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Commentary

Asthma Growth in Children with Severe Early Childhood Bronchitis

Takeshita Michelle*

Department of Dermatology, Drug Hypersensitivity Clinical and Research Center, Linkou Branch,Taiwan

DESCRIPTION

Up to 75% of cases of bronchiolitis are caused by the Respiratory Syncytial Virus (RSV), but other viruses, such as the rhinovirus (HRV), Human Bocavirus (HBoV), Human Metapneumovirus (HMPV), influenza virus (FLU) or Parainfluenza Virus (PIV), can also cause lower respiratory tract infections in this age group.

Although the effects of viral coinfections on acute bronchiolitis outcomes have been examined in several researches, their relevance is still debatable because inconsistent findings have been published about their potential association with short-term severity.

Regarding the medium and long-term outcome, it is well established that newborns suffering from severe RSV bronchiolitis, but also HRV and HMPV bronchiolitis are at greater risk of asthma development during childhood. To our knowledge, the only study that has examined the medium-term respiratory outcome in patients with a history of severe viral coinfection bronchiolitis is the one that our team previously published. In this study, which involved telephone interviews, children with viral coinfection were 2.5 times more likely than those with a single viral infection to develop asthma at the age of 6 to 9 years. The primary goal of this study was to evaluate respiratory morbidity, lung function, and allergy sensitization in children who had previously been hospitalized for severe bronchiolitis caused by a viral coinfection versus those who had only a single viral infection.

The existence of a link between baby bronchiolitis and the eventual development of asthma is unquestionably supported by scientific evidence, even though the pathogenic mechanism is poorly understood and the potential causative relationship has not yet been clearly established. Many studies have documented this connection, first with RSV and then with other viruses like HMPV, HBoV, and particularly HRV, which, when found in bronchiolitis, is linked to an up to ten-fold increased risk of having asthma by the age of six.

Regarding asthma maintenance therapy, within 48 months of being hospitalized, 45% of children who had previously been hospitalized for bronchiolitis reported receiving prescriptions for asthma control drugs, primarily inhaled corticosteroids. In patients with HRV (47%), compared to those with RSV (15%) or non-RSV/HRV bronchiolitis (26%), more children were treated. In our study, coinfection was an independent risk factor that increased the likelihood of obtaining inhaled glucocorticoids/ (ICS/LABA) treatment by three times and the likelihood of receiving asthma maintenance treatment by two times in children who needed treatment. It should be emphasized that in step 4 of asthma treatment, the ICS/LABA combination is typically administered as the preferable initial treatment. Once more, increasing ICS and ICS/LABA prescriptions show that asthma in children with a history of allergies is more severe.

It has been proposed that a non-invasive biomarker of eosinophilic inflammation is the fraction of exhaled nitric oxide. There were differences between the control group of 11-year-old kids hospitalized for bronchiolitis and the infants with recurrent wheezing episodes, even though some authors found that FeNO measurements in infants with recurrent wheezing episodes were linked to wheezing persistence through age 3 years. FeNO was linked in the study to atopy but not asthma in both groups. Also, our findings revealed no variations in FeNO levels between groups with coinfections and those with single infections. Those who had allergic sensitization, in contrast, had considerably higher FeNO readings than those who did not. There were no children with high FeNO who did not also have allergic sensitivity. These findings, which supported the finding that eosinophilic airway inflammation exclusively occurs in infants who develop atopic asthma, were translated by elevated levels of FeNO.

Here having severe bronchiolitis with two or more viral detections that are positive is an independent risk factor for developing asthma more frequently and with greater severity between the ages of 6 and 9. Early diagnosis of the viral cause of severe bronchiolitis may make it easier to diagnose and treat asthma in children who are still in school.

Correspondence to: Takeshita Michelle, Department of Dermatology, Drug Hypersensitivity Clinical and Research Center, Linkou Branch,Taiwan, Email: michelle.t@gmail.com

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