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E Newsletter

The Chiropractic Board have approved for release the following paper on the risk management of cervical Manipulation.

CERVICAL MANIPULATION RISK MANAGEMENT

The Chiropractic Board has received communication from a patient of a chiropractor, expressing concern about manipulation of the cervical spine and the risk of stroke. The patient approached the Board with a list of recommendations which the Board considered reasonable and has decided that its role as the responsible authority under the HPCA Act 2003, with the best interests of the public and all registered chiropractors, makes it important to review and publish some of the important aspects of risk management when utilising cervical manipulation.

We offer the following, in the form of “question and answer”, for your consideration and comment:

What is the risk of vertebrobasilar stroke (VBS) following cervical manipulation?

Essentially, the risk is extremely low but the consequences if VBS does occur can be catastrophic in terms of mortality and morbidity. A patient who suffers VBS following cervical manipulation will not care what the risk factor is – for that patient it is 1:1.

The incidence of VBS has been researched and reported by many authorities and the figures can be quite confusing. The risk of serious complications has been reported as high as 1:4,500 manipulations and as low as 1:14,000,000 manipulations and both these extremes are probably meaningless clinically. The studies used to produce these figures are not considered valid. Because it is such a rare event there are significant difficulties in designing research trials that would produce meaningful results. There is no international central data base where such events might be formally recorded and this is one reason that the incidence figures are so disparate because various authors have used different data. However, some recent studies have utilised quite impressive data bases and their findings are much more helpful and reliable. Probably the most accurate and certainly the most recent figures from the USA and Canada show an incidence in the population of 0.8-1/100,000.

The problem was summed up by Haldeman, Kolbeck and McGregor (2002) who concluded that “cerebrovascular accidents after manipulation appear to be unpredictable and should be considered an inherent, idiosyncratic and rare complication of this treatment approach”. However, recent communication with Haldeman shows that this conclusion is no longer the opinion of the authors. Rather, “current evidence suggests that these events are not complications, which suggest a cause and effect. Instead they are spontaneous, producing neck pain and headache that causes the patient to seek either chiropractic or physician care. They remain ‘inherent, idiosyncratic and rare’”.

Is there evidence of a relationship between cervical manipulation and VBS?

It depends on which research “evidence” one reads and the need to differentiate between a causal or temporal relationship. Current evidence is strong for a temporal rather than a causal relationship.

Two studies, in Canada in 2001 (Rothwell, Bondy and Williams) and in the USA in 2003 (Smith, Johnston and Skalabrin) reported that individuals experiencing VBA are 5 to 6 times more likely to have visited a chiropractor than age-matched people in the general population without stroke. Both studies have been cited by critics of cervical manipulation as evidence that chiropractic neck manipulation increases the risk of stroke. (The Smith study was critiqued by Coté, Cassidy and Haldeman (Neurology 2003) as having several methodological problems that made the conclusions unreliable).

A more recent study by Cassidy, Boyle, Coté et al (2008) utilised a large government data base from Ontario, Canada containing health care and billing records over an 8 year period (April 1993 to March 2002) covering 109 million person years. The study was designed to reveal if there was an association between visiting a primary care medical provider (PCP) and stroke similar to that for chiropractic. The authors reported that there is a similar association between either PCP visits or chiropractic visits and VBA stroke. They further concluded that 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”.

The conclusions of the Cassidy, Boyle, Coté study show the critical need for performing a comprehensive case history and physical examination. It is clear from this study that any patient presenting with headache and neck pain should be as thoroughly assessed as possible, understanding that such a clinical presentation may be related to VBA dissection in progress.

Another interesting and robust study, “Incidence and Outcome of Cervical Artery Dissection: A Population Based Study”, by Lee, Brown, Mandrekar and Mokri was reported in *Neurology* (November 2006). The study was based on data obtained from the Rochester Epidemiology Project which links with the Mayo Clinic Health system and Olmstead Medical Centre in Rochester, New York. Essentially 100% of the local population is seen by one of these two institutions over a 3.2 year period. The period for the study was 17 years between 1987 and 2003. One of the conclusions of the study was that the majority of cervical artery dissection patients in the community have excellent outcome and, contrary to many tertiary referral series, re-dissection is rare.

Are “screening tests” useful for detecting those patients who may be at risk?

A number of screening tests designed to detect impaired flow in the vertebral arteries have been utilised by chiropractors and other health professionals. Such tests as Maigne’s, Houle’s, and Hautant’s are examples. The most recent evidence suggests that such tests are not useful in ruling in or ruling out the risk of VBS. The Association of Chiropractic Colleges in the USA and Canada has taken the position that their students should be taught that such tests are not valuable in assessing risk.

The most valuable “tests” are the case history and the physical examination.

The case history should include presenting complaint, past health history, family history and personal/social history.

The most important warning that may arise from the presenting complaint is when the patient describes the onset of “neck or occipital pain with a sharp quality and severe intensity, or severe and persistent headache, which is sudden and unlike any previously experienced pain or headache” (Coté, Cassidy and Carroll).

The past health history, family history and personal/social history are also important tools for assessing risk. Two helpful sources in this area are papers by Mann and Refshauge and by Haldeman, Kolbeck and McGregor. According to these authors potential risks include a previous history of ischaemic symptoms, dizziness from head movements, anomalous cerebral circulation, vascular disease, connective tissue disease, hypertension, oral contraceptives, family history of stroke, migraine headaches and smoking. A further more recently discussed potential risk is increased levels of homocysteine and it has been speculated by Rosner that this may be developed as a useful screening tool. For additional information on risk factors we recommend Rubinstein, Peerdeman, van Tulder, Riphagen and Haldeman's "A Systematic Review of Risk Factors for Cervical Artery Dissection" published in *Stroke* (July 2005).

Most physical examination procedures are focused in regard to the presenting complaint in an effort to refine the list of differential diagnoses that flow from the case history. The most important vital sign to record is blood pressure. Moderate to high blood pressure recordings should act as cautionary signs and they should certainly be monitored over a short period to determine if referral for further evaluation is indicated. Orthopaedic tests of the cervical spine should be applied systematically so that the least provocative tests are completed before more provocative tests are attempted.

Should the patient be asked for informed consent?

Yes, absolutely. Regardless of the patient's presenting complaint, the practitioner is responsible to provide sufficient information so that the patient can consent to treatment, understanding the nature of the proposed treatment, its benefits and risks and other treatment approaches that might be considered. Informed consent should be recorded in the patient file.

What are the signs and symptoms of vertebrobasilar insufficiency and/or vertebral artery trauma?

It is critical that the practitioner is able to recognise signs and symptoms of an "adverse event" following cervical manipulation.

Terrett provides an excellent summary of such signs and symptoms with the simple and memorable "5D's And the 3N's"

Dizziness/vertigo/giddiness/light-headedness

Drop attacks/loss of consciousness

Diplopia (or other visual disturbances)

Dysphagia (speech difficulties)

Dysphagia (difficulty swallowing)

Ataxia of gait, walking difficulties or incoordination of the extremities, falling to one side

Nausea or vomiting

Numbness to one side of face and/or body

Nystagmus

What immediate actions should be taken if signs and symptoms of VBS occur during the physical examination or following cervical manipulation?

The most common symptom of VBS is head and neck pain. Another symptom is dizziness. If dizziness is the only symptom, the patient should be rested and monitored to see if the dizziness resolves. If it does, the patient should not be re-manipulated on that visit but should be clearly informed about the absolute need to contact the practitioner if the dizziness returns. Neck and/or head pain should be similarly monitored.

In cases where dizziness is the only symptom and it resolves quickly and does not return, the practitioner must make some very important decisions with regard to further manipulation of the cervical spine. Further manipulation should only be carried out after a comprehensive physical examination that reveals no evidence of signs or symptoms suggestive of vertebrobasilar insufficiency. If cervical manipulation is performed it should be based on clear and objective findings that indicate it is an appropriate and necessary form of care.

If signs and symptoms do not resolve, or if they become progressively worse, the practitioner should call an ambulance and have the patient taken to the nearest hospital emergency department. The ambulance attendants and the emergency department should be informed of the nature of the patient's signs and symptoms and the suspicion of VBS. Under no circumstances should the patient be allowed to drive or travel by public transport or taxi.

Patients who experience signs or symptoms of VBS will be naturally fearful of what is happening to them. It is important for the practitioner to remain calm, explain the potential nature of the signs and symptoms and reassure the patient of the need for referral to a hospital emergency department. The patient's next- or nearest-of-kin should be contacted. The practitioner should maintain daily contact with hospital personnel and with the patient and family.

Should manipulation of the cervical spine be restricted or prohibited?

Some vocal critics of chiropractic promote the prohibition of cervical manipulation based on the potential risk of VBS. Thirty years ago, one medical witness under cross-examination during the Commission of Inquiry into Chiropractic in New Zealand advocated stopping all spinal manipulative therapy because of the risks to the patient that exist from the procedure. The Commission noted that "we are unable to accept this as a realistic or reasonable view" and concluded, "We are therefore satisfied that chiropractors in this country are generally careful and skilled. They are capable of carrying out their treatment with safety to the patient. There must of course always be the case where something goes wrong despite every reasonable precaution. That is a hazard of every technique or occupation. The medical profession itself does not claim to be immune from it. But, with that reservation, our finding is that there is no unusual degree of risk to patients who undertake chiropractic treatment from a registered chiropractor in New Zealand."

Today, the most recent and authoritative document on the treatment of neck pain is the report of the Bone and Joint Decade Task Force on Neck Pain. For Grades 1 and 2 neck pain the Task Force listed the following treatments which showed similar evidence for safety and effectiveness: education, exercise, manipulation, mobilisation, acupuncture, analgesics and low-level laser therapy. The first four treatments listed all fall within the purview of chiropractic practice and should be utilised to a greater or lesser extent when tailoring treatment for an individual patient.

The Chiropractic Board hopes this commentary will be helpful summary of some of the issues and factors associated with cervical manipulation and the rare but potentially serious risk of vertebrobasilar stroke.

We encourage and welcome comment.

The Board acknowledges the following individuals for their review and comments on the draft paper:

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Respectfully submitted, 4 August 2009
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Protecting the safety of the New Zealand public