chial hyperreactivity (BHR) as measured by methacholine inhalation challenge in infants with recurrent wheezing.

Study Population. Seventy-two children, 6 to 31 months old (median: 15 months) were studied. All of the children had previously suffered from recurrent wheezing defined as >3 separate wheezing episodes in the past 12 months. Excluded were infants born prematurely or small for gestational age or known cardiopulmonary abnormalities. All patients with atopic dermatitis were excluded. None of the children were treated with inhaled corticosteroids or cromolyn for 4 weeks before the tests were performed. Bronchodilator treatment was stopped >12 hours before testing.

Methods. All children were sedated with chloral hydrate before lung function testing. Compliance of the respiratory system (CRS) and resistance of the respiratory system (RRS) were measured from the passive tidal expiratory flow volume curve obtained by standard single breath method before and after methacholine challenge. Only children with normal baseline flow volume loops, CRS, and RRS underwent methacholine provocation. Methacholine was inhaled during tidal breathing using a face mask with a leak-free seal. Starting dose consisted of 5 inhalations equivalent to 50 µg methacholine. Thereafter, the doses were increased by doubling the number of inhalations every 2 minutes until a positive reaction occurred defined as an increase of RRS by at least 50% or maximum dose of 900 µg methacholine was inhaled. Venous blood samples for ECP were performed after lung function testing. The subjects were divided into 3 groups based on serum ECP levels—low (<10 µg/L), medium (10–20 µg/L), or high (>20 µg/L).

Results. Provocative methacholine concentrations at which an increase of RRS of at least 50% was measured, ranged from 30 to 976 µg. There was no significant correlation between serum ECP levels and BHR as measured by methacholine reactivity. Also, in all patients analyzed, there was no apparent relationship of BHR or high level of ECP with the levels of total or specific immunoglobulin E (IgE), peripheral blood eosinophils, family history of atopic disease, or exposure to cigarette smoking.

Conclusions. No significant correlation between serum ECP levels and bronchial reactivity was found in 72 children under 31 months of age with recurrent wheezing. These parameters may reflect independent pathogenic mechanisms in the etiology of childhood asthma.

ALAN B. GOLDSOBEL, MD
San Jose, CA

FREQUENCY, SEVERITY, AND DURATION OF RHINOVIRUS INFECTIONS IN ASTHMATIC AND NONASTHMATIC INDIVIDUALS: A LONGITUDINAL COHORT STUDY


Purpose of Study. Rhinovirus infections cause a significant proportion of asthma exacerbations. The aim of this study was to determine if people with asthma are more susceptible to rhinovirus infections than people without asthma.

Study Population. The study participants were 76 cohabiting and nonsmoking couples, 1 who had asthma and at least 1 positive skin test, and 1 who was neither atopic nor asthmatic.

Methods. From September to December, each subject recorded peak expiratory flow twice daily and categorized any upper and lower respiratory tract symptoms as mild (1), moderate (2) or severe (3) once daily. Nasal aspirates were obtained every 2 weeks for rhinovirus reverse transcriptase-polymerase chain reaction (RT-PCR); each member of a couple had nasal aspirates collected within 24 hours of the other. Clinical illness was defined as a symptom score above the individual’s median score for at least 3 days, preceded and followed by symptom scores below the median score. Any illnesses beginning within 7 days before or 2 days after rhinovirus isolation was classified as being associated with that infection.

Results. After adjusting for the use of inhaled corticosteroids and sex, the 2 groups did not differ significantly with respect to risk of rhinovirus infection (odds ratio [OR]: 1.15; 95% confidence interval [CI]: 0.71–1.87) or severity (P = .38) or duration (P = .66) of upper respiratory tract symptoms. With their first rhinovirus infection, subjects with asthma had more lower respiratory tract symptoms (P = .051), more severe (P = .001) and longer (P = .005) duration of lower respiratory tract symptoms, and greater mean fall in peak flow (P = .03) than subjects without asthma. Risk of infection was slightly but not significantly higher in asthmatics using continuous inhaled corticosteroids (OR: 1.15; 95% CI: 0.60–2.19). Sex was not associated with susceptibility to rhinovirus infection (OR: 0.87; 95% CI: 0.53–1.42).

Conclusions. People with atopic asthma are not at greater risk of rhinovirus infection than those without atopy and asthma, but have more frequent, more severe, and longer lasting lower respiratory tract symptoms with rhinovirus infections.

Reviewers’ Comments. Many recent studies have focused on the lower respiratory tract symptoms occurring during rhinovirus infections, in an effort to determine the mechanisms of rhinovirus-induced asthma symptoms. This study’s detailed characterization of the upper and lower respiratory tract symptoms in asthmatics and nonasthmatics will be helpful in determining the degree of extrapolation to asthmatic individuals that can be applied to studies done in nonasthmatics. In addition, the increased morbidity from rhinovirus-induced lower respiratory tract symptoms in asthmatics described in this study illustrates the importance of rhinovirus prevention in this population.

ELINOR SIMONS, MD
ROBERT A. WOOD, MD
Baltimore, MD

OBESITY IS A RISK FACTOR FOR DYSPNEA BUT NOT FOR AIRFLOW OBSTRUCTION

Sin DD, Jones RL, Man SF. Arch Intern Med. 2002;162: 1477–1481

Purpose of the Study. Previous research suggests that obesity is an important risk factor for asthma. However, because obesity can cause dyspnea through mechanisms other than airflow obstruction, diagnostic misclassification of asthma could partially account for this association. The purpose of the study was to determine if there is a relationship between obesity and airflow obstruction.

Study Population and Methods. A total of 16 171 participants (17 years or older) from the Third National Health and Nutrition Examination Survey (NHANES III) were divided into 5 quintiles based on their body mass index (BMI) to determine the association between BMI quintile and risk of self-reported asthma, bronchodilator use, exercise performance, and airflow obstruction. Significant airflow obstruction was defined as a ratio <80% the predicted
value of forced expiratory volume in 1 second to forced vital capacity adjusted for age, sex, and race.

Results. The highest BMI quintile (ie, the most obese participants) had the greatest risk of self-reported asthma (odds ratio [OR]: 1.50; 95% confidence interval [CI]: 1.24–1.81), bronchodilator use (OR: 1.94; 95% CI: 1.38–2.72), and dyspnea with exertion (OR: 2.66; 95% CI: 2.35–3.00). Paradoxically, the highest BMI quintile had the lowest risk for significant airflow obstruction ($P = .001$).

Conclusions. This study demonstrates that while obesity is a risk factor for self-reported asthma, obese participants are at a lower risk for (objective) airflow obstruction. More obese than nonobese participants were using bronchodilators despite a lack of objective evidence for airflow obstruction. These data suggest that mechanisms other than airflow obstruction are responsible for dyspnea genesis in obesity and that asthma might be overdiagnosed in the obese population.

Reviewer’s Comments. The obvious problem with this study is that a single measure of airflow cannot be considered diagnostic for asthma. Nonetheless, it is unlikely that this study population was gathered to answer specific questions about asthma. My guess is that the authors gathered a lot of information about their obese population (including baseline spirometry) and later went back to see if they could make inferences regarding asthma. It’s a lesson on how this is not the best way to conduct clinical research. On the other hand, I suppose it points out that not all dyspnea (even that which is reported to improve with bronchodilators) represents asthma.

ALLEN ADINOFF, MD
Aurora, CO

DIAGNOSIS AND MANAGEMENT

IMPROVING ASTHMA OUTCOMES AND SELF-MANAGEMENT BEHAVIORS OF INNER-CITY CHILDREN


Purpose of the Study. To investigate whether the use of a home-based computerized interactive device using the Internet improves education and self-management of pediatric asthma.

Study Population. One hundred thirty-four children diagnosed with persistent asthma between 8 and 16 years of age recruited from the primary care clinic at a children’s hospital serving primarily inner-city children.

Methods. Randomized, controlled trial with 66 children in the intervention group and 68 children in the control group. Both groups participated in a standardized teaching session on peak flow monitoring and appropriate use of medications. The intervention group received an interactive communication device (Health Buddy) that posed a set of queries each day consisting of symptoms, peak flows, medication use, functional status. The control group monitored their symptoms with a standard asthma diary. All children returned for 2 follow-up visits at 6 and 12 weeks. Measures for the study were compiled from interviews conducted at each visit.

Results. Children in both groups of the study reported a decrease in asthma symptoms and a decrease in peak flow readings in the yellow or red zone at 6 and 12 weeks compared with baseline. Fewer children in the Health Buddy group had yellow or red zone peak flows ($P = .02$). The intervention group was less likely to report limitation in activity ($P = .03$), and less likely to make urgent calls to the hospital ($P = .05$).

Conclusions. Children randomized to the Health Buddy were more likely to improve the degree of compliance with prescribed medications and to reduce asthma symptoms, while making fewer urgent calls.

Reviewer’s Comments. This study illustrates the need for good asthma education to help reinforce symptom awareness and medication compliance for patients and their families. It is likely that the newly diagnosed and those with a difficult medication regimen would receive greatest benefit. A longer study stratifying patients’ asthma severity would be helpful in pursuit of this idea. One could certainly envision the utility of this type of program in the immediate postexacerbation period, as well as during problematic months. Future studies of the Health Buddy need to address cost-effectiveness and long-term usage.

MORNA J. DORSEY, MD
LYNDA C. SCHNEIDER, MD
Boston, MA

SYMPTOM MONITORING IN CHILDHOOD ASTHMA: A RANDOMIZED CLINICAL TRIAL COMPARING PEAK EXPIRATORY FLOW RATE WITH SYMPTOM MONITORING


Purpose of the Study. The purpose of this study was to evaluate the effects of 3 different regimens of symptom monitoring on asthma morbidity outcomes.

Study Population. One hundred sixty-eight children aged 6 to 19 years who had >3 asthma-related health care visits in the previous 12 months. The children were recruited from 11 different primary care sites and of diverse racial, geographic, and socioeconomic backgrounds.

Methods. Patients were randomized into 1 of 3 treatment groups. Treatment groups were: group 1, subjective symptom monitoring; group 2, peak expiratory flow rate (PEFR) monitoring when asymptomatic; and group 3, PEFR monitoring twice daily and when symptomatic. In the beginning of the study, all families received education on asthma triggers, asthma symptom recognition, symptom management, and medications. A 2-week practice period included formulating a personal action plan that specified changes in management strategy based on symptoms or PEFR. A weekly diary was obtained for 3 months. Outcome measures included an asthma severity score (a composite score of symptom frequency, symptom duration, activity limitation, nighttime symptoms, and days missed from school), forced expiratory volume in 1 second (FEV$_1$), symptom days, and health care utilization.

Results. Children who used PEFR meters when symptomatic had a lower asthma severity score, fewer symptom days, and less health care utilization than children in the other 2 treatment groups. Minority and poor children had the greatest improvement using peak flow meters (PFMs) when symptomatic. Results were less dramatic in white families. Thirty percent of families discontinued daily PFM use by 1 year after exiting the study, while 94% of families continued to use PFMs when symptomatic.

Conclusions. Not all children with asthma need PFMs. Children and families who face extra challenges as a result of illness severity, sociodemographic, or health care system characteristics clearly seemed to benefit most from PFM usage.

Reviewer’s Comments. This article supports the National Heart, Lung, and Blood Institute guidelines, which recom-
OBESITY IS A RISK FACTOR FOR DYSPNEA BUT NOT FOR AIRFLOW OBSTRUCTION

Allen Adinoff

Pediatrics 2003;112:473

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Allen Adinoff

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