

Standards of practice relative to complications of and contraindications to spinal manipulative therapy

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Frequently, development of standards of practice that determine contraindications of spinal manipulative therapy result from reported complications following adverse reactions. Methods whereby the chiropractic profession can take a more active and responsible role in the further development of such standards are discussed. Common problems which contraindicate or require modification of spinal manipulation are presented.

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KEY WORDS: contraindications, non-indications, complications, standards of care, spinal manipulation, chiropractic.

La mise au point de normes de pratique déterminant les contre-indications de la thérapie par manipulation de la colonne vertébrale résultent souvent de complications rapportées à la suite de réactions adverses au traitement. Les méthodes par lesquelles la chiropratique peut jouer un rôle plus actif et plus responsable dans la mise au point de ces normes sont le sujet de ce débat. Les problèmes courants donnant lieu à une contre-indication des manipulations de la colonne vertébrale ou à une modification de ces manipulations sont également exposés.

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MOTS-CLÉS : contre-indications, non-indications, complications, normes en matière de soins, manipulation de la colonne vertébrale, chiropratique.

Introduction

Standards of practice dealing with the complications of and contraindications to spinal manipulative therapy can be actively determined by the chiropractic profession or accepted passively (imposed by others). The purpose of this discussion is to briefly outline the manner in which the complications of spinal manipulation contribute to the development of cautions and contraindications, which should be observed in applying forceful manual therapy.

When establishing standards of care for any procedure, terms must be defined. Differentiation must be made between contraindication, where a procedure is inadvisable, and a complication, where a procedure produces an adverse reaction which may not be serious. In the latter case, the patient may experience a stiff neck or a temporary increase in pain that readily resolves. A symptom or circumstance precludes a method of treatment when it carries a high risk. In this sense, severe osteoporosis is a contraindication to forceful spinal manipulation due to the risk of pathological fracture. When there is no indication for a procedure, treatment is not warranted. It is conditions where there are non-indications that concern third party payers. Chiro-

practitioners who treat without clear indications for treatment are frequently the target in the development of standards of care because they treat excessively, dramatically driving up the cost of health care.

Who sets standards of care?

Do we let government agencies and insurance companies set the standards by which we practice? Or in the case of contraindications to the primary procedure used in chiropractic practice, do we let the courts decide when manipulation is contraindicated. When it comes to informed consent, the New Brunswick Court of Appeal has found a chiropractor negligent for failing to inform his patient that cervical manipulation carries the risk of stroke, however rare the occurrence.¹

Do we wait for the courts in our land to set standards by which we practice? There are those who think that it would hurt the interests of patients and the chiropractic profession by starting to warn patients of the risk of stroke.² Do we have an ethical obligation to warn our patients of possible complications of manipulation? Informed consent by definition implies the willing, uncoerced acceptance of a clinical intervention by a patient after adequate disclosure by the doctor of the nature of the intervention, alternative, with risks and benefits. The elements of informed consent are: disclosure, comprehension, voluntariness, and competence. We must disclose to the patient the nature of the risks and benefits of the procedure. They must be

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presented in terms that the patient can understand. The patient must voluntarily agree to the procedure and there should be no coercion. The patient must be competent to make that decision, for example, minors cannot give informed consent. This must be given by their legal guardian.

Does the following standard outlined by the Australian Physiotherapy Association meet the above criteria?

"I wish to manipulate your joint using a quick movement in the position in which I am holding your neck. You may hear a click and this is normal."

Followed by:

*"Neck manipulation can be dangerous, but this is extremely uncommon. I have carried out the recommended precautionary tests and in my opinion, there is little risk in your case."*³

One wonders if there isn't an element of coercion when the patient is then asked if they are agreeable for the therapist to proceed with manipulation after the patient's cervical spine has been preplaced in the manipulative position awaiting the thrust. Less threatening to the patient might be the informed consent developed in association with the CMCC's Centre for the Study of Spinal Health (Appendix A), which can be presented prior to positioning the patient for manipulation. The patient's questions can then be answered in a non-threatening manner.

Another factor that must be considered in setting standards for chiropractic care is premanipulative testing of the cervical spine.² Can testing the patency of the vertebral arteries by extension and rotation of the neck (Houle's or George's test) for example, indicate those patients at risk for stroke?^{4,5} We know that as the vertebral arteries ascend through the vertebral transverse processes they are well protected; but they are relatively unprotected in their passage from the atlas into the skull with considerable laxity of the vessels as they course between C1 and C2. This allows the arteries to move freely with movement of the cervical spine and head.⁶ With 30 degrees of rotation, kinking of the contralateral artery occurs as it exists from the transverse foramen, increasing to 45 degrees as the angle of rotation increases. Past 45 degrees kinking occurs in the ipsilateral vertebral artery.⁷

Gentle extension and rotation with the patient supine provides a provocative test for vertebral artery insufficiency. This test should be stopped immediately if nystagmus, vertigo, pallor, visual disturbance or near syncope are produced. An adverse reaction suggests the direction in which manipulation is contraindicated.⁷

Complications of spinal manipulation

While the possibility of vertebral artery occlusion and stroke associated with manipulation has been documented, the incidence is exceedingly rare.^{2,8} What has not been determined is the benefit to risk ratio. With many millions of cervical spine manipulations providing benefit for a wide range of conditions, the benefits would seem to warrant the risk of the rare occur-

rence of adverse reactions when careful screening is applied.⁸

We also know that the mean age of the fifty well documented cases (including 12 deaths) that have been noted since 1947 is 37.9.⁸ With an incidence of nearly 2:1 female to male, predisposing factors such as oral contraceptives must be explored. Identification of patients at risk for vertebral artery syndrome must surely be included in chiropractic standards of care to prevent severe complications of spinal manipulation.

The wisest course of action to prevent vascular complications from manipulation appears to be careful screening, with minimal force introduced in extension and rotation.⁹

Those patients in which forceful manipulation is precluded may benefit from alternative procedures including soft tissue and mobilizing techniques.

APPENDIX A*

Dear Patient:

In our experience, the most effective treatment for spinal joint dysfunction involves manipulation of spinal joints. Specifically, manipulation can reduce pain, tenderness, and muscle spasm, and can improve the mobility of your spine, as well as many other beneficial effects.

As with all other forms of treatment, manipulation of the spinal joints has some unwanted side effects of which you should be made aware. A very small percentage of patients (less than one percent) may experience discomfort after a manipulation, ranging from an aching feeling of stiffness to actual soreness. This may, depending on the type of condition you have and for how long you have had it, be an expected consequence of this form of treatment. In the very rare instance (from one in one million to one in ten million) serious neurological damage may occur as a result of this type of treatment.

We at the Midtown Chiropractic Clinic take every precaution in our diagnosis and treatment to minimize these unfortunate occurrences. Although we offer spinal manipulation with the utmost confidence in its proven benefits, you have the choice to decide not to have this type of treatment. There are other forms of treatment available to you here, including soft tissue therapy, electrical therapy and mobilization, among others.

Please sign below if you understand the described risk and consent to the treatment.

I have read the above statements and have had the opportunity to discuss this with my treating doctor and have any questions answered. I am of legal age of consent.

NAME _____ DATE _____

WITNESS _____ DATE _____

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Severe vascular complications can also arise from failure to identify aortic aneurysms, which can be a cause of low back pain. In such cases, rupture followed by hemorrhage is potentially fatal. Abdominal palpation screening for a pulsating mass determines the need for prompt referral to a vascular surgeon. Most commonly seen in patients in sixth or seventh decade, aortic aneurysm is often visualized on radiographs as a calcific outline of the bulging abdominal aorta.¹⁰ There is little disagreement that prompt referral is the standard of care for patients with this condition. Even though no reported cases have been found, common sense dictates this course of action.

Contraindications to spinal manipulation

Much of what is in the literature concerning contraindications to manipulation comes from accidents reported by the medical profession. Are we not responsible for the identification of those conditions that require prompt referral to other specialists? For example, patients with symptoms of cauda equina syndrome or those with advancing neurological deficits should be referred for neurological consultation without delay.¹¹

Although trauma is not an absolute contraindication to spinal manipulation, patients who have suffered traumatic events require careful examination for areas of excessive motion.¹² Forceful non-specific manipulation is considered an absolute contraindication in areas exhibiting instability.¹³ This includes unstable spondylolisthesis, however, most cases of spondylolisthesis do not exhibit instability, and slippage is unlikely to progress past adolescence.¹⁴ Spinal manipulation has been shown to offer rapid symptomatic relief to many patients with back pain associated with spondylolisthesis.¹⁵ Although there is no evidence that a slip can be reduced by manipulation, spondylolisthesis offers no contraindication to manipulation. High velocity, low amplitude thrust manipulation directed to the joints above and below the slippage can reduce pain and disability in patients suffering from low back pain and should be considered a safe procedure when applied by skilled practitioners.¹⁶

Is arthritis categorically a contraindication to manipulation? It is widely accepted that inflammatory joint disease is a contraindication to manipulation.^{17,18,19,20} Not all joint pathology, however, should be so classified. Patients with ankylosing spondylitis may benefit from manipulation when the disease is quiescent,¹⁷ and manipulation of the thoracic spine of these patients can promote respiratory movement, which improves the general health of the patient.

Patients with degenerative joint disease (osteoarthritis) of the lumbar spine have been shown to benefit from manipulation.²¹ The episodic fixations frequently accompanying the degenerative process are considered to be the lesion that responds to manipulation.²² Osteoarthritis of the cervical spine may respond better to gentle mobilization followed by more vigorous manipulation, but this condition does not pose a greater risk of vascular complications following cervical spine manipulation and should not be considered a contraindication to this pro-

cedure.

The establishment of standards for the contraindication of forceful manipulation are, for the most part, based on common sense,²³ but those conditions that pose a risk should be identified with treatment modification appropriate to each case suggested. Like any other procedure requiring skill, safe manipulation is dependent on the training proficiency and experience of the practitioner. In addition to good diagnostic skill, the key factor in the prevention of complications of manipulation is the use of minimum, specifically directed force of high velocity, and low amplitude.

Conclusion

This limited discussion outlines the manner by which standards of practice to prevent complications of spinal manipulation are developed. The chiropractic profession must accept the responsibility for further development of standards to prevent complications of spinal manipulative therapy. Current guidelines noted by a number of authors have been summarized in Table I.^{8,11,13,17,18,19,20,23}

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Table 1 GENERAL HEALTH PROBLEMS WHICH EITHER CONTRAINDICATE OR REQUIRE MODIFICATION OF SPINAL MANIPULATION

Condition	Potential Complications of Manipulation	Method of Detection	Modification of Patient Management
Vascular complication			
1. Vertebral-basilar insufficiency	Vertebral-basilar infarction	Predisposition detected by cervical extension-rotation test, Doppler angiography	Cervical manipulation contraindicated in extension and rotation, use of soft tissue and mobilizing techniques, refer to vascular surgeon for evaluation
2. Atherosclerosis of major blood vessels	Blood vessel rupture (hemorrhage), dislodged thrombi	Palpation, auscultation, x-ray visualization, Doppler	Soft tissue and mobilizing techniques with light adjustments, refer to vascular surgeon
3. Aneurysm	Rupture and hemorrhage	Irregular pulse, abdominal palpation, auscultation, x-ray	Refer to vascular surgeon
Tumors			
1. Lung	Metastasis to spine, ribs	Auscultation, lab findings, x-ray, MRI	Referral
2. Thyroid	Metastasis to spine	Palpation, x-ray, and lab findings, MRI	Referral
3. Prostate	Metastasis to spine	Palpation, MRI, x-ray and lab findings, rectal exam	Referral
4. Breast	Metastasis to spine	Palpation, MRI x-ray and lab findings	Referral
5. Bone	Pathologic fractures	X-ray and lab findings	Referral
Bone infections			
1. Tuberculosis	Pathologic fracture	Biopsy x-ray and lab findings	Referral
2. Bacterial infection (osteomyelitis)	Pathologic fracture	Biopsy x-ray and lab findings	Referral
Traumatic injuries			
1. Fractures	Increased instability, delayed-healing, fracture	X-ray findings including CT	Referral
2. Joint instability or hypermobility	Increased instability	Stress x-ray views, palpation, stress ROM	Manipulation of area fixation, immobilization or avoidance of area of instability; if severe, refer for surgery
3. Severe sprains or strains	Increased instability	Stress ROM, stress x-ray views, motion palpation	If severe, refer for surgery, manipulate area of fixation
4. Unstable spondylolisthesis	Increased instability	Stress x-ray, motion palpation	Avoid areas of slippage, specific manipulation to levels above and below

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Table 1 Continued

Condition	Potential Complications of Manipulation	Method of Detection	Modification of Patient Management
Arthritis			
1. Rheumatoid arthritis	Transverse ligament rupture, increased inflammation	X-ray and lab findings	Forceful manipulation of the cervical spine contraindicated, use soft tissue and mobilizing techniques with light adjustments
2. Ankylosing spondylitis	Increased inflammation	X-ray and lab findings	In the acute stage mobilizing techniques and exercise contraindicated, bed rest; mobilizing technique useful later
3. Psoriatic arthritis	Transverse ligament rupture	X-ray findings, skin lesions	Forceful manipulation contraindicated, use soft tissue mobilizing technique
4. Osteoarthritis (unstable stage)	Increased instability	Pain and stiffness of joint, stress x-ray findings	Immobilization of area if severe
5. Osteoarthritis (late stage)	Neurologic compromise	X-ray findings	Mobilization, gentle manipulation
6. Uncoarthrosis	Vertebral artery compromise	X-ray findings	Gentle traction, mobilizing and soft tissue techniques
Psychological consideration			
1. Malingering	Secondary gain syndrome	Exaggerated response, inconsistencies in signs and symptoms	Release of patient
2. Hysteria	Prolonged treatment	Exaggerated response, inconsistencies in signs and symptoms	Refer for psychological evaluation
3. Hypochondriasis (dependent personality)	Dependency on chiropractic	Delayed healing time	Reevaluate patient, wean with reassurance
4. Pain intolerance	Unnecessary pain	Patient communication, excessive tension on palpation	Gentle maneuvers and reassurance
Metabolic disorders			
1. Clotting disorders	Spinal hematoma	History of anticoagulant therapy, pulse, bruises	Forceful manipulation contraindicated
2. Osteopenia (osteoporosis, osteomalacia)	Pathological fractures	History of long-standing steroid therapy, and post menopausal female, anticonvulsive medication, and malabsorption syndrome and nutritional deficiencies, x-ray findings	Forceful manipulation contraindicated, use mobilizing technique with light adjustment
Neurologic complication			
1. Sacral nerve root involvement from medial or massive disc protrusion	Permanent neurological deficits	Neurological and orthopaedic tests, CT scan and myelography	Refer patient
2. Disc lesions (advancing neurological deficits)	Permanent neurological deficits	Neurological and orthopaedic tests, CT scan and myelography	Refer patient
3. Space-occupying lesions	Permanent neurological deficits	MRI, CT scan, myelography	Refer patient

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