A suggested protocol for the examination and treatment of the cervical spine: managing the risk

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The purpose of this article is to review what is *generally* acceptable and recommended for the examination and treatment of the cervical spine, particularly when considering the risks of vertebrobasilar accidents.

Chiropractors have always been the primary practitioners of manipulation of the articulations of the human body,[1] having utilized cervical manipulation throughout the history of the profession. Other practitioners have not generally used cervical manipulation either because of lack of proper skills, fear, or ignorance. The chiropractic profession continues to achieve a high degree of success in patient satisfaction in safely providing what has become regarded as a valued and desired service to the public.[1,18,19,20,25] There is no doubt that cervical manipulation is effective in relieving many problems. There are only a few studies suggesting that manipulation may be superior to other forms of treatment, as it relates to pain, stiffness, range of movement and paraesthesia.[2,3] Manipulation to the cervical spine is typically performed upon clinical problems arising from joint dysfunctions producing symptoms such as stiffness, numbness, tingling, dizziness, pain, headaches, as well as problems associated with disc wear or degeneration of the cervical spine.[4–17] Empirically, patients who receive cervical manipulation tend to respond favourably.

However, cervical spine manipulation requires a high degree of skill and ability in order to ensure a correct thrust with a minimum amount of force needed to accomplish the desired goal. This is all the more important because of the many different procedures and techniques that chiropractors use and the inherent variations among patients.

In the cervical region, the potential for injury and a serious adverse reaction to manipulation may be greater than in other areas of the spine.[18] Potentially the worst injury that may happen in a chiropractic practice, is to have a patient sustain a stroke or a severe cervical injury involving the brain stem after a manipulation.[19–22] While these occurrences are rare, they are well recognized by the profession. It was generally conceded in the past that the risk of an adverse cervical reaction such as a stroke is about one in one million[19,21,23,24] cervical manipulations performed. In Canada, a review of recent insurance information suggested that the risk is much lower at one in three million manipulations.[25] Whilst there is no doubt of the benefits of cervical manipulation, it is incumbent upon the chiropractic profession to ensure that the potential risk of a vascular accident is minimized.

History

The initial requirement is to obtain a good case history. This is necessary to address the nature of the presenting complaint and to determine if the problem has the potential to respond to chiropractic care or if it needs to be referred for some alternate care. A good history frequently leads to the diagnosis. A thorough history also helps to establish a plan of chiropractic management of patient care. It also is of major importance if there is litigation as both the chiropractor's thoroughness as well as the appropriateness of care undertaken will be examined, and the history will be a major issue as to care received.

The history should include information that is pertinent to the patient's presenting complaint and general health. For example, has the patient had a history of prior neck problems? What were the events that brought on the neck pain? Has there been an injury or trauma to the neck? Is the patient on medication for high blood pressure? Is there any personal or familial evidence of arteriosclerosis, stroke, or vascular disease? Does the patient smoke or, if female, is she taking birth control pills? Has there been an auto accident or any other injury? Has the patient had any drop attacks or indications of any transient ischemic attacks in the past? All this information should be obtained from the patient. Also, are there additional symptoms such as blurred vision or loss of vision, buzzing or ringing in the ears; any speech impediment such as slurring, any blackouts or numbness, etc.

Examination

After obtaining the case history, an examination should include the physical examination of the neck, including appropriate orthopaedic and neurological tests that are usually performed in the chiropractor's office, as well as the observation and notation of any pertinent data.

An examination of the cervical spine is required prior to any manipulation. Various tests have been suggested such as the Houle's test,[26] also called de Kleyn's test.[27] The Houle's test is usually performed with the patient lying supine with the head extended over the edge of the examining table. The head is

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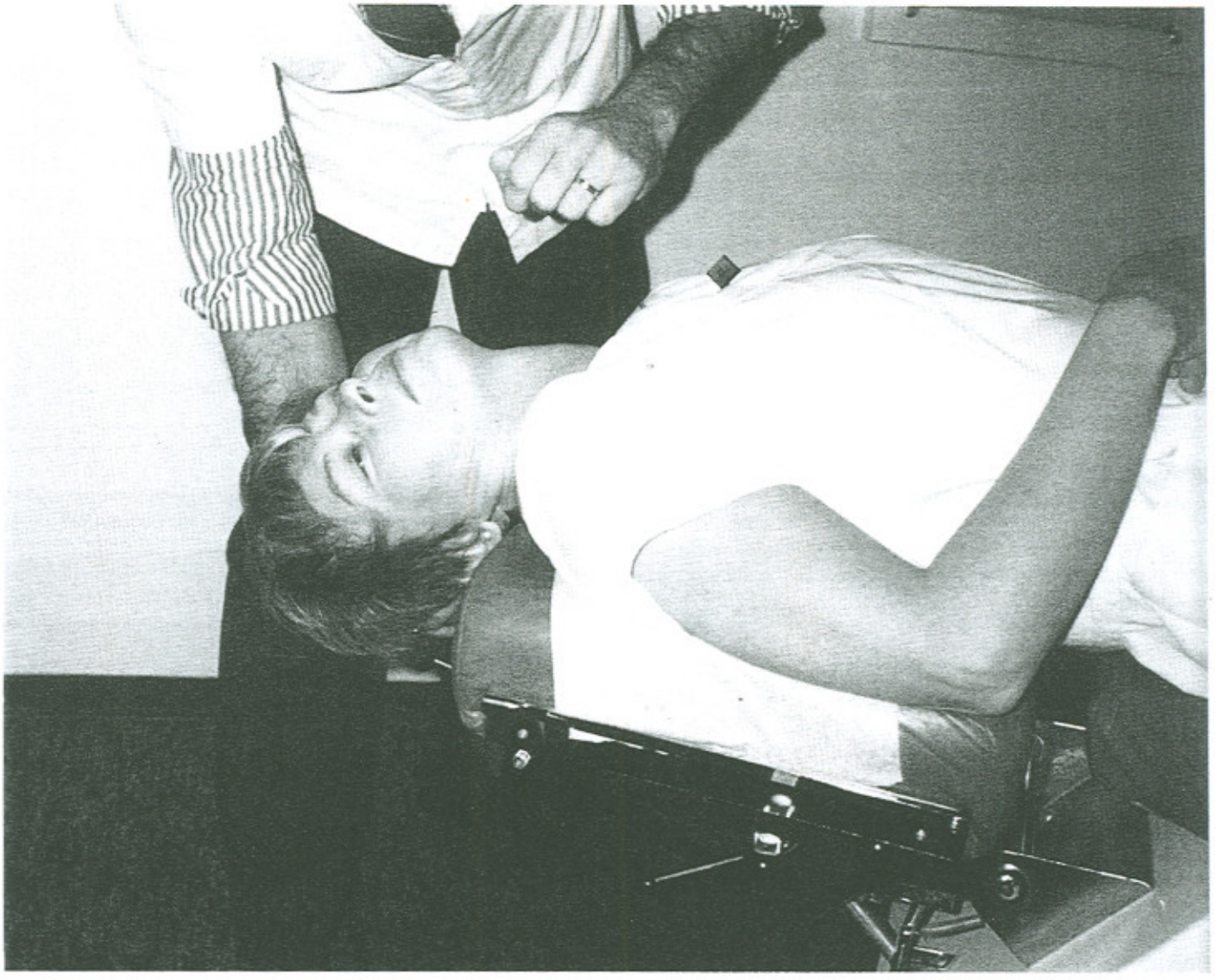

Figure 1 Houle's test or de Kleyn's test.

then gently held in extension and rotated from right side to left side, held in position on each side for a minimum of 20 seconds, preferably 30 seconds. The patient should be asked if they experience any dizziness, nausea or loss of sensation. The eyes should be observed to detect nystagmus (see Figure 1).

The George's test[28] is along the same theme. It is usually performed with the patient standing, although, sometimes sitting. The eyes are closed, the head is extended, turned to the right side or the left side, again held for a minimum of 20 seconds but preferably 30 seconds in each direction and the patient is asked if they experienced any unusual symptomatology. (see Figure 2.)

Hautant's test[29] is done with the patient sitting on the table, eyes closed to eliminate visual cues, arms outstretched, palms upward and the head is bent backwards and turned slightly to the right side and the left side. While held in this position, observe for any dropping of the arms and hands downwards or deviation off to one side, as well as experiencing any dizziness or other unusual symptoms while held in this position, again for 20 or 30 seconds. (see Figure 3.)

In Maigne's manoeuvre,[30] with the patient supine, maintain the head in a position preparatory to and simulating the ma-

Figure 2 George's test.

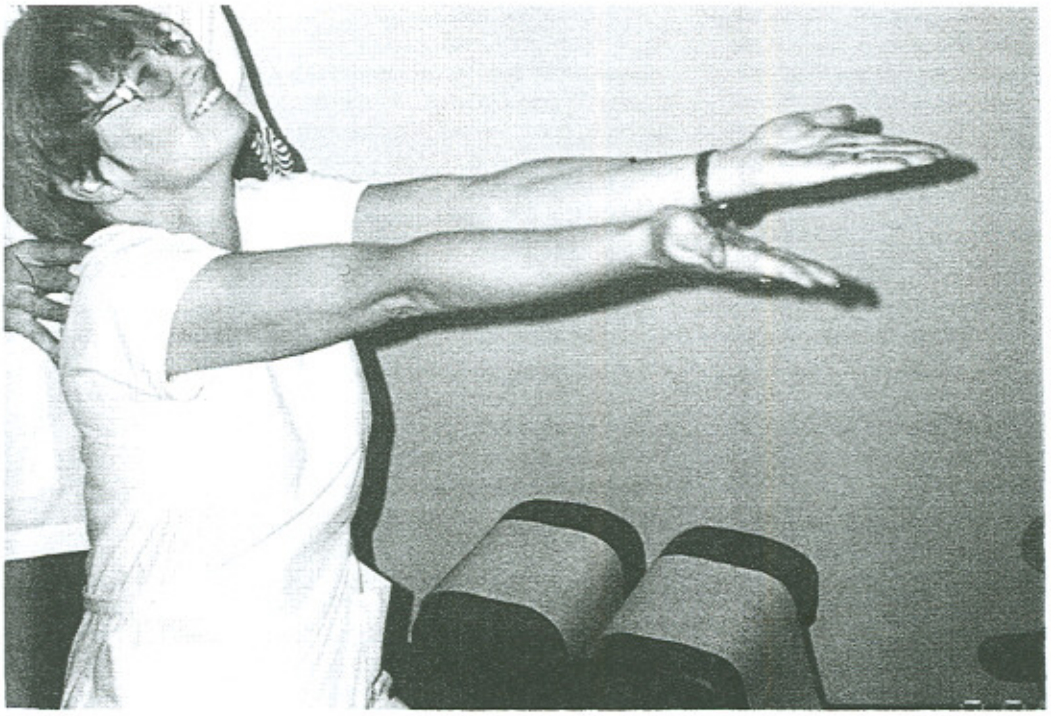

Figure 3 Hautant's test.

nipulation about to be administered. During this time, the patient must be questioned as to the onset of warning symptoms, and, as with all the tests, should be immediately returned to neutral should threatening symptoms occur.

Some practitioners consider Underberger's test the most sensitive of the provocative tests for vertebrobasilar insufficiency. The patient stands with eyes closed and arms stretched forward. The hands are supinated to shoulder height. The patient is asked to mark time, by stepping on the spot. The feet must be lifted high off the ground. While marking time, the patient moves the head slowly into extreme rotation, lateral flexion and extension. Swaying or staggering of the body to one side is suggestive of vertebral artery insufficiency.

Any or all of these tests can be done on an ongoing basis quickly and easily at intervals prior to subsequent manipulations when indicated. It is generally considered that you need not do all these tests, but if the rotation – extension test elicits a positive response at any time, the other tests may help confirm the suspicion of VBI.

It is conceded by most people involved in chiropractic care, as well as neurologists, that the provocative tests are of limited or nonexistent value. This is because none of the tests can conclusively eliminate the possibility of a cerebral vascular accident (CVA) or completely exclude a person from being at risk of this occurring. However, it could be argued that the value of the tests is merely to demonstrate, in the case of litigation, that the chiropractor was aware of the risk of cerebral vascular accidents and was attempting to exclude any significant risks to the patient. As well, it can be stated that those people who become unstable or experience periods of extreme dizziness, nausea, etc. in the course of doing these tests demonstrate a contraindication to manipulation. Therefore, the failure to do the tests may be construed as negligence on the part of the chiropractor because, even though they are of limited value, doing the tests demonstrates the chiropractor's awareness of the possibility of CVA's and concern for the patient's well-being.

Motion palpation tests should be done after examining the full range of cervical motion. Palpation of the individual joints of the cervical spine is necessary especially the upper cervical segments C1 and C2 for areas of possible joint restriction or hypermobility/instability, as well as areas of muscular tenderness.

Blood pressure should be taken if there is any suspicion of vascular dysfunction. Auscultation over the carotid arteries for the arterial sounds of bruit or irregular vascular patterns should also be considered in these cases.

If any of these tests elicit any positive symptomatology, this should be carefully recorded in the chiropractor's notes. Whilst it would be generally conceded that a positive response to any of these tests is not an absolute contraindication to manipulative treatment of the cervical spine, a strong reaction to any of these tests, Houle's, George's, Hautant's, Maigne's, or Underberger's, would be a good indication to proceed with extreme caution and perhaps foregoing cervical manipulation until further investigation. On this point though, many chiropractors know that patients will present with dizziness or neck pain as a presenting symptom and that they often tend to respond favourably to chiropractic care. So it can be stated that, whilst these tests may be an indication to proceed with caution or to avoid cervical manipulation altogether, the practitioner must note this decision in the patient's case history. It is most important that the practitioner be aware of the positive response to these tests prior to proceeding. If a decision to manipulate is made, proceed very cautiously while seriously considering the above issues in the decision making process. The patient's informed consent *must* be obtained at this point.

It is obvious that cervical manipulation should not be performed until appropriate examination has been done. Similarly, there are sufficient reasons in the majority of cases to take cervical x-rays prior to manipulation.[31-37] It is recognized that, with pregnancy and perhaps in young children, this may not be appropriate but, as a general rule, it would be prudent to have radiographic information of this area of complaint when manipulation is contemplated. Certainly if x-rays or tests indicate there may be a possibility of difficulty in adjusting the cervical spine or there is a need to exercise caution, the patient must be fully advised of this and an informed consent obtained prior to performing any manipulative treatment. This point cannot be over-emphasized. It would be improper to proceed with manipulation prior to advising the patient of any anticipated risk.

In summary:

1 There is always an element of unpredictability in doing a cervical manipulation and, no matter what tests are performed, accidents can and do occur even though infrequent.[38,39] No test can be said to specifically and definitely include or exclude anyone from manipulation. Accidents have been known to occur even when all tests have been negative. Patients who have had cervical manipulation in the past and have been very responsive may even be at risk. An accident can still occur on subsequent manipulations. This is, of course, very rare.
2 Some of the test procedures themselves may appear to have some risk and the patient should be carefully watched and monitored when tested, especially with the head and neck extended and eyes shut.[40,41]
3 Record and maintain accurate records on that which was relevant on the office visit.
4 The use of informed consent forms is a reality all professions must deal with. Chiropractic practice is no exception. Any time there is even the slightest indication of material risk to the patient, they must be informed and you must have patient agreement to perform the treatment or procedure anticipated.
5 Not everyone needs to be adjusted and there may be times when other alternative treatment or care is preferred.
6 Never, during initial treatment, force a manipulation. At

times a manipulation may not be successful on the first attempt. It may be necessary to modify the technique with regard to patient position and thrust direction. However, this does not mean that repetitively forcing a joint or using a high degree of force is acceptable. The lightest amount of thrust should be used in any cervical manipulation, and a small increase of force may be acceptable if the first attempt at releasing the joint does not work. Always remember to use a minimum amount of thrust to accomplish the objective.

7 It is generally accepted within the profession that manipulation should not be forced but, additionally, that extreme amounts of extension or rotation of the cervical spine or both together should be avoided.[40-44]

8 Patients who exhibit dizziness during the course of examination or persistent dizziness as part of their symptomatology or who experience dizziness during cervical manipulation, such as in positioning the head or slightly turning the head, should not be manipulated. If the symptomatology is aggravated or brought on by positional changes in the head or by neck movement, then this is a good indication not to manipulate at this time.

9 In all cases of cervical manipulation, it is recommended that specific joint mobilizations take place as opposed to generalized or long lever manipulative thrusts to the neck. Mild traction may assist in performing a gentler smoother manipulation. Until both the patient and the chiropractor are aware of the limitations and effect the adjustment will have on the patient, manipulation should be postponed in favour of mobilization.

10 Never continue to adjust someone who experiences distress such as nausea, severe dizziness, blurred vision, or acute pain. Wait until you evaluate how symptoms stabilize or progress. Then determine what to do i.e. refer, wait a few days, re-evaluate and perhaps continue care, or stop future neck manipulations.

In conclusion, prior to performing cervical manipulation, appropriate history taking, testing and the skilful application of manipulative techniques and procedures must be done and recorded. We must involve the patient in their management. We must have their informed consent prior to undertaking any proposed treatment. It is only when practitioners familiarize themselves with available guidelines and (where appropriate) standards of care will the profession continue to treat the cervical spine free of the criticism of other professions or the public and at the least risk to the patient. Further research and inquiry is necessary before a valid and specific protocol is established.

Definitions

Manipulation: A passive manoeuvre in which specifically directed manual forces are applied to vertebral and extra-vertebral articulations of the body, which suddenly carries the articular element beyond their usual physiological range of movement without passing the limit imposed on their anatomical range of movement with the objective of restoration of mobility.

Mobilization; A passive movement within the physiologic joint space for the purpose of increasing overall range of joint motion.

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