ONE MINUTE CONSULT

BRIEF ANSWERS TO SPECIFIC CLINICAL QUESTIONS

Q: Intravenous or oral steroids: Which is better for acute exacerbations of asthma or COPD?

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A: FOR EXACERBATIONS OF ASTHMA, oral steroids appear to be as effective as intravenous (IV) steroids. For exacerbations of chronic obstructive pulmonary disease (COPD), we have no evidence to suggest either an advantage or an equivalent effect of IV steroids compared with oral steroids. However, both routes of administration have been shown to be effective.

Therefore, although a controlled, direct comparison is needed to shed more light on this question, clinicians appear justified in giving oral corticosteroids rather than IV corticosteroids for patients with exacerbations of asthma or COPD.

ACUTE EXACERBATIONS ARE COMMON

How to manage acute exacerbations of COPD and asthma is an important issue for any clinician working in an emergency department, hospital, or outpatient clinic. About 500,000 hospital admissions for asthma and 200,000 hospital admissions for COPD are reported every year.[1]

STEROIDS ARE USEFUL

Although there has been some controversy, steroids are generally thought to be useful for treating exacerbations of asthma. A number of studies found that steroids improved pulmonary function, decreased the hospitalization rate, and decreased the rate of relapse in asthmatic patients.[2] The National Heart, Lung, and Blood Institute recommends steroids for patients with a moderate to severe exacerbation of asthma or those who have not responded promptly to beta-agonists.

There is now also evidence supporting the use of steroids for patients with an acute exacerbation of COPD.

IS IV BETTER THAN ORAL?

IV vs oral steroids in asthma exacerbation

Is there any advantage to IV steroids vs oral steroids in patients with acute exacerbation of asthma? The answer seems a clear "no." A study involving 77 patients treated with high-dose oral or IV methylprednisolone found no difference either in the rate of improvement in pulmonary function or in hospital length of stay.[3]

Another study compared IV hydrocortisone against oral prednisolone and again found no significant difference in pulmonary function.[4]

A 4-day study of patients randomized to receive either oral or IV methylprednisolone also found no difference in pulmonary function.[5]

Oral steroids seem as good as IV steroids

IV steroids in COPD exacerbation

Similar comparative studies are not available for patients with COPD. However, studies using IV steroids have shown improvement in pulmonary function, as have studies using oral steroids.

Studies of steroid treatment in patients with an acute exacerbation of COPD date back to 1980. One of the first large randomized studies on this subject found that pulmonary function began to improve within 12 hours of giving IV methylprednisolone.[6] Although one study found no advantage to giving steroids in the emergency department,[7] another found that pulmonary function improved over a 6-hour stay in the emergency room after patients received corticosteroids.[8]

The Veterans Administration Cooperative Study Group trial,[9] one of the largest studies of steroid treatment in hospitalized patients with acute exacerbations of COPD, compared steroid treatment vs placebo. Within 12 hours of presentation, patients received either methylprednisolone (125 mg IV every 6 hours for 3 days) or a placebo infusion. Then, patients receiving methylprednisolone were switched to oral prednisone in tapering doses for either 2 or 8 weeks; patients in the placebo group received placebo capsules.

Steroid treatment was associated with a lower rate of treatment failure, shorter hospital stay, and more rapid improvement in pulmonary function. The 8-week course did not have any advantage over the 2-week course. The major side effect was an increase in the incidence of hyperglycemia.

Oral steroids in COPD exacerbation

Others have evaluated the use of oral corticosteroids for patients with acute exacerbation of COPD.

In COPD, oral vs IV steroids have not been compared directly

A small study found that a tapering course of prednisone led to more rapid improvement in oxygenation and peak expiratory flow rate in outpatients.[10]

Seemungal et al[11] found that outpatients treated with oral steroids had more rapid improvement in pulmonary function and a greater interval between exacerbations than those treated without steroids.

Davis et al[12] found that a 14-day course of prednisone started in the hospital led to a shorter length of stay and more rapid improvement in pulmonary function.

RECOMMENDATION

The optimal dose of steroids for acute exacerbation of asthma or COPD remains controversial. IV methylprednisolone is typically given in doses ranging from 60 mg to 120 mg. There is no advantage to very high doses of IV steroids.[13] Oral prednisone is generally given in doses ranging from 40 mg to 80 mg. There is little evidence to suggest an advantage of one dose of prednisone over another.

Based on the information above, our practice is to use oral steroids in either case. We use IV steroids when the patient cannot take oral medications. Our usual adult dosage is prednisone 40 mg to 60 mg once a day for 7 to 10 days in asthma, and 14 days in COPD. We do not feel that a taper is needed for short courses of steroids.[14]

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