tional QOL. It may be difficult to determine where the process begins in an individual child, but it may well result in a vicious cycle. The clinician should utilize not only appropriate medications for treatment of asthma but also asthma education and psychological assessment and referrals when indicated.

JOHN E. DULONGER, MD
Indianapolis, IN

ASTHMA DEATHS DURING SPORTS: REPORT OF A 7-YEAR EXPERIENCE


Purpose of the Study. To characterize fatal asthma that occurs while participating in sports activities.

Study Population. Potential subjects with asthma who died while participating in sports activities from 1993–2000 were identified by using a nationwide information service that reviews ~10 000 newspapers.

Methods. For each potential qualifying subject, autopsy results and family interviews were sought. To be included in the study, the subject had to be participating in physical activity at the time of asthma-symptom onset and appear well beforehand, and the medical examiner had to have concluded that the subject died of asthma.

Results. There were 263 potential asthma-related deaths identified, but only 61 met the criteria. Of these, 81% were subjects <21 years of age, and only 3% were >31 years of age. Sixty-nine percent of the subjects were male; 91% had a known history of asthma. There were 35 competitive and 26 recreational athletes. Only 51% of competitive athletes had their fatal event during participation in their organized sport, with 78% of these occurring during practice situations and the rest during active competition. Basketball was the most common activity at time of death (21%) in both competitive and recreational groups, compared with track/running (11%), gym class (10%), football and recreational play (each 8%), and other (42%). Only 5% of the subjects had been using asthma-controller therapy, although the medication status of 18% of the subjects could not be determined. No mention was made of the use of an inhaled β2-agonist before exercise.

Conclusions. Sudden fatal asthma exacerbations occur in both competitive and recreational athletes and can be precipitated by sporting activity. Subjects who had fatal asthma attacks during exercise were usually white males between 10 and 20 years of age. Few had evidence of histories of persistent asthma, based on medication use. Extra care is needed to identify the athlete with asthma and ensure that such individuals receive proper evaluation, treatment, and monitoring. If asthma were reportable as a cause of death, a better understanding of asthma fatality during exercise might follow.

Reviewers’ Comments. One unsettling question is why the incidence of fatal asthma with exercise is heavily weighted toward those individuals with presumed mild intermittent disease. Granted, there are more people with mild intermittent asthma than any other severity class, and these individuals are more likely to participate in aerobic exercise than their peers with more severe disease. However, it is hard to accept that these persons could suddenly evolve such profound airway obstruction. Do these persons have suboptimal perception of airway obstruction chronically or during times of increased cardiopulmonary demand? Are they driven to “tough it out” even with recreational activity? Although the answers to some of these questions might be “yes,” it is more likely that these ill-fated young people had more asthma at rest than had met the eye or the ear of the patient, family, and physician. It is not uncommon to see significant airway obstruction in an adolescent with few asthma symptoms. Such individuals might be spared much of their exercise risk if spirometry were part of their asthma evaluation and monitoring. Finally, should we lower the bar for the introduction of asthma-controller therapy?

TIMOTHY ANDREWS, MD
JAMES R. BANKS, MD
Arnold, MD

A PILOT SURVEY OF β2-AGONIST INHALER AVAILABILITY FOR CHILDREN WITH ASTHMA DURING ORGANIZED SPORTING EVENTS


Purpose of the Study. Nearly 90% of asthmatic patients experience exercise-induced bronchospasm (EIB). This study investigated the level of preparedness for EIB in suburban children involved in recreational sports.

Study Population. Five hundred seventy-nine children ≤12 old who were enrolled in a community sports league in Pennsylvania were studied. Seventy-four percent were male, and 96% were white. Four hundred sixty-four children (80%) played soccer, and 115 (20%) played baseball.

Methods. A 3-question survey was administered during a face-to-face interview with the parent or caretaker of the child.

Results. Of the 579 parents/caretakers, 80 (14%; 63 for soccer and 17 for baseball) reported a history of physician-diagnosed asthma for their child. Of the soccer players, 16 (25%) had their inhalers immediately available, and of the baseball players, 2 (12%) had their inhalers immediately available, giving a total of 18 (22%) children having inhalers available.

Conclusions. More than 75% of children with asthma who participated in organized sports were unprepared for a potential episode of EIB.

Reviewer’s Comments. This was a small pilot study, but it demonstrates that children with asthma who participate in organized sports may be unprepared for a possible asthma exacerbation. It is unfortunate that this study did not go further and explore asthma severity or the reasons why the families did not have a short-acting, inhaled β2-agonist available. I presume that, in this primarily middle-class/upper-middle-class community, there were no financial barriers to obtaining the medication or medical care. As physicians we need to emphasize to patients that exercise is a primary trigger of asthma and that patients should have their inhalers available when they participate in sporting events.

HELEN SKOLNICK, MD
Princeton, NJ

INFLUENZA VACCINATION IN CHILDREN WITH ASTHMA: RANDOMIZED DOUBLE-BLIND PLACEBO-CONTROLLED TRIAL


Purpose of the Study. To investigate if influenza vaccination in children with asthma prevents asthma exacerbations provoked by influenza infection

562 ASTHMA
Study Population. Subjects were asthmatic children aged 6 to 18 years who had no other chronic illness. There were 347 children assigned to the vaccine group and 349 assigned to the placebo group.

Methods. The primary outcome was the number of asthma exacerbations associated with virologically proven influenza infection. Study subjects and their families scored daily symptoms in a diary, and when symptoms reached a predefined level, a pharyngeal swab for influenza was taken. The symptom diary was maintained from the day after administration of inactivated influenza vaccine or placebo on approximately November 1 until April 1 of the following year. Secondary outcomes included the duration and severity of the asthma exacerbations, adverse effects of vaccination, and the number, duration, and severity of all asthma exacerbations. Influenza virus–specific antibody titers were measured before vaccination, 14 to 21 days afterward, and at the end of the influenza season.

Results. In each group, 344 participants provided diary data for the primary outcome. The groups were generally similar in baseline characteristics, with almost 90% of children having used maintenance medication for asthma in the previous 12 months. There were 486 reports of symptom scores that met the predefined criteria for an asthma exacerbation (vaccine group: 251; placebo group: 235), with 42 of the resultant throat swabs testing positive for influenza (vaccine group: 24; placebo group: 18). The difference in the number of asthma exacerbations was not significant (95% confidence interval: 34% reduction to 161% increase). There were no significant differences found between the 2 groups for any of the secondary outcomes measured. Antibody levels 14 to 21 days after vaccination were increased only in the vaccine group. However, when comparing the 14- to 21-day titers to those at the end of the season, ~23% of subjects in the placebo group and 10% in the vaccine group had a fourfold increase in influenza-specific titers.

Conclusions. The authors concluded that influenza vaccination was not more effective than placebo in reducing the number of asthma exacerbations caused by influenza infections in children.

Reviewers’ Comments. Current guidelines that recommend the use of influenza vaccination in asthmatics are based on epidemiologic evidence. A recent Cochrane review of influenza vaccination in asthmatics found insufficient evidence to make conclusions about the risks or benefits of influenza vaccination, primarily because of a lack of randomized trials. Although this study was a randomized trial, the low attack rate of influenza (~6% of subjects tested positive by pharyngeal swab) makes it difficult to draw conclusions from the results. The study’s sample size was calculated based on the assumption of a 30% influenza attack rate, leaving it significantly underpowered to detect an effect at such a low attack rate. If the question of efficacy of influenza vaccine in reducing asthma morbidity is ever to be answered convincingly, a large randomized trial, probably over several influenza seasons, will be needed.

Ariana D. Buchanan, MD
Larry W. Williams, MD
Durham, NC

RHINITIS THERAPY AND THE PREVENTION OF HOSPITAL CARE FOR ASTHMA: A CASE-CONTROL STUDY


Purpose of the Study. To examine the effect of treatment of allergic rhinitis on hospitalization and emergency department visits in patients with concomitant allergic rhinitis and asthma.

Study Population. Three hundred sixty-one subjects and 1444 control patients with allergic rhinitis and asthma who were at least 6 years of age.

Methods. A case-control analysis of patients with asthma and concomitant allergic rhinitis was performed between 1996 and 1997 in a large managed care organization in northeastern United States. Diagnosis, procedure, laboratory, health care utilization, and pharmacy records were analyzed to determine if treatment of allergic rhinitis affected the frequency of asthma exacerbations. Patients fulfilled the requirements for diagnosis of asthma and allergic rhinitis within a 12-month period. Patients were defined as asthmatic if they had ≥2 claims with diagnostic codes for asthma; had claims with 1 asthma diagnosis code and 1 asthma-related prescription; or filled 2 asthma-related prescriptions. Patients with allergic rhinitis had ≥2 claims with allergic rhinitis diagnosis codes; ≥2 prescriptions for second-generation antihistamine; ≥2 prescriptions for nasal corticosteroids; 1 prescription for a second-generation antihistamine and 1 prescription for a nasal corticosteroid; or a claim with 1 allergic rhinitis diagnosis code and at least 1 prescription for a second-generation antihistamine and a nasal corticosteroid.

Results. Treatment of allergic rhinitis was associated with a lower frequency of emergency department visits and hospitalization resulting from asthma. Patients receiving monotherapy with a nasal corticosteroid had significantly lower risk of emergency department visits (odds ratio [OR]: 0.75) and hospitalization (OR: 0.56). A similar trend was seen with treatment with a second-generation antihistamine alone. Treatment with a combination of nasal corticosteroids and second-generation antihistamines was associated with additional lower risk of emergency department visits (OR: 0.37) and hospitalization (OR: 0.22).

Conclusions. Treatment of allergic rhinitis lowers the risk of asthma-related health care utilization in patients with concomitant allergic rhinitis and asthma.

Reviewer’s Comments. This was a useful study in that it supports the National Heart, Lung, and Blood Institute guidelines for long-term successful management of patients with asthma and concomitant allergic rhinitis. This is the first large case-control study to definitively show a positive relationship between treatment of allergic rhinitis and lowered risk for asthma health care utilization. Findings support the idea of “one airway,” and physicians should remain cognizant of the benefits of treating the upper airway in patients with lower-airway disease.

Tamara T. Perry, MD
Little Rock, AR

HOW DO PATIENTS DETERMINE THAT THEIR METERED-DOSE INHALER IS EMPTY?

Rubin BK, Durotuye L. Chest. 2004;126:1134–1137

Purpose of the Study. To evaluate how patients determine that their metered-dose inhalers (MDIs) are empty and to measure doses available of MDIs in different laboratory conditions.

Study Population. Fifty consecutive patients attending a pediatric asthma center at Wake Forest University (Winston-Salem, NC).

Methods. Fifty new pediatric patients and their caregivers who used MDIs regularly were asked the question “How do you know when it is time to replace your inhaler?” and then were asked to elaborate on their answers.
Influenza Vaccination in Children With Asthma: Randomized Double-Blind Placebo-Controlled Trial
Ariana D. Buchanan and Larry W. Williams
Pediatrics 2005;116:562
DOI: 10.1542/peds.2005-0698GGG

Updated Information & Services
including high resolution figures, can be found at:
/content/116/Supplement_2/562.1.full.html

Subspecialty Collections
This article, along with others on similar topics, appears in the following collection(s):
Sports Medicine/Physical Fitness
/cgi/collection/sports_medicine/physical_fitness_sub
Asthma
/cgi/collection/asthma_sub

Permissions & Licensing
Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
/site/misc/Permissions.xhtml

Reprints
Information about ordering reprints can be found online:
/site/misc/reprints.xhtml
Influenza Vaccination in Children With Asthma: Randomized Double-Blind Placebo-Controlled Trial
Ariana D. Buchanan and Larry W. Williams
Pediatrics 2005;116:562
DOI: 10.1542/peds.2005-0698GGG

The online version of this article, along with updated information and services, is located on the World Wide Web at:
/content/116/Supplement_2/562.1.full.html