

JAMA Clinical Evidence Synopsis

Systemic Corticosteroid Therapy for Acute Sinusitis

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CLINICAL QUESTION Are oral or parenteral corticosteroids associated with improved clinical outcomes in patients with acute sinusitis compared with placebo or nonsteroidal anti-inflammatory drugs (NSAIDs)?

BOTTOM LINE Oral corticosteroids combined with antibiotics may be associated with modest benefit for short-term relief of symptoms in adults with severe symptoms of acute sinusitis compared with antibiotics alone. Oral corticosteroids as monotherapy are not associated with improved clinical outcomes in adults with clinically diagnosed acute sinusitis.

Acute sinusitis is among the most common reasons for physician consultations and antibiotic prescriptions in the United States.¹ Because symptoms of acute sinusitis resolve spontaneously in most patients,² symptomatic treatment and watchful waiting is most appropriate in patients with mild disease. Antibiotics should only be prescribed to those with severe symptoms.^{3,4} Intranasal corticosteroids are recommended for patients with moderate symptoms as monotherapy and in addition to antibiotics when symptoms are severe.⁴ For patients with severe symptoms, systemic corticosteroid therapy may have advantages over topical treatment possibly due to higher corticosteroid levels and lower risk of poor delivery due to nasal secretions. This JAMA Clinical Evidence Synopsis summarizes the results of a Cochrane review,⁵ first published in 2011 and updated in 2014, comparing systemic corticosteroids with either placebo or nonsteroidal anti-inflammatory drugs (NSAIDs) for acute sinusitis.

Evidence Profile**No. of randomized clinical trials:** 5**Study years:** Conducted, 1988-2011; published, 1990-2012 (last search date: February 19, 2014)**No. of patients:** 1193 (data of 945 patients available for meta-analysis)**Men:** 37% **Women:** 63%**Race/ethnicity:** Unavailable**Age, mean (range):** 40 years (15-70)**Settings:** Otorhinolaryngology sites (3 studies) and primary care (2 studies)**Countries:** France (3 studies), South Africa (1 study), and the Netherlands (1 study)**Comparison:** Oral corticosteroids + antibiotics vs placebo + antibiotics in 3 studies (789 patients); oral corticosteroids + antibiotics vs NSAIDs + antibiotics in 1 study (219 patients); oral corticosteroids vs placebo in 1 study (185 patients)**Primary outcome:** Resolution or improvement of any sinusitis symptom at 2-week follow-up or less (short-term), more than 2-week follow-up (long-term)**Secondary outcomes:** Time to sinusitis symptom resolution; relapse or recurrence rates; adverse events**Summary of Findings**

When combining data from the 4 studies in which antibiotics were prescribed in addition to oral corticosteroids vs control treatment (ie, placebo or NSAIDs), oral corticosteroids were associated with a higher rate of achieving symptom resolution or symptom improvement compared with control treatment at 3 to 7 days' follow-up (relative risk [RR], 1.40 [95% CI, 1.08-1.81]; absolute rates of resolution or improvement of symptoms, 312 of 435 patients for oral corticosteroids and 235 of 434 patients for control treatment) and at day 4 to days 10 to 12 (RR, 1.32 [95% CI, 1.04-1.68]; absolute rates of resolution or improvement of symptoms, 368 of 470 patients for oral corticosteroids and 300 of 475 patients for control treatment) (Figure).

We found 1 study that assessed the association of oral corticosteroids without cotreatment with antibiotics. In this study, corticosteroid monotherapy was not associated with benefit compared with placebo at day 7 follow-up (RR, 1.12 [95% CI, 0.87-1.44]; absolute rates of improvement, 55 of 88 patients for oral corticosteroids and 48 of 86 patients for placebo). Only this study reported on time to resolution of sinusitis symptoms and showed that corticosteroid monotherapy was not associated with benefit compared with placebo, except for cough (2 days for oral corticosteroids vs 3 days for placebo, $P = .046$). No trial reported associations of corticosteroids with relapse rates. Adverse effects were mild (mainly nausea, vomiting, and gastric complaints) and did not differ between patients receiving oral corticosteroids or control treatment (absolute rates, 147 of 586 patients [25.1%] for oral corticosteroids vs 167 of 577 patients [28.9%] for control treatment; $P = .14$).

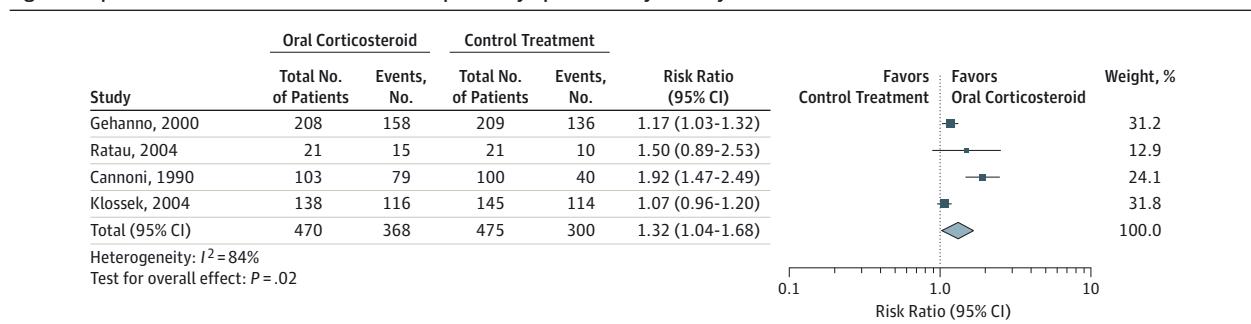
Discussion

Current data on oral corticosteroids plus antibiotics are limited but suggest that oral corticosteroids in combination with antibiotics may be associated with modest benefit for short-term symptom relief compared with antibiotics alone in adults with severe symptoms of acute sinusitis. Oral corticosteroid monotherapy is not associated with improved outcomes for acute sinusitis.

Limitations

Most patients included in this systematic review (966 of the 1193 patients) had a radiologically confirmed diagnosis of acute sinusitis and

Figure. Proportion of Patients With Resolution or Improved Symptoms at Day 4 to Days 10 to 12 for Oral Corticosteroids vs Control Treatment



Source: Data have been adapted with permission from Wiley.⁵ NSAID indicates nonsteroidal anti-inflammatory drugs. Control treatment was either placebo or

NSAIDs. Four of the 5 studies included antibiotics with oral corticosteroids and the control treatment. The size of the data markers indicates the weight of the study.

were recruited from an ear, nose, and throat specialty office. Generalizability to patients diagnosed and treated in primary care is unclear.

Meta-analyses of the results of the trials studying combinations of oral corticosteroids with antibiotics should be interpreted with caution as the methodological quality was judged moderate and risk of bias significant. Furthermore, the proportion of individuals who were lost to follow-up and in whom outcome data were missing at follow-up in the individual trial reports was substantial. We explored the potential influence of this missing data on our meta-analyses findings. In a worst-case scenario, in which all participants who were lost to follow-up in the treatment groups were counted as having experienced treatment failure and all participants lost to follow-up in control groups were counted as having experienced treatment success, oral corticosteroids would have no statistically significant benefit compared with control treatment.

Comparison of Findings With Current Practice Guidelines

Our findings are consistent with existing clinical practice guidelines.^{4,6} Although the European guideline states that oral corticosteroids as an adjunctive therapy to antibiotics may be effective for short-term symptom relief in patients experiencing severe symptoms of acute sinusitis, this regimen is not recommended as standard practice because of limited evidence.⁴ The 2007 US clinical practice guideline states that systemic corticosteroids have not been shown to be effective for acute sinusitis.⁶

Areas in Need of Future Study

A large primary care-based randomized trial is needed to determine whether systemic corticosteroids improve outcomes for acute sinusitis that is sufficiently severe to warrant antibiotic therapy.

ARTICLE INFORMATION

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Submissions: We encourage authors to submit papers for consideration as a JAMA Clinical Evidence Synopsis. Please contact Dr McDermott at mdm608@northwestern.edu.

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