Topical steroids in chronic rhinosinusitis without polyps: a systematic review and meta-analysis

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CRD summary
This review found insufficient evidence to demonstrate a clear overall benefit for topical steroid treatment in chronic rhinosinusitis without polyps. However, their use appeared safe with possibly some symptomatic benefit. The authors’ conclusions appeared to reflect the data presented, but due to clinical variability across the trials and risk of publication bias, the reliability of the conclusions is unclear.

Authors’ objectives
To evaluate whether topical steroids provide symptomatic relief in patients with chronic rhinosinusitis without polyps.

Searching
MEDLINE (1966 to April 2009), EMBASE (1980 to April 2009) and the Cochrane Central Register of Controlled Trials (CENTRAL, first quarter 2009) were searched without any language restrictions. Search terms were reported. Reference lists of identified articles and relevant textbook chapters were checked for additional studies. Unpublished trials were not included.

Study selection
Randomised controlled trials (RCTs) that compared topically administered corticosteroids (at any dosage) in patients with chronic rhinosinusitis without polyps, compared with placebo or alternative topically administered corticosteroids, were eligible for inclusion. Trials using co-interventions including oral steroids, antihistamines, decongestants, antibiotics and/or surgery were eligible.

The primary outcome of interest was overall improvement in symptoms and signs as defined by study authors. Secondary outcomes included combined or individual symptom scores, nasal resistance, radiological findings, endoscopic findings, and adverse effects.

The drugs evaluated (fluticasone, budesonide, beclomethasone, dexamethasone and tixocortol) and co-interventions (antibiotics, systemic steroids, surgery and other interventions) varied between the trials. The trial duration ranged from 1.6 to 52 weeks. Three trials included some patients with nasal polyps; two of these did not report separate data for those with and without polyps. Outcomes assessed and definition of response to treatment varied between trials.

Two reviewers independently selected the eligible studies.

Assessment of study quality
Two reviewers independently assessed the trial quality based on allocation concealment, blinding, dropout rate, intention-to-treat analysis, definition of patient population and inclusion/exclusion criteria.

Data extraction
Standardised mean differences (SMD) for continuous outcomes, relative risks (RR) for dichotomous outcomes and associated 95% confidence intervals (CIs) were extracted or calculated.

The authors did not state how many reviewers performed the data extraction

Methods of synthesis
Where possible, the results were combined in random effects meta-analyses with heterogeneity assessed using the Cochrane Q test. Differences between trials in quality, follow-up and definition of chronic rhinosinusitis were discussed in the text.
Results of the review
Nine RCTs (n=657 patients, range 15 to 167) were included in the review. Trial quality was described as suboptimal, with only one trial fulfilling all criteria except for relatively high drop-out rate (20%). Eight trials were described as double-blind, three trials had adequate allocation concealment and three trials analysed results on an intention-to-treat basis. The percentage loss to follow-up varied from 0% to 24% (eight trials).

There was a greater decrease in total symptom scores (SMD -0.63, 95% CI -1.09 to -0.16; three RCTs) in patients treated with topical steroids compared with placebo. Overall response to treatment did not differ significantly between groups (RR 0.75, 95% CI 0.5 to 1.1, five RCTs). There was substantial heterogeneity between the trials reporting overall response to treatment ($I^2$=66.2%). Peak nasal inspiratory flow (two trials) and mucosal thickening (two trials) measures were significantly improved in steroid-treated patients compared with placebo-treated patients.

The adverse events of incidence of infective complications (one RCT) and epistaxis (three RCTs) did not differ between the steroid-treated and placebo-treated patients.

Authors' conclusions
This review concluded that there was insufficient evidence to demonstrate a clear overall benefit for topical steroids in chronic rhinosinusitis without polyps, but their use appeared safe and may show some symptomatic benefit. A class effect among different topical steroids could not be assumed.

CRD commentary
This review addressed a clear research question. The inclusion criteria were well defined, although some included trials recruited patients outside the defined participant group (patients with nasal polyps). The authors searched several sources for relevant studies. However, as only published studies were eligible, this review may be vulnerable to publication bias. The risk of bias and errors during the process was minimised by independent and duplicate study selection and validity assessment.

Some of the trial details (e.g. patient population) were poorly reported. The trials were combined in random effects meta-analyses, allowing for statistical heterogeneity. However, given the differences between trial populations, interventions and outcome definitions, it was difficult to assess the appropriateness of combining the trials.

The authors' conclusions appear to reflected the data presented, but due to the risk of publication bias and clinical variability across the trials, the reliability of the conclusions is unclear.

Implications of the review for practice and research
**Practice:** The authors stated that topical steroids should remain a part of any comprehensive treatment programme for chronic rhinosinusitis.

**Research:** The authors stated that future trials with well-defined study populations, using validated outcome measures and appropriate treatment period and follow-up, are required.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.