

Letter to the Editor

TO THE EDITOR: In your May issue, Khan et al. (1) reported a case of internal carotid artery dissection (ICAD) with associated oculosympathetic palsy, which followed chiropractic manipulation (CM) that had been performed one day earlier. However, it had previously been reported that the medical literature does not support a clear causal relationship between CM and ICAD (2). There are often confounding factors, such as connective tissue abnormalities (3), underlying arteriopathies (4), hyperhomocysteinemia (5), or coexistent infections (6), any of which may obscure a cause-and-effect relationship.

Based on two epidemiological studies that reported the incidence of ICAD at 2.6 and 2.9 cases per 100,000 population yearly (7, 8), nearly 8,000 ICADs are estimated to occur in the United States each year. Since the typical ICAD patient experiences prodromal symptoms that include headache and neck pain, it is likely that a proportion of these 8,000 patients will consult chiropractic physicians in the days, weeks, or months before the ultimate ICAD diagnosis. The mere fact that an ICAD develops at some point in time following CM does not establish a causal relationship. A causal relationship may exist in cases where head or neck pain with ensuing ischemic signs develops immediately following or within hours after CM, but because of the widespread uncertainty concerning the etiology of ICAD (9, 10), there will always be a measure of doubt about the true cause.

Stringer and Kelly (11) propose a mechanism for traumatically induced ICAD that involves a sudden, severe stretch of the internal carotid artery over the upper cervical spine when the neck is hyperextended and laterally flexed to the opposite side. However, CM is a highly specialized procedure which is the focal point of a chiropractic physician's education and no CM maneuvers that resemble this description are taught in any of the chiropractic institutions in the U.S., to our knowledge. Violent long-lever manipulations may sometimes be used by untrained manipulators, which may be the reason that non-chiropractic providers have been responsible for a disproportionate share of reported cases of ICAD following manipulation (2, 12).

Khan et al. suggest in their conclusion "...that patients with neck pain be examined and neuroimaged in order to exclude possible underlying pathologies before receiving any manipulation of

the neck." This suggestion is unreasonable, given that the odds of developing ICAD that is temporally related to CM has been estimated at approximately 1:601,145,000 (2). Moreover, ionizing radiation itself may pose a health hazard, creating an unfavorable risk-benefit scenario for obtaining the image.

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AUTHORS' RESPONSE: Haneline and Cooperstein point out in their letter that a causal relation between chiropractic manipulation (CM) and internal carotid artery dissection (ICAD) is only likely if symptoms of oculosympathetic palsy occur immediately or within "hours."

In the present case, it is impossible to quantify the exact time interval between CM and ICAD, since the patient awoke with symptoms the morning following the manipulation. Therefore, we suspect that the symptoms of ICAD may well have begun in closer temporal proximity to the CM than can be quantitated. In other words, though the left eyelid droop was first noted the "following morning," the onset of the ICAD undoubtedly occurred at some earlier time, most likely while the patient was sleeping.

ICAD is clearly a rare complication of CM. Our case report implies that there may well be a causal link in some patients and that physicians should be aware of this possibility. We also continue to believe that it would be prudent to perform neuro-imaging when CM is required repeatedly or when there are other possible risk factors for dissection, including poorly controlled hypertension or known cerebrovascular disease.

To conclude, we agree that it is difficult to prove a causal association from only a case report, as proving causation generally requires well-controlled studies. Nevertheless, given the strong tem-

poral relationship between the cervical chiropractic manipulation and carotid artery dissection in this patient, a coincidental association appears less likely. Furthermore, other studies have also reported a similar temporal association between cervical manipulation and carotid artery dissection (1–5).

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