Predicting Future Asthma Morbidity in Preschool Inner-City Children

**PURPOSE OF THE STUDY.** To determine which clinical and environmental factors are predictive of poor long-term asthma control in preschool inner-city children.

**STUDY POPULATION.** Preschool inner-city children with a history of persistent asthma.

**METHODS.** Baseline characteristics determined to be potential predictors of asthma severity were examined: demographics, asthma symptoms, medication use, healthcare utilization, early life medical history, family history, allergen exposure and allergic disease, and pollutant exposure. Bivariate and multivariate analyses were performed by using logistic regression to examine the association of predictors of asthma severity with healthcare utilization at 2 years.

**RESULTS.** Of the 150 children at baseline, the follow-up rate was 83% at 2 years; therefore, 124 children were included in final analyses. At baseline, the mean age was 4.4 years, and participants were predominantly African-American (90%). Most of the children were atopic, and 32.5% reported using inhaled corticosteroids. Nighttime awakening from asthma and a history of pneumonia were predictive of future poor control.

**CONCLUSIONS.** Preschool children with nighttime awakening from asthma and a history of pneumonia may deserve closer monitoring to prevent future asthma morbidity.

**REVIEWER COMMENTS.** The authors offer very important insights into the clinical presentation of asthma for young preschoolers and longitudinal outcomes. By identifying simple clinical clues, including nocturnal waking and a history of recurrent pneumonia, this study allows the clinician to triage high-risk asthmatic children within the context of an examination or clinic visit. These tools allow for further coordination of both asthma education and more aggressive medical intervention to reduce the morbidity and burden these children face due to their asthma.

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Urinary Bromotyrosine Measures Asthma Control and Predicts Asthma Exacerbations in Children

**PURPOSE OF THE STUDY.** To determine the usefulness of urinary bromotyrosine, a marker of eosinophil-catalyzed protein oxidation, in monitoring asthma control and predicting future exacerbations.

**RESULTS.** Urinary bromotyrosine levels correlated significantly with indexes of ACQ6 at baseline and at follow-up. This correlation was not seen with respect to nitric oxide levels, spirometry, and blood metrics (immunoglobulin E, eosinophil count). Participants with higher baseline levels of urinary bromotyrosine were 18.1-fold more likely to have inadequately controlled asthma and fourfold more likely to have an asthma exacerbation during the study period.

**CONCLUSIONS.** Urinary bromotyrosine significantly correlates with measures of asthma control and is a good marker for predicting the risk of future asthma exacerbations in children.

**REVIEWER COMMENTS.** Based on findings from this study, using urinary bromotyrosine levels as an objective marker for asthma control and in predicting risk for future exacerbations seems promising. However, the cost of such studies given its availability in select laboratories may be a limiting factor and deterrence in its widespread use, and confirmatory studies are needed.

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A Randomized Trial of Air Cleaners and a Health Coach to Improve Indoor Air Quality for Inner-City Children With Asthma and Secondhand Smoke Exposure

**PURPOSE OF THE STUDY.** To compare an intervention by using air cleaners and health coach intervention to reduce secondhand smoke (SHS) exposure, particulate matter (PM), air nicotine, and urine cotinine concentrations, and burden these children face due to their asthma.

**STUDY POPULATION.** There were 57 people enrolled from the Cleveland Clinic with a diagnosis of asthma between the ages of 5 and 21 years. Recruitment occurred from July to September 2006 and follow-up from August to November 2006. All subjects were considered to be at baseline status and being seen as part of regularly scheduled visits. Those with other comorbid conditions were excluded.

**METHODS.** Asthma Control Questionnaires (ACQ6) were used to assess asthma control given at the initial study encounter and at a 6-week follow-up. Spirometry was performed, and exhaled nitric oxide was measured. Spot clean catch urine samples were collected to determine free bromotyrosine levels by stable isotope dilution high-performance liquid chromatography with online mass spectrometry. Charts were reviewed for medical history, medication, and laboratory results.

**RESULTS.** Urinary bromotyrosine levels correlated significantly with indexes of ACQ6 at baseline and at follow-up. This correlation was not seen with respect to nitric oxide levels, spirometry, and blood metrics (immunoglobulin E, eosinophil count). Participants with higher baseline levels of urinary bromotyrosine were 18.1-fold more likely to have inadequately controlled asthma and fourfold more likely to have an asthma exacerbation during the study period.

**CONCLUSIONS.** Urinary bromotyrosine significantly correlates with measures of asthma control and is a good marker for predicting the risk of future asthma exacerbations in children.

**REVIEWER COMMENTS.** Based on findings from this study, using urinary bromotyrosine levels as an objective marker for asthma control and in predicting risk for future exacerbations seems promising. However, the cost of such studies given its availability in select laboratories may be a limiting factor and deterrence in its widespread use, and confirmatory studies are needed.
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