



Chiropractic Cervical Adjustment

Cervical adjustment, also known as neck manipulation, is a precise manual procedure applied to the joints of the neck. Cervical adjustment works to improve joint mobility in the neck, restoring range of motion, and reducing muscle hypertonicity thereby relieving pressure and tension.¹ Patients typically notice a reduction of pain, soreness, stiffness and improved mobility.

All health care interventions carry risks of varying significance and incidence. The most common adverse effects associated with chiropractic cervical adjustment are short-term fatigue, muscle ache and mild vaso-dilative response. The findings in the existing, published literature indicate that serious adverse events associated with cervical adjustment are very rare. For example, cases of vertebral artery (VBA) stroke have been associated with cervical adjustment, however, the most recent research into this association suggests otherwise. Two primary types of research have been conducted into this potential association: retrospective and progressive case studies; and biomechanical research into the kinetics of cervical adjustment.

Recent Findings

The most recent research into this association was published by the Bone and Joint Decade Task Force on Neck Pain and Its Associated Disorders in *Spine* in 2008.² The study — which analyzed a total of 818 VBA strokes that met the inclusion/exclusion criteria over the 9-year inception period in Ontario — concludes that VBA stroke from any cause is a very rare event and that the risk of VBA stroke associated with a visit to a chiropractor's office appears to be no different from the risk of VBA stroke following a visit to a family physician's office.

The study concludes that the association between VBA stroke and chiropractic care is most likely due to patients with headache and/or neck pain from a VBA dissection seeking care in the prodrome of a stroke.

A British study of more than 19,000 chiropractic patients encompassing over 50,000 cervical spine manipulations published in October 2007 in *Spine* found “no reports of serious adverse events.”³

Similarly, an extensive commentary on chiropractic care, published in the February 2002 issue of the *Annals of Internal Medicine* states the following with regard to the safety of cervical adjustment: “No serious complication has been noted in more than 73 controlled clinical trials or in any prospectively evaluated case series to date.”⁴

A Canadian study, published in 2001 in *Stroke*, also concludes that stroke associated with cervical adjustment is so rare that it is difficult to calculate an accurate risk ratio.⁵ The study authors have stated

¹See Appendix of Research References

² Cassidy JD et al. Risk of Vertebral Artery Stroke and Chiropractic Care. *Spine* February 15, 2008, Volume 33, Issue 4S Supplement.

³ Thiel HW, Safety of Chiropractic Manipulation of the Cervical Spine: a prospective national survey. *Spine*, October 1, 2007, 32:21.

⁴ Meeker WC, Haldeman S. Chiropractic: A profession at the crossroads of mainstream and alternative medicine. *Annals of Internal Medicine* February 5, 2002, Vol. 136, No. 3.

⁵ Rothwell DM, Bondy SJ, Williams JJ. Chiropractic manipulation and stroke: A population-based, case-controlled study. *Stroke* May 2001.

that the association “...is smaller than that associated with many commonly used diagnostic tests or prescription drugs.”

Recent research into the association between cervical adjustment and stroke has also involved biomechanical studies to assess what strain, if any, cervical adjustment may place on the vertebral arteries. The findings indicate that cervical adjustment is done well within the normal range of motion and that cervical adjustment is “very unlikely to mechanically disrupt the VA [vertebral artery].”⁶

Clinical Practice Guidelines

In 2005, the Canadian Federation of Chiropractic Regulatory and Educational Accrediting Boards and the Canadian Chiropractic Association published a comprehensive Clinical Practice Guideline on Evidence-Based Treatment of Neck Pain in Adults (not associated with whiplash) which encompasses a thorough review of the literature on risks associated with cervical manipulation. The Guideline provides clear direction on assessment of risk factors, contraindications to treatment, and warning signs indicating a need to refer. Two additional cervical care Guidelines are currently in development: one on treatment of headache and one on treatment of whiplash. Ongoing research will continue to inform the delivery of chiropractic care with the goal of further enhancing positive outcomes for patients.

For further information, please direct enquiries to:

John J. Triano, DC, PhD, FCCS(C)
Professor & Dean Graduate Education and Research
Canadian Memorial Chiropractic College
(416) 482-2340

Associate Professor, School of Rehabilitation Sciences
McMaster University
Hamilton

Appendix of Research References

Hurwitz EL, Aker PD, Adams AH, Meeker WC, Shekelle PG. The appropriateness of manipulation and mobilization of the cervical spine: A systematic review of the literature. *Spine* 1996; 21(15): 1746-1760.

Dabbs V, Lauretti WJ. A risk assessment of cervical manipulation v. NSAIDs for the treatment of neck pain. *Journal of Manipulative and Physiological Therapeutics* 1995; 18:530-6.

Spitzer WO, Skovron ML et al. Scientific monograph of the Quebec Task Force on Whiplash-associated Disorder: Redefining whiplash and its management. *Spine* 1995; 20:8S.

Coulter ID, Hurwitz EL et al. The appropriateness of manipulation and mobilization of the cervical spine. Santa Monica, California: RAND. Document No. MR-781-CR.

Hurwitz EL, Aker PD et al. Manipulation and mobilization of the cervical spine: a systematic review of the literature. *Spine* 1996; 21:1746-60.

Aker PD, Gross AR et al. Conservative management of mechanical neck pain: Systematic overview and meta-analysis. *Br Med J* 1996; 313:1291-6.

Whittingham W, Nilsson N. Active range of motion in the cervical spine increases after spinal manipulation. *J Manipulative Physiol Ther* 2001; 24(9):552-5.

⁶Herzog W, Symons BP, Leonard T. Internal forces sustained by the vertebral artery during spinal manipulative therapy. *Journal of Manipulative and Physiological Therapeutics*, October 25, 2002 (8): 504-10.

Bronfort G, Evans R et al. A randomized clinical trial of exercise and spinal manipulation for patients with chronic neck pain. *Spine* 2001; 26(7):788-800.

Hoving JL, Koes BW et al. Manual therapy, physical therapy, or continued care by a general practitioner for patients with neck pain. *Annals Int Med* 2002;136:713-22.

Evans R, Bronfort G, Nelson B, Goldsmith CH. Two-year follow-up of a randomized clinical trial of spinal manipulation and two types of exercise for patients with chronic neck pain. *Spine* 2002; 27(21):2383-9.

Hurwitz EL, Morgenstern H, Harber P, Kominski GF et al. A randomized trial of chiropractic manipulation and mobilization for patients with neck pain: clinical outcomes from the UCLA neck-pain study. *Am J Public Health* 2002; 92(10):1634-41.

Giles LG, Muller R. Chronic spinal pain syndromes: a clinical pilot trial comparing acupuncture, a nonsteroidal anti-inflammatory drug, and spinal manipulation. *J Manipulative Physiol Ther* 1999; 22(6):376-81.

Jordan A, Bendix T, Nielsen H, Hansen FR. et al. Intensive training, physiotherapy, or manipulation for patients with chronic neck pain. A prospective, single-blinded, randomized clinical trial. *Spine* 1998; 23(3):311-8.

Vernon H, McDermaid C, Hagino C. Systematic review of complementary/alternative therapies for tension-type and cervicogenic headaches. *Comp Therap Med* 1999.

Nelson CF, Bronfort G, Evans R et al. The efficacy of spinal manipulation, amitriptyline and the combination of both therapies for the prophylaxis of migraine headache. *J Manipulative Physiol Ther* 1998; 21(8):511-9.

Tuchin PJ, Pollard H, Bonello R. A randomized controlled trial of chiropractic spinal manipulative therapy for migraine. *J Manipulative Physiol Ther* 2000; 23(2):91-95.

McCrary DC, Penzien DB et al. Evidence report: behavioural and physical treatments for tension-type and cervicogenic headache. Des Moines, Iowa. Foundation for Chiropractic Education and Research Product No. 2085, 2001.

Bronfort G, Assendelft WJ, Evans R et al. Efficacy of spinal manipulation for chronic headache: a systematic review. *J Manipulative Physiol Ther* 2001; 24(7):457-66.

Jull G, Trott P, Potter H et al. A randomized controlled trial of exercise and manipulative therapy for cervicogenic headache. *Spine* 2002; 27(17):1835-1843.

2008