STUDY POPULATION. Children aged 6 to 7 years who were living in 3 cities (Bilbao, San Sebastian, and La Coruna) and 1 province (Asturias) of the North Atlantic coast of Spain.

METHODS. The International Study of Asthma and Allergies in Childhood (ISAAC) core and environmental questionnaires were used in 4 different centers of the Spanish North Atlantic coast. Bilbao, San Sebastian, and Asturias have a universal BCG immunization policy during the first days of life, whereas La Coruna discontinued this practice in 1989. Except for this center, immunization coverage was >90%. Parents of children aged 6 and 7 years were surveyed from a random sample of schools of Asturias or all schools in the city district among the remainder of the centers.

RESULTS. The participation rate was >70%. After excluding those children born outside Spain, there were 6762 immunized and 2828 nonimmunized. After adjusting for gender, age, smoking habits of the father and mother, truck traffic near the household, presence of older and younger siblings, and ownership of a cat or a dog during the first year of the child’s life, the adjusted odds ratios of the BCG-immunized children according to disease outcome were 0.87 for asthma (95% confidence interval [CI]: 0.76–1.00), 0.87 for hay fever (95% CI: 0.75–1.01), and 0.89 for atopic dermatitis (95% CI: 0.76–1.05).

CONCLUSIONS. BCG immunization offers weak protection against atopic diseases in Spanish schoolchildren.

REVIEWER COMMENTS. BCG vaccination has received attention because of its ability to provoke a T-helper (Th)1 response. Many investigators have hypothesized that vaccination with BCG may offer protection from Th2-skewed diseases such as asthma, allergic rhinitis, and atopic dermatitis. Although this study reveals that immunization with BCG offers weak protection against asthma and allergic rhinitis in a homogeneous population, it is important to remember that these diseases are multifactorial, with genetic and environmental influences also impacting pathogenesis.

Hospitalization for RSV Bronchiolitis Before 12 Months of Age and Subsequent Asthma, Atopy and Wheeze: A Longitudinal Birth Cohort Study


PURPOSE OF THE STUDY. To compare asthma and atopy outcomes of children according to whether they had been admitted to a hospital in the first 12 months with respiratory syncytial virus (RSV)—proven bronchiolitis.

STUDY POPULATION. Data from a large, population-based, birth cohort (Avon Longitudinal Study of Parents and Children) were used.

METHODS. Outcomes considered were 12-month prevalence of wheeze at 2 ages (between 30–42 and 69–81 months), cumulative prevalence of doctor-diagnosed asthma at 91 months, and skin-prick test–defined atopy at 7 years. Multivariable logistic-regression models were used to calculate odds ratios for outcomes adjusted for potential confounders.

RESULTS. A total of 150 infants (1.1% of the cohort) were admitted to a hospital within 12 months of birth with RSV bronchiolitis. The prevalence of wheezing was 28.1% in the RSV group and 13.1% in controls at 30 to 42 months and 22.6% vs 9.6% at 69 to 81 months. The cumulative prevalence of asthma was 38.4% in the RSV group and 20.1% in the controls at 91 months. Atopy was found in 14.6% of those in the RSV group and in 20.7% of the controls at 7 years. RSV bronchiolitis was associated with subsequent wheezing between 30 to 42 months (odds ratio [OR]: 2.3; 95% confidence interval [CI]: 1.3–3.9) and 69 to 81 months (OR: 3.5; 95% CI: 1.8–6.6) and with the cumulative prevalence of asthma at 91 months (OR: 2.5; 95% CI: 1.4–4.3) but not with atopy (OR: 0.7; 95% CI: 0.2–1.7).

CONCLUSIONS. In a population-based birth cohort, RSV bronchiolitis was associated with subsequent wheezing and asthma but not with the development of atopy by 7 years of age.

REVIEWER COMMENTS. Because infants who have severe RSV infection have recurrent wheezing later in life, RSV has been suggested to be a risk factor for asthma. Some also postulate that early RSV infection may predispose children to atopy; however, this has been controversial. Henderson et al show in their large prospective cohort that severe RSV infection requiring hospitalization is associated with wheezing but not atopy. These results indicate that RSV infection may be a risk factor for nonallergic asthma.

Early Respiratory Infections, Asthma, and Allergy: 10-Year Follow-up of the Oslo Birth Cohort

PURPOSE OF THE STUDY. As one dimension of the hygiene hypothesis, early infections may protect against the development of atopic disease. However, there are few long-term follow-up studies of the influence of early respiratory infections. This study investigates associations between early respiratory infections and diagnosed asthma, allergic rhinitis, and skin-prick sensitization in children at 10 years of age.

STUDY POPULATION. A total of 2540 Norwegian children were followed prospectively from birth to the age of 10 years in the Oslo Birth Cohort.

METHODS. Information on child’s health and environmental exposures, including experiences with respiratory infections, was recorded at birth and at 6 and 12 months. Current symptoms and “ever” doctor-diagnosed asthma and allergic rhinitis were compared with these early life exposures. A subset of the cohort underwent skin-prick testing.

RESULTS. “Ever” diagnosis of asthma was positively associated with measures of early life infection. Current asthma was related to lower respiratory tract infection (adjusted odds ratio [aOR]: 2.1; 95% confidence interval [CI]: 1.3–3.0) and croup (aOR: 2.3; 95% CI: 1.3–4.2) in the first year. ORs for allergic rhinitis and skin-prick sensitization were smaller but “mainly positive.” Birth order and child care attendance at 1 year of age were not significantly associated with any of the studied outcomes.

CONCLUSIONS. Early respiratory infections did not protect against the development of atopic disease during the first 10 years of life. Rather, infections increased the risk for asthma at age 10.

REVIEWER COMMENTS. The hygiene hypothesis has been used to explain an inverse relation between early-life infection and allergic disease. Although a number of studies have described the relationship of early childhood infections and atopic disease, few have done so prospectively. This study, with its ORs near 1 with narrow CIs, shows a positive relationship of infections to atopy. Thus, it does not support the view of protection with increasing infection, bringing to light that this relationship is not as simple or direct as was first described. Additional prospective studies with long-term follow-up are required to further define this relationship. In addition, these results support previous conclusions that early childhood infection may be associated with an increased risk for future development of asthma. There continues to be many unanswered questions regarding the risks in susceptible hosts.

Exposure to Pets, and the Association With Hay Fever, Asthma, and Atopic Sensitization in Rural Children


PURPOSE OF THE STUDY. To evaluate the effect of exposure to animals on the development of hay fever, asthma, and atopy.

STUDY POPULATION. Cross-sectional study of 2618 families of Swiss, German, and Austrian decent, living in a rural location. Families were assigned to 1 of 2 categories: farming and nonfarming.

METHODS. Information was collected by standardized questionnaire and interview. Mattress dust was collected and measured for content of endotoxin and cat allergen. Specific immunoglobulin E levels to multiple common allergens and immunoglobulin G4 to cat were measured.

RESULTS. Complete data were available for 812 children. Among them, 319 were farmers’ children and 493 were nonfarmers’ children. In the entire group, early (<1-year-old) and current exposure to cats was associated with a reduced risk of wheezing and grass pollen sensitization. Current contact with dogs was inversely associated with hay fever, asthma, and sensitization to cat allergen and grass pollen. Early exposure to dog did not have any significant effects. When farm-animal contact was controlled for, most of these associations were weakened but were strongest in farmers’ children.

CONCLUSIONS. There was an inverse relationship between dog exposure and asthma, hay fever, and allergy. However, much of this protective effect was explained by exposure to farm animals.

REVIEWER COMMENTS. There are several studies that report pet exposure to be associated with a reduced risk for atopic disease. In this study, the primary outcome of decreased clinical manifestations of atopy was confounded by exposure to farm animals. Although the exposure to pets did not show an overall statistically significant association, the results approached significance, and a larger study population may have revealed significant differences. Also, the study ultimately found that animal exposure is most likely to provide a protective effect when the total level of exposure is highest (ie, those children exposed to pets and farm animals).
Early Respiratory Infections, Asthma, and Allergy: 10-Year Follow-up of the Oslo Birth Cohort
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