Spinal cord stimulation for chronic low back pain: a systematic literature synthesis

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Authors' objectives
To analyse the long-term benefits and risks of spinal cord stimulation (SCS) for people with chronic back or leg pain, who have already had one or more operations for lower-back and/or leg pain.

Searching
MEDLINE was searched from 1966 to 1994 for articles included under (1) epidural stimulation, dorsal column stimulation and SCS, and (2) chronic pain, intractable pain, lower-back pain or failed back surgery. Other studies were identified from bibliographies of articles and book chapters, personal files, and literature supplied by manufacturers and physicians.

Study selection
Study designs of evaluations included in the review
All 39 studies were case series.

Specific interventions included in the review
SCS using electrodes either implanted in the epidural space via lamininectionomy or by percutaneous insertion.

Participants included in the review
People with chronic back or leg pain who have already had one or more operations for lower-back and/or leg pain.

Outcomes assessed in the review
Return to work, pain, medication use, subsequent operations, functional disability and stimulator use after permanent implantation of spinal cord stimulators.

How were decisions on the relevance of primary studies made?
Two investigators independently reviewed each article to determine whether it met the inclusion criteria, and resolved any disagreements by consensus.

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

Data extraction
Two investigators independently extracted the data using a form developed for this process. Any discrepancies were resolved by discussion

Methods of synthesis
How were the studies combined?
A narrative synthesis is presented.

How were differences between studies investigated?
Study differences were discussed as part of the narrative synthesis.

Results of the review
Thirty nine case series were included. There were no randomised controlled trials. No details are given about the total
number of patients included.

At one year follow-up, the mean percentage of patients receiving greater than 50% pain relief was 59% (data from 29 studies, range: 15-100%). On average, 29% of patients (data from 6 studies, range: 15-50%) were working and 23% were taking opiates (data from 9 studies, range: 0-57%). A mean of 58% reported improved ability to perform activities (data from 5 studies, range: 17-100%). A mean of 42% of patients had 'any complications' (data from 13 studies, range: 20-75%).

Authors' conclusions
It seems that approximately 50 to 60% of patients with failed back surgery syndrome report at least 50% pain relief with SCS at long-term follow-up visits. However, there is insufficient evidence at present to draw conclusions about the efficacy of SCS relative to no treatment or other treatments for this patient population, or about the effects of SCS on patient work status, functional disability and health care and medication use. There is clear need of prospective randomised trials to answer these questions.

CRD commentary
The authors acknowledge the fact that the evidence base for this review is weak because it is based on case series data. They also discuss the fact that the studies are highly heterogeneous. In addition, the inclusion criteria limited studies to those in the English and French languages. There are no details of an assessment of the quality of the included papers. No individual study details are given, nor is it possible to identify the individual studies. The outcome categories are not clear: 13 studies reported 'any complication' while 20 and 17 studies reported infection and biological complications other than infection, respectively.

Implications of the review for practice and research
The authors suggest the following for future studies: randomised controlled and comparison trials; follow-up assessment of all patients entered into the study at uniform times after implantation; follow-up assessment by an independent observer; description of relevant patient clinical and demographic characteristics; use of widely-used valid and reliable measures; and assessment of multiple outcome dimensions, including lower-back pain, leg pain, physical functioning, medication use, work status, health care use and quality of life.

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AccessionNumber
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.