



Evidence in Action: Responding to “Chiropractors Cause Stroke”

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WHILE ATTENDING YOUR CHILD’S cross-country meet, you introduce yourself as a doctor of chiropractic to another parent, a paramedic. He recently attended a continuing education event where the presenter said, “Chiropractors cause stroke.”

As you know, cervical artery dissection (CAD) may produce a stroke when the internal lining of the artery tears and obstructs blood flow to the brain. CAD is a rare and unpredictable event^{1,2} resulting from a combination of risk factors thought to involve intrinsic susceptibility

(e.g., connective tissue disorder) and extrinsic stimuli (e.g., mechanical trauma).

In the world of health care, evidence speaks volumes. So that’s where you turn.

Where to begin?

Large groups of patients (“study populations”) should be used to evaluate factors that may be involved in CAD stroke risk. Therefore, researchers need large study populations to evaluate whether cervical manipulative therapy (CMT) increases CAD stroke risk. Individual case reports and small studies evaluate CMT’s stroke development risk poorly.

The controversial association between CMT and CAD stroke apparently originated with medical providers who observed it in individual patients.^{3,4} Keep in mind that these clinicians believe they are acting in their patients’ best interests by calling attention to this issue. Instead of becoming angry and defensive, DCs do well to respect these clinicians’ concern for patients while understanding that individual patient encounters cannot predict what will happen to large numbers of patients.

Whether a relationship exists between a specific exposure (e.g., CMT) and an outcome (e.g., CAD stroke) is best evaluated using a type of research study design called a case-control study. I recommend reviewing the evidence on case-control studies performed to evaluate the potential association between CMT and CAD stroke; larger, longer studies yield more precise information.

Begin with a search of online databases such as *pubmed.gov*. Use the search terms “chiropractic AND stroke AND case-control” to access most of the best available evidence. By focusing on high-quality case-control studies, I located five appropriate studies. (See Table 1.)⁵⁻⁹

What are the results?

All Table 1 articles are case-control studies. Major differences among them include the number of patients studied, duration of study time and how much time elapsed between CMT and CAD stroke onset. I recommend obtaining copies of these articles to fully comprehend the different methodologies.

Table 1

► Rothwell et al.⁵ discovered patients were five times more likely to have visited a DC in the week preceding CAD stroke diagnosis. 582 stroke patients. 2,328 matched controls.

► Smith et al.⁶ discovered patients were six times more likely to have received spinal manipulative therapy (SMT) in the 30 days preceding CAD stroke diagnosis. 51 stroke patients. 100 matched controls.

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▶ Dittrich et al.⁷ discovered patients were no more likely to have received CMT in the 30 days preceding CAD stroke diagnosis. 47 stroke patients. 47 matched controls.

▶ Cassidy et al.⁸ discovered patients were 1.4 times more likely to have visited a DC in the 30 days preceding CAD stroke diagnosis. Additionally, this study discovered patients were just as likely to have visited a primary care physician (PCP) in the 30 days prior to being diagnosed with a stroke. 818 stroke patients. 3,164 controls.

▶ Thomas et al.⁹ discovered patients were 25 times more likely to have experienced recent minor mechanical trauma to the neck, including exposure to CMT, in the three weeks preceding CAD stroke diagnosis. 47 stroke patients. 43 controls.

Making sense of these results:

Current evidence cannot determine whether CMT causes stroke. Note that Cassidy et al.⁸ is the most robust study yet performed on this topic due to its inclusion of so many patients and its lengthy duration.

A reasonable explanation of each study's results in Table 1 is in the Discussion section of the Cassidy et al.⁸ study. This study discovered that a small risk existed of developing a CAD after a DC visit. It discovered a similar risk after a primary care physician (PCP: MD/DO), visit. When compared, no difference was found between the risk of developing a stroke in the 30 days after visiting a DC and the 30 days after visiting a PCP. The risk similarity is thought to be explained by patients' complaints of neck pain or headache symptoms. Such symptoms may be related to the early stages of CAD. Therefore, it is realistic to expect a subtle increase in stroke diagnosis within 30 days of a visit to any healthcare provider involved in CAD management.

If a strong relationship had been found between CMT and CAD stroke, it should have resulted in a significant increase in CAD diagnoses following DC visits. The failure to detect such a relationship in the Cassidy et al.⁸ study seems to discredit the argument that CMT is strongly associated with stroke production via CAD:

"The increased risk of VBA stroke associated with chiropractic and PCP visits is likely due to patients with headache and neck pain from VBA dissection seeking care before their stroke. We found no evidence of excess risk of VBA stroke associated with chiropractic care compared to primary care."⁸

In summary, the association between CMT and CAD stroke remains controversial. CAD stroke is a rare event. Conclusive evidence is lacking to establish a strong association between

CMT and CAD stroke. Evidence is also lacking establishing absolutely no association.^{10, 11}

Future high-quality studies should investigate this area to help healthcare providers better identify and care for patients on the verge of a CAD stroke.

How can DCs respond?

I recommend pointing out that many clinicians inappropriately use individual patient encounters to identify a CMT/CAD association. I would state that case-control studies are specifically designed to evaluate risk factors for rare conditions. They should be the source of information due to the rarity of CAD.

Currently, inconsistencies exist between the few studies that have evaluated a CMT/CAD stroke association. But strong evidence states that developing a stroke after a DC visit is rare and similar to the risk of developing a stroke after a PCP visit. You may wish to emphasize that this topic remains very controversial and requires further research.

I believe that acknowledging the facts and the limitations of our current understanding is helpful. An open, honest approach will add to your credibility as a healthcare provider who values patients' health above all. ■

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