

Selected Summaries

Steroids in Acute Asthma: Oral or Nebulized?

[Scarfone RJ, Loiselle JM, Wiley JF II, Decker JM, Henretig FM, Joffe MD. Nebulized Dexamethasone Versus Oral Prednisone in the Emergency Treatment of Asthmatic Children. Ann Emerg Med 1995, 26: 480-486].

In this randomized double blind, double-placebo study, the authors compared nebulized dexamethasone with oral prednisone in the treatment of children with acute asthma, in a pediatric emergency set up. Patients aged 1-17 years, all with moderate asthma exacerbation, received frequent aerosolized albuterol (salbutamol) and either 1.5 mg/kg of nebulized dexamethasone or 2 mg/kg of oral prednisone.

A total of 111 children (56 in dexamethasone group and 55 in prednisone group) were evaluated; 21% of those treated with dexamethasone required hospitalization, compared with 31% of those treated with prednisone ($p=0.26$). A significantly greater proportion of dexamethasone treated children were discharged home within 2 hours (23% versus 7%; $p=0.02$). In the dexamethasone group, 8% who received the drug by mouth piece were hospitalized compared with 33% who received it by face mask ($p=0.06$). Fewer children treated with dexamethasone vomited (0% versus 15%; $p=0.001$) and fewer relapsed within 48 hours of Emergency Department (ED) discharge (0% versus 16% $p=0.008$). Authors concluded that nebulized dexamethasone was as effective as oral prednisone in the ED treatment of moderately ill children

with acute asthma and was associated with more rapid clinical improvement, more reliable drug delivery, and fewer relapses.

Comments

Several trials have shown that parenteral and oral steroids can reduce the need for hospitalization among patients in the ED with acute asthma exacerbation of moderate severity(1,2). However, the par-enteral and oral routes of administration each have disadvantages, particularly in children. In addition, with either route of administration clinical benefit is experienced. Inhaled corticosteroids offer the advantages of administration directly to the lungs, relative ease of administration, and more reliable patient acceptance.

In this study there were no significant differences in hospitalization rates between the groups, but significantly more dexamethasone treated patients were discharged home within 2 hours. These results are in conformity with our recently completed study on inhaled budesonide in acute asthma. Laboratory studies have shown that corticosteroids have local topical effects such as alteration of cell membrane composition and function, increased beta-adrenergic activity, and alpha-adrenergic vasoconstriction(3,4). These effects occur relatively rapidly in comparison to systemic effects. Perhaps the clinical benefits in the dexamethasone group resulted from rapid local effects. In addition, systemic effects of the nebulized dexamethasone absorbed through the pulmonary and gastrointestinal mucosa, may have contributed. Future studies will be needed to answer the question raised by these results "Did nebulized dexamethasone

exert its actions mainly by topical effects, systemic effects, or both in the treatment of acute asthma?"

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