STUDY POPULATION. There were 289 children studied who were part of a group of children at high risk for asthma and allergies who were enrolled at birth and followed prospectively in the Childhood Origins of Asthma (COAST) study.

METHODS. Children were followed for the first 6 years of life. Specific viral pathogens were identified in 90% of wheezing episodes during the first 3 years of life (nearly all outpatient illnesses). Peripheral blood was drawn annually to assess for aeroallergen sensitization.

RESULTS. Sensitized children were at significantly greater risk for viral wheeze than nonsensitized children (hazard ratio [HR] 1.9; 95% confidence interval [CI], 1.2–3.1). Looking at specific viral infections, allergic sensitization was associated with increased risk of wheezing from human rhinovirus (HR 2.3; 95% CI, 1.4–4.0) but not respiratory syncytial virus (HR 1.6; 95% CI, 0.87–2.9). Conversely, viral wheezing was not associated with increased risk of allergic sensitization (HR 0.76; 95% CI, 0.5–1.1).

CONCLUSIONS. Allergic sensitization increases the risk for all viral wheezing, especially for human rhinovirus wheezing but not respiratory syncytial virus wheezing.

REVIEWER COMMENTS. Allergic sensitization and viral wheezing early in life have both been associated with increased risk for child-onset asthma. This study is novel in that it is the first prospective cohort to identify allergic sensitization preceding viral wheezing. However, there are some previous data from another study finding severe respiratory syncytial virus bronchiolitis to be a risk factor for subsequent wheezing. If allergic sensitization is a primary event in the pathway to childhood asthma, it then would become a primary target for prevention.

Résumé

Les enfants sensibilisés ont un risque plus élevé de tous les épisodes de toux associés à des infections virales que les enfants non sensibilisés (hazard ratio [HR] 1.9; intervalle de confiance à 95% [IC] 1.2–3.1). En comparaison des infections virales spécifiques, la sensibilisation allergique était associée à un risque accru de toux liée à l’HRV (HR 2.3; IC 95% 1.4–4.0) mais pas à la RSVC (HR 1.6; IC 95% 0.87–2.9). En revanche, la toux virale n’avait pas de lien avec le risque accru de sensibilisation allergique (HR 0.76; IC 95% 0.5–1.1).

CONCLUSION. La sensibilisation allergique augmente le risque pour tous les épisodes de toux associés à des infections virales, spécifiquement pour l’hRV mais pas pour la RSVC.

Commentaires de l’examinateur. Les épidémies virales précédes par l’allergie augmentent le risque pour tous les épisodes de toux associés à des infections virales, spécifiquement pour l’hRV mais pas pour la RSVC.


Nithya U. Swamy, MD
J. Andrew Bird, MD
Dallas, TX

Preschool Asthma After Bronchiolitis in Infancy

PURPOSE. To evaluate the outcome of asthma in preschool-age children who were hospitalized at <6 months of age for bronchiolitis. Other predictors of childhood asthma were collected about parental risk factors and atopic dermatitis in children.

STUDY POPULATION. Full-term infants \( n = 166 \) <6 months of age were enrolled upon hospitalization for bronchiolitis and were followed up at 5 to 6 years of age.

METHODS. From participant nasopharyngeal aspirates, 7 viruses including respiratory syncytial virus (RSV) and rhinovirus were assessed for the bronchiolitis etiology. At follow-up, questionnaires identified doctor-diagnosed
RESULTS. The predominant virus was RSV (70.5%) in the 166 bronchiolitis hospitalizations at <6 months. Follow-up at 6.5 years of age reported only 7.7% (9 children) of the former RSV hospitalized bronchiolitis group was shown to have developed asthma, which was defined by the use of continuous or intermittent inhaled corticosteroids. Conversely, the former non-RSV bronchiolitis group showed a 24.4% rate of asthma.

CONCLUSIONS. Asthma at preschool age was more common after non-RSV bronchiolitis in infancy. Notably, the prevalence (12.6%) of the 2 groups was significantly lower than previously reported values.

REVIEWER COMMENTS. The findings of this prospective study contribute to the debate that is ongoing about RSV/non-RSV bronchiolitis at infancy as an asthma predictive factor. This study contributes new data to the debate on bronchiolitis admissions at age <6 months. However, the reported rate of asthma in the follow-up group was notably lower than what has been reported in previous research. Future research should focus on investigating further the mechanisms of viral etiology in bronchiolitis and whether it can contribute to early-life risk factors for developing asthma.


Alisha Bouzaher, BA  
Wanda Phipatanakul, MD, MS  
Boston, MA

**DIAGNOSIS AND MANAGEMENT**

**Does a Single Measurement of Exhaled Nitric Oxide Predict Asthma Exacerbations?**

Visser CA, Brand PL. *Arch Dis Child* 2011;96(8):781–782

**PURPOSE OF THE STUDY.** The ability to predict asthma exacerbations would be useful because it might be possible to intensify therapy and prevent the exacerbation. One proposed tool to predict asthma exacerbations is exhaled nitric oxide (FeNO). The study evaluated whether measurements of FeNO predict subsequent asthma exacerbations.

**METHODS.** The study included 103 children aged 6 to 16 years with asthma on daily inhaled corticosteroid controller therapy. At a scheduled follow-up visit, a single FeNO measurement was made (baseline). The children were then followed prospectively for 12 months for asthma exacerbations requiring systemic corticosteroids.

**RESULTS.** Ten patients (9.7%) had asthma exacerbations. The baseline FeNO was higher in children who went on to have exacerbations (median 41 ppb, interquartile range 33–71 ppb) than in those who did not (median 13, interquartile range 9–21 ppb, *P* < .001). However, there was complete overlap of FeNO values between groups.

**CONCLUSIONS.** The authors concluded that FeNO measurements are “useless in predicting asthma exacerbations.”

**REVIEWER COMMENTS.** Although the current study evaluated only a single FeNO measurement as a predictor of subsequent asthma exacerbations, many other studies have assessed using serial FeNO measurements to tailor asthma therapy. A meta-analysis published in 2012 (Petsky et al. *Thorax* 2012;67:199–208. doi: 10.1136/thx.2010.135574) concluded that “tailoring of asthma treatment based on FeNO levels has not been shown to be effective in improving asthma outcomes in children … there is insufficient justification to advocate the routine use of … FeNO in everyday clinical practice.” I believe FeNO has yet to prove itself to be a useful clinical tool.


John M. Kelso, MD  
San Diego, CA

**Development and Validation of the Composite Asthma Severity Index—An Outcome Measure for Use in Children and Adolescents**


**PURPOSE OF THE STUDY.** To develop and validate a new instrument, the Composite Asthma Severity Index (CASI), which accounts for impairment, risk, and amount of medication to maintain control. Previous instruments do not take into account these measures in defining severity as outlined by the Expert Panel Report—3: For the Diagnosis and Management of Asthma.

**STUDY POPULATION.** Data from 546 children and adolescents in the Asthma Control Evaluation (ACE) trial were used initially to determine outcome domains of asthma. External validation of the severity index was achieved by using data from 419 children and adolescents in the Inner City Anti-IgE Therapy for Asthma (ICATA) trial, a double-blind, placebo-controlled multicenter trial of omalizumab versus placebo.

**METHODS.** Factor analysis was used to determine independent outcome domains of asthma using the data from the ACE trial. Next, 26 Inner City Asthma Consortium (ICAC) clinical investigators combined and weighted the domains into a final CASI score using a Delphi consensus process. The scale properties of CASI were then evaluated for construct validity (variability at different time points compared with variability of other asthma outcomes), internal consistency, and test-retest reliability. Finally, CASI was externally validated by using data from the ICATA trial.

**RESULTS.** Five independent asthma domains out of 11 outcomes were determined and in combination accounted for the diagnosis and management of asthma.
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Alisha Bouzaher and Wanda Phipatanakul
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