Duration of Early-life Asthma-like Episodes Varies by Specific Viral and Bacterial Triggers

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Abstract (Words 269)

Background

Asthma-like episodes are frequent in early life and are often triggered by viral and bacterial respiratory tract infections. However, literature on whether specific pathogens affect episode severity and duration is limited and conflicting.

Objective

To examine if specific microbial triggers of asthma-like episodes are associated with episode duration.

Methods

We analysed 496 airway samples collected during acute asthma-like episodes from 282 children aged 0-3 years from the Copenhagen Prospective Studies on Asthma in Childhood (COPSAC)-2010 cohort. Samples were tested for common pathogenic respiratory viruses by PCR and bacteria by cultures. Asthma-like episodes required at least three days of symptoms and were prospectively recorded in daily diaries from birth to age 3 years. The association between microbial triggers and episode duration was analysed by generalized estimating equations.

Results

The median duration of asthma-like episodes was 12 days [IQR 7-24]. Viruses were identified in 74.4% of samples, pathogenic bacteria in 78.8%, and co-occurrence in 59.8%. Younger age and an asthma diagnosis were associated with longer episodes while genetic markers of childhood asthma did not correlate with episode duration. Rhinoviruses were associated with 19% longer episodes, an association mainly driven by rhinovirus C (45% longer episodes). Respiratory Syncytial Virus (RSV) was associated with 33% shorter episodes, and bocavirus with 34% shorter episodes. Presence of *S. pneumoniae*, *H. influenzae* and/or *M. catarrhalis* was associated with 32% longer episodes, an association mainly driven by *M. catarrhalis* (40% longer episodes).

Conclusion

Specific microbial triggers of asthma-like episodes, child age, and asthma diagnosis were associated with the duration of such episodes. These results enable better prediction of episode severity, thereby aiding future personalized treatment plans.