

scores to differentiate pediatric patients with and without CRS based on radiographic criteria. Based on these data and analysis, we can use the CT scan to discriminate between children with and without CRS. Nevertheless, the positive and negative predictive values of this test are substantially dependent on the prevalence of CRS, and this must be factored into clinical decision-making. This study highlights the fact that CRS is primarily a clinical diagnosis, and both the decision to perform a sinus CT and the interpretation of the scan should include this clinical context.

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EFFECTIVENESS OF ADENOTONSILLECTOMY IN CHILDREN WITH MILD SYMPTOMS OF THROAT INFECTIONS OR ADENOTONSILLAR HYPERTROPHY: OPEN, RANDOMISED CONTROLLED TRIAL

van Staaij BK, van den Akker EH, Rovers MM, Hordijk GJ, Hoes AW, Schilder AG. *BMJ*. 2004;329:651–658

Purpose of the Study. To evaluate the effectiveness of adenotonsillectomy in children with a small number of recurrent sore throat infections or with mild obstructive symptoms from adenotonsillar hypertrophy.

Study Population. Three hundred otherwise healthy children in the Netherlands, aged 2 to 8 years, who were being considered for adenotonsillectomy to treat recurrent throat infections or obstructive symptoms. Excluded from the study were children with frequent throat infections (≥ 7 in the past year, ≥ 5 in each of the past 2 years, or ≥ 3 in each of the past 3 years), children with suspected obstructive sleep apnea (as indicated by a Brouillette score of >3.5), and children with craniofacial anomalies, Down syndrome, and certain immunodeficiencies.

Methods. Subjects were randomized to receive surgical intervention with adenotonsillectomy within 6 weeks or observation. Patients were followed at regular intervals for 2 years, and outcomes were assessed by review of disease-specific diaries and quality-of-life surveys. The primary outcome measure was incidence of fever; secondary outcomes were frequency of sore throats, upper respiratory infections, school or day care absence resulting from upper respiratory infection, health-related quality of life, sleeping and eating patterns, height, and weight.

Results. Over a mean follow-up period of 22 months, children in the adenotonsillectomy group compared with children in the watchful-waiting group as follows: 2.97 fevers per person-year compared with 3.18 (difference: -0.21 , 95% confidence interval [CI]), 0.56 throat infections compared with 0.77 (difference: -0.21 , 95% CI), and 5.47 upper respiratory tract infections compared with 6.00 (difference: -0.53 , 95% CI). The subgroup of patients with 3 to 6 throat infections in the preceding year did show more pronounced results than the subgroup of 0 to 2 infections. Health-related quality-of-life scores revealed no clinical differences at 2 years. The Brouillette score of obstructive sleep apnea was lower in the group receiving surgery after 6 months but not at 24 months.

Conclusions. Adenotonsillectomy in young children with mild symptoms of sore throat or adenotonsillar hypertrophy has no major clinical benefit after 2 years of follow-up.

Reviewers' Comments. Adenotonsillectomy is one of the most common surgical procedures performed on children,

and these authors noted a tonsillectomy rate in the Netherlands more than twice that seen in the United States. The children in this study do not have the well-established indications for adenotonsillectomy, namely very frequent pharyngitis or documented obstructive sleep apnea. It is certainly not a new concept that only modest benefits are afforded by adenotonsillectomy to children "moderately affected" by throat infection (see *Pediatrics*. 2002;110:7–15). This study supports continued use of well-defined severity criteria to select children for treatment with adenotonsillectomy, because sustained major benefits of surgery were not demonstrated in children with mild illnesses. However, more than 34% of the children randomized to observation in this study underwent adenotonsillectomy during the follow-up period. The analysis of outcomes was performed based on initial randomization, not on the eventual treatment. We are also concerned that children with mild obstructive symptoms of adenotonsillar hypertrophy may have upper airway resistance or obstructive sleep apnea of physiologic consequence. These children may need additional evaluation and/or consideration for adenotonsillectomy to avoid complications of upper airway obstruction.

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SIMILAR ALLERGIC INFLAMMATION IN THE MIDDLE EAR AND THE UPPER AIRWAY: EVIDENCE LINKING OTITIS MEDIA WITH EFFUSION TO THE UNITED AIRWAYS CONCEPT

Nguyen LHP, Manoukian JJ, Sobol SE, et al. *J Allergy Clin Immunol*. 2004;114:1110–1115

Purpose of the Study. To determine if the middle-ear compartment may be a component of the united airways in allergic disease by comparing the inflammatory profiles of the middle ear to the upper airway.

Study Population. Children (aged 2–18 years) undergoing myringotomy, tympanostomy tube placement, and adenoidectomy were recruited prospectively and consecutively for the study. All children had documented conductive hearing loss, flat tympanograms, and middle-ear effusions that persisted for >3 months and were unresponsive to antibiotics and symptomatic nasal obstruction caused by adenoid hypertrophy.

Methods. Middle-ear effusions, torus tubarius (eustachian tube mucosa at the nasopharyngeal orifice), and adenoidal tissue biopsies were obtained from 45 patients undergoing simultaneous tympanostomy tube placement for otitis media with effusion (OME) and adenoidectomy for adenoid hypertrophy. The cellular and cytokine profiles of each site were investigated by using immunocytochemistry (elastase, CD3, major basic protein) and in situ hybridization (interleukin [IL]-4, IL-5, interferon [IFN]- γ mRNA). Allergic sensitization to 12 common perennial and seasonal airborne allergens was determined with skin-prick testing.

Results. Of the 45 patients with OME, 11 (24%) were atopic. The middle-ear effusions of atopic patients had significantly higher levels of eosinophils, T lymphocytes, and IL-4 mRNA⁺ cells ($P < .01$) and significantly lower levels of neutrophils and IFN- γ mRNA⁺ cells ($P < .01$) compared with nonatopic patients. The nasopharyngeal tissue biopsies revealed similar cellular and cytokine profiles.

Conclusions. In atopic patients with OME, the allergic inflammation occurs on both sides of the eustachian tube,

in both the middle ear and the nasopharynx. The results of this study support the concept that the middle ear may be part of the united airway in atopic individuals

Reviewer's Comments. OME affects 15% to 20% of children and is a major pediatric health care issue as well as a substantial economic burden (estimated costs are in the billions of dollars annually). Current management of OME is often unsuccessful, and significant numbers of refractory cases require surgical intervention. Extensive research has supported the concept of a "united airway," in which a tight connection exists between the upper and lower airways in allergic disease. For example, local treatment of allergic rhinitis leads to a reduced bronchial hyperresponsiveness in patients with coexisting asthma. The results of this study support the concept that the middle ear might be part of the united airway in atopic individuals. Therefore, an integrated management approach to allergic OME should take into consideration the common underlying systemic inflammation and the unity of airways.

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EFFICACY OF SUBLINGUAL IMMUNOTHERAPY IN CHILDREN WITH SEVERE GRASS POLLEN ALLERGIC SYMPTOMS: A DOUBLE-BLIND PLACEBO-CONTROLLED STUDY

Bufe A, Ziegler-Kirbach E, Stoeckmann E, et al. *Allergy*. 2004;59:498–504

Purpose of the Study. To determine the clinical efficacy of high-dose sublingual immunotherapy (SLIT) in children with grass-pollen allergy by using a double-blind placebo-controlled study.

Study Population. A total of 161 children with seasonal rhinoconjunctivitis, 82 in the treatment group and 79 in the placebo group, were enrolled from 33 centers in Germany.

Methods. For the first year, patients were given either treatment or placebo; for the remaining 2 years, all patients were given treatment in an open-controlled manner. Symptom scores and medication usage were assessed during the pollen seasons and combined to determine a clinical index (CI), the primary end point of the study. Titrated skin-prick tests and specific IgE and IgG subclass antibodies were measured each year.

Results. A total of 132 patients completed the study. Analysis after 1 year of SLIT and analysis of the change in CIs during the 3 grass-pollen seasons showed that there was no significant difference in the CIs between the treatment and placebo groups. However, subgroup analysis in a repeated-measures model revealed that patients with SLIT and severe symptoms before beginning treatment showed a 30% improvement after 3 years, compared with 10% improvement in the placebo group. Allergen-specific IgE and IgG subclass antibodies increased in both the treatment and placebo groups.

Conclusions. Efficacy of SLIT could only be seen in children with severe clinical symptoms after 3 years of therapy. There was also a significant placebo effect.

Reviewers' Comments. SLIT is readily given to allergic patients in European countries, but its use in the United States is limited. SLIT use in children is an attractive alternative to subcutaneous injections, given its lack of pain and decreased chance of systemic adverse effects. Although early controlled studies analyzing SLIT did not demonstrate clear clinical effects, SLIT has proved to have some

reproducible value in adults, and a small number of other studies have also shown it to be effective in children. Only additional long-term comparative studies will show whether SLIT can compete with the established subcutaneous treatment.

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PREVALENCE OF MIGRAINE IN PATIENTS WITH A HISTORY OF SELF-REPORTED OR PHYSICIAN-DIAGNOSED "SINUS" HEADACHE

Schreiber CP, Hutchinson S, Webster CJ, Ames M, Richardson MS, Powers C. *Arch Intern Med*. 2004;164:1769–1772

Purpose of the Study. Symptoms referable to the sinus area are frequently reported during migraine attacks but are not recognized in diagnostic criteria. Underrecognition of migraine may be partly attributed to a variable clinical presentation, and migraines with "sinus" symptoms contribute to this problem. This study was conducted to determine the prevalence of migraine-type headache (International Headache Society [IHS]-defined migraine without aura [IHS 1.1], migraine with aura [IHS 1.2], or migrainous disorder [IHS 1.7]) in patients with a history of self-described or physician-diagnosed "sinus" headache.

Patient Population and Methods. During a clinic visit, patients with a history of "sinus" headache, no previous diagnosis of migraine, and no evidence of infection were assigned an HIS headache diagnosis on the basis of headache histories and reported symptoms.

Results. A total of 2991 patients were screened. The majority (88%) of these patients with a history of self-described or physician-diagnosed "sinus" headache were diagnosed at the screening visit as fulfilling IHS migraine criteria (80% of patients) or migrainous criteria (8% of patients). The most common symptoms referable to the sinus area reported by patients at screening were sinus pressure (84%), sinus pain (82%), and nasal congestion (63%).

Conclusions. In this study, 88% of patients with a history of "sinus" headache were determined to have migraine-type headache. In patients with recurrent headaches without fever or purulent discharge, the presence of sinus-area symptoms may be part of the migraine process. Migraine should be included in the differential diagnosis of these patients.

Reviewer's Comments. There is not much question that patients with chronic rhinosinusitis can have facial pain and headache. However, as allergists, we are often presented with patients who have little or minimal nasal symptoms and/or normal sinus radiographs who complain of "sinus pain." This study confirms the results of at least one earlier report, strongly suggesting that, in this context, the overwhelming majority of sinus pain really is a form of migraine. Because activation and sensitization of the trigeminal vascular system is the primary mechanism of pain in migraines, nasal congestion, rhinorrhea, and ocular symptoms can accompany the headaches.

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**Similar Allergic Inflammation in the Middle Ear and the Upper Airway:
Evidence Linking Otitis Media With Effusion to the United Airways Concept**

Anna Nowak-Wegrzyn
Pediatrics 2005;116;552
DOI: 10.1542/peds.2005-0698KK

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