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Professional Notes

RAND Expert Panel Supports Spinal Manipulation for Most Back Pain

'The Appropriateness of Spinal Manipulation for Low Back Pain', Paul Shekelle MD MPH, The RAND Corporation 1991, CCR Conference on Research and Education, Monterey, California, June 21, 1991.

Chiropractors are familiar with the facts that:

- There is now compelling scientific evidence that chiropractic manipulation is effective in the management of both acute and chronic mechanical low back pain.
- There is more controlled trial evidence supporting manipulation for back pain than any other treatment approach.

Accordingly chiropractors tend to gravitate towards other areas of interest – the preventive role of manipulation and its effects on many other conditions. (For vertigo, see main article).

However many current medical texts, written by authors with no training in and little experience of manipulative health care, continue to doubt the validity of manipulation. In this context it is highly significant that a new expert panel convened by the respected RAND Corporation and dominated by leading medical experts on back pain has concluded that spinal manipulation is appropriate for most common forms of low back pain.

There was also unanimous agreement that a reasonable trial of spinal manipulation – i.e. an initial period of treatment in which improvement should be observed –

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Vertigo

A. Introduction

"It is important to stress that a cervical factor may be present in all forms of vertigo and dizziness … in no field is manipulation more effective than in the treatment of disturbances of equilibrium."[1]

Karel Lewit MD, neurologist.

1. Vertigo, the sensation that you or the world is spinning, is a common form of disequilibrium and is one of the three most common complaints following whiplash injury.[2] The other two are neck muscle tenderness/pain and headache.

2. This Report reviews chiropractic management of vertigo with emphasis on a new study by Fitz-Ritson DC[3] which:

a) Reports a 90% complete success rate with a population of 112 acute and chronic patients suffering vertigo following neck injury.

b) Describes an established method of differential diagnosis of cervical vertigo, and a four stage course of management/ treatment.

c) Provides good reviews of the literature and commonly accepted causes of vertigo.

B. Definitions and Mechanisms

3. With vertigo the brain has a false perception of balance and motion because of flawed information from the nervous system. There are various definitions of vertigo but it may be:

a) *Subjective* – the patient feels that he/she is rotating; or

b) *Objective* – the surroundings are rotating.

4. The body's communication center for balance or equilibrium is found in the brainstem (medulla) – where the brain narrows to form the top of the spinal cord. The brainstem contains the 'vestibular nuclei' which:

a) gather and process information on position and movement from *above* (the vestibular nerves descending from the inner ear) and *below* (input from sensory nerves throughout the body transmitted by the spinal cord).

b) Receive and process related information on vision and sound.

5. Accordingly causes of vertigo may be:

a) A problem in the central nervous system (CNS) – the brain, brainstem, or spinal cord (e.g. cerebrovascular malformations; brainstem ischemia; inflammation/fever). This is 'central vertigo'. And/or

b) A problem in the muscles, joints and ligaments of the neck (cervical spine) irritating nerves and altering incoming information to the central nervous system (CNS). Such a condition is called 'cervicogenic' or 'cervical vertigo'.

6. Stress or injury to the joints and muscles of the cervical spine activates two types of sensory nerves:

a) *Nociceptors* – the nerves which report pain to the CNS.

b) *Proprioceptors* – the sensory nerves which report movement and position from inside the body – from the muscles, joints and ligaments.

7. Spinal muscles and joint capsules, not surprisingly, are particularly rich in proprioceptors and have a major role in governing balance. Spinal muscles in the cervical spine – especially the upper neck – have the strongest and most direct proprioceptive input into the CNS.

8. Fitz-Ritson reviews the three accepted mechanisms for cervical vertigo, all of which are "well supported clinically and experimentally":[3]

a) *Cervical sympathetic irritation*. Stress or injury to neck muscles and joints is picked up or 'received' by proprioceptors. They report a flow of altered sensory input into the spinal cord and brainstem (CNS). This bombardment causes adaptive change in the CNS and, once a certain threshold is reached, vertigo.

b) *Abnormal neck reflex*. Similar to the above. Vertigo results from a barrage of altered reflex information that confounds the vestibular nuclei in the brainstem.

c) *Mechanical compression or irritation of the vertebral artery*. Disturbed function of the neck muscles and/or joints interferes with the vertebral artery which supplies various structures in the head – including the labyrinths (inner ear) and the brainstem including the vestibular nuclei.

This is an area that requires careful understanding and differential diagnosis since in some circumstances vertebral artery insufficiency associated with symptoms such as vertigo can be a

contraindication for some forms of manipulative therapy. This is well described in chiropractic[4,5,6] and medical[7,8] literature.

However in the words of Lewit, an internationally respected Czech neurologist with long experience of treating these problems with manipulation:

"Adequate manipulative treatment not only gives satisfactory results in cases where no other non-surgical methods are effective" but enables the practitioner "to single out those patients in whom arteriography is indicated with a view to possible surgical treatment."[9]

C. Fitz-Ritson Study

Methods

9. This was a prospective study involving 235 consecutive patients with neck injury, predominantly whiplash, presenting to a chiropractic practice in Toronto, Canada between 1986 and 1990.

10. 112 (47.6%) had cervical vertigo (subjective or objective) assessed on the following 2-step test, performed with the practitioner behind the patient and anticipating a fall or nausea:

a) Firstly, seated on a stool that rotates, with thighs parallel to the floor and eyes closed, the patient shakes his/her head from side to side as far and quickly as possible. Resulting vertigo may be central (arising from the vestibular nerve in the inner ear) or cervical (arising from neck muscles and joints).

b) Secondly, seated upright on the stool with feet at shoulder width, the patient uses his/her feet to rotate the entire body side to side. Once the patient is comfortable with the procedure, the doctor stands behind and holds the patient's head steady – but with some traction to pre-stretch the neck muscles.

The patient then rotates as above, but with eyes closed. Any vertigo now experienced is cervical vertigo since there is no movement to stimulate the vestibular nuclei. This swinging chair or stool test, reviewed in the chiropractic literature since 1977[4,5] was first developed in Europe.

11. Assessments of vertigo were made initially, before the 6th treatment, and – if the patient remained under treatment – before the 9th, 12th, 15th and 18th treatments.

Management

12. The 112 patients with vertigo included 69 (62%) with varying stages of *acute* neck injury (defined as less than three months) and 43 with **chronic** injury (over three months). They all experienced pain and restricted movement as well as vertigo.

Accordingly individual treatment varied, but was consistent with one overall management plan. This is described by Fitz-Ritson in considerable detail in a companion paper.[10] In view of the excellent results reported, it is now described in some detail. Figure 1 lists all treatments used during the course of chiropractic care.

13. Overall management goals are described as:

- Alleviate pain as quickly as possible.
- Restore motion then strengthen as early as possible.
- Prevent chronic pain patterns from developing
- Rehabilitate not only the injured area but also the whole person.

14. Four defined stages of management were:

a) *Pain reduction*. Major objective is 'reduction of inflammation, muscle spasm and pain'. Operational endpoint is 'no pain at rest'. An additional goal is biomechanical correction of muscle and related but distal joints.

b) *Mobilization*. Major objective is 'improvement of function or movement'. Operational endpoint is 'capacity to perform unstressed basic daily activities'. Treatment now includes:

- Mobilization of injured joints, followed by ice therapy in the office and at home.
- Specific adjustment or manipulation of distal but related areas.
- Active exercises for stretching and range of motion. Continued electrical therapy and soft tissue therapy (triggers, stretching).

c) *Manipulation and conditioning*. Major objectives are 'restoring normal movement patterns and normal strength'. Operational endpoint is 'capacity to perform normal activities under some constraints'. Treatment now includes:

- Adjustment of the injured joints.
- Exercise – isometric for strength in the cervical spine, and general for overall muscular tone and cardiovascular fitness.
- Postural/ergonomic advice.

d) *Rehabilitation*. Major objectives are 'return to full lifestyle and prevention of future problems'. Operational endpoint is 'full recovery and end of active care'.

15. This management regime, Fitz-Ritson emphasizes, "addresses the three etiological causes of cervical vertigo" – cervical sympathetic irritation, abnormal neck reflex, and mechanical irritation or compression of the vertebral artery.

"A great deal of attention was applied to the soft tissues, especially the muscles and areas that provide afferent input to the muscles, such as the temporomandibular joints and their surrounding muscles ... with the return to near normal function of the muscles and their proprioceptors, along with the normal mechanics of the joints, the afferent flow into the spinal cord and brainstem nuclei will return to normal levels (restoring) homeostatic equilibrium (and) decreasing the symptom of vertigo."

Figure 1

Treatments used in Fitz-Ritson Study

- Rest and support in the acute phase, depending on severity of the injury.
- Ice therapy and moist heat
- Nutritional therapy
- Trigger point therapy and stretching
- Low force joint mobilizations
- Electrotherapy
- Spinal manipulation
- Passive exercises
- Active strengthening exercises
- Postural/ergonomic advice
- Lifestyle management advice

Results

16. Of the 112 patients with cervical vertigo:

a) 101 (90.2%) had no symptoms after 18 treatments.

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is four weeks. This is a fundamental change from the traditional medical stance that manipulation should be discontinued after 2 or 3 treatments.

The expert panel conclusions were first presented by Paul Shekelle MD, a researcher at RAND, during June at the annual meetings of the Consortium for Chiropractic Research and the California Chiropractic Association at Monterey. (For further details on publication – see end of this item). Who was on the panel and how were decisions made?

Procedure

For the past 10 years the Health Sciences Department at RAND, in conjunction with UCLA, has pioneered the development and application of methods to assess the appropriateness of medical procedures. Sound method involves three steps:

1. Literature review. (For spinal manipulation RAND found 74 sources – 21 controlled trials, 12 case series, 11 case reports, 21 reviews and 9 texts).

2. Development of a list of patients/cases that might be subject to the procedure being assessed – here manipulation. (This RAND study identified approximately 1500 types of patient that might receive manipulation for low back pain. This list was developed from the literature, input from experts, and observing and questioning clinicians at work).

3. Assessment of the appropriateness of the treatment for each patient type, this assessment being by a panel of experts using established consensus methods.

The Expert Panel

1. RAND has tested many medical procedures by expert panel. Its established rules for a panel include:

- nine members
- a mix of academics and private practitioners
- geographic representation; and most importantly
- a mix of those who use the treatment method and those who do not.

2. Its inter-disciplinary panel for spinal manipulation comprised:

- Three chiropractors, two in private practice.
- One osteopath
- One internist
- Two medical orthopaedists
- One family MD
- One neurologist

(For details see Table 1)

3. Each expert did an 'appropriateness rating' privately on two occasions. The first rating was on the expert's own assessment of the 1500 patient types, based on the literature review and his/her own experience. The second rating was made after a consensus meeting of all the experts. Disagreement after first rating was 37%, after second rating only 12% – indicating that controlled consensus methods work. Results

1. The expert panel – the majority of which was comprised of opinion leaders in medicine – agreed that spinal manipulation was *appropriate* for the most common forms of low back pain. These include, for example:

- pain arising within the last three weeks
- pain with minor neurologic findings (e.g. unilateral dermatormal sensory deficit, stable motor weakness, unilateral diminished ankle reflex); and pain with unremarkable lumbosacral radiographs.

2. The panel was *equivocal* – i.e. could not reach a satisfactory agreement according to the stringent RAND criteria – on manipulation for:

- chronic pain
- pain with sciatic nerve irritation, and
- pain in the presence of disc herniation.

In other words there is now enough scientific evidence and clinical experience to provide support for spinal manipulation in these circumstances – this expert panel could neither confirm nor deny the value of manipulation.

3. Manipulation was found to be *inappropriate* in the presence of certain general characteristics, including:

- an unfavourable response to prior spinal manipulation
- the presence of contraindications on lumbar xrays such as malignant tumours, osteomyelitis, inflammatory arthritis, septic arthritis, acute or unhealed fracture
- no xrays in the presence of risk factors for contraindications such as fever, history of malignancy, severe osteoporosis, age greater than 50, significant trauma; and major neurologic findings such as cauda equina syndrome or progressive locomotor weakness.

4. There was *unanimous agreement* on what amounted to an appropriate initial course of manipulation. This was a period of four weeks – two weeks each of two different types of manipulation. With evidence of improvement treatment might be continued, with no evidence of improvement it should be stopped.

Publication

1. Dr. Shekelle's summary of the RAND expert panel's findings entitled 'The Appropriateness of Spinal Manipulation for Low Back Pain' is published in the CCR Core Conference proceedings.

2. The literature review by the panel will be available from RAND as a separate publication or monograph by the end of July 1991. (R-4025/1-CCR/FCER. 32 pages). RAND Corporation, 1700 Main Street, P.O. Box 2138, Santa Monica, California 90407-2138. This review, edited by Dr. Shekelle, will also be submitted for publication as a journal article in due course.

3. The expert panel's ratings of appropriateness and other findings will also be available as a monograph from RAND by late July 1991. (R-4025/2-CCR/FCER)

This expert panel process was funded by the Consortium for Chiropractic Research and the Foundation for Chiropractic Education and Research as part of broad ongoing research relevant to development of better guidelines for chiropractic practice. A second expert panel, comprising chiropractors only, has been convened and its results should be available before the end of 1991.

Table 1

Rand Expert Panel Members

Chiropractors

Tom Bergmann DC Private practice, Minnesota. Editor, Chiropractic Technique (Williams and Wilkins).

Tom Hyde DC Private practice, Florida. President, ACA Council on Sports Injuries and Physical Fitness.

John Triano MA, DC Director, Spinal Ergonomics and Joint Research Laboratory, National College of Chiropractic, Chicago.

Medical orthopaedists

John Frymoyer MD Professor, Department of Orthopaedics and Rehabilitation, University of Vermont, Burlington.

Sam Wiesel MD Chairman, Department of Orthopaedic Surgery, Georgetown University Hospital, Washington DC. Joint author of 'Low Back Pain: Medical Diagnosis and Comprehensive Management', Borenstein DG and Wiesel SW (1989), W.B. Saunders Company, Philadelphia; editor-in-chief, 'Seminars in Spine Surgery', W.B. Saunders Company.

Osteopath

James Weinstein DO Department of Orthopaedic Surgery, University of Iowa, Iowa City. Joint author of 'The Lumbar Spine: The International Society for the Study of the Lumbar Spine', Weinstein JN and Wiesel SW (1990) Ed. Com W.B. Saunders Company, Philadelphia.

Internist

Richard Deyo MD, MPH Health Systems Research and Development, Seattle Veterans' Administration Medical Center, Seattle.

Family Practitioner

Peter Curtis MD Private practice and Department of Family Medicine, University of North Carolina, Chapel Hill.

Neurologist

Scott Haldeman DC MD PhD Clinical Professor, Department of Neurology, University of California, Irvine.

The above expert panel was in unanimous agreement that a reasonable trial of spinal manipulation was a period of four weeks – two weeks each of two different types of manipulation. See text of article for consensus on appropriate, equivocal, and inappropriate indications for spinal manipulation.

How to Assess Different Chiropractic Techniques – CCR Adopts a New Model

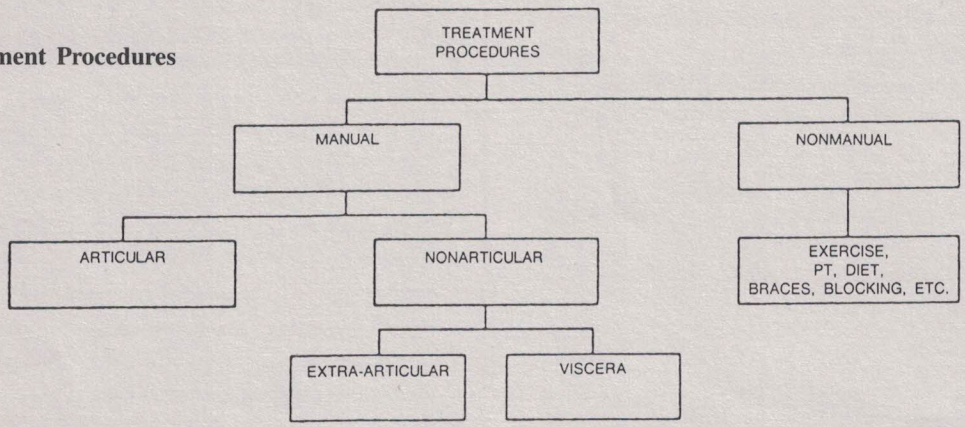
The Consortium for Chiropractic Research (CCR) held its watershed 'Consensus Conference on the Validation of Chiropractic Methods' in Seattle in March 1990. A group with broad representation of the chiropractic profession in North America, including representatives of all major technique schools, resolved: "All chiropractic procedures should be submitted to a standardized validation process. This process should include consensus methods and clinical research."

How does one do that? Is it possible? There are many named techniques, and each comprises numerous diverse procedures. Each procedure requires validation. The thousands of technique procedures need some common categorization or model.

The following model, developed with the assistance of the ACA Council on Technic and proposed by Kevin Bartol D.C., Assistant Professor, Northwestern College of Chiropractic in the May 1991 issue of Chiropractic Technique (Vol. 3 No. 2, 24-26), was adopted by the CCR for its recent consensus conference in Monterey, California (June 21-23, 1991).

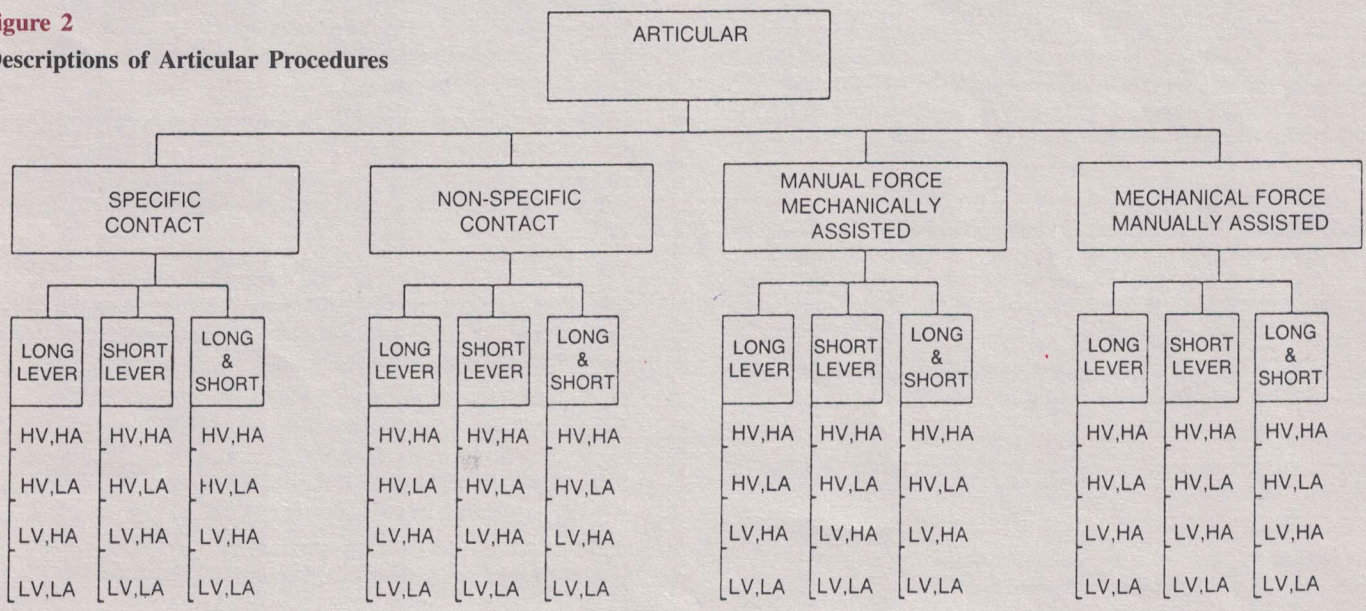
The Consortium for Chiropractic Research, which has the ACA, ICA, CCA and most chiropractic colleges and many state associations funding as members, is coordinating the research relevant to development of better practice guidelines for chiropractic in North America. Thus the importance of CCR adopting the above model – which, with refinements, will be central to evolving chiropractic practice, education and research in the years ahead.

Figure 1:
Chiropractic Treatment Procedures



- 'Articular Procedures' are those intended to have a direct effect on the anatomical joint.
- 'Non-articular Procedures' are those directed mainly to a non-articular joint structure – procedures such as transverse friction massage, proprioceptive neuromuscular facilitation, passive stretch, and trigger point therapy, and visceral procedures such as respiratory diaphragm, neurolymphatic reflexes, and lymphatic pump.
- For subdivision of articular procedures see Figure 2 below.

Figure 2
Descriptions of Articular Procedures



- The third tier, which is Tier 5 in the overall model, bases classification on lever arm delivery method.
- The final tier, Tier 6, classifies by force. Amount of force is, of course, a continuum but may be generally categorized as a combination of high velocity (HV) or low velocity (LV) and high amplitude (HA) or low amplitude (LA).

b) The 11 patients who did not respond were all chronic cases – seen 21 to 43 months after injury. Six reported some improvement, the five with no change had sustained severe injuries including compression fractures of vertebral bodies.

17. Of the 101 patients who recovered completely:

a) 69 (61.6%) were acute patients, 43 (38.4%) chronic (injury more than three months ago).

b) 73 (65.2%) had prominent upper cervical joint fixations, apparent on motion palpation.

c) 55 of this 73 were acute patients – and 53 of them (96.4%) were symptom free before nine treatments. This is described as "very significant" – there was nearly always rapid success in acute patients with specific joint blockage (vertebral fixation) in the upper cervical spine.

d) Chronic patients with lower cervical fixations took longest to respond, averaging 15-18 treatments. (This still, however, amounted to relief within two months for patients who had suffered attacks of vertigo for many months or years).

D. Discussion

18. Fitz-Ritson's work is of particular interest because it is the largest controlled study of clinical results yet published.

19. There is a large body of relevant basic science research including:

a) Animal studies by Ikeda et al[11] which have shown that acute whiplash injuries cause haemorrhage and swelling of muscles, which later produces change in muscle structure (inflammatory granulation tissue) and degeneration of nerve.

b) Hinoki[2] has shown that patients with cervical soft tissue injury following whiplash reveal abnormal EMG discharges from the neck musculature – and that the level of these is closely related to the patient's symptoms of vertigo during a course of treatment.

c) Suzuki[12] has shown that electrical stimulation of normal cervical muscles does not cause vertigo – but that such stimulation does with traumatized cervical muscle.

d) Brink et al[13] have shown that the splenius capitis muscle, which runs from the base of the skull down the cervical spine, has more direct connections (monosynaptic) to the spinal cord in the upper cervical spine than in the mid and lower cervical spine – where connections are disynaptic.

Using this evidence Vidal et al[14] have shown that stimulation of the muscles innovated by C1-C2 causes autonomic change in symptoms (e.g. nystagmus) not seen on equal stimulation of spinal nerves at C3-C4 and C4-C5.

e) Fitz-Ritson[15] has demonstrated that the C2 dorsal root ganglia, which receive sensory information from the joints and muscles in the upper cervical spine, have direct connections with the spinal cord and brainstem nuclei.

20. Previous clinical studies of manipulation of the upper cervical spine for vertigo include two by Lewit MD[16] which report similar results to Fitz-Ritson – a 90% success rate following manual correction of muscle and joint movement restrictions in the upper cervical spine – "the craniocervical junction including C2-C3". The studies involved 54 and 70 patients.

In addition to the rotating stool or chair test Lewit uses two examinations common in chiropractic practice:

a) As part of general screening the patient stands on two scales, one for each foot. Where there is an imbalance of 5 kgs or more this will "probably be accompanied by a deviation in Hautant's test in some position of the head, usually that corresponding to movement restriction ... in the craniocervical junction."[17]

b) In Hautant's test the patient sits with the back supported, the eyes closed, and arms outstretched forward. The examiner watches for lateral deviation of the arms, comparing the position of the patient's arms with his own thumbs. Any deviation that takes place when the patient turns his/her head is the result of the head position relative to the trunk – i.e. the position of the cervical spine.

"In fact the reaction to the changed head position in cases of imbalance due to cervical lesion is so characteristic that we can speak of a 'cervical pattern'".

(Lewit points to two advantages of this test over Romberg's test (with the patient standing). Firstly the patient feels safe even if dizzy, and deviation is not caused by nervousness. Secondly, as the patient is leaning back against a chair, only side deviation of the arms is possible). The "clinically masked disturbances of equilibrium" including vertigo revealed by Hautant's test are "almost invariably of cervical origin ... and disappear after treatment of movement restriction."[17]

E. Conclusion

21. In medical practice the cause of most cases of vertigo and other disturbances of balance, including Meniere's Disease, remains unknown. Vertigo is assumed to be 'central vertigo', and specialists look for a disorder in the head or central nervous system.

'Cervical vertigo', arising from dysfunction in the cervical spine, is seldom considered. Few MDs have the manual training and skills to find and treat such dysfunction or movement restriction in the joints and muscles.

The studies discussed above provide evidence that upper cervical joint movement restriction (subluxation, fixation) can be the cause, or a contributing cause. Importantly, in cases of vertigo where the patient recalls no 'injury' or considers that overall neck movement is normal, detailed manual examination will frequently reveal specific joint restriction.

22. The Fitz-Ritson study emphasizes that important aspects of management of cervical vertigo are:

a) Early active treatment to restore motion and normalize proprioceptive input to the central nervous system.

b) Due emphasis on muscles as well as joints.

This is consistent with chiropractic management of neck trauma generally (for reviews of management of whiplash see Foreman and Croft's 'Whiplash Injuries'[18] and the September 1988 issue of The Chiropractic Report (Vol. 2 No. 6)), and the strong new move in medicine towards early active treatment and functional restoration in cases of neck[19] and back[20] pain.

References

1 Lewit K (1985) 'Manipulative Therapy and Rehabilitation of the Locomotor System', Butterworths, London, 327,329

2 Hinoki M et al (1971) 'Neurotological Studies on Vertigo due to Whiplash Injury', Equilibrium Res Suppl 1:5-29.

3 Fitz-Ritson D (1991) 'Assessment of Cervicogenic Vertigo' J Manipulative Physiol Ther 14(3):193-198.

4 Giles LGF (1977) 'Vertebral-basilar Artery Insufficiency', JCCA 23(3):112-117.

5 Henderson DJ (1979) 'Significance of Vertebral Dyskinesia in Relation to the Cervical Syndrome', J Manipulative Physiol Ther 2(1):3-15.

6 Henderson DJ and Cassidy JD (1988) 'Vertebral Artery Syndrome', Chapter 11 in 'Upper Cervical Syndrome: Chiropractic Diagnosis and Treatment' ed by Vernon H, Williams and Wilkins, Baltimore.

continued on page 6

7 Greenman PE (1989) 'Principles of Manual Medicine', Williams and Wilkins, Baltimore, 99.

8 Frumkin LR and Baloh RW (1990) 'Wallenberg's Syndrome following Neck Manipulation', Neurology 40:611-615.

9 Ref 1 supra, 329.

10 Fitz-Ritson D (1990) 'The Chiropractic Management and Rehabilitation of Cervical Trauma', J Manipulative Physiol Ther 13(1):17-25.

11 Ikeda K and Kobayashi T (1967) 'Mechanisms and Origin of So-Called Whiplash Injury', Clin Surg 22:1655-60.

12 Suzuki M (1955) 'The Effect of Electricity of Flowing Electrode', J Physiol Soc. Jap 17:223-34.

13 Brink E et al (1981) 'Patterns of Segmental Monosynaptic Input to Cat Dorsal Neck Motorneurons', J Neurophysiol 46:496-505.

14 Vidal P et al (1982) 'Horizontal Eye Position-related Activity in Neck Muscles of the Alert Cat', Exp Brain Res 46:448-53.

15 Fitz-Ritson D (1988) 'Neuroanatomy and Neurophysiology of the Upper Cervical Spine', in Upper Cervical Syndrome, ed by Vernon H, Williams and Wilkins, Baltimore, 48-85.

16 Ref 1 supra, 327.

17 Ref 1 supra, 325 - 6.

18 Foreman SM and Croft CA (1988) 'Whiplash Injuries: The Cervical Acceleration/Deceleration Syndrome', Williams and Wilkins, Baltimore.

19 Mealy K, Brennan H and Fenelon GC (1986) 'Early Mobilization of Acute Whiplash Injuries' Br Med J 292:656-657.

20 Waddell G (1987) 'A new Clinical Model for the Treatment of Low Back Pain', Spine 12(7):632-644.

Chronic LBP – more evidence that chiropractic succeeds with the costly ones

Nyiendo J Ph.D, 'Disabling Low Back Oregon Workers' Compensation Claims. Part II: Time Loss', JMPT (May 1991) 14(4):231-239.

The British trial of chiropractic ((Br Med J (1990) 300:1431-37) clearly documented that patients with a history of low-back pain and/or chronic problems did far better under chiropractic care than competing medical and physiotherapy services offered by the National Health Service in Britain. This supported the evidence of Kirkaldy-Willis and Cassidy in Canada.

Now Joanne Nyiendo Ph.D., Director of Research, Western States Chiropractic College, Portland, Oregon, shows the same thing in the United States from a comprehensive review of Oregon WCB records. She reports:

- "The median time loss days for cases with comparable clinical severity was 9.0 for DC cases and 11.5 for MD cases. Chiropractic claimants had a higher frequency of return to work within one week ...".
- "However *for claimants with a history of chronic low back problems* the median time loss days for MD cases was 34.5 days compared to 9 days for DC cases."
- "It is suggested that chiropractors are better able to manage injured workers with a history of chronic low back problems and to return them more quickly to productive employment."

Nyiendo's paper also records how 5 of 6 studies since 1980 have shown fewer time loss days and lower compensation costs for chiropractic cases.

Back Pain

Teenagers

In the U.S. the Medical Post has reported that more teenagers are presenting with back pain complaints. A University of Michigan study of 100 adolescents showed common causes were:

- Spondylolysis or spondylolisthesis (33%).
- Sheuermann's Kyphosis (33%).
- Tumour or infection (18%).
- Idiopathic (15%).

On one hand this suggests that there is more often a clear cause for back pain in adolescents than adults – on the other hand it suggests a need for preventive care and a significant minority with mechanical back pain.

('More Teenagers Presenting with Back Pain Complaints', the Medical Post March 5, 1991, 17).

Pregnancy

A thorough new study from Sweden published in Spine in May 1991 looked at the relationship between pregnancy and back pain in a group of 855 women and found:

- 1 in 2 women (49%) suffer from back pain during pregnancy. (This confirmed findings in earlier studies mentioned).
- As pregnancy advanced there was a statistically significant increase in the number of patients with sacroiliac pain, and a simultaneous decrease in the number with low-back pain.
- Factors that increased risk of back pain included young age, previous pregnancies, back problems before pregnancy, and various physical and psychological work factors. "There was no difference in prevalence of back problems between housewives and working women" (sic).

Ostgaard HC, Andersson GBJ et al 'Prevalence of Back Pain in Pregnancy', Spine (May 1991) 16(5):549-552. Ostgaard HC and Andersson GBJ 'Previous Back Pain and Risk of Developing Back Pain in a Future Pregnancy', Spine (April 1991) 16(4): 432-436.