) forms complexes with free IgE, blocking its interaction with mast cells and basophils and lowering free IgE levels in the circulation. This study specifically seeks to assess the efficacy and safety of omalizumab for prophylaxis of symptoms in patients with seasonal allergic rhinitis.

Study Population. Patients 12 to 75 years old with no or mild symptoms during the preceding month but with at least a 2-year history of moderate-to-severe seasonal allergic rhinitis attributable to ragweed were considered eligible for the study. The history of moderate to severe ragweed-induced allergic rhinitis was defined as having a score of 2 or more on a 0- to 3-point scale (0 = no symptoms; 3 = severe symptoms), in 4 of 8 symptom categories (sneezing, itchy nose, runny nose, stuffy nose, watery eyes, red eyes, itchy eyes, or itchy throat) based on patient recall of the previous ragweed pollen season. Skin test sensitivity to ragweed pollen and a baseline total IgE level of between 30 and 700 IU/mL also were required.
POLLEN IMMUNOTHERAPY REDUCES THE DEVELOPMENT OF ASTHMA IN CHILDREN WITH SEASONAL RHINOCONJUNCTIVITIS (THE PAT-STUDY)

Stacie M. Jones

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