Efficacy of endoscopic ultrasound-guided celiac plexus block and celiac plexus neurolysis for managing abdominal pain associated with chronic pancreatitis and pancreatic cancer

CRD summary
The authors concluded that endoscopic ultrasound-guided coeliac plexus block and coeliac plexus neurolysis had some efficacy in pain management for patients with chronic pancreatitis and pancreatic cancer. This conclusion reflects the evidence presented, but it's reliability is unclear because of limited information from the included studies, and poor reporting of the review may have hidden some methodological flaws.

Authors' objectives
To evaluate the efficacy of endoscopic ultrasound-guided coeliac plexus block and coeliac plexus neurolysis to alleviate chronic abdominal pain in patients with chronic pancreatitis and pancreatic cancer.

Searching
PubMed and EMBASE were searched for English-language articles from 1966 to 2007. Search terms were reported. Reference lists were searched manually.

Study selection
Eligible studies were of patients aged over 18 years with unremitting chronic abdominal pain arising from chronic pancreatitis or unresectable pancreatic cancer and who needed narcotic analgesics for pain control. Included studies had to enrol at least 10 patients who had received endoscopic ultrasound-guided coeliac plexus block or coeliac plexus neurolysis. The outcome of interest was pain relief.

Mean age of patients (where specified) was 17 to 86 years. Endoscopic ultrasound-guided coeliac plexus block methods and materials were similar across the included studies and used bupivacaine followed by triamcinolone or its analogue Depmedrol. Endoscopic ultrasound-guided coeliac plexus neurolysis methods included pre-hydration with normal saline and, in most cases, moderate sedation with midazolam and meperidine followed by various volumes of 0.25% bupivacaine and 95% absolute alcohol. Pain was measured by visual analogue scale, Likert scale or other measures of response. Adverse events were reported. Just under half of the included studies were abstracts.

Two independent reviewers selected the studies based on title and abstract; the authors did not state how many reviewed the full papers.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The observed proportion of patients with pain relief was extracted for both interventions to enable calculation of percentage estimates of pain relief. Estimates were presented alongside the right open one-sided 95% confidence interval (CI). As there was no defined control group, the proportion of patients without pain relief was assumed as an arbitrary control group and assigned a value of 0.5.

The authors did not state how many reviewers carried out data extraction.

Methods of synthesis
Estimates and 95% CIs were pooled in a meta-analysis using a Bayesian Hierarchical model and a Markov Chain Monte Carlo algorithm. Statistical heterogeneity was assessed with the X² test. Publication bias was assessed with a funnel plot.

Results of the review
Six studies (n=221) were included in the analysis of endoscopic ultrasound-guided coeliac plexus block for chronic pancreatitis. There were four prospective studies (three were randomised, one of these was blinded) and two retrospective studies. Average follow-up ranged from four to eight weeks (stated in three studies). Three studies (n=119) were included in the analysis of endoscopic ultrasound-guided coeliac plexus neurolysis for pancreatic cancer pain. There were two prospective studies and one retrospective study. Follow-up periods appeared to range from two weeks to 52 weeks (there was some discrepancy in the reporting).

The pooled estimated proportion of patients with pain relief for chronic pancreatitis from endoscopic ultrasound-guided coeliac plexus block was 51.46% (six studies). The 95% CI suggested that the true proportion who experienced pain relief was over 32.72%. The authors suggested that the procedure had some efficacy in these patients.

The pooled estimated proportion of patients with pancreatic cancer pain relief from endoscopic ultrasound-guided coeliac plexus neurolysis was 72.54% (three studies). The 95% CI suggested that the true proportion of patients who benefited from the procedure was over 50.62%. The authors suggested that this represented good efficacy.

The most frequently reported adverse effects for endoscopic ultrasound-guided coeliac plexus block were transient diarrhoea, transient orthostatic hypotension, transient increases in pain and abscess formation. For endoscopic ultrasound-guided coeliac plexus neurolysis, the most common adverse effect was transient hypotension; there were no major neurologic complications.

There was no evidence of statistical heterogeneity. Publication bias was not indicated.

**Authors' conclusions**

Endoscopic ultrasound-guided coeliac plexus block and coeliac plexus neurolysis had some efficacy in pain management for patients with chronic pancreatitis and pancreatic cancer.

**CRD commentary**

The review question was clear and supported by detailed inclusion criteria for all aspects except study design. The search strategy was limited to two electronic databases. Language bias could not be ruled out. There was no apparent search for unpublished material; publication bias was assessed as not present, but the authors had some reservations about this interpretation. The review process was poorly reported, with no indication that attempts were made to minimise error and bias. There was no reported validity assessment, which made it difficult to judge the reliability of the included studies. Although there was no statistical heterogeneity, the authors acknowledged that the small number of included studies may have precluded an accurate evaluation. Just under half of the included studies were abstracts of papers, which meant that fuller information was unavailable to the review.

The conclusion reflects the evidence presented, but it's reliability is unclear because of limited information from a small number of included studies, and poor reporting of the review may have hidden some methodological flaws.

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

**Practice:** The authors stated that endoscopic ultrasound-guided coeliac plexus neurolysis was a reasonable option for patients with tolerance to narcotic analgesics. Endoscopic ultrasound-guided coeliac plexus block for chronic pancreatitis should be used in acute flares of the condition as a measure of temporary pain relief.

**Research:** The authors stated that randomised controlled trials were needed to focus additionally on quality of life and to enable appropriate patient selection, timing and technique refinement in endoscopic ultrasound-guided coeliac plexus block and coeliac plexus neurolysis. Research into the efficacy of alcohol use in chronic pancreatitis was warranted.

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