Development of Allergic Rhinitis among Children Previously Diagnosed as Nonallergic Rhinitis

J. Prkaiananoh, P. Vichyanond, N. Visitsunthorn, P. Pacharn, O. Jirapongsananuruk; Division of Allergy and Immunology, Department of Pediatrics, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, THAILAND.

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.

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

J. Kwon1, J. Seo1, J. Yu1, M. Kang2, S. Kang3, S. Hong4; 1Childhood Asthma Atopy Center, Department of Pediatrics, Asan Medical Center, Seoul, KOREA, REPUBLIC OF; 2Asan Institute for Life Sciences, Seoul, KOREA, REPUBLIC OF; 3University of Ulsan College of Medicine, Seoul, KOREA, REPUBLIC OF.

RATIONALE: We investigated whether the interaction between the early exposure to molds and the IL-13 +204G/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 +204G/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.