COMMENTARY

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Low-dose steroids for acute exacerbations of COPD in a non-ICU setting: Worth consideration

Despite guidelines recommending low-dose oral glucocorticoids over high-dose intravenous (IV) glucocorticoids for inpatient management of acute exacerbations of chronic obstructive pulmonary disease (COPD), we have observed that most patients still receive high-dose IV therapy before being transitioned to low-dose oral therapy at discharge. Clinical inertia undoubtedly plays a significant role in the slow adoption of new recommendations, but in this era of evidence-based practice, the unfortunate lack of data supporting low over high steroid doses for acute exacerbations of COPD also contributes to hesitancy of physicians.

A SIGNIFICANT AND GROWING BURDEN

COPD is one of the most common pulmonary conditions managed by hospitalists today, and by the year 2030, it is predicted to become the third leading cause of death worldwide.[1]

COPD is also a significant economic burden, costing $50 billion to manage in the United States, most of that from the cost of lengthy hospital stays.[2] COPD patients have 1 to 2 exacerbations per year.[3] Bacterial and viral infections are responsible for most exacerbations, and 15% to 20% are from air pollution and other environmental causes of airway inflammation.[3]

CHALLENGES TO CHANGING PRACTICE

Glucocorticoids are the gold standard for treatment of acute exacerbations of COPD. It is well-documented that compared with placebo, glucocorticoids reduce mortality risk, length of hospital stay, and exacerbation recurrence after 1 month.[4] And while high-dose IV steroid therapy has been the standard approach, oral administration has been found to be noninferior to IV administration with regard to treatment and length of hospital stay.[5]

While adverse effects are more common at higher doses, the optimal dose and duration of systemic glucocorticoid therapy for acute exacerbations of COPD are still largely at the discretion of the physician. The 2019 report of the Global Initiative for Chronic Obstructive Lung Disease (GOLD) recommends low doses (40 mg) for no more than 5 to 7 days for exacerbations, based on reports that showed no worse outcomes with low-dose oral than with high-dose IV therapy.[6,7] (In the 2010 study by Lindenauer et al,[7] 92% of nearly 80,000 patients received high-dose IV steroids, reflecting standard practice at that time.) However, the GOLD guidelines do not address mortality rates, length of stay, or readmission rates for either approach, as they are devised to direct treatment in patients with stable mild to advanced COPD, not exacerbations.

Despite the guidelines, most patients still receive high-dose IV steroids for acute exacerbations

THE EVIDENCE FOR LOW-DOSE STEROIDS

Mortality rates

Aksoy et al[8] established that, compared with placebo, low-dose steroids improved mortality rates in a subset of patients with acute exacerbations, specifically those with eosinophilic exacerbations. This study followed the 2013 Reduction in the Use of Corticosteroids in Exacerbated COPD (REDUCE) trial, which

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showed mortality rates were not lower with 14 days of low-dose prednisone treatment than with 5 days.[9]

Length of hospital stay

With regard to length of hospital stay, in 2011 Wang et al[10] found no statistically significant difference between high- and low-dose steroid treatment.However, the REDUCE trial found that low-dose steroids shortened the median length of stay by 1 day compared with placebo.[9]

Hospital readmission rates

The REDUCE trial found no statistically significant difference in readmission rates when comparing 5 days of low-dose treatment vs 14 days.[9] However, Aksoy et al[8] found that readmission rates were significantly lower with low-dose treatment than with placebo.No study has yet examined readmission rates with high-dose vs low-dose steroid treatment.

What does the evidence tell us?

Low-dose oral glucocorticoid treatment shows definitive benefits in terms of lower mortality rates, shorter hospital length of stay, and lower readmission rates vs placebo in the treatment of acute exacerbations of COPD. Furthermore, a 14-day course is no better than 5 days in terms of mortality rates. And low-dose glucocorticoid treatment shows reduced mortality rates in addition to similar hospital length of stay when compared to high-dose glucocorticoid treatment.

Together, these findings lend credibility to the current GOLD recommendations. However, we have observed that in sharp contrast to the leading clinical guidelines, most patients hospitalized for acute exacerbations of COPD are still treated initially with high-dose IV corticosteroids. Why?

Obstacles that perpetuate the use of high-dose over low-dose treatment include lack of knowledge of glucocorticoid pharmacokinetics among clinicians, use of outdated order sets, and the reflex notion that more of a drug is more efficacious in its desired effect. In addition, administrative obstacles include using high-dose IV steroids to justify an inpatient stay or continued hospitalization.

COUNTERING THE OBSTACLES: THE HOSPITALIST'S ROLE

To counter these obstacles, we propose standardization of inpatient treatment of acute exacerbations of COPD to include initial low-dose steroid treatment in accordance with the most recent GOLD guidelines.[6] This would benefit the patient by reducing undesirable effects of high-dose steroids, and at the same time reduce the economic burden of managing COPD exacerbations. Considering the large number of hospitalizations for COPD exacerbation each year, hospitalists can play a large role in this effort by routinely incorporating the low-dose steroid recommendation into their clinical practice.

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