Review: Inhaled corticosteroids alone appear to be as effective as oral corticosteroids after ED discharge for acute asthma

Edmonds ML, Camargo CA Jr, Saunders LD, Brenner BE, Rowe BH. **Inhaled steroids in acute asthma following emergency department discharge.** Cochrane Database Syst Rev. 2000;(3):CD002316 (latest version 21 March 2000).

QUESTION

Are inhaled corticosteroids (ICSs) alone or combined with oral corticosteroids (OCSs) as effective as OCSs alone after discharge from the emergency department (ED) for acute asthma?

DATA SOURCES

Published and unpublished trials were identified by searching the Cochrane Airways Review Group "Asthma and Wheez*" randomized controlled trial register (to April 1999), which is based on searches of EMBASE/Excerpta Medica, MEDLINE, CINAHL, and the Cochrane Clinical Trials Register; hand searching 20 respiratory care journals, abstracts from 3 respiratory societies, and meeting abstracts from the American Thoracic Society; reviewing bibliographies of retrieved studies; and contacting experts and pharmaceutical companies.

STUDY SELECTION

Randomized or quasirandomized controlled trials published in any language were selected if they included patients who were discharged from an ED after treatment for acute asthma and if patients were allocated to ICS therapy (i.e., any corticosteroid agent administered by metered-dose inhaler, other inhaler, or nebulizer) in addition to or as a substitute for OCS therapy.

DATA EXTRACTION

Data were extracted on study methods, patient characteristics, interventions, and outcomes. Main outcomes were acute asthma relapse and asthma-specific quality of life. Methodologic quality of studies was assessed using the Cochrane approach and the Jadad criteria.

MAIN RESULTS

10 studies (6 unpublished, 6 involved adults) met the inclusion criteria: 3 compared ICSs plus OCSs with OCSs alone (909 patients), and 7 compared ICSs alone with OCSs alone (1204 patients). All studies had quality scores ≥ 4 out of 5. Follow-up for individual trials ranged from 70% to 100%. Meta-analyses of studies that compared ICSs plus OCSs with OCSs alone found no differences between groups at either 7 to 10 days or 20 to 24 days for asthma relapse (3 studies), quality of life (2 studies), asthma symptoms (2 studies), β-agonist use (3 studies), side effects (2 studies), hospital admission (2 studies), or pulmonary function tests (2 studies). Meta-analyses of studies that compared ICSs alone with OCSs alone found no differences between groups for asthma relapse at 7 to 10 days (4 studies) or 16 to 21 days (2 studies), quality of life (2 studies), β-agonist use at 7 to 10 days (2 studies), peak expiratory flow rates (PEFRs) at 7 to 10 days (6 studies), or percentage of predicted PEFR at either time interval. At 20 to 24 days, the ICS group had a higher PEFR than did the control group (weighted mean difference 15.2 L/min, 95% CI 2 to 29).

CONCLUSIONS

Inhaled corticosteroids alone appear to be as effective as oral corticosteroids after discharge from the emergency department in patients with mild asthma exacerbations. Evidence is insufficient on the benefit of addition of inhaled corticosteroids to oral corticosteroids in this setting.

Source of funding: National Institutes of Health.

For correspondence: Dr. M. Edmonds, Division of Emergency Medicine, University of Alberta, 1G1 Walter Mackenzie Centre, 8440-112 Street, Edmonton, Alberta T6G 2B7, Canada. FAX 780-407-3314.

COMMENTARY

Many controlled trials have established the efficacy of ICSs in chronic asthma. The role of ICSs in acute asthma remains controversial. The well-done meta-analysis by Edmonds and colleagues reviews the use of ICSs alone or in combination with OCSs in the setting of acute exacerbations of asthma. The study set out to answer 2 questions: Are ICSs beneficial when added to the standard short-course therapy with OCSs, and can ICS therapy be substituted for OCS therapy after an acute asthma attack?

Three trials involving almost 1000 patients addressed the first question. Both groups received a fixed dose of oral prednisone for 5 to 7 days. The addition of ICSs did not reduce asthma relapse, despite a trend in favor of ICSs. However, the length of follow-up in these 3 studies was 20 to 24 days, and several studies have shown that reduction in airway hyperresponsiveness occurs over several weeks with ICSs and may not be maximal for ≥ 3 months in some patients (1–3).

The 7 studies that addressed the second question involved > 1200 patients but included only patients with relatively mild asthma and varied markedly in their reported outcomes. No differences were found between treatments for asthma relapse at either 7 to 10 days or 16 to 21 days. Although 6 of the 7 trials concluded that ICSs could be substituted for OCSs, the authors' power calculations suggest that these data are not sufficient to conclude that the 2 treatments are equivalent.

Until further research results are available, the mainstay of therapy for acute asthma exacerbations is still 5 to 10 days of OCSs. ICSs are a reasonable alternative in patients with mild asthma who are at high risk for complication from OCSs. The addition of ICSs to OCS therapy is reasonable, yet at present the benefits are unproved and must be individualized for each patient.

Jay Peters, MD
University of Texas
San Antonio, Texas, USA

References

1. **Juniper EF, Kline PA, Vanzieleghem MA, et al.** Effect of long-term treatment with an inhaled corticosteroid (budesonide) on airway hyperresponsiveness and clinical asthma in nonsteroid-dependent asthmatics. Am Rev Respir Dis. 1990;142:832-6.
2. **van Essen-Zandvliet EE, Hughes MD, Waalkens HJ, et al.** Effects of 22 months of treatment with inhaled corticosteroids and/or beta-2-agonists on lung function, airway responsiveness, and symptoms in children with asthma. The Dutch Chronic Non-Specific Lung Disease Study Group. Am Rev Respir Dis. 1992;146:547-54.
3. **Kerstjens HA, Brand PL, Hughes MD, et al.** A comparison of bronchodilator therapy with or without inhaled corticosteroid therapy for obstructive airways disease. Dutch Chronic Non-Specific Lung Disease Study Group. N Engl J Med. 1992;327:1413-9.