

Abstract

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Interaction of 17q21 variants with breastfeeding in relation to respiratory symptoms in infancy

Introduction: A recent study reported interaction effects between 17q21 variants and the presence of older siblings and exposure to animal sheds on development of wheeze in infancy. A possible modification of the association between respiratory symptoms and 17q21 variants by breastfeeding, however, has not yet been addressed in the literature.

Objective: We studied the influence of asthma-associated 17q21 single nucleotide polymorphisms (SNPs) on respiratory symptoms during the 1st year of life, and whether this association could be modified by breastfeeding.

Methods: Term unselected infants (n=368) from the Basel-Bern Infant Lung Development birth cohort were studied. Occurrence and severity of respiratory symptoms and breastfeeding status were assessed weekly during the 1st year of life. Genome-wide genotyping was performed and five 17q21 tagging SNPs were analyzed.

Results: An association between 17q21 variants and respiratory symptoms during the 1st year of life was not found. However, stratification by breastfeeding status showed that during those weeks when infants were breastfed, the carriers of asthma risk genotypes of the most strongly associated SNPs (rs7216389, AA and rs4795405, CC) were protected from respiratory symptoms. When infants were not breastfed, those carriers exhibited a trend towards an increased risk for respiratory symptoms, resulting in a significant interaction effect for both SNPs (p-value for interaction 0.003 and 0.010, respectively).

Conclusions: Our study is the first to show that the effect of 17q21 polymorphisms on respiratory symptoms during the 1st year of life depends on breastfeeding status.

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