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Article

Rehrer, Matthew W., et al. "A Randomized Controlled Noninferiority Trial of Single Dose of Oral Dexamethasone Versus 5 Days of Oral Prednisone in Acute Adult Asthma." *Annals of Emergency Medicine*, vol. 68, no. 5, 2016, pgs. 608-613.

Clinical Question

In adult patients with asthma, how does a single dose of dexamethasone compare to a usual 5-day burst of prednisone?

Study Type

Prospective, double-blind, randomized controlled noninferiority trial

Methods

Patients aged 18 to 55 years old were randomized to two treatment arms, with one arm receiving a single dose of 12 mg of oral dexamethasone with 4 days of placebo or a 5-day course of oral prednisone 60 mg a day. Eligibility requirements were: age 18 to 55 years; a history of asthma; presented to the ED with an acute episode of asthma requiring more than 1 albuterol nebulizer treatment; and were discharged home with a valid telephone number for follow-up. This study excluded those who: were without a working telephone number because the follow-up was by telephone; were pregnant; had a previous allergic reaction to corticosteroids; reported use of oral corticosteroids 2 weeks before presentation; had a history of a chronic respiratory disease such as chronic obstructive pulmonary disease or pulmonary fibrosis, HIV/AIDS, congestive heart failure, active varicella, active tuberculosis, or diabetes mellitus. Also excluded patients with severe asthma requiring immediate airway intervention such as noninvasive bilevel airway support or intubation and those who were admitted to the hospital. The primary outcome measure was relapse, defined as "an unscheduled return visit to a health care provider for additional treatment for persistent or worsening asthma within 14 days."

Results

A total of 376 subjects were analyzable in this study: 173 dexamethasone subjects and 203 prednisone subjects completed the study and telephone follow-up. The dexamethasone group slightly surpassed the preset 8% confidence interval difference between groups for noninferiority in relapse rates within 14 days (12.1% versus 9.8%; difference 2.3%; 95% confidence interval -4.1% to 8.6%). There were similar rates of hospitalization for relapse visit (dexamethasone 3.4% versus prednisone 2.9%; difference 0.5%; 95% confidence interval -4.1% to 3.1%). Adverse effect rates were generally the same in the 2 groups, except for abdominal pain, which was greater in the dexamethasone group.

Study Limitations/Issues

The patients lost to follow-up, approx. 20%, potentially limited the study. Despite attempts to exclude patients with other chronic pulmonary diseases/disorders, the study potentially included subjects who had concurrent chronic obstructive pulmonary disease or other pulmonary problems. Also, this study took place at a single-site, urban, underserved county hospital, which could limit generalizability to other settings.

Discussion

A single dose of oral dexamethasone did not demonstrate noninferiority to 5-day course of oral prednisone.
