Emergency treatment of malignant extradural spinal cord compression: an evidence-based
guideline

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Authors' objectives
To assess the effectiveness of three non-histologically specific treatments for malignant extradural spinal cord compression (MSCC). The three treatments evaluated were surgery, radiotherapy, and steroids.

Searching
MEDLINE was searched from 1966 through January 1997, and Cancerlit from 1986 through January 1997, for papers published in the English language. Details of the search strategy were provided.

Four journals, which had been identified as being the source for more than two citations, were handsearched for the years 1996 and 1997.

Study selection
Study designs of evaluations included in the review
Any study design was included in the review. These included randomised controlled trials (RCTs), cohorts (where the inception cohort was formed at time of initial presentation), and case-control studies performed on a demonstrably similar cohort of patients.

Only trials in which the results were stratified by pre-treatment motor function (minimum strata: ambulatory with or without paresis; nonambulatory and paretic; paraplegic) were included in the primary outcome analysis (post-treatment ambulatory rate).

Specific interventions included in the review
The specific interventions were steroids, surgery and radiotherapy.

Steroidal treatment, with or without adjunct radiotherapy, comprised dexamethasone (dose range: moderate, i.e. 16 mg/day, to high, i.e. 96 mg/day) or methylprednisolone.

Surgical treatment, with or without adjunct radiotherapy, comprised the following: laminectomy; vertebral body resection (vertebral corpectomy); surgical stabilisation (instrumentation, cement, or bone graft); or surgical salvage, if symptoms of spinal cord compression progress on radiotherapy.

Radiotherapy treatment consisted of a dose ranging from 8 Gy in a single fraction, to 40 Gy in 20 fractions over 4 weeks.

Participants included in the review
Patients suffering from symptomatic malignant extradural spinal cord compression, with or without bony compression or spinal instability. The participants included ambulatory, paretic and paraplegic patients.

Outcomes assessed in the review
The primary outcome was retaining or regaining ambulatory status for each of the pre-treatment cohorts (ambulatory, paretic, paraplegic). The secondary outcomes were the 30-day peri-operative mortality (not necessarily surgery-specific); the 30-day post-operative complication rate; and pain (complete and partial response).

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 criteria developed by Guyatt et al. (see Other Publications of Related Interest nos.1-2) were used for rating the RCTs. The case-control studies were evaluated on the basis of the similarity of cohorts of patients, in terms of pre-treatment motor function, institution, and outcomes. The cohort studies were evaluated on the basis of the description and comprehensiveness of the cohorts, the similarity of the treatments, and the similarity of the methods used to measure the outcomes. The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the authors performed the data extraction.

Methods of synthesis
How were the studies combined?
The studies were synthesised qualitatively. Each study was graded according to the 1997 classification criteria of the Canadian Task Force on the Periodic Health Examination (see Other Publications of Related Interest no.3), which assigns a level of evidence based on the quality of the study and the type of study design used. Each manoeuvre was assigned a recommendation graded from A (strongly supported) to E (strongly refuted), based on the level of evidence that supports or refutes the manoeuvre.

How were differences between studies investigated?
No formal statistical test for heterogeneity was performed.

Results of the review
Thirty-one studies were included. There were 4 studies of steroidal treatment, 9 studies of surgery, and 24 studies of radiotherapy. The type of study design and the number of participants included for each study were not specified. Twenty-four studies were included in the analysis of the primary outcomes.

There was good evidence (grade A) to support the use of high-dose dexamethasone (96 mg/day) for the treatment of MSCC, but inconclusive evidence for the use of moderate-dose steroids (16 mg/day) in conjunction with radiotherapy. There was fair evidence (grade B) for not using steroids in patients who are nonparetic and ambulatory pre-treatment, and for giving radiation to patients with subclinical cord compression. For all the remaining treatment manoeuvres there was weak or inconclusive evidence to support their use.

Authors' conclusions
In general, there were very few papers of high methodological quality found in the literature. More studies are needed to satisfy the validity of many of the clinical decisions that are made today with regard to the treatment of MSCC.

CRD commentary
This was a relatively thorough review, although the literature search was somewhat limited in that it only included English language articles and it did not attempt to find unpublished data. There was clear information on the validity assessment tool used. However, no inclusion criteria were stated, and very little information was presented on the individual studies included in the review. In addition, the authors did not present an overview of the results of the included studies, but alternatively gave the number and grade of studies that supported each treatment manoeuvre. The main results presented here should be interpreted with caution as it was unclear from which study designs the results were taken.

Implications of the review for practice and research
The authors recommend that radiotherapy alone be the first-line treatment for ambulatory patients, except where there
is spinal instability, bony compression or paraplegia on presentation, in which case surgery should be performed. Either modality can be used for paraparetic patients who are non-ambulatory. As the authors noted, future research directives on the treatment of MSCC need to focus on the utility of moderate-dose steroids. They should also investigate more rigorously whether surgery provides a better ambulatory outcome than radiation for patients who present with MSCC and paresis or paraplegia.

With the difference in outcomes between patients who present with paraplegia and those who are still ambulatory, research should also focus on diagnosing patients who are still ambulatory, with only (minimal) radiographic compression. The authors suggest aggressive screening and/or patient education.

Bibliographic details

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Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

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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.