Outcomes From Magnetic Resonance Imaging:
Confirmed Symptomatic Cervical Disk Herniation Patients Treated With
High-Velocity, Low-Amplitude Spinal Manipulation Therapy:
A Prospective Cohort Study With 3-Month Follow-Up

Journal of Manipulative and Therapeutics
October 2013; Vol. 36; pp. 461-467

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KEY POINTS FROM THIS STUDY:

1) “The purpose of this study was to investigate outcomes of patients with cervical radiculopathy from cervical disk herniation (CDH) who are treated with spinal manipulative therapy.”

2) The most common cause of cervical nerve root compression is degenerative stenosis leading to intervertebral foramen narrowing. The second most common cause is CDH.

3) Patients with radiculopathy from cervical disk herniations (CDHs) typically have acute neck pain with associated arm pain, although the arm pain may be the predominant symptom.

4) This study used 50 patients with a mean age of 44 years. “Treatments were repeated 3 to 5 times per week for the first 2 to 4 weeks and carried on 1 to 3 times per week thereafter until the patient was asymptomatic.” They were evaluated at baseline, 2-weeks, 1-month, and 3-months.

5) The patients in this study had neck pain and moderate to severe arm pain in a dermatomal pattern with sensory, motor, or reflex changes corresponding to the involved nerve root.

Subjects in this study also had at least one of the following positive orthopaedic tests for cervical radiculopathy:
• Positive upper limb tension test
• Positive cervical distraction test
• Positive Spurling’s test
• Positive cervical rotation test at less than 60°

Magnetic resonance imaging-proven CDH at the corresponding spinal segment.
6) The patients completed baseline questionnaires:
   • Numeric rating scales (NRS) for pain where 0 is no pain and 10 is the worst pain imaginable for both the neck and the arm pain separately.
   • Neck Disability Index (NDI).

7) “High-velocity, low-amplitude spinal manipulations were administered by experienced doctors of chiropractic.”
   • “The treatment procedure was a standardized, single, high-velocity, low-amplitude cervical manipulation with rotation to the opposite side and lateral flexion to the same side of the affected arm.”
   • “The DC stood on the affected side of the supine patient's neck, with an index contact on the articular pillar of the most symptomatic vertebral motion segment on the side of the patient's complaint and at the spinal level clinically assessed to correspond with the MRI findings.”
   • “Rotation to the opposite and lateral flexion to the ipsilateral side was used to take out skin and joint slack.”
   • “Once the patient was positioned, a high-velocity, low-amplitude thrust was applied, with the goal of moving the affected segment and producing an audible release.” An audible release was achieved in most case.
   • “In the rare case where an audible release did not occur during the procedure, the DC might repeat the manipulation up to 2 additional times.”
   • “When a patient reported bilateral neck and/or arm pain (extremely rare), the procedure could be reproduced on the opposite side as well.”

8) “Fifty patients were included. At 2 weeks, 55.3% were ‘improved,’
   • “By 2 weeks after the first treatment, 55.3% of all patients reported that they were significantly improved and none reported being worse.”
   • “At 1 month, 68.9% were significantly improved.”
   • By 3 months 85.7% were significantly improved with no patients being worse.

9) “Statistically significant decreases in neck pain, arm pain, and NDI scores were noted at 1 and 3 months compared with baseline scores.”

10) “Most patients in this study, including subacute/chronic patients, with symptomatic magnetic resonance imaging–confirmed CDH treated with spinal manipulative therapy, reported significant improvement with no adverse events.”
11) For the subacute/chronic patients, the mean duration of symptoms was 299 days. At 3 months, 76.2% of these patients reported clinically relevant improvement with no patients reporting that they were worse.

12) “There were no adverse events in this cohort of patients.”

13) “Most patients in this study with MRI-proven symptomatic CDHs who were treated with high-velocity, low-amplitude spinal manipulation reported clinically significant improvement at all time points, particularly at 3 months.”

14) The clinically relevant threshold for improvement of the NRS and NDI is 30% to 35%; at 3 months, these patients receiving HVLASM had improvement scores between 66% and 75%, far exceeding the threshold.

15) The presence of radiculopathy is not a negative predictor of outcomes for chiropractic patients with radiculopathy.

16) “It is important to point out that even the subacute/chronic patients in this study with symptoms lasting longer than 4 weeks (mean duration, 298.73 days) reported high levels of clinically significant improvement. This is clinically important as the chronic patients are the ones who are usually the most costly in terms of health care use and quality-of-life disruption.”

17) In this study, SMT was 2-3 times superior to published studies of patients CDH with radiculopathy who received 2 cervical nerve root blocks with a corticosteroid and anesthetic.

18) “Serious adverse events [of cervical SMT] such as dissection of the vertebral artery or serious neurologic deficits are so rare that accurate estimations of the frequency cannot be calculated but are estimated at 1 of 200 000 to 1 of several million treatments.”

19) “Patients whose herniation had penetrated through the peripheral annular fibers, the posterior longitudinal ligament, or were sequestered were not excluded from being treated with SMT.”

PRACTICAL APPLICATIONS FROM AUTHORS:

• “Patients with symptomatic MRI-confirmed cervical disk herniations treated with SMT to the level of herniation reported high levels of clinically relevant improvement at 2 weeks, 1 month, and 3 months after the first treatment.”

• Acute patients showed faster and greater improvement than subacute or chronic patients.