Methods. This randomized, double-blind, dose-ranging, placebo-controlled trial assigned patients to receive omalizumab, 50 mg ($n = 137$), 150 mg ($n = 134$), or 300 mg ($n = 129$), or placebo ($n = 136$) subcutaneously just before ragweed season and repeated during the pollen season every 3 weeks in patients with baseline IgE levels of 151 to 700 IU/mL (4 total treatments) and every 4 weeks in patients with baseline IgE levels of 30 to 150 IU/mL (3 total treatments). Main outcome measures were self-assessed daily nasal symptom severity scores (range: 0–3), rescue antihistamine use, and rhinitis-specific quality of life during the 12 weeks from the start of the treatment.

Results. Nasal symptom severity scores were significantly lower in patients who received 300 mg omalizumab than in those who received placebo ($P = .002$). A significant association was observed between IgE reduction and nasal symptoms and rescue antihistamine use. A linear dose-response relationship was observed for average daily nasal symptom scores and omalizumab dose. Patients in the 300-mg and the 150-mg omalizumab groups had significantly greater percentage of days with minimal nasal symptoms versus those in the placebo group. Rhinitis-specific quality of life scores were consistently better in patients who received 300 mg of omalizumab than in those who received lower dosages or placebo and did not decline during the peak season. A dose-dependent decrease in serum-free IgE levels occurred after omalizumab treatment. The frequency of adverse events was not significantly different among the omalizumab and placebo groups.

Conclusions. Omalizumab decreased serum-free IgE levels and provided clinical benefit in a dose-dependent fashion in patients with seasonal allergic rhinitis. This was demonstrated by decreased average daily nasal symptom scores, daily nasal and ocular symptom severity and duration scores, and assessment of quality of life scores. Patients receiving 300 mg omalizumab also experienced profound reductions in serum-free IgE levels after the first dosing interval, when 63% of patients had serum-free IgE levels <10.4 IU/mL.

Reviewers' Comments. This well-designed study thoroughly assesses the impact that omalizumab can have on the treatment of allergic rhinitis. There are, however, several limitations to this study. According to the article, only two thirds of patients were exposed to the severe pollen season. Therefore, variability in ragweed exposure across different sites in the United States is one factor that must be considered. It should also be known that patients entering the study were not completely asymptomatic, which could be attributable to a lingering effect from allergic rhinitis symptoms from the spring allergy season. However, this 12-week study of patients with seasonal allergic rhinitis did demonstrate that omalizumab therapy decreased serum-free IgE levels and provided clinical benefits, improving rhinitis-specific quality of life and reducing rescue medication use. Additional studies are necessary to pinpoint the exact placement of this agent in the therapeutic regimen for treatment of seasonal allergic rhinitis.

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DECREMENTS IN VIGILANCE AND COGNITIVE FUNCTIONING ASSOCIATED WITH RAGWEED-INDUCED ALLERGIC RHINITIS

Wilken JA, Berkowitz R, Kane R. *Ann Allergy Asthma Immunol*. 2002;89:372–380

Purpose of the Study. Previous studies have shown adverse effects on sedation, cognition, and psychomotor performance in patients with allergic rhinitis with or without medical therapy. This study was done to further delineate the impact and consequences of symptomatic allergic rhinitis on vigilance and a wide range of tests of cognitive function.

Study Population. Two hundred ninety-six adults (mean age: 36–37 years) were studied in an allergen exposure unit (AEU). The subjects had a minimum 2-year history of ragweed-associated allergic rhinitis with positive prick/puncture or intradermal skin tests to ragweed. The patients were not allowed to be on any other medications for allergy, asthma or central nervous system (CNS) depressants or stimulants.

Methods. This was a randomized, parallel-group, single-center study. The patients were all asymptomatic during an initial screening period and for baseline testing. The patients were administered a battery of automated neuropsychologic tests at baseline. The primary measure was the Kay Continuous Performance Test (KCPT), which is a measure of vigilance or the ability to maintain a certain level of arousal or attention while engaged in a monotonous or repetitive task. Secondary tests measured working memory, psychomotor speed, reasoning/computation, and divided attention. After the asymptomatic screening period and baseline testing, subjects were divided into symptomatic or asymptomatic groups. The symptomatic group was exposed to a consistent pollen level in the AEU. The symptomatic subjects could have as many as six 90-minute allergen exposure sessions over a 7-day period until they achieved specified levels of symptoms. Then, the testing was repeated as well as repeated in an asymptomatic control group with allergic rhinitis who had no pollen exposure in the AEU.

Results. Symptomatic allergic rhinitis had major adverse impacts on measures of vigilance. Symptomatic subjects performed significantly worse than asymptomatic subjects on all parameters of the KCPT. The cognitive battery of tests also showed a negative impact on a broad range of cognitive functions in symptomatic allergic rhinitis subjects. The greatest effect sizes were for tests measuring working memory and psychomotor speed.

Conclusions. Symptomatic, untreated allergic rhinitis subjects were found to have a significant decrement on measures of vigilance and a broad range of cognitive functions.

Reviewer's Comments. Another study showing cognitive changes in patients with allergic rhinitis. Another reason not to compound the problem with first-generation, sedating antihistamines.

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COMPARISON OF CEFUROXIME WITH OR WITHOUT INTRANASAL FLUTICASONE FOR THE TREATMENT OF RHINOSINUSITIS—THE CAFFS TRIAL: A RANDOMIZED, CONTROLLED TRIAL

Dolor RJ, Witsell DL, Hellkamp AS, Williams JW, Califf RM, Simel DL. *JAMA*. 2001;286:3097–3105

Purpose of the Study. It is not known whether intranasal corticosteroids are beneficial to treat acute rhinosinusitis in patients with a history of chronic or recurrent sinus symptoms. This study specifically seeks to determine if the addition of an intranasal corticosteroid to antibiotic ther-

apy affects the speed and rate of recovery of patients with acute rhinosinusitis.

Study Population. Patients 18 years or older presenting with acute sinonasal symptoms and a history of previously diagnosed recurrent or chronic sinusitis that necessitated antibiotic therapy were eligible for enrollment. All patients were required to have evidence of sinus infection on either plain film sinus radiograph (Waters view) or nasal endoscopy. Patients were screened using the major symptom criteria for acute rhinosinusitis developed by the Task Force on Rhinosinusitis of the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS). These criteria included the following: headache; facial pain and pressure; nasal congestion; thick, colored nasal discharge; and olfactory disturbance. Patients with 2 or more of these 5 symptoms were eligible for enrollment. Excluded were patients with nasal polyposis, previous sinus surgery, chronic bacterial sinusitis with failure of antimicrobial therapy, intranasal steroids within the past 14 days, or antimicrobial treatment in the past 7 days.

Methods. This double-blind, randomized, placebo-controlled multicenter trial randomly assigned patients to 2 puffs (total dose: 200 μg) of either fluticasone propionate (Flonase, GlaxoSmithKline) or placebo nasal spray taken once a day in each nostril for 21 days. All patients received cefuroxime axetil (Ceftin, GlaxoSmithKline) 250 mg twice daily for 10 days, as well as 2 puffs of xylometazoline hydrochloride per nostril twice daily for 3 days, 10 minutes before using study nasal spray. Oral antihistamines, oral decongestants, and mucolytics were not allowed. The primary outcome was the proportion of patients in each treatment group who experienced clinical success (patient reported cure or much improved) at 10, 21, or 56 days, based on telephone follow-up. Secondary outcomes included differences over time in the sinusitis and general health quality of life scores via survey.

Results. A total of 88 (93%) patients completed follow-up. Patients recorded their symptoms, work assessment, and compliance during the 3-week treatment phase. Patients receiving fluticasone achieved a significantly higher rate of clinical success than patients receiving placebo (93.5% vs 73.9%; $P = .009$). Patients treated with fluticasone improved significantly more rapidly (median of 6.0 days to clinical success) versus patients in the placebo group (median of 9.5 days; $P = .01$). An absolute benefit increase of 19.6% (95% confidence interval [CI]: 5.3%–33.9%) was noted; hence, the number needed to treat with fluticasone to gain 1 additional cure was 6 patients (95% CI: 3–19). Sinusitis-related quality of life, as determined via survey, improved equally over time for both treatment groups. Patients treated with fluticasone had a higher subjective level of work performance that was statistically significant on day 21 ($P = .009$).

Conclusions. Patients with acute paranasal sinusitis were more likely to achieve clinical improvement when treated with fluticasone and cefuroxime than with cefuroxime alone. For every 6 patients treated with fluticasone, cefuroxime, and xylometazoline, 1 additional patient is cured compared with patients treated with cefuroxime and xylometazoline alone.

Reviewers' Comments. More studies are needed to assess the impact of intranasal corticosteroids on patients with acute sinusitis, as well as those who present with signs and symptoms of sinusitis but negative radiographs or endoscopic findings. Evaluation of subjects with chronic bacterial sinusitis as well as nasal polyposis is needed as well. Nevertheless, sinusitis treatment guidelines should be amended to include intranasal corticosteroids as adjunctive therapy to antibiotics for acute sinusitis to enhance recovery.

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CLINICAL OUTCOME OF PEDIATRIC ENDOSCOPIC SINUS SURGERY

Walner DL, Markey R, Jain V, Myer CM. *Am J Rhinol.* 2002;16:151–154

Purpose of the Study. To assess the efficacy of functional endoscopic sinus surgery (FESS) in children based on a clinical symptom survey.

Study Population. Preoperative and postoperative clinical outcome surveys were completed for 23 children (11 girls and 12 boys) who underwent FESS for sinusitis refractory to medical treatment. The average age at the time of surgery was 6 years (range: 2–13 years).

Methods. A clinical outcome survey based on modification of the short form (SF)-36 global health assessment was completed by parents of 27 children before FESS. Approximately 2 years after surgery (range: 22.4–33.3 months), the same survey was completed by the parents of 23 children during a telephone interview. No control groups were studied. The survey consisted of 19 questions aimed at determining functional status and quality of life, as well as obtaining information about the incidence of allergies, asthma, and immune deficiencies. These authors also collected data on the presenting symptoms of sinusitis, the presence of nasal polyps, the type of sinus surgery performed, the severity of sinusitis based on preoperative computed tomography (CT), and the need for revision surgery.

Results. The most common presenting symptoms before FESS were purulent nasal discharge and chronic nasal congestion. Allergies were present in 70%, asthma in 35%, immunodeficiency in 4%, and nasal polyps in 13%. Two children (9%) required revision FESS. The survey results showed a decrease in symptom score (clinical improvement) for each of 15 outcome categories. There were statistically significant improvements in 9 of 15 categories, including frequency of cough, nasal obstruction, visits to the doctor, problems with routine activities, problems with conduct at school or school attendance, problems with parental performance at work, and problems with parental performance at home related to the child's condition. Children with more severe disease on CT scan demonstrated less overall improvement, while those with asthma had a larger overall improvement in postoperative survey scores.

Conclusions. The results reveal an improvement in clinical symptoms and overall quality of life, based on parental report on a survey, for children undergoing FESS for chronic sinusitis. The study supports pediatric FESS as an effective treatment for children with sinusitis that persists after medical therapy.

Reviewers' Comments. Chronic sinusitis in children is a multifactorial disease, sharing characteristic symptoms with other common diagnoses such as allergic rhinitis and viral upper respiratory tract infection. Although the majority of cases of bacterial sinusitis respond favorably to medical management or adenoidectomy, sinus surgery may play a role in the treatment of children with persistent disease. Although previous studies have evaluated the efficacy of pediatric FESS based on symptom scores, these authors incorporated a global health survey to further quantify the benefits of sinus surgery on daily function and quality of life of both of the child and the caregiver. The survey used was a modification of the SF-36 Health Survey, which is used in outcome studies of chronic sinusitis in adults. This study is limited by the relatively small

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