

# Letters to the Editor

To the Editor:

In reporting a rare consequence of cervical manipulation, the article about chiropractic sympathectomy, by AM Khan et al. (1), should be of interest to all health care providers whose scope of practice includes spinal manipulative therapy (SMT). Since there is increasing utilization of SMT by medical doctors and physical therapists (2), no profession is immune to the sequelae of a manipulative procedure (3, 4).

We agree that health care providers should be aware of the potential adverse reactions associated with an intervention. However, it is unreasonable to recommend premanipulative neuroimaging for all neck pain patients as a screen for patients at risk of subsequent arterial dissection. The authors appear unaware of the relevant studies, including imaging of the neck arteries of patients with known dissections and stroke, which conclude that there do not appear to be clinical, laboratory or imaging studies which conclusively demonstrate any predisposition to arterial dissection from cervical SMT (2, 5). We hope that interdisciplinary clinical and pathological studies may provide clearer direction in this regard.

Finally, to title this article “Chiropractic Sympathectomy” is incorrect pathologically, especially in consideration of the patient’s reported full recovery. As noted, the patient suffered an oculosympathetic palsy that appeared to be temporally associated with a cervical manipulation. Surely, patients’ and practitioners’ interests are better served when authors of scientific and professional articles restrict themselves to being factual and accurate, leaving sensationalism and conjecture to the tabloids.

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## References

1. Re: Khan AM et al. Chiropractic sympathectomy: carotid artery dissection with oculosympathetic palsy after chiropractic manipulation of the neck. *Mt Sinai J Med* 2005; 72(3):207–210.
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Authors’ reply:

Thank you for your interest in our article.

We agree that no profession is immune to sequelae of a manipulative procedure but must emphasize that all should be aware of potential complications to spinal manipulative therapy (SMT) (1–5). We are also aware that there is no screening imaging of choice to alert the health care profession to potential cases of arterial dissection. However, we don’t agree that there are no clinical, laboratory or other warning signs. We would like to point out some of these risk factors, e.g., hereditary connective tissue disorders such as Ehlers Danlos syndrome (EDS), genetic diseases (MTHFR), familial and seasonal patterns, infections, homocysteinemia, and fibromuscular dysplasia (6–19). High-risk groups should be identified and further testing with imaging modalities should be done if deemed necessary (20–22).

Drs. Steiman and Mior imply that we were unaware of a number of studies (e.g., Haldeman et al., *J Neurology* 2002; 249:1098–1104 and Smith et al., *Neurology* 2003; 60:1424-1428) “which conclude that there do not appear to be clinical, laboratory or imaging studies which conclusively demonstrate any predisposition to arterial dissection from cervical SMT.” We would like to point out that both of these works were retrospective studies that showed that cervical SMT preceded the occurrence of stroke and cerebral artery dissection in a significant number of patients. Neither study addressed the issue raised as to whether pre-SMT neuro-imaging might reduce the occurrence of neurological sequelae in patients with neck pain. Until this point is resolved, we continue to believe that neuro-imaging is clinically and medicolegally prudent prior for SMT for patients with neck pain.

Drs. Steiman and Mior also question the use of the term “chiropractic sympathectomy,” since it is “incorrect pathologically” for a patient in whom the symptoms were reversible. On this point, we also disagree. There are other instances where the term “sympathectomy” is employed when the condition is not permanent. For example, “chemical sympathectomy” is a procedure used to treat reflex sympathetic dystrophy despite the

recognition that its effects are transient. Thus, far from representing “sensationalism” and “tabloid” journalism, we believe that the term we chose for this article is appropriate and based on established medical precedents.

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### To the Editor:

I am a medical doctor studying in Turkey. My speciality is obstetrics and gynecology. While preparing an article about fetal growth restriction and metabolic syndrome, I found an article in *The Mount Sinai Journal of Medicine* (vol. 72 no. 4 July 2005) titled “The Metabolic Syndrome and Cardiovascular Disease.” In the article, the WHO criterion for microalbuminuria is given as an albumin excretion rate of “≥ 20 mg/min.” I think the milligram terminology should be micrograms. Aside from this, the article was quite excellent, because the pathophysiology was described so clearly.

I look forward to reading future articles in the *Journal*.

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### Author’s reply:

The albumin excretion rate used by WHO in the definition of metabolic syndrome is indeed greater than or equal to 20 micrograms/min, as outlined in a 1999 report (1). Furthermore, a subsequent WHO report discouraged the use of the term “microalbuminuria” in favor of the phrase “abnormal albumin excretion rate” (2).

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1. [http://whqlibdoc.who.int/hq/1999/who\\_ncd\\_ncs\\_99.2.pdf](http://whqlibdoc.who.int/hq/1999/who_ncd_ncs_99.2.pdf) (accessed 12/13/05)
2. <http://whqlibdoc.who.int/hq/2002/9241590483.pdf> (accessed 12/13/05)

To the Editor:

Organophosphate poisoning (OPP), acute and chronic, still remains an underrecognized medical health problem across the world. Sebe and colleagues, in a recent article (1), report a pregnant woman with fetal death after ingestion of chlorpyrifos, a situation that is even more neglected in toxicology. The apparent 'better' outcome of the woman in the case study who noticed loss of fetal movements within two hours of ingestion, makes one speculate whether the diffusion of chlorpyrifos was diverted towards the fetal circulation. And, if so, do pregnant women with acute OPP need a different regime or different formulation for cholinesterase reactivation with oxime?

Chlorpyrifos is extremely lipophilic, and equilibration between maternal and fetal blood may occur in a matter of hours. U.S. studies on indoor pesticide use and prenatal exposure have shown a significant inverse relationship between birth weight and length (a decrease in birth weight by 42.6 gm and in birth length by 0.24 cm) with each log unit rise in plasma chlorpyrifos levels (2). A recent study has shown that chlorpyrifos is teratogenic and embryotoxic in mice at doses below those that cause significant maternal toxicity (3). Chlorpyrifos is bioactivated by cytochrome P450-dependent desulfuration (CYP2D6 isoform) in the liver to chlorpyrifos-oxon. Studies using quinine as a specific inhibitor of CYP2D6 have shown that individual polymorphisms of CYP2D6 can influence organophosphate toxicity (4). CYP2D6 expression has been detected in fetal liver, and 3–10% of Caucasians are poor metabolizers due to inheritance of 2 defective CYP2D6 alleles. Fetal hepatic drug conjugation may prolong fetal exposure to metabolites, and if the drug is excreted in fetal urine, it can be recycled via amniotic fluid and fetal swallowing which may prove to be lethal.

Reactivation of inhibited acetylcholinesterase (AChE) by nucleophilic displacement of the OP

moiety from the active-site serine of the inhibited enzyme is the primary mechanism of action of oximes. The rate of this action varies with the structure of the bound organophosphate and the oxime involved. In our study involving acute OPP in South India, we showed that persistent inhibition of butyrylcholinesterase may be the underlying cause of lack of oxime efficacy, and that timing of oxime therapy may be the key to reversing acute OPP toxicity (5). Interestingly, quaternary ligands such as edrophonium and decamethonium have been shown to accelerate the reactivation by oximes by a maximum of 12.0-fold and 3.0-fold respectively, which certainly appears promising (6). The use of such quaternary ligands complexed with oximes may prove to be future therapeutic strategies and merits further study.

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