Association of Food Allergy and Decreased Lung Function in Children and Young Adults With Asthma


**PURPOSE OF THE STUDY:** To determine if an association between food allergy (FA) and lung function exists in children and young adults with and without asthma.

**STUDY POPULATION:** One thousand sixty-eight children and young adults aged 0 to 21 years enrolled in the Chicago Food Allergy Study were recruited between August 2005 and June 2011.

**METHODS:** Participants were categorized as having FA by physician diagnosis, evidence of specific immunoglobulin E, and typical symptoms within 2 hours of food ingestion. Asthma was categorized by physician diagnosis. A standardized questionnaire was used to obtain information regarding demographics, home environment, diet, lifestyle, history of FA, and other atopic diseases. Blood samples and allergy skin prick test results were collected to determine food-specific and total immunoglobulin E measurements.

**RESULTS:** Of the 1068 participants, 417 (39%) had asthma, 402 (38%) had at least 1 FA, and 162 (15%) had 2 or more FAs. In the entire cohort, there was no significant association between FA number and lung function. In children with asthma, there was a statistically significant difference in predicted forced expiratory flow at 25% to 75% (FEF 25% to 75%) between children with 2 or more FAs compared with those with none (mean [SE] \(\beta = -7.5 [3.6]; P = .04\)). Participants with asthma and only 1 FA did not have any significant differences in percent predicted FEF 25% to 75% compared with those with no FAs. There was no significant association between FA number and other pulmonary function tests.

**CONCLUSIONS:** Having 2 or more FAs is a potential risk factor for greater small airway airflow obstruction among children with asthma.

**REVIEWER COMMENTS:** The authors of this study hypothesized that among participants with asthma, FA would be associated with a further decrease in pulmonary function. This study found that individuals with 2 or more FAs had a lower percent predicted FEF 25% to 75% compared with individuals with no FAs. It is unclear whether this association is attributable to effects on lung growth and development from nutritional avoidance, airway inflammation related to FA, or simply a marker for worse asthma in more-atopic individuals. Coexisting asthma and FA should be identified, and management should include avoidance of these foods, keeping in mind that supplementation with important nutrients and antioxidants may be beneficial for lung function, particularly in patients with multiple FA. Further investigation between FA and lung function would help in implementing intervention strategies for patients with multiple FAs with decreased lung function.

**Impact of Community Respiratory Viral Infections in Urban Children With Asthma**


**PURPOSE OF THE STUDY:** To prospectively evaluate the influence of viral infection on respiratory symptoms, lung function, and nasal cytokines in children with asthma living in an urban environment.

**STUDY POPULATION:** The study included 53 children with asthma living in Detroit, Michigan.

**METHODS:** Subjects were recruited with a screening questionnaire distributed through a community-based research partnership. Subjects participated in 4 2-week surveillance assessments, corresponding with fall, winter, spring, and summer seasons over the course of 1 year. During each 2-week surveillance period, spirometry, presence of respiratory viral nucleic acid, rhinovirus fraction of exhaled nitric oxide, symptom reports, and nasal lavage samples were obtained on 3 separate occasions. Respiratory symptoms were measured by using a previously published respiratory symptom score. “Sick periods” were defined when symptom scores were >2, and an additional assessment with previously stated measurements was completed over the 1-week sick period. Subjects were contacted weekly via telephone to monitor for illnesses and initiate sick period assessments. Nasal lavage samples were analyzed for the following: presence of respiratory viral nucleic acid, rhinovirus typing and viral copy numbers, and messenger RNA and protein expression analysis of select biomarkers previously shown to be elevated in rhinovirus infection.

**RESULTS:** The investigators enrolled 53 subjects, who were predominantly African American, elementary school-aged, and had high prevalence of home smoke exposure. Approximately 75% of subjects had mild intermittent or mild persistent asthma. Six hundred fifty-eight nasal aspirates were obtained. Of the samples, 22.9% of surveillance samples and 33.7% of respiratory illness samples were virus positive, with rhinovirus accounting for 48.9% of infections. Comparing the presence of respiratory virus with high- and low-symptom illnesses, children with severe colds (symptom scores >5) had signs of airway inflammation on spirometry with a statistically significant decrease of ∼10% of predicted forced
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