Corticosteroids for Sore Throat

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NNT color recommendation	Green (benefit> harm)
Summary heading	Corticosteroids significantly reduce pain in patients with sore throat
Benefits in NNT	1 in 5 were helped (complete resolution of pain at 24 hours) 1 in 5 were helped (complete resolution of pain at 48 hours)
Benefits in percentages (absolute risk reduction)	21% absolute reduction in pain at 24 hours 24% absolute reduction in pain at 48 hours 6-hour mean improvement in onset of pain relief 12-hour mean improvement in complete pain relief
Harms in NNT (NNH)	No one was harmed
Harms in percentages	No one was harmed
Efficacy endpoints	Complete resolution of pain at 24 and 48 hours, mean time to onset of pain relief, and mean time to pain resolution
Harm endpoints	Hospitalization, peritonsillar or parapharyngeal abscess, pneumonia, severe tonsillitis, pneumonia death
Who was in the studies	1,319 adult and pediatric outpatients with presumed infectious sore throat from nine trials

NARRATIVE

In the United States, up to 2% of ambulatory visits are related to sore throats.[1] "Sore throat" is a broad term with a wide range of etiologies. Infections are the most common cause, with group A beta-hemolytic streptococcus (GABHS) accounting for 10% of cases in adults and up to 30% in pediatric patients.[2,3] A variety of interventions can be used to reduce pain, and while antibiotics are frequently used to treat infection, their overall analgesic effect is likely small and their overuse may lead to bacterial resistance and other adverse events.[4,5] Another option is corticosteroids, which are thought to reduce oropharyngeal inflammation. Corticosteroids may have analgesic/anti-inflammatory effects.[6] They have demonstrated efficacy in other inflammatory conditions such as viral croup and glandular fever.[7,8] The publication of a recent large, rigorous trial of corticosteroids for sore throat[9] prompted the updated meta-analysis discussed here.[10]

The systematic review summarized here included double-blind, placebo-controlled, randomized trials (RCTs) of corticosteroids versus placebo for patients aged 3 and older with any of the following: signs of acute tonsillitis, pharyngitis, or clinical syndrome of sore throat (defined as painful throat or odynophagia).[10] All corticosteroid routes and types were eligible. Hospitalized patients and those with documented glandular fever, sore throat following tonsillectomy or intubation, and peritonsillar abscess were excluded. Primary outcomes included pain resolution at 24 and 48 hours, mean time to onset of pain relief, and mean time to complete resolution of pain.

The authors of the meta-analysis identified nine RCTs with 1,319 subjects in aggregate. Study settings included the emergency department and general practices in five countries. In eight studies, patients received antibiotics, and in one study, clinicians offered a delayed antibiotic prescription or no antibiotics. Corticosteroids included betamethasone up to 8 mg, dexamethasone up to 10 mg, or prednisone 60 mg. Seven trials utilized a single dose of corticosteroids, one used prednisone for 1 or 2 days, and one used dexamethasone for 1 or 3 days. Routes included intramuscular, oral, or both.

When used with antibiotics, corticosteroids improved the likelihood of complete pain resolution at

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24 hours (absolute reduction 20.8%; number needed to treat [NNT] = 5; relative risk [RR] = 2.4, 95% confidence interval [CI] = 1.3 to 4.5) and at 48 hours (absolute reduction 24.4%; NNT = 5; RR = 1.5, 95% CI = 1.3 to 1.8). Corticosteroids reduced the mean time to onset of pain relief and mean time to complete resolution of pain by 6.0 hours (95% CI = 3 to 9 hours) and 11.6 hours (95% CI = 1 to 22 hours), respectively.

CAVEATS

While this meta-analysis found that corticosteroids improved resolution of pain, there are several limitations that should be considered. The first is that in the majority of studies patients also received antibiotics. While most patients with sore throat do not need or benefit from antibiotics, it is unclear whether their concomitant use may have influenced the outcomes (pain relief or adverse events). The included trials did not control for the possibility that corticosteroids and antibiotics have a synergistic effect.

Trials varied with regard to types and routes of corticosteroids as well as the specific outcome measures. Therefore, we are unable to determine the optimal route, formulation, or dosing regimen. In addition to clinical heterogeneity, there was statistical heterogeneity regarding complete resolution of pain at 24 hours, mean time to onset of pain relief, and mean time to complete resolution of pain. However, the authors performed a sensitivity analysis excluding each trial in turn and demonstrated no loss of significance for mean time to onset of pain relief. Two trials accounted for heterogeneity regarding mean time to complete resolution of pain, and removing these trials resulted in a mean time to complete pain resolution of 21 hours. Thus, this heterogeneity likely does not impact the clinical outcomes. The estimates of the mean times to onset of pain relief and complete resolution of pain were further limited by patient recall and recording bias. Only two studies included pediatric patients, preventing the authors from drawing conclusions about this population. Finally, the harm endpoints included in the analysis do not include the most common adverse events associated with corticosteroids. Only two studies (n = 690 patients) reported adverse events, with insufficient power to adequately assess this outcome.

Based on the evidence supporting the significant improvement in pain relief in patients with sore throat, we have assigned a color recommendation of green (benefit> harm) for corticosteroids. However, we recognize that adverse events were poorly reported. Further data are needed to better evaluate adverse events, corticosteroid efficacy in children, and use of corticosteroids without antibiotics.

Editor's Note: Brass Tacks are concise reviews of published evidence. This series is a result of collaboration between *Academic Emergency Medicine* and the evidence-based medicine website, www.TheNNT.com. For inquiries please contact the section editor, Shahriar Zehtabchi, MD (Shahriar.zehtabchi@downstate.edu).

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