

Evidenced Based Critically Appraised Topic
Inhaled Nasal Corticosteroids and Rhinosinusitis

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Clinical Scenario

A 68-year-old female presents to the clinic with a 14 day complaint of facial pain and pressure, postnasal drip, and low grade temperature that started with the onset of a upper respiratory infection. She is the primary caregiver of her debilitated husband. History is negative except for a history of migraine headaches. A macrolide antibiotic was prescribed for a diagnosis of acute rhinosinusitis.

Clinical Question

In adults patients (over the age of 18 years) diagnosed with acute rhinosinusitis, would addition of an inhaled nasal corticosteroid to standard treatment lead to faster resolution of symptoms without significant side effects?

Articles:

Hayward, G., Heneghan, C., Perera, R., & Thompson, M. (2012). Intranasal corticosteroids in management of acute sinusitis: A systematic review and meta-analysis. *Annals of Family Medicine*, 10(3), 241-249. doi:10.1370/afm.1338.

Zalmanovici Trestioreanu, A., & Yaphe, J. (2011). Intranasal steroids for acute sinusitis. *Cochrane Database of Systematic Reviews 2009, Reviewed 2011*(4. Art. No.: CD005149), Issue 4. Art. No.: CD005149. doi:10.1002/14651858.CD005149.pub3

Summary and Appraisal of Key Evidence**Study 1**

Hayward, et al. (2012) reviewed six randomized control trials (RTC's) investigating intranasal cortisone as an adjunct treatment of acute rhinosinusitis assessing the improvement or complete resolution of symptoms providing a Level I Grade A level of evidence. They independently appraised study quality and extracted data on participants, doses of inhaled corticosteroid, and outcomes of participants with documented rhinosinusitis. Primary outcomes included the proportion of participants with improvement or complete resolution of symptoms. Secondary outcomes included mean change in symptom scores over 0 to 21 days, adverse events, relapse rates, and days missed from school/work. The age range of participants varied from under 12 years of age to over 18 years.

The original study pool of 3,257 was narrowed to six studies that met the quality assessment and study criteria. Six randomized controlled trials of 2,495 participants diagnosed with acute rhinosinusitis were included in the review. In addition to intranasal corticosteroids, five studies prescribed antibiotics (amoxicillin, co-amoxiclav, or cefuroxime) to patients in both groups. Three different intranasal corticosteroids were used in the studies. Three studies reported resolution at 14-15 days and three studies reported at 21 days. Inhaled nasal corticosteroids resulted in a small increase in resolution of improvement in facial pain and congestion (risk difference = 0.08; 95% CI, 0.03-0.13). Outcomes showed a benefit at 21 days but not at 14 to 15 days. Higher doses of mometasone furoate showed a

significant dose-response relationship. Meta-analysis demonstrated no significant differences in the rate of overall adverse reactions between patients taking intranasal corticosteroids and placebo.

Study 2

Zalmanovici Trestioreanu and Yaphe, (2011) conducted an analysis of randomized controlled trials comparing inhaled nasal corticosteroid treatment, placebo, or no intervention in acute rhinosinusitis demonstrating a Level 1, Grade A level of evidence. They appraised data, study design, interventions, and outcomes of study participants. Adults and children were included in the studies with clinical confirmation of diagnosis by radiological evidence or by nasal endoscopy.

Four double blind trials with a study length of 15 or 21 days including 1,943 participants were analyzed. The primary outcome was the proportion of participants with either resolution or improvement of symptoms. Participants with inhaled nasal corticosteroid treatment (INCS) were more likely to experience resolution or improvement in symptoms than those receiving placebo (73% versus 66.4%; risk ratio (RR) 1.11; 95% confidence interval (CI) 1.04 to 1.18). Higher doses of INCS had a stronger effect on improvement of symptoms or complete relief. No significant adverse events were reported.

Results

The results of the studies indicated that the use of inhaled nasal corticosteroids in patients diagnosed with acute rhinosinusitis may be effective in reducing symptoms. Study 1 included participants that were on antibiotics that may have improved symptoms. Further studies with longer duration are needed. Both studies were limited by a short duration, small sample size, and the inclusion of participants of all ages.

Clinical Bottom Line

Evidence from these two studies suggest that inhaled nasal corticosteroids as an adjunctive therapy or independent treatment are slightly effective for relief of symptoms in acute rhinosinusitis, however further study is needed. Higher dose inhaled nasal corticosteroids showed a significant dose-response relationship. The length of time of resolution of symptoms can be as long as 14-21 days. Safety of inhaled nasal corticosteroids compares to placebo. The inclusion of all ages in these studies makes it difficult to extrapolate the results to a specific age group. Acute rhinosinusitis is a common reason for patients to seek primary care. In a national health survey conducted during 2008, nearly 1 in 7 (13.4%) of all noninstitutionalized adults aged over 18 years were diagnosed with rhinosinusitis within the previous 12 months (Leung & Katial, 2008). As antibiotic resistance continues to escalate, new safe and effective treatments are needed for this common problem.

Implications for Practice

I would recommend the use of inhaled nasal corticosteroids for treatment of acute rhinosinusitis, however I would guide patients to make an informed decision about the lag of 14-21 days for the small improvement in symptoms verses the cost of the medication. These studies did not analyze the presence of allergic rhinitis or other co-morbid conditions that could alter the benefit risk ratio of the use of inhaled nasal corticosteroids.

References

- Hayward, G., Heneghan, C., Perera, R., & Thompson, M. (2012). Intranasal corticosteroids in management of acute sinusitis: A systematic review and meta-analysis. *Annals of Family Medicine*, 10(3), 241-249. doi:10.1370/afm.1338
- Leung, R. S., Katial, R. (2008). The diagnosis and management of acute and chronic sinusitis. *Primary Care Clinical Office Practice*, (35),11–24
- Zalmanovici Trestioreanu, A., & Yaphe, J. (2011). Intranasal steroids for acute sinusitis. *Cochrane Database of Systematic Reviews*, Issue 4. Art. No.: CD005149. doi:10.1002/14651858.CD005149.pub3