

## LETTER TO THE EDITOR

# Spinal Manipulation is Not an Emerging Risk Factor for Stroke Nor is it Major Head/Neck Trauma. Don't Just Read the Abstract!

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Dear Editor,

We read with interest the article by Micheli *et al.* [1] describing the emerging risk factors for cervical artery dissection. In their abstract, the authors' state, "Other known risks factors for CAD are major head/neck trauma like chiropractic maneuver, coughing or hyperextension injury associated to car."

We would like to address two points in this letter: 1) the current best-evidence indicates no causal relationship between spinal manipulation ('chiropractic maneuver' in the paper) and vertebrobasilar artery (VBA) stroke, and 2) spinal manipulation or 'chiropractic maneuvers' are not major head/neck trauma as suggested in abstract of this article.

First, evidence is mounting that the association between spinal manipulation and stroke is coincidental rather than causal and reflects the natural history of the disorder [2]. The largest population-based study to date was conducted by Cassidy *et al.* [3] and included all vertebrobasilar artery (VBA) strokes in Ontario, Canada over a period of 9 years. The authors found no evidence of excess risk (i.e. no risk) of VBA stroke associated with chiropractic care [3]. Interestingly there was an association between stroke and visits to both chiropractic and medical physicians but the association was the same for each type of provider [3]. The prevailing hypothesis is that patients with vertebral artery dissections often have initial symptoms that cause them to seek care from a chiropractic or medical physician and the stroke is independent of their visit [2-4]. This population-based study (Cassidy *et al.*, 2008) provides higher quality evidence than previous case reports, case series, and physician surveys frequently referenced when discussing spinal manipulation in this context [2]. If anything, the latest scientific evidence questions whether spinal manipulation is a risk factor at all for cervical artery

dissection. In contrast to the title of the Micheli *et al.* (2010) paper, chiropractic spinal manipulations may very well be a demerging risk factor for stroke since there may not be any risk.

Secondly, spinal manipulation or 'chiropractic maneuver' (assumed to be cervical spine manipulation) is not major head/neck trauma as inferred in the abstract. The body of the Micheli *et al.* paper [1] even mentions that spinal manipulations are not considered major trauma, so the abstract is clearly inconsistent with the findings and should be corrected. The evidence, albeit limited to date, suggests that spinal manipulative treatments produce stretches of the vertebral artery that are much smaller than those that are produced during normal everyday movements, and thus they appear harmless [5]. Major trauma is usually associated with high-energy mechanisms of injury and results in serious visceral injury or spinal motion unit injury such as fracture or dislocation [6]. High-energy mechanisms of cervical spine injury have been described as those involving a high-speed motor vehicle crash (greater than 50 km/h), pedestrian being struck by car or a fall from greater than 3 m [7]. Clearly, spinal manipulations delivered by licensed chiropractors do not fulfill the criteria for major trauma and should not be considered major trauma. In addition, contrary to what was stated in the Micheli *et al.* [1] paper, it is also equally unlikely that most episodes of coughing fulfill the criteria for major trauma.

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