Wheezing Rhinovirus Illnesses Predict Asthma

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SAN DIEGO — More than 75% of children who have a wheezing illness at age 3 years will develop asthma by age 6 years. In addition, children who develop a wheezing illness caused by rhinovirus during infancy are times more likely to develop asthma by age 6, compared with those who develop a wheezing illness caused by respiratory syncytial virus (RSV) or parainfluenza virus, according to new findings from the Childhood Origins of Asthma (COAST) study presented during a press briefing at the annual meeting of the American Academy of Allergy, Asthma, and Immunology.

“The big finding here is the association of the common cold virus with wheezing illness during the first year of life,” said the study’s principal investigator, Dr. Robert F. Lemanske Jr., professor of pediatrics and medicine at the University of Wisconsin, Madison.

Dr. Lemanske and his associates at the University of Wisconsin School of Medicine and Public Health launched the study, funded by the National Institutes of Health, to conduct the birth cohort study of 2459 children designed to assess genetic and environmental factors influencing the development of asthma. Study participants had to have a parent with confirmed or preclinical aerosol sensitization and/or asthma.

The researchers collected cord blood and annual blood samples to evaluate cytokine responses. They also collected nasal lavage samples at the time of scheduled study visits and during significant respiratory illness to ascertain viral illness.

Previous findings from the many research groups have demonstrated a relationship between persistent wheezing patterns and children previously hospitalized with respiratory syncytial virus, there was no association between wheezing with RSV or parainfluenza virus during the first year of life and a diagnosis of asthma at 6 years of age in the study,” said Kathleen A. Roberg, R.N., a study manager with department of medicine at the university. “But there was a threefold increase of an asthma diagnosis for wheezing illnesses associated with rhinovirus during the first year of life.”

She went on to note that as the children reached 3 years of age, more than 73% of children with a wheezing illness at age 1 year of age with rhinovirus continue to be the most striking in this relationship. In this study, the first R and other viral infections was related to the diagnosis of asthma. This suggests that “there is a time between ages 1 and 3 that is critical in the development of persistent asthma.”

In an interview, Dr. Lemanske said more research was needed to determine what drives the apparent association between wheezing rhinovirus illness early in the life and the subsequent development of asthma.

“we’re trying to determine if this is a host defect in terms of how these kids handle the common cold versus whether or not there are certain strains of the common cold virus that are more likely to get kids to wheeze. In the next phase of this project we’ll look at that.”

In another presentation, Rochelle A. Graber reported that children in the COAST trial who had frequent respiratory illnesses during the first year of life had a higher incidence of asthma at age 6, compared with those who had no respiratory illnesses during the first year of life, yet other markers of atopy were unremarkable.

During the first year of life, 54 children had no respiratory illnesses, 204 had been between one and four, and 29 had five or more, which was defined as frequent, said Ms. Graber, a research coordinator with the university’s department of medicine.

There were no statistically significant differences between the children with frequent respiratory illnesses and those with no respiratory illnesses in terms of the incidence of a positive skin prick test at the 5-year study visit (62% vs. 45%), respectively, and the diagnosis of positive allergens at age 6 (38% vs. 23%, respectively), and the diagnosis of positive allergens at age 6 (38% vs. 23%, respectively).

However, 46% of children who had frequent respiratory illnesses during infancy had asthma at age 6, compared with 14% of children who had no respiratory illnesses during infancy, a statistically significant difference.

References:

1. Reference: 03-5344-R1

2. Prevention of dental caries in children film is usually observed. The incidence of recurrences in children receiving anticoagulation therapy was low as patients are more likely to experience atrial fibrillation.

3. Fenofibrate at doses equivalent to 96 mg to 145 mg TRICOR® twice daily was associated with a low incidence of gastrointestinal adverse events in a large randomized, placebo-controlled study of the safety and efficacy of fenofibrate in the treatment of hypertriglyceridemia. Asymptomatic increases in transaminases were mentioned in the package insert.

4. In a 21-month study in mice, fenofibrate 10, 45, and 200 mg/kg/day given in drinking water was used to determine the potential for peroxisome proliferation in humans. The subsequent development of asthma in these animals was evaluated.

5. Fenofibric acid is known to be substantially excreted by the kidney. It is therefore expected that patients with renal impairment will have reduced clearance of fenofibric acid and its metabolites.

6. The use of fibrates alone, including TRICOR, may precipitate myopathy, rhabdomyolysis, and acute renal failure. These reactions have been reported with any of the fibrates: TRICOR (fenofibrate tablets), Atromid-S (clofibrate), and Lopid (gemfibrozil).

7. When the participants were 7 years of age, the incidence of asthma was significantly higher in children with a previous wheezing illness at age 3 years (52% vs. 36%), and the intensity of wheezing was greater in the children with previous wheezing illness (p<0.05).

8. The incidence of wheezing illness at age 3 years was significantly higher in children with positive family history of asthma (75% vs. 41%), positive family history of allergy (70% vs. 44%), and positive family history of rhinitis (57% vs. 38%). In addition, the incidence of wheezing illness at age 3 years was significantly lower in children with positive family history of rhinoconjunctivitis (20% vs. 40%).