NATIONAL TRENDS IN ASTHMA VISITS AND ASTHMA PHARMACOTHERAPY, 1978–2002
Jenny Campbell and Stacie M. Jones
Pediatrics 2004;114;529

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ROLE OF GASTROESOPHAGEAL REFLUX IN OLDER CHILDREN WITH PERSISTENT ASTHMA


Purpose of the Study. To determine the effect of gastroesophageal reflux (GER) treatment on asthma outcomes.

Study Population. Forty-six children (5–10.5 years of age) who had received treatment for moderate persistent asthma for at least 2 years and who were being cared for by a specialist were studied.

Methods. Subjects were recruited from a pulmonology practice after fulfilling the following inclusion criteria: no family history of asthma or atopy, no personal history of atopy, receiving treatment for asthma (multiple controllers) for at least 2 years, with ≥3 emergency department visits or hospitalization for treatment of asthma in the prior year, nonsmoking parents, no prior history of respiratory syncytial virus bronchiolitis, and able to swallow a pill or capsule. Forty-six children were enrolled and referred to gastroenterologists, to rule out GER disease with esophageal pH (dual-channel) monitoring (for 20–24 hours). Those with abnormal pH probe study results began treatment, including lifestyle changes, prokinetic and proton pump inhibitor treatment, and, if indicated, surgical intervention. Those with normal pH study results were given the option of beginning medical treatment. The subjects were monitored at regular 4-week intervals for an 18-month period, for asthma assessment and adjustment of medications if necessary. The pulmonologist was not blinded with respect to the treatment.

Results. A total of 482 subjects were screened during a 2.5-year period. Twenty-seven of the 46 enrolled patients (59%) had abnormal pH study results, with 18 opting for medical treatment and 9 opting for surgical treatment. Of the 19 with normal pH study results, 8 opted to begin medical treatment. There were no differences in age or gender for any of the groups. The 27 patients who underwent treatment because of abnormal pH study results all were able to reduce (50%) the amount of asthma medication used. There was no statistical difference in outcomes between the medical and surgical intervention groups. Of those with normal pH study results, the 11 patients who did not begin GER treatment experienced no changes in their asthma medications; however, 2 of 8 patients with normal study results who began empiric GER treatment were able to reduce (70%) their requirements for bronchodilators and inhaled corticosteroids. Among patients with abnormal pH study results, the probability of improvement of asthma after GER treatment was 100%; among those with normal pH study results receiving treatment, the probability of improvement was 25%. The study found what has been shown in adult studies, that treatment of GER disease with either proton pump inhibitors or surgical intervention can improve asthma, in this case by reducing the need for rescue and controller medications. This has not been found for treatment with ranitidine. The authors found pH probe study results to be useful predictors of responses to anti-GER treatment. The study did not answer several questions, including the following. How long should medical GER treatment continue for these patients? Is the prokinetic necessary? How long will asthma improvement continue, with or without treatment? Is surgical intervention superior to medical treatment? What, if anything, in the patient history could indicate the presence or absence of GER and suggest the response to treatment? What effect does this treatment have on lung function and long-term outcomes?

Conclusions. Screening for the presence of GER disease among children with moderate persistent asthma, with pH probe studies, is a useful screening approach. Treatment of asthmatic children with aggressive acid suppression may improve asthma outcomes.

Reviewer’s Comments. Although the exclusion criteria for this study were extensive, resulting in a rather select study population, this study does demonstrate what has been found among adults, that GER disease may play a role in a significant number of asthma cases and that treatment of GER disease may lead to improvement in asthma outcomes. It also demonstrates that pH probe studies are useful screening tests for such patients, although patient histories would have been helpful in this study.

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NATIONAL TRENDS IN ASTHMA VISITS AND ASTHMA PHARMACOTHERAPY, 1978–2002


Purpose of the Study. To analyze asthma clinic visits and changes in asthma (pharm) therapy during a 25-year period.

Study Population. Subject data from the National Disease and Therapeutic Index, from 1978 to 2002, were used to evaluate asthmatics examined by office-based physicians.

Methods. The National Disease and Therapeutic Index provides data on diagnostic and prescribing information.
from physicians across the United States. Approximately 3500 physicians participate each 3-month period and provide information on patients they examine in 2 consecutive workdays. Information focuses on specific diagnoses and medications, not on patient adherence. This study analyzed the number of asthma visits (based on International Classification of Diseases, 9th revision, codes) and medications used to treat asthma each year from 1978 to 2002, primarily in an outpatient setting. Medications were classified as controllers (eg, inhaled corticosteroids) or relievers (eg, short-acting, β2-receptor agonists).

Results. The annual number of patient visits for treatment of asthma doubled from 1978 (8.5 million) to 1990 (17.7 million) and then demonstrated a plateau, with a mean of 16 million cases per year, from 1991 to 2002. The treatment of asthma changed tremendously during the 25-year study period. Prescription rates for controllers increased; in 2001, controllers were prescribed more than relievers (83% vs 80%) for the first time. Prescriptions for relievers increased from 1978 to 1993 but decreased thereafter. From 1978 to 1988, prescriptions for inhaled corticosteroids remained at around 8% with respect to the annual total of asthma visits. This number increased to 48% in 2002. The use of long-acting, β2-receptor agonists alone peaked in 2000 and declined to 9% in 2002, most likely because of increased use in combination with inhaled corticosteroids (20% of visits). The use of leukotriene modifiers steadily increased after their release in 1997, to 24% in 2002, whereas xanthine use decreased to 2% and cromone use decreased to 1%. Oral corticosteroid use was constant at 20%. The number of medications was stable, at a mean of 2 per patient, during the past decade.

Conclusions. The study concluded that, although the number of asthma visits increased during the study period, the number of return visits for treatment of asthma decreased. Prescriptions for controller medications increased, whereas prescriptions for relievers decreased. This pattern suggests that asthma treatment is changing to be more consistent with current guidelines.

Reviewers’ Comments. Consensus guidelines for asthma are helpful for adequate diagnosis and treatment of this disease. Trends in asthma pharmacotherapy are changing, so that controller medications are prescribed more often, leading to decreased need for relievers and better control of asthma. This study did not include asthma-related visits to emergency departments or hospital-based clinics; therefore, more severe cases of asthma might not have been adequately analyzed.

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Methods. A single telephone interview with parents of eligible children was used to assess 1) classes of medications (controller and reliever) in use and frequency of use in the previous 4 weeks; 2) asthma symptoms during days, but not nights, in the previous 2 weeks; 3) visits to specialists, outpatient doctors, or emergency departments or hospitalizations; and 4) the existence and use of a written action plan.

Results. Of the children who participated, 68% had 0 to 4 symptom days in the previous 2 weeks, 16% had 5 to 9 symptom days, and 16% had 10 to 14 symptom days. Fifty-five percent had a health care visit in the previous 1 year; 23% went to an emergency department, 14% saw an asthma specialist, and 4% were hospitalized. Most children with frequent symptom days were receiving controller medicines and used reliever medicines. Poor adherence to controller medicines was common (40%), especially among those with few symptom days. Sixty-four percent of children with persistent asthma had excessive symptoms or high reliever medication use and were considered to have inadequately controlled conditions. Approximately one-third of these patients had not been prescribed controllers. Written care plans were received by 21% of patients, and the existence of a plan was not protective against inadequate control.

Conclusions. Inadequate asthma control, defined as frequent symptoms or high reliever medication use, was common even when controller medications were prescribed. Nonadherence to controller medications and over-reliance on reliever medications were common.

Reviewers’ Comments. This is an important study emphasizing that asthma control remains a significant problem for children. This study highlights 2 factors that contribute to poor asthma control, namely, lack of adherence to controller medications and lack of appropriate prescription of controllers. Younger age and being treated by an asthma specialist were associated with better asthma control. The study excluded important groups, including children <3 years of age, children treated by a specialist, and patients with intermittent or severe persistent asthma. Patients themselves were not interviewed (only the parents were interviewed), which is a known limitation in adolescent studies. Surveyed controller and reliever use was not compared with actual prescription refills or mechanical dose-counting results. Nonetheless, this is another study suggesting that asthma among children is not well controlled and that we need to assist our patients with medication adherence and to make sure that patients with persistent asthma are prescribed controller medications.

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DIAGNOSIS AND MANAGEMENT

EFFECTS OF EDUCATIONAL INTERVENTIONS FOR SELF-MANAGEMENT OF ASTHMA IN CHILDREN AND ADOLESCENTS: SYSTEMATIC REVIEW AND META-ANALYSIS


Purpose of the Study. To determine the effectiveness of educational programs for the self-management of asthma among children and adolescents.

Study Population. Eligible studies were published, randomized, controlled trials of educational programs for the self-management of asthma among children and adoles-