
High-velocity low-amplitude spinal manipulation for symptomatic lumbar disk disease: a systematic review of the literature

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CRD summary

This authors of this review concluded that the safety and effectiveness of high-velocity low-amplitude spinal manipulation for symptomatic lumbar disk disease could not be established because the available evidence was limited. Further high-quality research is required. There were limitations in the reporting of the review methods but, overall, these conclusions seem appropriately cautious.

Authors' objectives

To review the evidence for high-velocity low-amplitude spinal manipulation (HVLASM) for symptomatic lumbar disk disease (SLDD).

Searching

The Cochrane CENTRAL Register (through March 2003), MEDLINE (January 1966 to March 2003), CINAHL (January 1982 to March 2003) and MANTIS (January 1996 to March 2003) were searched for relevant articles; the search terms were reported. In addition, the references of retrieved articles were checked for additional citations and experts in the area were personally contacted for additional input. Inclusion was limited to publications in the English language.

Study selection

Study designs of evaluations included in the review

Studies of any design were eligible for inclusion in the review.

Specific interventions included in the review

Studies evaluating HVLASM were eligible for inclusion. HVLASM was defined as:

a manual procedure involving the application of a high-velocity, low-amplitude thrust to a given functional spinal unit, causing grade V joint motion into the paraphysiological space and typically resulting in an audible cavitation;

a procedure not administered under any form of anaesthesia; and

adjunctive therapies did not include spinal injections or acupuncture. HVLASM did not have to be the sole intervention evaluated. The included studies evaluated HVLASM with and without physiotherapy, flexion, distraction, McKenzie prone press-ups and bed rest. Where reported, the number of treatment sessions ranged from 1 to 56 over a period of 2 weeks to 10 months; about half of the included studies did not report the treatment frequency. The two studies with control groups compared HVLASM with chemonucleolysis or compared physiotherapy, flexion/distraction with and without HVLASM.

Participants included in the review

Studies including participants with SLDD were eligible for inclusion. Pathology and symptoms of SLDD had to be clearly defined; pathology had to be herniated disk with or without nerve root displacement, or internal disk disruption as demonstrated on magnetic resonance imaging, computed tomography, myelography, epidurography and/or discography. The majority of the included studies evaluated HVLASM in patients with herniated disk.

Outcomes assessed in the review

Studies measuring patient-based outcomes or intermediate outcomes were eligible for inclusion in the review. Patient-based outcomes included pain intensity scales, patient report of pain status and disability (e.g. Oswestry, Roland Morris scales), whilst intermediate outcomes included measures of anatomic or physiologic parameters (via imaging,

electrodiagnostic studies, etc.).

How were decisions on the relevance of primary studies made?

The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality

Published criteria described by Harris were used to assess the internal validity of the included studies, by which the studies were rated as good, fair or poor. The studies were also graded according to a hierarchy of study design, which ranged from I for a randomised controlled trial (RCT) to III for case reports. Two independent reviewers performed the assessment. In the case of discrepancies, consensus was reached after discussion.

Data extraction

The authors did not state how the data were extracted for the review, or how many reviewers performed the extraction. Data on the key characteristics of the included studies were extracted. The results for each outcome were reported as text, as a change in outcome measure from baseline, or as a proportion of the patients improved.

Methods of synthesis

How were the studies combined?

The studies were combined in a narrative.

How were differences between studies investigated?

The main differences between the included studies were apparent from examination of the data extraction tables. These differences were briefly discussed in the body of the review.

Results of the review

Sixteen studies (n=203) were included in the review: one RCT (n=40), one non-randomised controlled clinical trial (CCT; n=23), two single-group cohort studies (n=30), five case series (n=103) and seven single-patient case-reports (n=7).

Fourteen studies reported patient-based outcomes.

When considered by design and rating, the RCT and the CCT were rated fair, one cohort study was rated good and the other fair, and of the twelve case series/case reports, seven were rated good, three fair and two poor.

Patient-based outcomes.

One RCT (15 patients not properly randomised; rated fair) comparing osteopathic management involving HVLASM with chemonucleolysis (n=40) reported a modest clinically favourable outcome. One small cohort study (n=9) also reported a favourable clinical outcome; however, little detail was available. Of the remaining 110 patients from case reports or case series, 94 had a good clinical outcome.

Intermediate outcomes.

One trial (n=34) showed improvement in surface thermography parameters and a second cohort (n=21) described the immediate recovery of a depressed H reflex. However, the authors stated that the relationship between these outcomes and SLDD were not clear. Safety.

The reporting of adverse events was inconsistent across the included studies. Eight studies provided no clear description of adverse effects and/or any worsening of pain. Two studies (18 and 20 patients who received the intervention) explicitly reported that no adverse effects occurred. Four studies (three case reports and one small case series) reported one patient each with worsening pain during the treatment period, whilst another four studies reported no worsening of pain during the treatment period. There were no reports of any pronounced acute adverse effects immediately after

HVLASM.

Authors' conclusions

The evidence about the effectiveness and safety of HVLASM in patients with SLDD was limited and definitive conclusions could not be drawn. The evidence suggested that HVLASM might be effective and there was no support for the concept that HVLASM was essentially unsafe. Further research is required.

CRD commentary

The review question was well-defined in terms of the intervention, participants and outcomes of interest. Electronic databases and other sources were searched, but limiting eligible studies to publications in English might have resulted in the omission of other relevant studies. The studies were first categorised by study design and then assessed for internal validity by two independent reviewers. However, it was unclear whether multiple reviewers were used to minimise error and bias at other stages of the review process. The narrative synthesis was appropriate given the methodological heterogeneity of the included studies. There were limitations to the reporting of the review methods but, overall, on the basis of the reviewed evidence from predominantly observational studies, the authors' conclusions seem appropriately cautious.

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 high-quality trials that use valid and reliable diagnostic criteria and outcome measures to evaluate the safety and effectiveness of HVLASM .

Bibliographic details

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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.