Meta-analysis of somatostatin, octreotide and gabexate mesilate in the therapy of acute pancreatitis


Authors' objectives

To evaluate the efficacy of somatostatin (SS), octreotide (OCT) and gabexate mesilate (FOY) in the treatment of acute pancreatitis.

Searching

MEDLINE was searched from 1977 to June 1997 using the keywords 'acute pancreatitis', 'somatostatin', 'octreotide' and 'gabexate mesilate'. In addition, the reference lists of the retrieved articles were examined. Studies published in English, Italian, Spanish or German were included.

Study selection

Study designs of evaluations included in the review
Randomised and non-randomised controlled clinical trials were eligible for inclusion.

Specific interventions included in the review
The specific interventions were SS, OCT and FOY.

Participants included in the review
Patients with mild or severe acute pancreatitis were included. Severe pancreatitis was defined as being present if the mortality in the control group was greater than 5%.

Outcomes assessed in the review
The outcomes assessed were early (less than 21 days) and overall (within 90 days) mortality; the number of patients with complications; the complication rate; and the number of patients who needed surgery.

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

Assessment of study quality
The authors do not report a systematic method of assessing validity.

Data extraction
The studies were independently evaluated by two reviewers.

Methods of synthesis

How were the studies combined?
A meta-analysis was conducted using a fixed-effect model, or a random-effects model where there was significant heterogeneity. The pooled odds ratio (OR), along with 95% confidence intervals (CIs), was obtained using the Mantel-Haenszel method. Rosenthal's fail-safe N method (see Other Publications of Related Interest) was used to assess publication bias.

How were differences between studies investigated?
The chi-squared statistic was used to test heterogeneity across studies, using a p-value of less than 0.05 to indicate the presence of heterogeneity. The results were shown using Galbraith's radial plot.
Results of the review
Twenty-five trials in total: 12 trials (703 patients) on SS, 9 trials (948 patients) on OCT, and 8 trials (896 patients) on FOY.

No agent was proven to be of value in the treatment of mild acute pancreatitis. In severe acute pancreatitis, both SS and OCT were beneficial in improving the overall mortality: the ORs were 0.36 (95% CI: 0.20, 0.64) and 0.57 (95% CI: 0.35, 0.88), respectively. FOY had no effect on either early or overall mortality, but was effective in improving the complication rate (OR 0.70, 95% CI: 0.56, 0.88), the number of patients with complications (OR 0.61, 95% CI: 0.41, 0.91), and the number of cases submitted to surgery (OR 0.60, 95% CI: 0.39, 0.92). SS and OCT had no significant effect on the number of patients with complications.

Authors' conclusions
Antisecretory agents, such as SS and OCT, were able to reduce mortality without affecting complications, whereas antiproteases, such as FOY, had no effect on mortality but did reduce complications. A trial exploring the efficacy of combining antisecretory agents with antiproteases would be of great benefit in patients with severe acute pancreatitis.

CRD commentary
This is a well-presented meta-analysis. The literature search and inclusion criteria were clearly described, and details of the individual studies were presented. The validity of the included studies was not systematically assessed. The review included both randomised and non-randomised controlled trials. However, there was no considerable difference in the results between randomised controlled trials only and all relevant trials (both randomised and non-randomised). The main problem with the review was the potential publication bias: an additional 14 and 3 negative studies for SS and OCT, respectively, would be able to overturn the significant results for overall mortality. The authors' conclusions should therefore be interpreted with caution.

Implications of the review for practice and research
A trial exploring the efficacy of combining antisecretory agents with antiproteases would be of great benefit in patients with severe acute pancreatitis.

Bibliographic details

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Other publications of related interest

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Subject indexing assigned by NLM

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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.