Acute exacerbations of chronic obstructive pulmonary disease can result in hospital admission so it is essential that nurses know which treatments are most effective.

Systemic corticosteroids for acute COPD exacerbations

In this article...
- How systemic corticosteroids are beneficial in the treatment of COPD exacerbations
- Different effects of oral and parenteral administration route

This review aimed to assess the effects of corticosteroids administered orally or parenterally to treat acute exacerbations of chronic obstructive pulmonary disease, and to compare the efficacy of parenteral versus oral routes of administration.

Acute exacerbations of COPD are a major cause of hospital admission and mortality. They contribute to long-term decline in lung function, physical capacity and quality of life. The most common cause is infection; treatment includes antibiotics, bronchodilators and systemic corticosteroids.

Study characteristics
The review included 16 randomised controlled trials, which compared systemic corticosteroids versus placebo. Four studies met the inclusion criteria for the comparison of oral corticosteroids versus parenteral corticosteroid.

The mean age of study participants was 68 years. Participants with an acute exacerbation were included if they experienced an acute functional deterioration (any combination of increased breathlessness or sputum volume, sputum purulence, cough, wheeze or symptoms of overt respiratory tract infection) and treated in primary or hospital secondary care.

The review had two comparisons:
- Studies comparing corticosteroids, administered either parenterally or orally with placebo-control injections or tablets as appropriate;
- Studies comparing oral corticosteroid with parenteral corticosteroids.

The outcomes were divided into early (up to 72 hours) and late (after 72 hours) time points.

Primary outcomes were treatment failure, relapse and mortality. Secondary outcomes were adverse drug effects, arterial blood gas measurements, symptom scores, lung function, health status and quality of life. The most common cause is infection; treatment includes antibiotics, bronchodilators and systemic corticosteroids.

Summary of key evidence
Systemic corticosteroids reduced the risk of treatment failure by more than half when compared with placebo in seven studies (median treatment duration: 14 days). It would have been necessary to treat nine people with systemic corticosteroids to avoid one treatment failure during the treatment period.

In two large studies the hazard ratio for relapse of up to 30 days showed a significant reduction with systemic corticosteroid treatment. However, the reduced likelihood of relapse at 1-4 months post treatment was not statistically significant in five studies.

Mortality up to 30 days was not reduced by treatment with systemic corticosteroid compared with placebo in 11 studies. Mortality did not differ between subgroups of studies, whether inpatient, intensive care unit or outpatient based.

Lung function measured >3 days of treatment was increased with corticosteroid treatment in seven studies - a clinically meaningful improvement. There were no differences at later time points.

Breathlessness was assessed using the Borg dyspnoea scale or visual analogue scales. Corticosteroid treatment significantly decreased breathlessness when standardised in three studies.

In one single inpatient study, there was an increased likelihood of hyperglycaemia with intravenous corticosteroid compared with oral corticosteroid treatment.

Best practice recommendations
This review provides high-quality evidence to support treatment with systemic corticosteroids by the oral or parenteral route for COPD exacerbations. Treatment reduces the likelihood of treatment failure, shortens hospital stay and improves lung function more quickly. There is no evidence of the benefit for parenteral treatment compared with oral treatment. There is a short-term increase in adverse drug effects with corticosteroid treatment; this is greater with parenteral administration compared with oral treatment.

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Reference