

## Chiropractic and Cerebrovascular Accidents: Dispelling the Myths

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The maturation of a profession can be measured to some degree by how its practitioners are willing to change treatments which represent potential harm to the patient, as well as incorporating new strategies which appear to heighten the patient's benefit of the health care delivered. Unfortunately there is a poverty of medical evidence in general<sup>1</sup> and in chiropractic in particular. Our techniques for treating patients have evolved over the years by passing oral and written history on to successive generations of chiropractors.

Although there is some evidence that manipulation seems to speed the recovery of patients with acute low back pain, nobody really knows for sure which methods are superior to others and which carry more risk of harm to the patient. Chiropractic is not unique in this, since perhaps only 15 percent of all medical procedures have any basis in scientifically valid research.<sup>1</sup> Were we all to return 200 years from now, things might perhaps be a little better with respect to the scientific validation of what chiropractors do, but no one will ever be able to predict what could happen to an individual patient undergoing our care.

Health care uses scientific methods, but it is in no way a pure scientific discipline like mathematics. We are dealing with the human body, a dynamic, living organism. But we do the best we can and some evidence suggests that patients are pretty darn happy with what chiropractors do for them.<sup>2</sup>

But can we do better with the evidence at hand now? Are there techniques we could apply that potentially carry superior benefit or less patient risk? How do we go about changing the standards or practice in a profession with probably 100 different methods of technique delivery and scopes of practice which include nearly everything under the sun as adjunctive to the adjustment, excepting of course prescription drugs and surgery. The therapeutic universe seems quite large in chiropractic but we are probably in a better state of affairs than our medical colleagues. One would hate to have to sort out in a scientific way the surgery universe, for example.

How do chiropractors change their methods over the years? Do they read our scientific journals and textbooks which espouse different treatment recommendations? If they read, do they incorporate this new information in patient care? It's difficult to surmise the practice of chiropractic, let alone whether there is an appreciation for change as new information becomes available. Slogans in chiropractic colleges such as "everything works" and "it doesn't matter what you do since 80 percent get well anyway," probably do not help matters.

Sometimes chiropractors change because the legal system demands it. Chiropractors, like most doctors, have been less than perfect record keepers in the past. Some doctors keep better records now and perhaps some of this is motivated by fear of exposing oneself to the judicial system, either through malpractice or expert testimony, rather than any perceived benefit to our patients from proper record keeping.

Complications (risk) from chiropractic adjustments is a complex issue. Most chiropractors believe,

and rightly so, that complications must be rare events, since our malpractice premiums are relatively low when compared to those in the medical profession. But chiropractors do get sued for malpractice from time to time. If our premiums shot through the roof because we performed extremely risky procedures, then perhaps many of us would alter the types of techniques we employ.

Wouldn't it be nice though, if we changed not because of a legal mandate but rather because of a healthy attitude towards our patients, that we should provide care with the least possible risk? An important issue that the chiropractic profession must face, is cerebrovascular accidents (CVA) following cervical spine manipulations. I would like to attempt to shed some light on the various myths and issues surrounding these types of complications that are encountered from time to time in chiropractic practice.

Myth #1: It's just too rare to be of concern.

A recent popular press publication<sup>3</sup> reported a significant number of claims for patients suffering strokes following spinal manipulation were settled by a chiropractic malpractice carrier in 1990.

Trying to base estimates of occurrence of these types of injuries on the number of case reports in the literature would be a little like estimating how many chiropractors successfully help patients with neck pain based upon how many case studies are available. It is also likely that estimates of injury based on how many malpractice claims there are for a particular class of injury also underestimate the occurrence since it is well known that not every patient who receives negligent treatment sues for malpractice.

Estimates ranging from one in one million, to 2-3 per one million manipulations, to one accident for every 400,000 procedures<sup>4,5</sup> probably underestimate the problem.<sup>6-9</sup>

Myth #2: It's the DO or MD, not the DC, who has the problem.

Another popular misconception is that CVAs arise because medical doctors, osteopaths, and physical therapists are the ones incompetently doing the manipulating of the patients who receive strokes. To illustrate the problem, a recent publication by a chiropractic author<sup>10</sup> makes the completely untrue statement that, "The literature reports a relatively small number of manipulation-related strokes, most of which were associated with manipulations performed by osteopaths and physiatrists." In a review by Terret and Kleynhans,<sup>11</sup> it was noted that of the 126 cases reported, 79 were related to manipulations by a chiropractor (63 percent) (See Table 1 below).

Table 1

Analysis of 126 Cases of Vertebrobasilar Accidents Following Manipulation

Manipulator	# Cases	# Died	Outcome Unknown
Chiropractor	79	14	4
Medical	18	8	
Osteopath	9	2	
Naturopath	4	2	
Physiotherapist	2		
Kinesiotherapist	1		

Wife	1	1	
Self	1		1
Unknown	11	2	
Total	126	29	5

Table 1: From Terret AGJ, Kleynhans AM. Cerebrovascular complications of manipulation. In: Haldeman S, ed. *Principles and Practice of Chiropractic*, 2nd ed. Norwalk, Connecticut: Appleton & Lange, 1992: 581.

Although a similar review of publications in this area by Martiensen and Nilsson<sup>12</sup> also demonstrated that chiropractor involvement was present in the vast majority of stroke-manipulation cases, Dr. Terret recently updated this information at the International Conference on Spinal Manipulation. Dr. Terret acknowledged that some of the case reports cited may have been biased against chiropractors when in fact a licensed DC was not involved in the incidents.

Myth #3: They would have had a stroke anyway. It's an old people's problem.

It has been put forth by a chiropractor that manipulation-related strokes occur in older people with preexisting vascular pathology such as atherosclerosis.<sup>13</sup> While it is true that the vast majority of strokes do occur in older individuals, this is not true of those associated with cervical manipulation.<sup>11,12</sup> The age group of those with a predilection for stroke following manipulation is probably a younger than average chiropractic patient.<sup>12</sup> The majority of manipulation-stroke victims are between the ages of 3-45. While this may appear to be a risk factor, it is most likely that this patient population also comprises the majority of patients seen by chiropractors.<sup>12</sup> There is also a slight tendency for victims to be more likely female but again this is probably due to the proportion of female patients usually seen by chiropractors and doctors in general.

Myth #4: I have adjusted the patient and up until now without any problems, why worry?

Repeated adjustments or a previous history of successful neck manipulation without apparent complications affords no protection for the patient<sup>14,15</sup> since most accidents do not occur on the first visit, but usually by the fifth.<sup>11</sup>

Myth #5: I can predict which patients who are susceptible to stroke/screening procedures are effective.

Frisoni and Anzola<sup>6</sup> state that the population at risk cannot be identified a priori in the vast majority of cases. This sentiment is echoed by Terret and Kleynhans.<sup>11</sup> Finding a negative result when extending and rotating the neck as a test of patency for the vertebral arteries may give the practitioner a false sense of security that the adjustment, which will move motion segment considerably further in rotation, will not pose a risk to the patient. The pre-manipulation maneuver may also induce a stroke.<sup>16</sup>

Myth #6: Rotary adjustments of the upper cervical spine are not the problem

A review by Terret and Kleyhans,<sup>11</sup> found that the mechanism of manipulation involved rotation in 81 percent of cases, and rotation combined with longitudinal axis extension were present in the

other 19 percent. Martiensen and Nilsson<sup>12</sup> reviewed 49 cases in which the method of manipulation was known. In 45 of the cases, the technique was cervical rotation. They note that techniques such as Pettibon or toggle-recoil are grossly underrepresented among the cases of cerebrovascular accidents and that rotational maneuvers are grossly overrepresented among CVA patients. They warn against the continued use of rotational techniques of the upper cervical spine in chiropractic. This recommendation is similar to that by Terret and Kleynhans<sup>11</sup> in which they advise that chiropractors should use techniques that, "... require either no movement to lock the spinal joints (toggle recoil technique) or that take their tension using lateral flexion (Gonstead, or supine lateral flexion techniques)." Other chiropractic authors have made similar recommendations.<sup>17,18</sup> Rotational movements of the upper cervical spine have the most marked mechanical effects (e.g., stretching, kinking, occlusion, tearing, etc.) on the vertebral arteries.<sup>19-21</sup>

#### Recommendations for the Chiropractic Profession

1. Chiropractic colleges need to teach upper cervical adjusting techniques that do not involve placing of the patient in rotation or involve rotational directions of thrust. These techniques include most "upper cervical" procedures such as NUCCA, Grostic, and toggle-recoil, and those techniques that can achieve the desired adjustment in either the neutral position or with lateral flexion pretensioning, such as Gonstead and supine lateral flexion procedures.
2. Chiropractic postgraduate education departments need to address the fact that many doctors in the field need additional training in techniques that do not involve rotational movements of the upper cervical spine.
3. Practicing chiropractors, who in the interim feel that there is no way to adjust the upper cervical spine without using rotational techniques, should obtain written informed consent from the patient at each visit in which a rotational adjustment is to be performed, since stroke and death represent a material risk to the patient.

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