Asthma

**PATHOPHYSIOLOGY**

**INCREASED INCIDENCE OF ASTHMA-LIKE SYMPTOMS IN GIRLS WHO BECOME OVERWEIGHT OR OBESE DURING THE SCHOOL YEARS**


*Purpose of the Study.* Recent cross-sectional studies have shown an association between obesity and an increased risk of asthma, especially in females. These authors used data from the Tucson Children’s Respiratory Study to search for an increase in asthma in children who became overweight between 6 and 11 years of age.

*Study Population.* The participating children are a birth cohort enrolled between 1980 and 1984 and followed longitudinally. All are resident in the Tucson, Arizona, area.

*Methods.* Symptom questionnaires were completed by parents when the children were 6, 8, 11, and 13 years of age. Weight and height were measured at age 6 and 11. Home peak flow readings were gathered at age 11. Only those children providing peak flow measurements twice daily on at least 4 days over 1 week were included in the analysis. Spirometry including bronchodilator response was also obtained at age 11.

*Results.* By age 6 and 11 years, 55% and 48%, respectively, of the original cohort remained in the study. Several factors were associated with a body mass index (BMI) in the overweight (BMI >85 percentile to <95 percentile) or obese (BMI >95 percentile) range. Females who were overweight or obese at the age 11 visit were more likely to have a concurrent history of wheezing than the nonoverweight. This effect was not present in girls at age 6 nor in boys at either age. Females who became overweight or obese between age 6 and 11 were roughly 7 times more likely to have developed new-onset asthma at age of 11 or 13. This history of wheezing was accompanied by an increase in peak flow variability and bronchodilator responsiveness. This association of obesity with new-onset asthma between 6 and 13 years was seen in the boys.

*Conclusions.* The authors conclude that development of an elevated BMI between age 6 and 11 is associated with an increased risk of asthma in girls. They speculate that there are 2 likely explanations for the observation. First, obesity may influence circulating female sex hormones; these hormones are thought to alter beta2-adrenergic responsiveness and may have other proasthmatic activity. A second possibility is the presence of a subgroup of girls with genetic alterations in the responsiveness of female hormone receptor(s). Such a change could lead to a predisposition to obesity and to asthma symptoms. The authors note a third possibility, a relationship of lack of exercise and increased risk of asthma and obesity, that cannot be addressed by the data available.

*Reviewer’s Comments.* More risk factors for asthma continue to come to light. Certainly the risks are not all allergic, nor are they even all restricted to obvious links to the immune system. Now to the allergic risks, we might add the risks of cleanliness (the hygiene hypothesis), small sibships, and obesity. For early-life wheezing, there’s the risk of viral infection, but for later-life wheezing these infections may be protective. Perhaps we will really understand all this in another couple of decades.

**BODysize**

**BODY MASS INDEX AND ASTHMA IN THE MILITARY POPULATION OF THE NORTHWESTERN UNITED STATES**


*Purpose of the Study.* To examine the association between asthma and obesity among adults.

*Study Population.* Enrollees in a military managed care program, ages 17 to 96 years.

*Methods.* The investigators obtained data from 45,743 enrollment questionnaires that were completed between January 1997 and December 1998. After excluding those with emphysema/chronic bronchitis or implausible or missing body mass index (BMI) data, case-control analysis was performed on 2577 asthma cases and 36,347 controls. Because asthma was self-reported, the investigators selected random samples of 1000 cases and 1000 controls for verification. Status of the subject as a case or a control was verified by cross-referencing the cases and controls with medication profiles obtained from a computerized military health record system. Univariate analysis and multiple logistic regression was performed on both the larger case-control group and the verified case-control sample.
Asthma and Obesity

Background

The relationship between asthma and obesity has been studied extensively. Obesity is associated with increased prevalence of asthma in the general adult population. Although selection bias may be a weakness of this study, its strength lies in the large study population.

Methods

Results

Conclusion

DETECTION OF IgA AND IgG BUT NOT IgE ANTIBODY TO RESPIRATORY SYNCYTIAL VIRUS IN NASAL WASHES AND SERA FROM INFANTS WITH WHEEZING

Purpose of the Study

Methods

Results

Conclusions

References

Elizabeth C. Matsui, MD
Robert A. Wood, MD
Baltimore, MD

Andrew Macginnitie, MD, PhD
Lynda C. Schneider, MD
Boston, MA

IMPACT OF LOW BIRTH WEIGHT ON EARLY CHILDHOOD ASTHMA IN THE UNITED STATES

Results. Analysis performed on the larger, unverified study population showed that subjects with asthma were more likely to be female and younger and less likely to engage in exercise at least 3 times per week. When BMI was examined, enrollees with asthma were more likely to have BMIs 25.0 to 29.9 kg/m² than enrollees without asthma (odds ratio [OR]: 1.2; 95% confidence interval [CI]: 1.1–1.4). Enrollees with asthma were also more likely to be obese (BMI ≥30 kg/m²). These findings held after adjustment for age and sex and when the analysis was performed on the verified sample. The OR for asthma increased with increasing BMI in both the larger study population and the verified sample. These findings remained in the final multivariate regression model for the larger study population and the verified sample, with a maximal asthma risk with BMI between 35 to 39.9 kg/m² in the verified sample (OR: 3.8; 95% CI: 2.0–7.2).

Conclusion. BMI >25.0 is associated with asthma and increasing BMI is associated with increasing odds of asthma.

Reviewers’ Comments. This large study confirms findings of previously published smaller studies and suggests that obesity is a risk factor for the general adult population. Although selection bias may be a weakness of this study, its strength lies in the large study population. Whether obesity plays a causal role in the development of asthma or vice versa remains unclear.

DETECTION OF IgA AND IgG BUT NOT IgE ANTIBODY TO RESPIRATORY SYNCYTIAL VIRUS IN NASAL WASHES AND SERA FROM INFANTS WITH WHEEZING


Purpose of the Study. The role of respiratory syncytial virus (RSV) in stimulating an immunoglobulin E (IgE) antibody response and enhancing the development of asthma remains controversial. The aim of this study was to measure IgE, immunoglobulin A (IgA), and immunoglobulin G (IgG) antibody responses to immunodominant RSV antigens in nasal washes and serum samples from infants with and without respiratory symptoms.

Methods. The children were enrolled in an emergency department during the mid-winter months and seen again at follow-up when they were asymptomatic. Nasal washes were obtained by standard methods and were evaluated for RSV antigen. Moreover, determination of antibody isotypes (IgE, IgA, and IgG) to RSV antigens was performed in nasal washes and serum samples by using an enzyme-linked immunosorbent assay. In a subset of nasal washes, IgE to RSV was also evaluated by using a monoclonal anti-FcE antibody-based assay.

Results. At enrollment, 15 patients with wheezing, 2 with rhinitis, and 11 without respiratory tract symptoms) were included in the investigation.

Results. At enrollment, 15 patients with wheezing, 2 with rhinitis, and 1 control subject tested positive for RSV antigen. Thirteen patients with wheezing were <6 months old, and most (77%) were experiencing their first attack. Among the children with positive test results for RSV antigen, an increase in both nasal wash and serum IgE antibody to RSV-Fs and Cg was observed at the follow-up visit. There was no evidence for an IgE antibody response to either antigen.

Conclusions. Both IgA and IgG antibodies to the immunodominant RSV-Fs and Cg antigens were readily detected in the nasal washes and serum samples from patients in this study. The investigators were unable to demonstrate specific IgE antibody to these antigens and concluded that the production of IgE as a manifestation of a Th2 lymphocyte response to RSV is unlikely.
### Body Mass Index and Asthma in the Military Population of the Northwestern United States

Elizabeth C. Matsui and Robert A. Wood

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