Prophylactic corticosteroids do not prevent post-ERCP pancreatitis: a meta-analysis of randomized controlled trials

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CRD summary
This well-conducted review evaluated the effectiveness of corticosteroids for the prevention of post-endoscopic retrograde cholangiopancreatography (ERCP) pancreatitis. The authors' conclusion that prophylactic corticosteroids did not reduce the incidence of post-ERCP pancreatitis is likely to be reliable.

Authors' objectives
To evaluate the effectiveness of corticosteroids for the prevention of post-endoscopic retrograde cholangiopancreatography (ERCP) pancreatitis.

Searching
MEDLINE, EMBASE, Cochrane Controlled Trials Register, The Cochrane Library, Science Citation Index databases and the search engines Google Scholar and Google were searched to June 2007. Search terms were not reported. Reference lists were also searched.

Study selection
Randomised controlled trials (RCTs) of patients who received either diagnostic or therapeutic ERCP were eligible for inclusion if they compared corticosteroids (administered prophylactically) with placebo. The primary outcome measure of interest was post-ERCP pancreatitis. Most of the included studies were conducted in the USA or Europe (one was conducted in Thailand). The corticosteroids included were methylprednisolone, hydrocortisone and prednisone; these were administered intravenously and orally (dosages and regimens varied). Definition of post-ERCP pancreatitis varied in the included studies.

The authors stated neither how the papers were selected nor how many reviewers performed the selection.

Assessment of study quality
Methodological quality was assessed using the Jadad scale to produce a quality score out of 5 based on randomisation, blinding, withdrawals and dropouts. Trials that scored 2 or less were deemed low quality and those that scored 3 or more were considered high quality. Quality assessment was performed independently by two reviewers. If disagreements could not be resolved by consensus, all other team members were consulted.

Data extraction
Odds ratios (ORs) and corresponding 95% confidence intervals (CIs) were calculated for each study by two independent reviewers.

Methods of synthesis
Odds ratios and corresponding 95% CIs were pooled in a fixed-effect meta-analysis in the absence of statistical heterogeneity (otherwise a random-effects model was used). Statistical heterogeneity was assessed using $X^2$ and the $I^2$ statistic. Publication bias was assessed through examination of funnel plots. Sensitivity analyses were performed to assess the effects of statistical method (random-effects versus fixed-effect model), interim analysis, exclusion of Western countries and study quality (high versus low). Subgroup analysis were performed for severity of post-ERCP pancreatitis (based on criteria by Cotton et al), route of administration and trial design.

Results of the review
Six RCTs were included in the review (n=2,710): one scored 2 for quality, one scored 3 and four scored 4.

Corticosteroids were not associated with a reduction in post-ERCP pancreatitis (odds ratio 1.13, 95% CI: 0.88 to 1.46, p=0.34; n=2,448). No significant statistical heterogeneity was detected ($X^2$=8.56, $I^2$=41.6%). Sensitivity and subgroup
analyses showed similar results.

The funnel plot was asymmetric, which suggested possible publication bias.

**Authors’ conclusions**

Prophylactic corticosteroids did not reduce the incidence of post-ERCP pancreatitis.

**CRD commentary**

The review addressed a clear research question supported by inclusion criteria for participants, intervention, outcomes and study design. Several electronic sources were searched but the authors did not report any attempts to identify unpublished studies (and funnel plot asymmetry suggested the presence of publication bias). No information was provided regarding the languages included in the search so it is not known whether the review is prone to language bias. Validity assessment and data extraction were performed in duplicate, reducing the risk of error and bias, but similar steps were not reported for study selection. Study quality was assessed using an appropriate tool and taken into consideration by the authors. The method of pooling appeared to be appropriate, statistical heterogeneity was assessed and possible sources of clinical heterogeneity investigated. This review was generally well-conducted and the authors’ conclusions are likely to be reliable.

**Implications of the review for practice and research**

The authors did not state any implications for practice or further research.

**Funding**

Not stated.

**Bibliographic details**


**PubMedID**

18765955

**DOI**

10.1159/000151999

**Original Paper URL**

http://content.karger.com/produktedb/produkte.asp?typ=fulltext&amp;file=000151999

**Indexing Status**

Subject indexing assigned by NLM

**MeSH**

Cholangiopancreatography, Endoscopic Retrograde /adverse effects; Female; Glucocorticoids /therapeutic use; Humans; Male; Pancreatitis /etiologic /prevention & control; Randomized Controlled Trials as Topic

**AccessionNumber**

12009101142

**Date bibliographic record published**

31/03/2009

**Date abstract record published**

16/09/2009

**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.