

BURDEN AND SUBTYPES OF EARLY-LIFE INFECTIONS INCREASE THE RISK OF ASTHMA AND ADVERSE LUNG FUNCTION

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Abstract

Background

Early-life respiratory tract infections have been linked to the development of asthma, but studies on burden and subtypes of common infections in asthma development are sparse.

Objective

The study aimed to examine the association between burden of early-life infections, including subtypes, with risk of asthma ages 3-10 years and lung function at age 10 years.

Methods

We included 662 children from the COPSAC₂₀₁₀ birth cohort, where infections, i.e., colds, acute tonsillitis, acute otitis media (AOM), pneumonia, gastroenteritis, and fever were registered prospectively in daily diaries at age 0-3 years, and asthma was diagnosed longitudinally from ages 3-10 years. The association between infection burden and subtypes and risk of asthma was analysed by generalized estimating equations.

Results

The children experienced a median of 16 [IQR=12-23] infections age 0-3 years. Children with a high burden of infections (above median) had an increased risk of asthma age 3-10: aOR=3.61 (2.39-5.45), $p < 0.001$, which was driven by colds, pneumonia, gastroenteritis, and fever episodes (p -values < 0.05), but not by AOM and tonsillitis. Further, increased infection burden was associated with decreased lung function and increased FeNO age 10. Finally, the association between infections and risk of asthma was significantly higher in children with allergic rhinitis at age 6 (p -interaction=0.046).

Conclusion

A high burden of early-life infections in terms of colds, pneumonia, gastroenteritis, and fever is associated with an increased risk of developing asthma, particularly in children with

respiratory allergy. Strategies to diminish these early-life infections could potentially offer a path for primary prevention of childhood asthma.