Is early endoscopic retrograde cholangiopancreatography useful in the management of acute biliary pancreatitis? A meta-analysis of randomized controlled trials


CRD summary
The authors concluded that in patients with predicted severe pancreatitis, early endoscopic retrograde cholangiopancreatography (ERCP) reduced pancreatitis-related complications but had no effect on mortality rate. In patients with predicted mild pancreatitis, there was no advantage of early ERCP compared with conservative management. Given ambiguity regarding the timeliness of the literature search, the reliability of the authors’ conclusions is unclear.

Authors’ objectives
To compare early endoscopic retrograde cholangiopancreatography (ERCP) with conservative management for the treatment of acute biliary pancreatitis.

Searching
MEDLINE, EMBASE and the Cochrane Library were searched. The upper end of the search date was unclear; it was reported as 2001 in the methods section of the paper, but two studies published in 2002 and 2007 were included in the review. Search terms were reported. Reference lists of retrieved articles, review articles and guidelines were scanned.

Study selection
Eligible for inclusion in the review were published prospective randomised controlled trials (RCTs) that compared early endoscopic retrograde cholangiopancreatography (ERCP) with conservative management in patients with acute biliary pancreatitis. Eligible trials were required to have well defined outcomes for at least one of the following: local complications, systemic complications, or mortality. Morbidity and mortality rates were defined as the number of patients suffering at least one complication or death within 90 days of admission.

The two primary outcomes of interest were complication rate (including local and systemic complications) and mortality rate. Length of hospital stay was a secondary outcome of interest.

Most included trials used typical clinical/biochemical data and ultrasound/computed tomography scan findings to diagnose acute biliary pancreatitis; varied clinical scores (Glasgow Score, Ranson Score, APACHE II Score) were used to assess severity. Patients with non gallstone-related pancreatitis, or acute biliary complications, such as acute cholecystitis or cholangitis, or relevant comorbidities were excluded from all trials. Early ERCP was performed within 72 hours of admission in three trials and within 24 hours in two trials. Conservative management included "supportive management", fluid replacement or fluid replacement plus clinical care (i.e. antibiotics, octreotide, oxygen and/or total parenteral nutrition).

Four reviewers selected studies for inclusion in the review; any disagreements were resolved by consensus.

Assessment of study quality
Trial quality was assessed using the modified Jadad scale (randomisation, double blind, description of withdrawals and drop-outs), with a possible score ranging from 1 to 3.

Four reviewers performed study quality assessment; any disagreements were resolved by consensus.

Data extraction
Data were extracted in order to calculate rate differences (RD), number needed to treat (NNT) and their associated 95% confidence intervals (CIs). Authors were not contacted for additional data.

Data were extracted by four reviewers into a standardised form; any disagreements were resolved by consensus.
Methods of synthesis
Rate differences were combined in a random-effects (DerSimonian Laird) model. Heterogeneity was assessed using the Q statistic. Subgroup analyses were performed for both outcomes according to the severity of pancreatitis (mild or severe).

Publication bias was assessed using Rosenthal's method.

Results of the review
Five RCTs were included in the review (n=702 patients, sample size 45 to 238). Three trials were high quality and scored 3 on the modified Jadad scale. Two trials scored 2.

Complication rate: The overall complication rate was 31%. Early endoscopic retrograde cholangiopancreatography (ERCP) was associated with a statistically significant reduction in complication rate compared with conservative management (pooled RD -8.7%, 95% CI -15.8 to -1.5; NNT=12 patients; five RCTs). Subgroup analysis revealed that, whilst early ERCP was associated with a statistically significant reduction in complication rate compared with conservative management in patients with severe pancreatitis (RD -38.5%, 95% CI -53 to -23.9; NNT=3 patients, three RCTs), there was no statistically significant difference in patients with mild pancreatitis (RD 1.8%, 95% CI -5.6 to 9.3; three RCTs).

Mortality rate: The overall mortality rate was 6%. There was no statistically significant difference in the mortality rate of patients who had undergone early ERCP compared with those who had received conservative management. Subgroup analysis showed that there was no statistically significant difference in mortality rate of patients with severe pancreatitis and those with mild pancreatitis.

Hospital stay: In patients with predicted mild pancreatitis, there was no difference in length of hospital stay in patients who had undergone early ERCP compared with those who had received conservative management (unclear if this was based on one or two RCTs). Two trials showed that patients with predicted severe pancreatitis who underwent early ERCP (9.5 days, range 6 to 36; 15.4 ± 3 days; p< 0.03) had a statistically significant shorter stay in hospital compared with those who received conservative management (17.0 days, range 4 to 74; 63 ± 4.8 days; p<0.05).

There was no evidence of statistical heterogeneity for any of the analyses.

The number of null trials needed for a statistically non significant result was three.

Authors’ conclusions
In patients with predicted severe pancreatitis, early endoscopic retrograde cholangiopancreatography reduced pancreatitis-related complications, but had no effect on mortality rate. In patients with predicted mild pancreatitis there was no advantage of early endoscopic retrograde cholangiopancreatography compared with conservative management.

CRD commentary
The review addressed a clear research question and was supported by adequate inclusion criteria. Appropriate sources were searched. However, the upper end of the search date was unclear, with the paper stating 2001, but studies dated 2002 and 2007 included in the review. Given this ambiguity, it was unclear if the search was sufficiently up-to-date. The authors conducted an assessment of publication bias and found no evidence. Review processes were performed with sufficient attempts to minimise reviewer error and bias.

Trial quality was assessed using an appropriate tool. Adequate trial details were provided. Appropriate synthesis methods were used.

The authors’ conclusions reflected the evidence presented, but given ambiguity regarding the timeliness of the literature search, the reliability of the authors’ conclusions is unclear.
Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that there is a need for more accurate tests for predicking severity in acute pancreatitis, and that endoscopic ultrasound and magnetic resonance cholangiopancreatography should be considered to better select patients who can benefit from therapeutic ERCP.

Funding
Not stated.

Bibliographic details

PubMedID
18243826

DOI
10.1016/j.dld.2007.12.001

Original Paper URL
http://dx.doi.org/10.1016/j.dld.2007.12.001

Indexing Status
Subject indexing assigned by NLM

MeSH
Cholangiopancreatography, Endoscopic Retrograde /methods; Cholangitis /complications; Humans; Pancreatitis, Acute Necrotizing /diagnosis /mortality /surgery; Randomized Controlled Trials as Topic; Survival Rate /trends; Treatment Outcome

AccessionNumber
12008104505

Date bibliographic record published
31/03/2009

Date abstract record published
02/02/2011

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.