

# Stroke and Spinal Manipulation

By Preston H. Long, PhD

Extensive research shows that spinal manipulation, the most commonly practiced chiropractic procedure, has limited therapeutic value especially when compared with less costly alternative therapies. Furthermore, there is evidence that chiropractic neck manipulation may damage neck arteries and lead to increased chance of stroke. Patients deserve to be provided a thorough informed consent by practitioners of spinal manipulation prior to any treatment being rendered. Further research into informed consent, stroke caused by spinal manipulation, and the therapeutic benefit of the procedure, if any, needs further investigation.

A recent article in *The Annals of Internal Medicine* reviewed 39 studies showing that spinal manipulation, the most commonly practiced chiropractic procedure, was no more effective than cheaper alternatives, such as exercise (Assendelft, Morton, Yu, Suttorp, & Shekelle, 2003). Roughly 3% to 11% of Americans visit a chiropractor every year. It has been estimated that by the end of this decade the United States will have approximately 100,000 chiropractors. The Institute for Social Research at Ohio Northern University performed a survey of North American chiropractors, which found that adjustments were believed to improve conditions such as tension headaches, migraines, otitis media, and asthma. Spinal manipulation is provided at every visit by 54.3% of chiropractors. The general perception is that spinal manipulations are believed to help visceral conditions by 62.1% of North American chiropractors. The inherent risk to providing spinal manipulation, such as stroke, paralysis, and death were not surveyed (McDonald, 2003). The therapeutic benefit of spinal manipulation compared to the risks involved remains controversial.

## Research

The highly respected Canadian Stroke Consortium at Toronto's Sunnybrook Hospital has found that chiropractic neck manipulation is the single leading cause of damage to the neck arteries leading to stroke in people less than 45 years of age (Annapolis Valley Skeptic, 2004). The Consortium also concluded that neck manipulation should probably be avoided in patients with recent acute neck pain, especially if it follows closely upon an accidental injury, for example the cervical acceleration/deceleration or whiplash.

In 1999, the Canadian Stroke Consortium did a retrospective survey of arterial dissection in Canada over the previous several years, with 15 centers reporting 63 cases. The preliminary results show:

- Of the stroke cases, 70% were due to neck trauma, and 30% were "spontaneous."
- Of the traumatic cases, 50% were caused by neck manipulation. In some cases, arteries on both sides of the neck were damaged.

- In the 50% that occurred without manipulation, minor neck trauma included swinging a golf club, vigorous drying after a shower, and bouts of violent coughing.
- The great majority of traumatic dissections involved the vertebral artery.
- 90% of the dissections occurred within hours of the trauma, but some cases were weeks later and in a few, months later (Annapolis Valley Skeptic, 2004).

Sixty-two clinical neurologists from across Canada, all certified members of the Royal College of Physicians and Surgeons, issued a warning to the Canadian public, which was reported by Brad Stewart, MD. The warning was entitled *Canadian Neurologists Warn Against Neck Manipulation*. The

final conclusion was that endless non-scientific claims are being made as to the uses of neck manipulation (Stewart, 2003). They need to be stopped. The public should be informed that chiropractic manipulation is the number one reason for people suffering stroke under the age of 45. Another Toronto-based study, as reported on CANOE's C-Health Web site by reporter Wayne MacPhail, states, "People under 45 who suffer a stroke are five times more likely to have seen a chiropractor in the previous week than a control group (Benedetti and MacPhail, 2004)."

**The public should be informed that chiropractic manipulation is the number one reason for people suffering stroke under the age of 45.**

A study also appeared in the May 2001 issue of *Stroke: Journal of the American Heart Association*. The Institute for Clinical Evaluative Sciences (ICES) in Toronto carried out the research. "This is the first time that the link between chiropractic manipulation and stroke has been examined using a sample control group and health insurance data." The ICES study calls on the chiropractic community to produce evidence that manipulating necks has a medical benefit (Rothwell, Bondy, & Williams, 2001).

A survey in the United Kingdom concluded that concerns about neurological complications following cervical spine manipulation appear to be justified. The literature does not recommend that the benefits of manipulation of the cervical spine outweigh the risks (The National Electronic Library for Health, 2001).

In an article published by the American Academy of Neurology concluded entitled *Spinal Manipulative Therapy Is an Independent Risk Factor for Vertebral Artery Dissection*, the authors concluded that,

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This case-controlled study of the influence of spinal manipulative therapy and cervical arterial dissection shows that spinal manipulative therapy is independently associated with vertebral arterial dissection, even after controlling for neck pain.

Patients undergoing spinal manipulative therapy should be consented for risk of stroke or vascular injury from the procedure. A significant increase in neck pain following spinal manipulative therapy warrants immediate medical evaluation (Smith W. S. et al., 2003 May).

Neurologist Wade Smith of the University of California, San Francisco, told the United Press International on May 12th, "Patients should be made aware that spinal manipulative therapy can damage blood vessels and cause stroke prior to the treatment. ... Rapid movements of the neck can pull and tear an artery at the back of your neck. This tear can cause blood to clot on the inside of the vessel and this blood clot can travel to the brain and plug an artery to the brain. This plugging can cause a stroke (Choi, 2003)."

"If you have something that's even slightly risky, you want to know what the benefit of the procedure is," Linda Williams added. "Since studies of neck manipulation for patients with neck pain have not been proven to be effective, then the question is why do it at all if you know there's some small risk attached to it (Choi, 2003)."

Linda S. Williams, MD, and Jose Biller, MD, authored an article entitled *Vertebrobasilar dissection and cervical spine manipulation—A complex pain in the neck* (2003). They state, "As use of chiropractic treatments has increased, so have demands for scientifically rigorous studies examining the risks and benefits of various chiropractic procedures. Prior to 2002, there were at least three randomized trials of cervical manipulation for patients with acute neck pain. However, the number of patients in these studies was small, and the quality of the studies was low." They re-address the study done by Smith and published in *Neurology* (2003), and their finding was that, "chiropractic manipulation independently increased the risk of vertebral artery dissection and stroke or TIA by approximately six-fold and must be taken seriously." Williams and Biller conclude that,

The fundamental issue remains not consent for risk but demonstration of benefit. In the absence of randomized controlled trial evidence demonstrating the efficacy of cervical manipulation, the best current evidence suggests that the small risk of dissection and stroke outweigh the benefit of this treatment modality for patients with acute neck pain (2003).

## Conclusion

The preponderance of the scientific literature supports a direct cause-and-effect mechanism between spinal manipulation and stroke. The therapeutic benefit of spinal manipulation in acute

neck pain remains unproven. The American public deserves to be provided a thorough informed consent by practitioners of spinal manipulation prior to any treatment being rendered. Further research into informed consent, stroke caused by spinal manipulation, and the therapeutic benefit of the procedure, if any, needs further investigation.

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