

979 Development of Allergic Rhinitis among Children Previously Diagnosed as Nonallergic Rhinitis

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RATIONALE: Nonallergic rhinitis (NAR) is characterized by nasal symptoms similar to allergic rhinitis (AR) without demonstration of an IgE-mediated immune response. Limited data are available on the natural history of NAR in its progression toward AR, particularly in children. We evaluated the development of AR in children who was previously diagnosed with NAR.

METHODS: Children with the diagnosis of NAR during the period of 2005-2007 were re-evaluated in 2010. Nasal symptoms, disease severity, comorbidities, rescue medication scores, skin prick test to aeroallergens were assessed.

RESULTS: We recruited 110 children with early diagnosis of NAR. The mean age was 6.1 ± 2.8 years, 61.8% were male and 50% had family history of atopy. The most frequent comorbidity was asthma (60.9%), followed by adenotonsillar hypertrophy (15.5%), allergic conjunctivitis (13.6%) and chronic/recurrent rhinosinusitis (13.6%). At re-evaluation, these children had improvement of rhinitis severity and less asthma symptoms ($P < 0.05$). Forty-six percent of children with NAR developed sensitization to aeroallergens and were then diagnosed as having AR. The most frequent aeroallergen sensitization was mites (60.8%), followed by cockroaches (43.1%) and Bermuda grass (27.5%). Children who developed AR had more nasal/eye symptoms, higher severity, and rescue medication scores than children who did not develop AR. Asthma and allergic conjunctivitis were more frequently in children who developed AR ($P < 0.05$). The predictor of developing AR was family history of atopy (adjusted OR 3.6; 95% CI 1.6-8.0).

CONCLUSIONS: Children with the diagnosis of NAR who had family history of atopy and persistent symptoms should be re-evaluated periodically for the development of AR.

980 Increasing Prevalence of Allergic Rhinitis in Korean Children May Be Influenced By the Gene-environment Interaction

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RATIONALE: We investigated whether the interaction between the early exposure to molds and the IL-13 +2044G/A (rs20541) polymorphism affect the development of AR in Korean children.

METHODS: A modified International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire survey was conducted among 4,716 children in 2008 and the prevalences of AR were compared to those of previous studies. Genotyping was performed in 844 children by using PCR-RFLP. The associations between genetic and environmental factors were analyzed by logistic regression.

RESULTS: The prevalences of AR diagnosis were 16.8%, 22.0%, 26.4% and 34.0% in 1995, 2000, 2005 and 2008, respectively. The male gender (aOR 1.38, 95% CI 1.14-1.67), parental allergic diseases (2.64, 2.23-3.13), history of atopic dermatitis (2.06, 1.70-2.51), history of asthma (3.16, 2.34-4.26), the use of antibiotics in infancy (1.94, 1.60-2.35), and the exposure to mold in house during infancy (1.80, 1.34-2.40) are the independent risk factors of current. Combination of the +2044G/A (rs20541) polymorphism in coding region of IL-13 and the exposure to molds in infancy were more likely to be associated with current AR. (aOR 3.27, 95% CI 1.75-6.11)

CONCLUSIONS: The prevalence of AR was increased during previous decade in Korean children. The risk factors for AR were male gender, history of AD or asthma, parental allergic disease, and the exposure to molds during infancy, and gene-environmental interaction may affect the development of AR.

981 Systemic vs Local Allergic Rhinitis: Clinical and Epidemiological Characteristics

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RATIONALE: Local allergic rhinitis (LAR) is a new form of allergic rhinitis in the absence of systemic atopy. The aim of this study was to perform a comparative analysis of the clinical and epidemiological characteristics of allergic rhinitis (AR) and LAR.

METHODS: A cross-sectional study was carried out in patients attending in our clinic with AR and LAR. Evolution time, ARIA classification, identification and intensity of symptoms and disturbance of sleep by visual analogue scale (VAS), presence of alterations of smell and co-morbidities were analyzed.

RESULTS: Twenty AR and 20 LAR patients were consecutively selected. All LAR patients had a positive nasal allergen provocation test (NAPT) and/or nasal specific IgE. Significant differences were not found between both groups. The clinical profile of patients was: 30 year old woman, moderate-persistent perennial rhinitis with 6 years of evolution. The most frequent symptoms were: nasal itching (90%) and sneezing (85%) in RA, and watery rhinorrhea and nasal itching (85%) in LAR. Seventy-five percent of AR patients and 70% of LAR complained of sleep disturbances. About 30% AR patients and 40% LAR reported intermittent hyposmia. Conjunctivitis was the most frequent co-morbidity (85% AR and 75% LAR), followed by asthma (45% AR and 40% LAR).

CONCLUSIONS: There were no clinical or epidemiological significant differences between classical systemic and local allergic rhinitis. Nasal allergen provocation test and nasal specific IgE determination are useful tools to be used for the diagnosis of LAR in patients with symptoms suggestive of allergic rhinitis and SPT and serum specific IgE negative.

982 Signs and Symptoms of Allergic Rhinitis Produced by the Allergen BioCube Compared to the Environment: A Validation Study

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RATIONALE: The Allergen BioCube (ABC) facility was designed to reproducibly induce signs and symptoms of allergic rhinitis in study subjects. This validation study was performed to confirm that subjects experience similar signs and symptoms of allergy when exposed to pollen in the environment and pollen in the ABC.

METHODS: Two IRB-approved, single center trials were performed with allergic volunteers having positive ragweed skin tests. Study 1 was a two-visit trial performed at peak ragweed season. Enrolled subjects (N=35) performed peak nasal inspiratory flow (PNIF) and nasal lavage, and described their allergic symptoms in diaries to determine total nasal signs and symptoms (TNSS) over 3 weeks. Study 2 was performed after peak ragweed season and enrolled a subset of volunteers (N=24) from Study 1. Subjects remained in the ABC for 3 hours daily over 4 consecutive days. Pruritus, rhinorrhea, sneezing, and congestion were subjectively assessed every 15 minutes using standardized scales then combined to determine TNSS. PNIF and nasal lavage were performed. Subjective and objective measurements were compared between studies.

RESULTS: TNSS scores were comparable between the ABC and the environment on peak pollen days. Nasal lavage and PNIF samples were similar between studies.

CONCLUSIONS: Signs and symptoms of allergic rhinitis were very similar between ABC exposure and environmental exposure thereby providing clinical validation of this disease model.