Apnea Risk in Bronchiolitis May Be Exaggerated

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DENVER — Apnea risk may be lower than previously believed in otherwise normal infants with bronchiolitis. Early studies included many children with serious comorbid conditions that may have compounded their apnea risk, a systematic review of studies concluded.

Hospitalization rates for children with bronchiolitis have risen 250% in the more than 30 years since publication of a noteworthy article that cited an apnea rate of 20% in children with respiratory syncytial virus (RSV), Dr. Shawn L. Ralston said at a meeting on pediatric hospital medicine.

Hospitalization for RSV-related bronchiolitis is so pervasive that up to one in five hospital admissions of infants is due to the diagnosis. However, severity and death rates have not changed since the 1970s, suggesting some children may be hospitalized unnecessarily, aid Dr. Ralston, a pediatric hospitalist at the University of Texas Health Science Center at San Antonio. She presented the results at a meeting sponsored by the Society of Hospital Medicine, the American Academy of Pediatrics, and the Academic Pediatric Association.

Dr. Ralston reviewed the literature to determine apnea rates in children with RSV and bronchiolitis. From eight retrospective studies, she identified 3,623 patients as having bronchiolitis. Of those, 310 (8.5%) were deemed to have apnea either observed or indicated by a parent or health care worker report. In 1,402 cases in which gestational age at birth was clearly documented, just 4.7% of full term babies (defined as 38 weeks or greater) with bronchiolitis had associated apnea, she reported.

These rates are far lower than those reported in a series of studies, beginning with one published in 1977 by Denver physician Frederic W. Bruhn (J. Pediatr. 1977;90:382-6) that identified apnea in 56 of 274 infants less than 6 months old who were diagnosed with RSV, a rate of 20.4%.

Other studies during the 1980s had heterogeneous apnea rates ranging from 10% to 20% and left an overall impression that apnea was very common in children with RSV and bronchiolitis.

A closer look at pertinent studies found wide disparities in design, inclusion criteria, and stratification of data. The most striking methodological problem was that studies with high apnea rates failed to exclude children with underlying illnesses and conditions.

The studies also tended to deemphasize the role of patient age and gestational age at birth, which appear to be important risk factors, with the youngest babies being at the highest risk. ■

Steroids Might Stem Resistance To β_2 Agonists

Steroids may prevent or reverse the desensitization occurring with prolonged exposure to short-acting β_2-adrenergic receptor agonists in treating chronic obstructive pulmonary disease and asthma.

Phillip R. Cooper, Ph.D., and Dr. Reynold A. Panettieri Jr. incubated slices of human lung tissue containing small airways with the short-acting β_2-adrenergic receptor agonist albuterol for 3, 6, or 12 hours at different concentrations. The incubation weakened subsequent isoproterenol-induced relaxation in a dose- and time-dependent manner (J. Allergy Clin. Immunol. 2008 Sept. 9 [doi: 10.1016/j.jaci.2 008.07. 040]).

After 12 hours of albuterol incubation, they noted a 40% decrease in maximum relaxation and a 45% decrease in airway sensitivity, compared with control values. The differences were statistically significant. In contrast, preincubating the slices of lung tissue with dexamethasone for 1 hour prevented the albuterol-induced desensitization. A 30-minute dexamethasone incubation didn't change albuterol-induced desensitization.

This is the first study to demonstrate a model of β_2-adrenergic receptor tolerance in human small airways. It provides a platform to determine the exact mechanisms of β-agonist desensitization in humans, as well as ways of preventing tolerance to those agonists in human airway disease. The take-home message is that steroids can reverse that tolerance, said the authors. They said they had no conflicts of interest.

—Fran Lowry