Steroids for preventing recurrence of acute severe migraine headaches: a meta-analysis

CRD summary
The authors of this review stated that their results suggested that when steroids were added to standard abortive therapy for migraine headaches they reduced the occurrence of moderate and severe recurrent headaches within 24 to 72 hours and adverse effects were mild. The conclusions of this review appear to be reliable.

Authors' objectives
To assess the effectiveness and tolerability of steroids for acute migraine headache in adults and the prevention of recurrence of these headaches

Searching
The authors searched PubMed, EMBASE and The Cochrane Library up to December 2012 with no language or publication restrictions. Search terms were presented. Conference proceedings and reference lists of potentially relevant studies were searched.

Study selection
Eligible studies needed to be prospective randomised controlled trials (RCTs) of adult patients diagnosed with acute migraine. Studies needed to report the efficacy of steroids as adjuvant therapy for acute migraines compared with placebo. The primary outcome was a moderate or severe headache (defined as relapse) within 24 to 72 hours of treatment. Secondary outcomes were the proportion of patients with a migraine that was totally resolved (pain-free) and adverse events.

Trials were published between 1999 and 2011. All trials compared dexamethasone at doses from 10mg to 24mg and all trials except one gave dexamethasone intravenously. Most trials provided “standard abortive therapy” as concomitant therapy; the nature of this therapy was not always explained in the included studies. All trials had a placebo comparison group. Different headache severity scales were used to assess treatment outcome.

Two authors were involved in the selection of studies for the review.

Assessment of study quality
Study quality was assessed using the Jadad scale of randomisation methods, blinding and withdrawals to give a score up to a maximum of 5.

It was not clear how many reviewers were involved in the assessment of quality for the review.

Data extraction
Two authors extracted data using pre-tested forms. Disagreements were resolved through consensus. Study authors were contacted for additional data.

Methods of synthesis
Studies were combined using meta-analysis. \(X^2\) and \(I^2\) tests for heterogeneity were conducted. Where heterogeneity was low (\(I^2<50\%\)) a fixed-effect model of meta-analysis was used and otherwise random-effects models were used. Pooled risk ratios and 95% confidence intervals were calculated. The number needed to treat (NNT) to prevent one moderate or severe recurrent headache was calculated. Subgroup and sensitivity analyses were conducted. Publication bias was assessed through funnel plots.

Results of the review
Eight RCTs (903 patients) were included in the review. Seven trials achieved the maximum score of 5 on the Jadad scale and one scored 4 points. Follow-up was between 24 and 72 hours.

Pooled analysis showed when steroids were added to standard abortive therapy they reduced the rate of moderate or severe recurrence of acute severe migraine headaches.
severe headache recurrence after 24 to 72 hours compared to placebo (RR 0.71, 95% CI 0.59 to 0.86; eight trials; NNT=10). There was no evidence of publication bias. There was no significant benefit in the proportion of totally resolved migraines (RR 1.11, 95% CI 0.94 to 1.32; six trials).

Six trials reported specific adverse events. Patients treated with steroids were more likely to have dizziness (RR 2.78, 95% CI 1.02 to 7.61; four trials). No significant differences were found between steroids and placebo groups for restlessness, drowsiness, nausea or vomiting, tingling, numbness, swelling and any other adverse events. Results of subgroup and sensitivity analyses were presented.

Authors' conclusions
Results suggested that when steroids were added to standard abortive therapy for migraine headaches they reduced the occurrence of moderate and severe recurrent headaches within 24 to 72 hours. Adverse effects were mild.

CRD commentary
This review was based on defined inclusion criteria and underpinned by a search of several sources of information. Unpublished studies and those in languages other than English were eligible for the review; this reduced the possibility of missing data. Limited study characteristics were provided but study quality was assessed and studies appeared to be largely free of the main sources of bias. More than one reviewer was involved in the selection of studies for the review and the extraction of data, which minimised the possibility of bias. The synthesis used was appropriate.

The conclusions of this review appear to be reliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated a need for that future studies to compare different doses on prevention of moderate and severe migraine headache. They recommended further studies to assess the oral administration of steroids for migraine and studies to identify the characteristics of patients who were most likely to benefit from steroid treatment.

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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.