hazelnut (n = 60). Parental eczema was significantly associated with reaction to milk oral challenges (odds ratio 3.1, 95% confidence interval 1.5–6.3, P < .01) even after corrected for age, sex, serum IgE test results, and atopic comorbidity. Among children challenged with egg, peanut, or hazelnut, there was no significant association with parental eczema. Other parental atopic conditions (allergic rhinitis, asthma) were not associated with clinical reactivity to any of the foods. There was also no statistically significant effect for increasing number of parental atopic conditions on the risk of reaction to any of the foods.

CONCLUSIONS. There may be more shared genetic factors between clinical reactivity to milk and parental eczema than there are with other allergenic foods.

REVIEWER COMMENTS. Pediatricians and allergists are often asked if an infant has an increased risk of developing a food allergy based on family history, and this Dutch study suggests parental eczema may be a risk factor for cow’s milk allergy. However, there are still many questions regarding familial and environmental influences on atopic development in young children. What is the definitive answer regarding food avoidance and pregnancy, when is the “safest” time to introduce the more allergenic foods into a child’s diet, and what are the gene(s) that are more involved in atopic diseases? This promises to be a challenging field of study in which large, multicentered trials will help us begin to answer these questions.


Joann H. Lin, MD
McKinney, TX

TOBACCO AND AIR POLLUTION

Prenatal and Passive Smoke Exposure and Incidence of Asthma and Wheeze: Systematic Review and Meta-analysis

PURPOSE OF THE STUDY. To determine estimates of the prospective impact of smoking by parents or household members on the risk of wheeze and asthma at various childhood stages.

STUDY POPULATION. Children up to age 18 years exposed to environmental tobacco smoke

METHODS. Search of Medline, Embase, and conference abstracts to characterize cohort investigations of the incidence of asthma or wheeze in association with exposure to prenatal or postnatal maternal, paternal, or household smoking in individuals up to 18 years of age.

RESULTS. The authors identified 79 prospective studies. Exposure to pre- or postnatal passive smoke was associated with a 30% to 70% increased risk of incident wheezing (strongest effect from postnatal maternal smoking on wheeze in children aged ≤2 years, odds ratio [OR] = 1.70, 95% confidence interval [CI] = 1.24–2.35, 4 studies) and a 21% to 85% increase in incident asthma (strongest effect from prenatal maternal smoking on asthma in children aged ≤2 years, OR = 1.85, 95% CI = 1.35–2.53, 5 studies).

CONCLUSIONS. Exposure to passive smoking increases the incidence of wheeze and asthma in children and young people by at least 20%. Preventing parental smoking is crucially important to the prevention of asthma.

REVIEWER COMMENTS. The study is limited by inclusion of atopic pediatric populations and the difficulty in establishing asthma in young children, as well as confounding impact of smoking of mother, father, and or other household members. However, the authors demonstrate, using 9 times more articles than previous studies, that passive smoking has a devastating effect of 28% to 70% enhanced risk of incidence of wheeze and/or asthma. Clearly, action to limit exposure to passive smoke in pediatric populations with chronic respiratory conditions is imperative.


Christopher Randolph, MD
Waterbury, CT

Parental Stress Increases the Detrimental Effect of Traffic Exposure on Children’s Lung Function

PURPOSE OF THE STUDY. Recent evidence indicates that the susceptibility to the adverse effects of air pollution is greater in the lower socioeconomic population. This may be as a result of increased psychosocial stress. This study hypothesized that psychosocial stress modifies the effect of traffic exposure on lung function.

STUDY POPULATION. Studied were 1399 children in the Southern California Children’s Health Study who were undergoing lung function testing. The study population came from 8 communities in southern California; these communities were selected to reflect a broad range of regional air pollutant exposures and large gradients in traffic exposure within communities.

METHODS. All children involved in the study underwent spirometric lung function testing during the 2008–2009 school year. Information regarding respiratory illnesses and environmental exposures was collected via a questionnaire. Sociodemographic characteristics (ie, race, income, insurance, tobacco smoke exposure) were assessed via a questionnaire at time of enrollment into the study in 2002–2003. The perceived stress scale, a 4-item questionnaire, was used to measure parental stress at time of enrollment. Exposure to nitric oxide, nitrogen dioxide, and total oxides of nitrogen...
(NO_{3}) were estimated by using measurements of these pollutants at 940 locations in the studied communities over a 2-week period.

RESULTS. Among children in high-stress households (perceived stress scale >4), flow in the large airways (forced expiratory volume 1 [FEV1]) decreased by 4.5% and 2.8% for each 21.8 ppb increase in NO_{x} at homes and schools, respectively. Pollutant effects were significantly larger in the high-stress households compared with lower-stress households (P = .007 for residential NO_{x}, P = .05 for school NO_{x}). Similar results were observed for lung function volume (forced vital capacity [FVC]). These associations remained after adjustment for sociodemographic factors and in an analysis restricted to children who do not have asthma.

CONCLUSIONS. Results suggest that a high-stress environment in the home, as determined by parental perceived stress, is associated with increased susceptibility to lung function effects of air pollution at home and school.

REVIEWER COMMENTS. Evidence has shown an association between exposure to air pollution and an increase in asthma prevalence, exacerbation rate, and lung function deficits. Additionally, psychosocial stress is associated with increased endogenous steroid production, leading to steroid resistance and diminished anti-inflammatory effect of cortisol. This study examined the detrimental effects of both, with results suggesting that children with high psychosocial stress in the home are more susceptible to the known health effects caused by air pollution. Furthermore, this study evaluated patients both with and without asthma, and showed consistent results in all children with traffic-related air pollution exposure. Those whose parents reported a stressful life during the child’s early school age experienced damaging effects in both FVC and FEV1. Further studies with longitudinal measurement of parental stress, personal stress, and lung function measurement are needed to evaluate this possible association.

The Respiratory Health Effects of Nitrogen Dioxide in Children With Asthma

PURPOSE OF THE STUDY. To determine the impact of nitrogen dioxide on the respiratory health of children with asthma.

STUDY POPULATION. New Zealand subjects (n = 349), ages 6 to 12, with physician-diagnosed asthma and symptoms in the past 12 months, who lived in a home with an unflued gas heater or plug-in electric heater for at least 2 winter periods, were included in this prospective study.

METHODS. Passive diffusion tubes were used to measure nitrogen dioxide levels over four 4-week periods in the 349 living rooms. The subjects measured their peak expiratory flow rate (PEFR) and forced expiratory volume in 1 second (FEV1) daily via small handheld spirometers. Daily measures of asthma severity (cough and wheeze at night, waking, and during the day; and number of preventer and reliever medication puffs) and upper respiratory symptoms (runny nose, sore throat, hoarse voice) were recorded by symptom diaries.

RESULTS. There was a consistent and significant increase in asthma severity symptoms and upper respiratory tract symptoms when subjects were exposed to increased nitrogen dioxide (1.14, 95% confidence interval [CI] 1.12–1.16). Increased indoor nitrogen dioxide was associated with a decrease in lung function as measured by FEV1 and PEFR (−13.21, 95% CI −26.03 to −0.38; and −17.25, 95% CI −27.63 to −6.88, respectively). Outdoor nitrogen dioxide was not found to be associated with respiratory tract or asthma symptoms, medication use, or lung function measurements.

CONCLUSIONS. The results of the study indicate that high levels of indoor nitrogen dioxide (most commonly from unflued gas heaters) are associated with poor pulmonary function and more frequent cough and wheeze in children with asthma.

REVIEWER COMMENTS. Children breathe more air per kilogram of body weight than adults, exposing their airways to a higher percentage of gaseous constituents that can potentially negatively impact respiratory disease. This study adds to the growing literature that nitrogen dioxide from unflued gas heaters (that is, gas heaters with exhaust vents that empty into the home) is a significant contributor to worse asthma severity in children. Health care providers should inquire how their patients’ families heat their homes during the winter in their assessments of potential asthma triggers.

FOOD ALLERGY
The Prevalence, Severity, and Distribution of Childhood Food Allergy in the United States

PURPOSE OF THE STUDY. The purpose of this study was to estimate the overall prevalence of childhood food allergy, and the severity of food-related allergic reactions in the United States.
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