Steroids for post-tonsillectomy pain reduction: meta-analysis of randomized controlled trials
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CRD summary
This review assessed the effects of corticosteroids on post-tonsillectomy pain in paediatric patients. The authors concluded that a single intra-operative dose of dexamethasone may reduce post-operative pain in the first 24 hours. The authors’ conclusions seem appropriately cautious given the differences between the studies, but the poor reporting of review methods makes it difficult to confirm the robustness of these conclusions.

Authors’ objectives
To evaluate the effects of corticosteroids on post-tonsillectomy pain in paediatric patients.

Searching
PubMed and the Cochrane Library were searched to July 2005 using the reported search terms. In addition, reference lists in textbooks, reviews and original trials were screened and experts were contacted for unpublished data. Foreign language papers were translated.

Study selection
Study designs of evaluations included in the review
Double-blind randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
Studies that compared a single, intra-operative intravenous dose of corticosteroids with placebo or no treatment were eligible for inclusion. The included studies used dexamethasone at doses ranging, where stated, from 0.4 to 1.0 mg/kg, giving a maximum total dose of 8 to 50 mg. The studies used different surgical techniques (cold, electrocautery or both) and different anaesthetic techniques (some studies controlled for the anaesthetic technique and others did not).

Participants included in the review
Studies of paediatric patients (aged 18 years or younger) undergoing tonsillectomy or adenotonsillectomy were eligible for inclusion. In all of the included studies, the participants underwent tonsillectomy and adenotonsillectomy.

Outcomes assessed in the review
Studies that assessed pain during the first 24 hours after surgery on a pain scale were eligible for inclusion. The included studies used different visual analogue scales (VAS) to assess pain.

How were decisions on the relevance of primary studies made?
The authors did not state how the studies were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Inclusion was limited to double-blind RCTs, but the authors did not state that they assessed the internal validity of these individual trials.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. Pain scales used in the individual studies were standardised to a 0 to 10 VAS. For each study, the mean VAS (and standard deviation) was reported for each treatment group together with the difference between the means with 95% confidence interval (CI). Authors of studies with missing data were contacted for further information. The methods used to calculate means and standard deviations from studies not presenting the relevant data were reported.
Methods of synthesis
How were the studies combined?
The pooled weighted mean difference in VAS between treatments was calculated, together with the 95% CI, using a random-effects model. Publication bias was assessed by calculating the number of studies required to make the pooled result statistically insignificant (fail-safe N).

How were differences between studies investigated?
The authors did not report that they assessed statistical heterogeneity but they did present a forest plot. A sensitivity analysis was performed after including two studies that did not present data in the required format but reported no difference between treatments, and after excluding one study that did not have a placebo control group.

Results of the review
Eight RCTs (n=626) were included.

The pooled analysis showed a statistically significant reduction in pain (measured on a 0 to 10 VAS) on the first post-operative day, with steroids compared with control; the difference was -0.97 (95% CI: -1.74, -0.19, p=0.01).

The number of studies required to make the difference in pain statistically insignificant was 4.

The results were similar after including two studies that reported no treatment differences but did not report data in the required format, and after excluding one study that did not use a placebo control.

Authors' conclusions
A single intra-operative dose of dexamethasone may reduce post-operative pain in the first 24 hours after tonsillectomy in paediatric patients.

CRD commentary
The review addressed a clear question that was defined in terms of the participants, intervention, outcomes and study design. The authors searched only two databases, but supplemented their search by contacting experts for unpublished data; this reduces the potential for publication bias, which was assessed. Foreign language reports were translated and this reduces the potential for language bias. Only double-blind RCTs were included, but no other aspect of validity was assessed; this made it difficult to fully assess the strength of the evidence. The methods used to select studies and extract the data were not described, so it is not known whether any efforts were made to reduce reviewer errors and bias.

The meta-analysis was performed without any assessment of statistical heterogeneity. The forest plot suggested that heterogeneity was present, but the direction of effect appeared consistent among studies. This heterogeneity means that a summary measure of treatment effect may not reflect the varying effects from individual studies. The authors’ conclusions seem appropriately cautious given the differences between the studies, but the lack of reporting of review methods makes it difficult to confirm the robustness of the conclusions.

Implications of the review for practice and research
Practice: The authors recommend that a single dose of intravenous dexamethasone be given during routine tonsillectomy or adenotonsillectomy in otherwise healthy children.

Research: The authors stated that further research is required to evaluate the potential benefits of dexamethasone in adults undergoing tonsillectomy. They also stated that the cost-effectiveness of dexamethasone has not been examined.

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Other publications of related interest

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Record Status
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.