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Patient positioning and braces for pain relief and spinal stability in metastatic cord compression in adults (Protocol)

Cox MK, Grant R, Kennedy C, Kilbride L

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[Intervention Protocol]

Patient positioning and braces for pain relief and spinal stability in metastatic cord compression in adults

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ABSTRACT

This is the protocol for a review and there is no abstract. The objectives are as follows:

To investigate the correct positions for patients with MSCC and examine the effects of spinal bracing to relieve pain or vertebral collapse under physiological load, or both, in patients with MSCC.

BACKGROUND

Controversy surrounds the care of patients with metastatic spinal cord compression (MSCC). Approximately ten people per 100,000 a year suffer from this condition and their prognosis is known to be very poor (Posner 1995; Levack 2002). Presently, care of MSCC patients is based on individual clinician preference rather than evidence based guidelines. The lack of such guidelines is causing delays and discrepancies in patient treatment (Levack 2002; McClinton 2006). In a recent audit conducted by McClinton and Hutchison it was highlighted that there was a lack of guidance on how to correctly position patients or whether or not to use braces, which was due to a lack of evidence to support best practice (McClinton 2006).

A number of nursing and patient care guidelines recommend bracing in patients with MSCC; however, there is little clinical evidence to substantiate these guidelines. Both nursing and surgical guidelines recommend bracing for patients with cervical lesions (Mercadante 1997; Schiff 2003; Yarbro 2005). Despite these recommendations, there is currently no evidence base for the use or functionality of bracing. For example, Heary and Bono; Held and Peahota; Maher de Leon *et al.* and Pease *et al.,* all advise that when there is a suspicion of cervical lesions, patients should be fitted with a cervical collar to help stabilise the spine and reduce neck movement. However, none of these authors have cited any original research or studies to support this statement (Held 1993; Maher de Leon 1998; Heary 2001; Pease 2004). In fact, Heary and Bono point out that there is a lack of evidence for the long-term benefit of bracing in the literature, and that "the (cervical) collar's effectiveness in preventing an impending pathological fracture is unknown" (Heary 2001). Additionally, there is evidence of (re)dislocation in patients wearing a cervical collar (White 1978; White 1990). Other guidelines have also recommended using a spinal orthosis to increase spinal stability and to relieve pain, for example, an extension brace for the thoracolumbar spine (White 1978; White 1990; Heary 2001).

Patients with an unstable spine or with stability status unknown are usually nursed in a supine position and recommended bed rest (Pease 2004; McClinton 2006). However, the supine position can increase pressure/pain for MSCC patients and there are several anecdotes of patients sleeping in an upright position to relieve pain (Gilbert 1978; Obbens 1987; Bilsky 1999; Bilsky 2006). Additionally, some patients have experienced a depressed mood when laying supine for extended periods of time (Pease 2004). Further complications such as DVT, chest infection pressure sores and urinary tract infections can pose additional problems (Pease 2004). As a result, one guideline suggests that patients with a short life expectancy should be in a sitting-up position to avoid the aforementioned complications related to bed rest (Jacobs 1999). An additional complicating factor to positioning is the increased pain experienced by patients with spinal instability whilst sitting or standing due to an increased axial load on the spine (Bilsky 1999). Despite these recommendations, no clear guidelines have been established about how to correctly position patients in order to maintain spinal stability and relieve pain. To ensure patients are cared for effectively and to ensure health care professionals are advised appropriately how to provide this care it is imperative that a review of patient postioning, bracing and spinal stability is undertaken.

OBJECTIVES

To investigate the correct positions for patients with MSCC and examine the effects of spinal bracing to relieve pain or vertebral collapse under physiological load, or both, in patients with MSCC.

METHODS

Criteria for considering studies for this review

Types of studies

Studies to be included are randomised controlled trials (RCTs).

Types of participants

Participants to be included will be adults of either gender. Participants must be diagnosed with MSCC. Any participants with a previous stabilising procedure such as internal brace surgery will be excluded.

Types of interventions

Interventions will include participants who receive bracing therapy or guidance for positioning, or both, e.g. lying flat, sitting up, standing or mobilised, or both, versus patients who receive no therapy or no positioning guidance, or neither. Where data exists comparisons of interventions on outcome measures will be made.

Types of outcome measures

- The primary outcomes will be the effect of bracing on vertebral collapse under physiological load, pain relief quality of life and patient satisfaction. Vertebral collapse will be measured by vertebral column collapse rate, number of vertebrae involved in the problem area and bony impingement. Validated scales to measure pain relief should be used in the studies (e.g. visual analogue scales (VAS), categorical scales and pain intensity scales), quality of life (e.g. EORTC) and patient satisfaction should also be used and it should be taken into account that patients will already be on analgesics.
- Adverse events will include increased pain and increased spinal instability.

Search methods for identification of studies

Electronic searches

The search strategy detailed in Appendix 1 will be applied to the following databases:

- MEDLINE (1950 to present);
- EMBASE (1980 to present);
- CANCERLIT (1961 to present);
- SIGN (Scottish Intercollegiate Guidelines Network);
- NICE (National Institute for Clinical Excellence);
- AMED (Allied and Complementary Medicine) (1985 to present);
- CINAHL (Cumulative Index to Nursing and Allied Health Literature) (1982 to present);
- CENTRAL (in *The Cochrane Library)* current issue.

The search strategy detailed in Appendix 1 will be applied to the CENTRAL database and the search strategy in Appendix 2 will be applied to the MEDLINE and OVID databases.

Searching other resources

Additional references will be located through searching the bibliographies of identified studies. The physician data query will be checked for any current clinical trials related to the research questions.

Data collection and analysis

Assessment of methodological quality

Two review authors will independently assess each eligible study for inclusion in the review and for its quality. Disagreements over inclusion will be resolved by discussion or with a third review author, or both. Assessment of methodological quality will be assessed and graded, using the 'Risk of bias' table available within RevMan 5 each study will be graded eligible, ineligible or unclear. If necessary additional information will be sought from the principal investigator of a study for clarification of published data or missing data.

Data extraction

Two tables will be produced, one outlining 'Characteristics of included studies' and the other detailing the 'Characteristics of excluded studies'. Details for the reason of exclusion will be given. We will extract key information on a standardised data extraction form. This will include where available:

- general information e.g. author, title, contact address, year of study, country of study, language of publication, year of publication;
- study characteristics e.g. design (randomised or non randomised), randomisation method, manner of recruitment, sampling, duration of intervention period, length of follow-up, reason and number of drop-outs, adverse events;
- participants e.g. source of primary tumours, level of involvement, inclusion;
- intervention e.g. detailed description of controlled intervention, mode, intensity, duration;
- outcomes e.g. specific outcome reported, assessment instrument used, scoring range;
- economic data e.g. cost;
- service provision e.g. resource allocation.

It is envisaged that the main outcome measures will be in the form of continuous data, reporting a comparison between treatment and control group levels of pain, functional disability or quality of life scores, or both. It is likely that validated scales will be used to assess the size of this effect e.g. If homogeneity across the studies can be established we will pool the studies for meta-analysis using the fixed-effect model. If I^2 is greater than 50% (heterogeneity) random-effects will be used.
If it is not possible to pool data we will provide a narrative account.

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* *Indicates the major publication for the study*

APPENDICES

Appendix 1. CENTRAL search strategy

Search details
#1 SPINAL CORD COMPRESSION (Single term MeSH)
#2 ((epidural or extradural or extra-dural or "spinal cord" or "dural sac" or "cauda equina" or "spinal column") AND metast* AND compress*)
#3 SPINAL NEOPLASMS (Single term MeSH)
#4 (metast* AND (cord NEAR/6 compress*))
#5 #1 AND metast*
#6 (#3 AND (metast* or compress*))
#7#2 or #4 or #5 or #6

Appendix 2. MEDLINE search strategy

Search details
1. SPINAL CORD COMPRESSION/ 2. ((epidural or extradural or extra-dural or “spinal cord” or “dural sac” or “cauda equina” or “spinal column”) AND metast$ AND compress$) 3. SPINAL NEOPLASMS/ 4. (metast$ AND (cord adj6 compress$)) 5. 1 AND metast$ 6. (3 AND (metast$ or compress$)) 7. 2 or 4 or 5 or 6

HISTORY

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CONTRIBUTIONS OF AUTHORS

Draft the protocol: MC, LK, CK

Develop a search strategy: MC, LK, CK

Search for trials: MC, LK, CK, RG

Obtain copies of studies: MC

Select which studies to include: MC, LK, CK, RG

Extract data from studies: MC, LK, CK, RG

Enter data into RevMan: MC

Carry out the analysis: MC

Interpret the analysis: MC, LK, CK, RG

Draft the final review: MC, LK, CK, RG

Update the review: MC, LK, CK, RG

DECLARATIONS OF INTEREST

None known

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