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BREASTFEEDING AND THE PREVALENCE OF ASTHMA AND WHEEZE IN CHILDREN: ANALYSES FROM THE THIRD NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY, 1988–1994

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AIRWAY INFECTIONS IN INFANCY AND THE PRESENCE OF ALLERGY AND ASTHMA IN SCHOOL AGE CHILDREN

Nja F, Nystad W, Hetlevik O, Lodrup Carlsen KC, Carlsen K-H. *Arch Dis Child*. 2003;88:566–569

Purpose of the Study. To determine whether a history of otitis media (OM) and respiratory tract infection (RTI) was associated with allergic sensitization and asthma among school-aged children.

Study Population. A total of 4585 children from 4 cities in Norway were surveyed for this study. Children recruited from 2 cities had the diagnosis of asthma or had wheezed without the diagnosis of asthma in the past 12 months. In the third city, children were randomly recruited. Control groups came from the same areas. The final study population included 502 children with complete data sets. Group 1 ($n = 166$) included those with current asthma or previous asthma, group 2 ($n = 155$) included those who had wheezed within the past year but had no diagnosis of asthma, and group 3 ($n = 181$) included those without asthma or wheezing.

Methods. The initial survey was from the International Study of Asthma and Allergies in Childhood. A second clinical study with the study groups investigated early exposures and health outcomes. The children also underwent skin prick testing and clinical examinations. Skin prick testing was performed with house dust mites, mold, animal dander, birch tree pollen, timothy grass pollen, mugwort pollen, cow's milk, and egg. Questions addressed OM and RTI, all involving recall of physician diagnoses. Information was also obtained about confounders such as breastfeeding, day care, and smoke exposure.

Results. The prevalence of allergic sensitization was different among children of atopic parents versus nonatopic parents (49.3% vs 31.9%). The prevalence of OM did not differ significantly between those born of atopic versus nonatopic parents (8.0% vs 7.4%). The associations between OM with or without RTI during infancy and allergic sensitization among school-aged children of atopic parents demonstrated odds ratios of 0.13 and 0.31, respectively. The association between RTI and asthma among school-aged children depended on whether lower RTI was included. Among children of nonatopic parents, a history of RTI/lower RTI was significantly associated with a history of asthma (odds ratio: 4.21). There was no association among children born to atopic parents. Confounding variables had no effect on this relationship.

Conclusions. In this study, a history of OM in infancy was negatively associated with allergic sensitization among school-aged children born to atopic parents, whereas a history of lower RTI was positively associated with asthma among children of nonatopic parents.

Reviewer's Comments. The "hygiene hypothesis" has been put forth as a potential explanation for the increase in allergic conditions. Studies on RTIs have yielded inconsistent results with respect to allergic sensitization. However, studies on RTI as a risk factor for asthma seem to be more consistent in their conclusions. The finding of less allergen sensitization among those with OM in infancy is new. The strongest association between subsequent asthma and early childhood infections was found among nonatopic children. This should be an area of continuing investigation, ideally with large prospective studies.

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BREASTFEEDING AND THE PREVALENCE OF ASTHMA AND WHEEZE IN CHILDREN: ANALYSES FROM THE THIRD NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY, 1988–1994

Chalada P, Arbes S, Dunson D, Zeldin DC. *J Allergy Clin Immunol*. 2003;111:328–336

Purpose of the Study. To determine whether breastfeeding has an association with the development of recurrent wheeze, asthma, or both among children up to 72 months of age and whether the duration or exclusivity of breastfeeding has an effect on this association.

Study Population. Children ($n = 8261$), 2 to 71 months of age, were sampled from the Third National Health and Nutrition Examination Survey, a nationally representative, cross-sectional survey conducted between 1988 and 1994 and designed to provide health estimates for the US population.

Methods. Data used in this study were obtained with the Third National Health and Nutrition Examination Survey Household Youth Questionnaire. Data were tested for significant associations between breastfeeding and physician-diagnosed asthma or recurrent wheeze (≥ 3 episodes of wheeze within the previous 12 months), with and without adjustments for confounding variables.

Results. Of the original cohort, 7766 children had available data on breastfeeding duration, recurrent wheeze, and all covariates. Prevalences of physician-diagnosed asthma and recurrent wheeze were 5.9% and 7.6%, respectively. Approximately one-half of the children were reported to have ever been breastfed. Unadjusted model results showed that children who had ever been breastfed were less likely to be diagnosed with asthma or to have recurrent wheeze, compared with those who had never been breastfed, whereas those who were breastfed for a longer time (≥ 4 months) had the lowest odds of asthma or wheeze. After adjustment for potential confounders, these results were not statistically significant. However, the investigators showed that children who had ever been breastfed had a decreased likelihood of recurrent wheeze or asthma before the age of 24 months, compared with children who had never been breastfed. Children with environmental tobacco smoke (ETS) exposure (37.9%) had a higher prevalence of asthma than did those from smoke-free homes. Children between the ages of 2 and 71 months with ETS exposure who had ever been breastfed were less likely to develop recurrent wheeze or asthma than were children who had not been breastfed, especially if the duration was ≥ 4 months.

Conclusions. Breastfeeding might delay the onset of or actively protect children <24 months of age against asthma and recurrent wheeze and might reduce the prevalence of asthma and wheeze among children exposed to ETS.

Reviewers' Comments. Recurrent wheeze and asthma are leading reasons for hospitalization and emergency department visits among children in the United States. Appropriate asthma diagnosis and treatment is especially difficult among children <24 months of age. In addition, ETS exposure is prevalent among young asthmatic patients and can compromise clinical outcomes. This study indicates that breastfeeding may have important effects on asthma and may provide protection from the ill effects of ETS. Broad-based public health strategies are needed to better educate individuals about preventive measures, such as breastfeeding and reduction of ETS exposure.

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