Hay fever and a single intramuscular injection of corticosteroid: a systematic review  
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CRD summary
This review investigated the efficacy and side-effects of a single intramuscular injection of systemic corticosteroid for the treatment of hay fever in adults. The authors concluded that systemic corticosteroid therapy is efficient and that there is no evidence of serious side-effects. The reliability of the conclusions are doubtful given the limitations in the search, quality assessment and reporting of the review process.

Authors' objectives
To assess the efficacy and side-effects of a single intramuscular (i.m.) injection of systemic corticosteroid (SCS) for the treatment of hay fever in adults.

Searching
PubMed, EMBASE and the Cochrane Library were searched in 2003 for trials published in English; the search terms were reported. Cross-referencing was used to identify further trials.

Study selection
Study designs of evaluations included in the review
Clinical trials were eligible for inclusion. The review included double- and single-blind trials, as well as open trials. Biochemical trials and reviews were excluded.

Specific interventions included in the review
Studies of a single or multiple dose of i.m. SCS were eligible for inclusion. Different generic formulae were used in the studies, including, betamethasone, methylprednisolone, triamcinolone and dexamethasone. Most of the studies used equipotent doses and a single injection of i.m. SCS.

Participants included in the review
Studies of adults suffering from hay fever were eligible for inclusion. Some studies included a minority of patients with co-existing or other allergic diseases (e.g. asthma and urticaria).

Outcomes assessed in the review
Inclusion criteria regarding outcomes relevant for the review were not specified. With the exception of one trial, the included trials measured the patients' subjective validation of the relief of hay fever symptoms. A range of global satisfaction scales were used. Some studies also reported clinical and physiological side-effects, such as a possible suppression of the hypothalamic-pituitary-adrenal axis caused by i.m. SCS.

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

Assessment of study quality
The trials were separated into three groups according to their methodology: double-blind randomised controlled trials (RCTs), single-blind RCTs and open trials. Other than that, the authors did not state that they assessed validity. The authors did not state how many reviewers categorised the trials.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.
Methods of synthesis
How were the studies combined?
The trials were combined in a narrative, grouped by method of blinding.

How were differences between studies investigated?
The authors discussed the trials according to the study design, comparator, and SCS formulation and dose. Differences between the trials were also evident from the table of included trials.

Results of the review
Eighteen trials (n=1,362) were included: 9 double-blind RCTs (n=640), 2 single-blind RCTs (n=101) and 7 open trials (n=621).

All 5 placebo-controlled double-blind trials showed a statistically significant clinical benefit with a single injection of SCS, lasting from within the first day to approximately 4 weeks.

A superior effect was found with i.m. SCS compared with nasal steroids in one of 2 trials comparing these treatments.

One trial found i.m. SCS to be of equal good benefit to oral steroids in relieving symptoms for more than 3 weeks.

Six of the 7 open trials showed benefits of i.m. SCS.

None of the trials reported statistically significant differences between the SCS formulations with respect to efficacy, onset and duration.

There was no statistically significant difference in side-effects reported in the double-blind placebo-controlled trials. Minor clinical side-effects were reported in the comparative studies, with similar effects observed across different SCS formulae.

The trials that reported physiological side-effects found only a few for i.m. SCS.

All trials were published pre-1988.

Authors' conclusions
Intramuscular SCS therapy is efficient and safe for the treatment of hay fever in adults. There was no evidence of serious side-effects or any influence on stress reaction.

CRD commentary
The authors investigated a clear question with explicit inclusion criteria relating to the intervention and participants. A few relevant databases were searched, although no attempt was made to identify unpublished literature and the possibility of publication bias was not assessed. Only trials published in English were included, which may lead to publication bias. There was no information on the number of reviewers that performed the study selection, quality assessment and data extraction processes, so it is not possible to comment on whether reviewer errors or bias might have influenced the findings.

The trials were combined in a narrative format, which was appropriate given the lack of definition of both the populations and outcome scales (as stated by the authors). Most of the trials enrolled only a few patients and all were published before 1989. Only some of the included studies reported on side-effects.

It is not possible to confirm the reliability of the authors' conclusions due to limitations in the search, quality assessment and reporting of the review process.
Implications of the review for practice and research
Practice: The authors did not state any implications for practice.
Research: The authors suggested that future trials compare i.m. SCS with first-line therapy.

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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.