

Tissue Damage Markers after a Spinal Manipulation in Healthy Subjects

Although this 2014 study is a preliminary report with a small sample size (n=30), it appears to be a promising direction for assessing the safety of SMT via tissue damage markers analysis. The study found that cervical or thoracic manipulation did not produce significant changes in these markers.¹

Cervical Spine Manipulation and ICA (internal carotid artery) dissection

“Although several case reports and case series raise the hypothesis of an association, we found no epidemiologic studies that validate this hypothesis.”²

Case reports represented the majority of the literature describing an association between cSMT (cervical spinal manipulative therapy) and CAD (carotid artery dissection). “This study has demonstrated that the literature infrequently reports useful data toward understanding the association between cSMT, CADs and stroke. As a result, the value of these reports toward informing our understanding of the relation between cSMT and CAD is minimal.”³

A 2014 biomechanical study found no significant changes in blood flow in the vertebral arteries of healthy young adult males after cervical spine manipulations.⁴

The results of this study suggest that vertebral artery strains during head movements including spinal manipulation do not exceed published failure strains.⁵

A 2008 population-based, case-control and case-crossover study found no evidence of increased risk of vertebrobasilar artery (VBA) stroke related to chiropractic care, compared to primary medical care.⁶ This comprehensive study, published in *Spine*, involved evaluation of nine years of medical records in the Canadian province of Ontario (covering 100 million patient years).

Serious Adverse Events and Spinal Manipulative Therapy of the Low Back Region

“The anecdotal nature of these cases does not allow for causal inferences between SMT and the events identified in this review.”⁷

Intracranial Hypotension

A 2014 systematic review stated: “To date, the evidence that CSMT is not a cause of IH is inconclusive. Further research is required before making any conclusions that CSMT is a cause of IH. Chiropractors and other health practitioners should be vigilant in recording established risk factors for IH in all cases. It is possible that the published cases of CSMT and IH may have missed important confounding risk factors (e.g. a new headache, or minor neck trauma in young or middle-aged adults).”⁸

Continued on next page.

Safety of Spinal Manipulative Therapy/Chiropractic Care continued

Spinal Manipulation during Pregnancy and Postpartum

A 2012 systematic review stated: "There are only a few reported cases of adverse events following spinal manipulation during pregnancy and the postpartum period identified in the literature. While improved reporting of such events is required in the future, it may be that such injuries are relatively rare."⁹

Chiropractic Care/SMT for Children

A 2014 systematic review stated, "Published cases of serious adverse events in infants and children receiving chiropractic, osteopathic, physiotherapy, or manual medical therapy are rare...no deaths associated with chiropractic care were found in the literature to date. Because underlying preexisting pathology was associated in a majority of reported cases, performing a thorough history and examination to exclude anatomical or neurologic anomalies before applying any manual therapy may further reduce adverse events across all manual therapy professions."¹⁰

A 2007 systematic review and its 2010 update found 9 severe adverse events and 20 indirect adverse events (effects due to delayed diagnosis or inappropriate use of SMT for certain conditions).^{11,12}

References

1. Achalandabaso A, Plaza-Manzano G, Lomas-Vega R, et al. [Tissue damage markers after a spinal manipulation in healthy subjects: a preliminary report of a randomized controlled trial](#). *Dis Markers*. 2014;2014:815379. **FREE FULL TEXT**
2. Chung CL, Cote P, Stern P, L'Esperance G. [The association between cervical spine manipulation and carotid artery dissection: A systematic review of the literature](#). *J Manipulative Physiol Ther*. Jan 3 2014.
3. Wynd S, Westaway M, Vohra S, Kawchuk G. [The quality of reports on cervical arterial dissection following cervical spinal manipulation](#). *PloS one*. 2013;8(3):e59170. **FREE FULL TEXT**
4. Quesnele JJ, Triano JJ, Noseworthy MD, Wells GD. [Changes in vertebral artery blood flow following various head positions and cervical spine manipulation](#). *J Manipulative Physiol Ther*. Jan 2014;37(1):22-31.
5. Piper SL, Howarth SJ, Triano J, Herzog W. [Quantifying strain in the vertebral artery with simultaneous motion analysis of the head and neck: a preliminary investigation](#). *Clin Biomech (Bristol, Avon)*. Dec 2014;29(10):1099-1107.
6. Cassidy JD, Boyle E, Cote P, et al. [Risk of vertebrobasilar stroke and chiropractic care: results of a population-based case-control and case-crossover study](#). *Spine (Phila Pa 1976)*. Feb 15 2008;33(4 Suppl):S176-183.
7. Hebert JJ, Stomski NJ, French SD, Rubinstein SM. [Serious adverse events and spinal manipulative therapy of the low back region: A systematic review of cases](#). *J Manipulative Physiol Ther*. Jun 17 2013.
8. Tuchin P. [A systematic literature review of intracranial hypotension following chiropractic](#). *Int J Clin Pract*. Mar 2014;68(3):396-402.

Continued on next page.

Safety of Spinal Manipulative Therapy/Chiropractic Care continued

9. Stuber KJ, Wynd S, Weis CA. [Adverse events from spinal manipulation in the pregnant and postpartum periods: a critical review of the literature](#). *Chiropr Man Therap*. 2012;20:8. **FREE FULL TEXT**
10. Todd AJ, Carroll MT, Robinson A, Mitchell EK. [Adverse events due to chiropractic and other manual therapies for infants and children: a review of the literature](#). *J Manipulative Physiol Ther*. Oct 30 2014.
11. Vohra S, Johnston BC, Cramer K, Humphreys K. [Adverse events associated with pediatric spinal manipulation: a systematic review](#). *Pediatrics*. Jan 2007;119(1):e275-283.
12. Humphreys BK. [Possible adverse events in children treated by manual therapy: a review](#). *Chiropr Osteopat*. 2010;18:12. **FREE FULL TEXT**