Asthma and Wheezing in the First Six Years of Life

ABSTRACT

Background Many young children wheeze during viral respiratory infections, **but** the pathogenesis of these episodes and their relation to the development of asthma later in life are not well understood.

Methods In a prospective study, we investigated the factors affecting wheezing before the age of three years and their relation to wheezing at six years of age. Of 1246 newborns in the Tucson, Arizona, area enrolled between May 1980 and October 1984, follow-up data at both three and six years of age were available for 826.

Parents were contacted shortly after the children were born, and completed a questionnaire about their history or respiratory illness, smoking habits, and education. Further parental questionnaires were completed during their child's second year of life and again at six years.

Results At the age of six years, 425 children (51.5 percent) **had** never wheezed, 164 (19.9 percent) **had had** at least one lower respiratory tract illness with wheezing during the first three years of life but **had** no wheezing at six years of age, 124 (15.0 percent) **had** no wheezing before the age of three years but **had** wheezing at the age of six years, and 113 (13.7 percent) **had** wheezing both before three years of age and at six years of age. The children who **had** wheezing before three years of age but not at the age of six **had** diminished airway function both before the age of one year and at the age of six years, were more likely than the other children to **have** mothers who smoked but not mothers with asthma, and did not **have** elevated serum IgE levels or skin-test reactivity. Children who started wheezing in early life and continued to wheeze at the age of six were more likely than the children who never wheezed to **have** mothers with a history of asthma ($P<0.001$), to **have** normal lung function in the first year of life, and to **have** diminished values for their airway function ($P<0.01$) at six years of age.

Conclusions

The majority of infants with wheezing **have** transient conditions associated with diminished airway function at birth and do not **have** increased risks of asthma or allergies later in life. In a substantial minority of infants, **however**, wheezing episodes are probably related to a predisposition to asthma.

Although asthma may originate soon after birth, the natural history of the disease is poorly understood. Many infants **have** episodes of wheezing associated with viral respiratory illnesses. **Neither** the pathogenesis of these episodes **nor** their relation to asthma **has** been completely elucidated. In older children and adults, the prevalence of asthma is strongly correlated with serum IgE levels and with skin-test reactivity to allergens, **but** in one study no such relation was evident between early wheezing and **serum IgE levels at birth**. Infants who **have** respiratory illnesses with wheezing in the first year of life **have** lower levels of lung function before any lower respiratory illness develops than do infants who do not **have** illnesses with wheezing. **This finding** suggests that small airways predispose many infants to wheezing in association with common viral infections. **However**, **it** is possible that acute bronchial obstruction may **have** a variety of causes in early life, and a minority of infants with asthma may coexist with a larger group of infants with wheezing who **have** a more benign condition that is not mediated by IgE.

Older children with asthma **have** lower levels of lung function than children without asthma. **It** is not known whether the reductions in lung function present before asthma develops contribute to asthma and continue to be present later in life or whether reduced lung function in children with asthma is the consequence of chronic airway inflammation.

We studied the natural history of wheezing in the first six years of life. Specifically, we assessed the factors that affect wheezing before the age of three years and their relation to wheezing at six years of age.

NEJM Volume 332:133-138 January 19, 1995 Number 3