The Chiropractic Report

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Professional Notes

Chiropractic Education Comes to Spain

In a significant advance for chiropractic in Spain, which has 175 quiropracticos or doctors of chiropractic but as yet no laws regulating the practice of chiropractic, a first educational program will commence at the Maria Cristina Royal University Centre (RCU) at El Escorial near Madrid in October 2007.

The RCU, which is affiliated with the University Complutense of Madrid, the largest and most prestigious public university in Spain, was founded by the Queen Regent Maria Cristina in 1892. Its new chiropractic program is being developed in consultation with the Anglo-European College of Chiropractic (AECC) of Bournemouth, England, and with the support of Asociación Española de Quiropráctica or Spanish Chiropractic Association (AEQ).

AEQ President Dr. Belen Sunyer, a graduate of Palmer College in Davenport, Iowa, announced this important new development following an AEQ Assembly on July 8 at which Dr.

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Current Management of Neck Pain Reviewed

A. Introduction

NECK PAIN IS EXTREMELY common and disabling. In the UK Hill et al. report that as many as 31% of adults have had neck pain in the last month, and 48% of neck pain patients report persistent pain one year later.[1]

Given those facts it is surprising that there is still very little research about the causes of neck pain, that its natural history is poorly understood, and that evidence of effectiveness for all treatments offered by health professionals is not yet strong.[2,3] The May 1995 report of the Quebec Task Force on Whiplash-Associated Disorders titled *Redefining Whiplash and its Management* acknowledged the lack of evidence, was critical of traditional treatment approaches, and prescribed this new approach to the management of patients with cervical spine soft-tissue injuries and neck pain:

a) Avoid rest, passive treatments, and use of a soft collar support – these approaches prolong pain and disability, and lead to chronic or long-term problems.

b) Reassure patients and keep them as active as possible. Use treatments that promote and support activity – specifically manual treatments (joint manipulation and mobilization, soft-tissue techniques) and exercises in combination with time-limited use of milder medications (NSAIDs, analgesics).

c) Avoid unproven therapies, including acupuncture, spray and stretch, transcutaneous electrical stimulation, ultrasound, laser, shortwave diathermy, heat, ice, massage, epidural or intrathecal Injections, corticosteroid injections of the facet joints, muscle relaxants and psychosocial interventions.[4]

2. Soon after the Quebec Task Force Report a state-of-the-art description of this active, patient-centered approach to management appeared in two leading multidisciplinary textbooks edited by American doctors of chiropractic – in 1996 in Craig Liebenson's *Rehabilitation of the Spine: A Practitioner's Manual*[5] and in 2000 in Donald Murphy's *Conservative Management of Cervical Spine Syndromes*[6]

A second edition of Liebenson's text has just been published, and as the prominent Scottish orthopedic surgeon Gordon Waddell says in the Foreword, ten years on from the Quebec Task Force Report and the first edition of the book, "so much that seemed revolutionary then is now accepted as the standard" for good spine care. Given:

- The new overview of the management of neck pain in Liebenson's impressive new text
- Two new US research studies reporting the effectiveness of chiropractic management for patients with acute neck pain – one uncomplicated and the other with spinal cord compression and radiating pain to the arm
- Two papers from European chiropractic researchers relevant to safety

this issue of The Chiropractic Report provides an update on the management of neck pain.

B. Diagnosis

3. Patients with cervical spine pain – in the head, neck, upper back or referred to the arm – usually seek professional help when they have severe pain, worsening pain or pain that is not resolving. They require careful diagnosis in two ways:

a) **Red flags.** To rule out 'red flags' – a process commonly known as diagnostic triage. These flags, indicating specific pathology that may need to be addressed first, include fracture, dislocation, infection, malignancy, referred pain from a visceral condition (e.g. angina, pleurisy) myelopathy and radiculopathy.

Advanced imaging and other studies are required to know the extent of a myelopathy or radiculopathy and whether or not

it is a contraindication for manipulation and other conservative care. The new study by Murphy et al. discussed below shows how selected patients can achieve good results, and avoid surgery, under skilled manipulative care. (see para 10).

However the great majority of neck pain patients, like back pain patients, have no red flags and are currently classified as having non-specific or mechanical back pain.

b) **Functional evaluation.** For patients without red flags, to evaluate and identify specific functional problems in the neuromusculoskeletal system. This is the central territory of chiropractic practice. As Liebenson, Skaggs et al. note, it is usually "difficult to pinpoint the specific pain-generating tissue" responsible for neck or head pain, and even when you can the reasons why the joint or muscle or other tissue is generating pain "are often elusive". This means that the clinician's main focus must be an evaluation of function – deficits in joint function and muscle strength/balance/coordination/endurance which place mechanical stress on pain-sensitive tissues, either directly or through biomechanical compensations.

Acute patients, Liebenson, Skaggs et al. observe, will only receive a limited functional assessment, mostly range of motion testing and orthopedic tests. Identifying the movements or positions that reproduce the patient's characteristic pain – their mechanical sensitivity (MS) – "is essential on an initial visit" because it later provides a method for demonstrating the effectiveness of the treatment and/or exercise prescription chosen, and for motivating the patient. After acute pain and muscle spasm settle, a more comprehensive functional assessment can be made and functional goals set.

4. **Upper crossed syndrome and the spine.** An example of related functional problems in muscles and joints giving rise to neck and upper back pain is the upper crossed syndrome shown in Figure 1. Overactive, shortened, tight muscles as shown are out of balance with underactive weaker muscles. This imbalance leads to postural changes and stress – for example flexion of the lower cervical spine, rounded shoulders, compensating extension of the upper cervical spine and head carried forward. This in turn generates abnormal biomechanics (e.g. less mobility in the thoracic spine, increased load on the cervical spine segments) and in due course pain.

It is obviously of little long-term use to give such patients pain medication. This simply dampens the symptoms of pain. Effective treatment must be directed at the causes of the pain, the relevant functional problems – exercises to reduce the muscle imbalance and joint manipulation to restore joint function and better sharing of the biomechanical loads throughout the upper spine.

Cleland et al. have shown that manipulation of the thoracic spine produces immediate analgesic effects in patients with mechanical neck pain.[7]

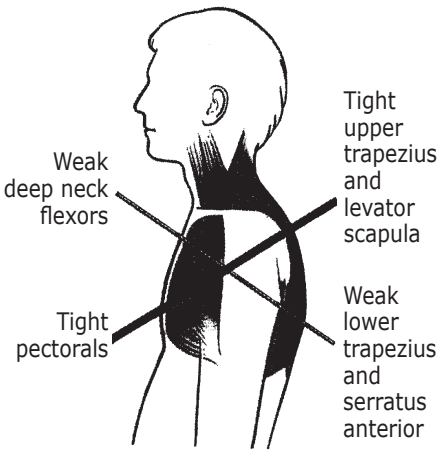
5. **Role of Imaging.** Imaging should be reserved for those patients for whom red flags seem likely following history and physical examination – see Figure 2 for indications from history. In the words of Liebenson, Skaggs et al. imaging is "an inappropriate screening method" because it has such an extremely high false positive rate (i.e. has low and therefore poor specificity). In the neck:

a) The false positive rate has been reported as high as 75% - meaning that 3 of 4 persons with no pain or other symptoms are found to have disc herniations and other structural problems.[8]

b) Similar levels of pain and disability are reported by patients with and without radiographic evidence of cervical spine degeneration. [9]

There is also a high false negative rate following whiplash injuries – with many patients wrongly accused of exaggerating their symptoms because pathology and injury not evident on imaging has been missed. Freeman, Sapir et al. from the Oregon Health Sciences University found that 9 of 14 consecutive patients referred to them for chronic pain following whiplash trauma (71%) had vertebral

Figure 1: Upper Crossed Syndrome



Reprinted from Rehabilitation of the Spine*, Liebenson (2007)*

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Figure 2: General Red Flags from the History

- Age <18 without precipitating event or onset age >45
- Prior history of cancer
- Significant trauma onset
- Constitutional symptoms: fever, chills, night sweats, nausea, vomiting, fatigue, diarrhea
- Night pain
- Pain unrelieved by rest or position
- Pain or pattern of symptoms disproportionate to typical musculoskeletal disorders
- Unexplained weight loss
- Bowel or bladder habit change
- Systemic illness (e.g. diabetes)
- Immunosuppressed states (corticosteroid use, HIV, etc . . .)
- Failure of conservative management

Reprinted from Rehabilitation of the Spine*, Liebenson (2007)*

end plate fractures at spinal levels that correlated well with the pain. All these unhealed occult (concealed) fractures had been overlooked on standard medical imaging and were found by them on subsequent bone scan and SPECT evaluation.[10] And in a new systematic review of the literature on cervical injuries following traffic accidents causing fatality, Uhrenholt, Grunnet-Nilsson et al. report that 93.5% of the minor lesions found at autopsy were missed by conventional radiographic examination, including MRI and CT. [11]

6. **Classification. T**he Quebec WAD Guidelines shown in Figure 3 are still the most helpful classification of neck complaints, for the purposes of reporting and interprofessional communication. Because so little is known about the exact causes of pain in individual patients, this classification system simply relies on the presence or absence of musculoskeletal signs, neurological signs and fracture/dislocation.

The significance of this classification for patients and chiropractic practice is illustrated in a study from Khan, Cook et al. from the Department of Orthopaedic Surgery, University of Bristol, England.[12] One hundred consecutive patients with chronic neck pain from road traffic whiplash injuries were treated with chiropractic manipulation. First, however, they were classified into three groups consistent with the Quebec WAD Guidelines:

• One group (number - 11) with severe neck pain but with full range of neck movement and no neurological symptoms or signs. (These patients commonly described an unusual complex of symptoms, indicating psychosocial factors and concerns).

• A second group with restricted range of neck movement but with no neurological deficit (n - 50).

• A third group (n - 32) with restricted range of neck movement but also neurological signs and/or symptoms.

There was significant improvement for patients in the second and third groups – those with physical signs of restricted movement – but, as might be expected, not those in the first group who had no biomechanical or neurological signs and symptoms.

Figure 3: Quebec Whiplash Associated Disorders (WAD) Guidelines Classification System Based on Signs and Symptoms (87)

Grade	*Clinical Presentation*
0	No complaint or physical sign*
I	Neck complaint of pain, stiffness or tenderness No physical signs
II	Neck complaint and musculoskeletal signs*
III	Neck complaint and neurological signs
IV	Neck complaint and fracture or dislocation

*physical or musculoskeletal signs – range of motion loss or tenderness

C. Management

7. **Integration of Rehabilitation and Manipulative Therapy.** In the ten years since the Quebec Task Force Report there has been mounting evidence supporting its recommendations, including the emphasis on keeping patients as active as possible and the use of manual treatments and exercise. What has become more clear is that skilled diagnosis of the individual patient's specific functional problems is vital, with treatment directed to correcting those specific joint and soft-tissue dysfunctions underlying the pain and disability. In the words of Liebenson, there must be "an integration of rehabilitation and manipulative therapy" which involves "a comprehensive analysis of the locomotor system" to understand the true causes of the problem and then "a specific prescription of manipulation and rehabilitation".

For many clinicians rehabilitation of neck pain patients, as with back pain patients, is still seen as something separate from early treatment, something that follows later if the patient is failing to improve under initial care. Gordon Waddell explains otherwise:

"The goal remains to . . . integrate relief of symptoms with restoration of function. There is now broad agreement on the importance of rehabilitation and . . . growing recognition that rehabilitation is not a second stage intervention after "proper" treatment has no more to offer yet recovery remains incomplete. Rather, rehabilitation should be an integral part of good clinical management. *Every* health professional who cares for patients (with spinal pain) should accept at least some responsibility for their function and occupational outcomes. That does not mean we should all become rehabilitation specialists: rather, it goes to the heart of what health care is all about."[13]

8. **Role of Chiropractic Adjustment.** Chiropractic adjustment, comprising specific joint manipulation and a variety of other manual procedures for joints and soft-tissues, has a central role in the management of patients with neck and head pain. This is clear from:

a) New research into the causes of neck pain. Following a series of sophisticated trials Lord, Barnsley et al. from the University of Newcastle, Australia, report that approximately 90% of patients with chronic neck pain after whiplash injuries have limited range of cervical motion – and that for approximately 60% the pain arises directly from facet dysfunction.[14] Cervical facet pain, a diagnosis unrecognized by most family physicians/general practitioners, "cannot be ignored any longer" and is "extraordinarily common."

b) New research into the effectiveness of chiropractic management of patients with acute and chronic neck pain, now reviewed.

9. **Acute Neck Pain – Uncomplicated.** Most of the clinical research on chiropractic and medical management of neck pain has been for patients with sub-acute or chronic neck pain. The Philadelphia Panel, a US panel of experts reporting on the literature up to 2002, found that there was not a single high-quality trial of any treatment for acute neck pain.[15] However, given the prevalence of facet joint dysfunction/subluxation in neck pain patients, and the evidence of effectiveness of chiropractic management of chronic pain patients (see below), it is logical to suggest that many acute patients will have similar functional problems and respond equally well to chiropractic manual treatments and exercise. That is the basis of the Quebec Task Force recommendations in favor of manipulation, mobilization and exercise.

A new study from Haneline at Palmer College of Chiropractic West, San Jose, California, offers evidence in support. [16] On one hand this is a multicentre retrospective survey of patients from chiropractic practices rather than a controlled trial. On the other hand it reports good results in a population of 115 patients in

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Chiropractic Education Comes to Spain

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Philippe Druart, President, European Chiropractors' Union, spoke of the importance of this development for the profession throughout Europe.

The RCU program will become the second Spanish-speaking school of chiropractic. The first, commenced in 2001 and graduating its first class last year, is the government-funded program at the Universidad Estatal del Valle de Ecatepec (UNEVE) in Mexico City, Mexico.

Research Notes

1. **US and Canada – New Research Funding to Discover the Biology of Manual Therapies.** A new editorial in JMPT reports on the first ever national or international research conference to consider and set a research agenda for the mechanisms underlying manual therapies – the 2005 Conference on the Biology of Manual Therapies co-sponsored by the US National Institutes of Health (NIH) and the Canadian Institutes of Health Research (CIHR) and held at the NIH in Bethesda, Maryland, June 9-10, 2005. The editorial accurately describes this as "a historic and critically important scientific workshop for all professions involved with manual therapies".

Authors are Partap Khalsa, DC PhD, a chiropractic neuroscientist now with the research arm of the National Center for Complementary and Alternative Medicine (NCCAM) at the NIH; Astrid Eberhart from the Institute of Neuroscience Mental Health and Addiction, CIHR; Richard Nahim, PhD MPH, Senior Advisor for Scientific Coordination and Outreach at NCCAM, NIH, and Alyssa Cotler, MPH, a Scientific Coordinator at NCCAM. The authors note:

a) Common to all use of manual therapies "is the assumption that reducing stresses and improving alignment of the skeleton and its associated soft tissues will, because the interrelatedness of all the body parts, stimulate the body's innate ability to heal."

b) "There is increasing evidence that manual therapies may trigger a cascade of cellular, biomechanical, neural and/or extra-cellular events as the body adapts to the external stress. Collectively (the research suggests) that spinal manipulation can alter the activity of nearby mechanical sensitive neurons . . . and in turn can lead to responses by the central and autonomic nervous systems . . . (which) may in turn lead to observed changes in circulating levels of various neuropeptides and regulatory proteins."

c) However, "the exact mechanisms of action for any treatment effects attributable to manual therapies are currently unknown" and the 2005 Conference signals the readiness of the US and Canadian governments to put major funding into research to discover these mechanisms of action and answer unanswered questions.

d) The Conference featured leading scientific experts from North America and Europe presenting findings and theories from five areas of science relevant to manual therapies – neuroscience, biomechanics, endocrinology, imaging and immunology.

Full information regarding funding opportunities, how to apply, deadlines, etc. may be found at the websites of NCCAM (www.nccam.nih.gov) and the CIHR (www.cihr-irsc.gc.ca). Dr. Partap Khalsa may be contacted at NCCAM at khalsap@mail.nih.gov.

(Khalsa PS, Eberhart A et al. (2006) The 2005 Conference on the Biology of Manual Therapies, J Manipulative Physiol Ther 29:341-346.)

2. **US – Management of Foot Pain after Fasciotomy.** There is little published evidence of the effectiveness of chiropractic management of patients with extremity pain, and this case series review from Lawrence Wyatt, DC from Texas Chiropractic College, Pasadena, Texas is understood to be the first case series by anyone evaluating the safety and potential effectiveness of using manipulation and mobilization in the management of lateral column foot pain – specifically lateral column foot pain after plantar fasciotomy. In summary:

a) The study involved 15 patients seen in a multidisciplinary office on referral from a podiatric surgeon. Patients had a history of chronic heel pain; conservative medical management for plantar fasciitis/fasciosis (e.g. taping/strapping, physical therapy, rest, orthotics, NSAIDS, corticosteroid injections); then the surgical procedure of plantar fasciotomy; then lack of significant improvement in lateral foot pain during a 4-6 week period of medical care prescribed by the podiatric surgeon (e.g. NSAIDs, shoe padding, rest).

b) Chiropractic management following that comprised:

• One treatment per week for between 2 and 8 weeks with mobilization and/or manipulation.

• Home exercises 3 times per day involving ankle and foot range of motion exercises using a tennis ball as the central point of movement.

c) Pain at baseline, at each treatment visit and following the final visit, was assessed by patients using a Verbal Rating Scale (VRS) from 0 to 100. Outcomes were classified into three categories – significant improvement (90% or more), moderate improvement (50-90%) and sub-optimal (less than 50%).

d) Results were that 11 of 15 patients experienced significant improvement within 8 visits, some after only 2-4 visits – "these patients required no further conservative or surgical intervention". Three experienced moderate improvement, one reported no change. Patients who complied with home care instructions responded better. There were no complications. Some patients noted a migration of pain during the course of therapy but this was "always milder than the original lateral column pain" and was gone between 1 and 4 weeks.

(Wyatt LH (2006) Conservative Chiropractic Management of Recalcitrant Foot Pain After Fasciotomy: A Retrospective Case Review, J Manipulative Physiol Ther, 29:398-342).

3. **US – Spinal Fusion Damages Adjacent Discs.** We all know that fusion of two segments in the lumbar spine or cervical spine leads to increased stress and damage at adjacent discs. A new study from Lopez-Espina et al. from the Biomechanics

research Laboratory, University of Illinois, Chicago, carefully documents this problem. In summary:

a) The researchers explain that previous clinical studies demonstrate that about 25% of all cervical fusion patients report further degeneration at adjacent levels to the fusion within 10 years. Their study was designed to the test the hypothesis that "increased stresses from fusion lead to accelerated degeneration or wearing out at the levels above or below that fusion."

b) They used four single fusion and three double fusion techniques to evaluate the biomechanical effects of fusion from C3 to C7, comparing the fused cervical spines with the biomechanical performance of normal spines.

c) The results show that stress increases up to 96% (i.e. is virtually doubled) in the annulus, nucleus and end plates after fusion, and that with double fusion there is even more stress.

This increased stress on the discs and end plates "provides evidence for the accelerated disc degeneration found in patients following fusion". There is always increase in stress, whatever the fusion model, for lateral bending, flexion and axial torsion, but not for extension. Generally there is greater stress at the disc level inferior to the fusion rather than the disc level superior.

(Lopez-Espina CG, Amirouche F, Havalad V (2006) Multilevel Cervical Fusion and Its Effect on Disc Degeneration and Osteophyte Formation, *Spine* 31(9)972-978.)

4. **US – New Classification System for Lower Cervical Spine Injuries.** A May supplement to the journal Spine is devoted to new knowledge and advances in the field of spinal trauma. In an interesting paper, Moore, Vaccaro et al., orthopedic specialists, describe a new classification scheme for subaxial cervical spine injuries. They note that there is currently no accepted classification scheme for such injuries, and that a new one is needed that is clinically relevant, easy to use, broadly applicable, teachable, reliable and valid. Such a scheme will help to determine whether a patient should have surgery or non-operative treatment and allow effective communication between professionals.

Moore, Vaccaro et al. then demonstrate the validity and utility of their new classification system – based on an evaluation of the four columns of the cervical spine, namely the:

a) Anterior column - including the vertebral body, intervertebral disc and annulus and the anterior/posterior longitudinal ligaments

b) Right pillar and left pillar – each including the pedicle, the superior and inferior facets, the lateral mass and the facet capsule.

c) Posterior column – including the lamina, spinous processes, nuchal ligaments and ligamentum flavum.

From imaging, a visual analogue score from 0 to 5 is applied to each column and summed – thus giving an overall injury severity score ranging from 0 to 20. The paper gives illustrations of this.

(Moore TA, Vaccaro AR, Anderson PA (2006) Classification of Lower Cervical Spine Injuries Back Pain, Spine 31 (11):S37-S42).

Book Review.

Rehabilitation of the Spine: A Practitioner's Manual (Craig Liebenson, 972 pages plus DVD, hardback, 2nd edition, 2007, Lippincott, Williams and Wilkins, Baltimore, www.lww.com. North American customers 800-638-3030, International customers 301-714-2324).

The first edition of this text, as leading back pain authority Gordon Waddell explains in the Foreword to the second, "has become a classic". The new edition, just released, is wonderfully comprehensive and practical and will build further on that reputation.

This presents the state-of-the-art for conservative management of spinal problems from distinguished clinicians and authors worldwide from the several disciplines that specialize in this field. The icing on the cake for clinicians is an accompanying free DVD that illustrates the wide range of manual techniques and exercise protocols described in the text – this DVD will greatly assist both clinicians and patients.

39 chapters in seven parts of the text address an overview of the functional restoration paradigm, basic science (mechanisms of injury, re-stabilization, pain), assessment and measurement of outcomes, acute care management, recovery care management, practical application by region (key assessment and training techniques – "tools of the trade") and overall implementation and practice. Read, view, enjoy, learn and know you are with the best.

terms of reduced pain and disability and strong levels of patient satisfaction. Points are:

a) The study included two surveys – one completed in writing by doctors of chiropractic concerning their treatment of patients with acute neck pain one year previously, the second by patients responding to a telephone survey on pain and disability levels and level of satisfaction.

b) All patients had received chiropractic manipulative therapy (CMT) though many had adjunctive chiropractic care also, most commonly physical therapy modalities and exercises. Most patients sought treatment following an injury (59%), with the great majority of those having been in a motor vehicle collision (84%). Average number of treatment visits was 24.5.

c) With respect to pain levels, patients were asked to report on an 11-point numerical scale – reporting on pain prior to treatment, pain at the conclusion of treatment, which was at least one year previously, and current pain. Averages were 7.5 for original pain, 1.9 for pain immediately after treatment, and 1.6 for current pain

With respect to level of disability, the 84 patients who reported that the acute neck pain had restricted their activities were rated in six categories prior to care and at the time of interview – very minimal restriction, minimal, moderate, moderately severe, severe or very severe. Overall, levels of disability were much improved at interview – at least a year after treatment ended. Approximately 6 in 10 (57%) of these acute pain patients reported that their physical restrictions were moderately severe or greater before treatment. 4 in 5 of these (79%) improved to minimal to moderate restriction.

d) With respect to patient satisfaction, which is where the rubber hits the road from the patient's perspective, 94% of patients indicated satisfaction with care. They were asked to rate care on a 6 point scale from 1 to 6 –very dissatisfied, dissatisfied, somewhat dissatisfied, somewhat satisfied, satisfied and very satisfied. 70% of patients indicated that they were very satisfied, 24% that they were satisfied. (32% of patients had been referred for co-management or additional care – 50% of these to massage therapists, 37% to medical doctors and 12% to various others. When the referred patients were asked which provider helped the most, 83% replied the chiropractor.)

10. **Acute Pain – Complicated.** Compression of the spinal cord in the cervical spine, confirmed by magnetic resonance imaging, will be a contraindication to manipulative treatment in some circumstances – but in others skillful assessment and treatment may lead to excellent results and avoidance of surgery that presents much higher risks. In the June 2006 issue of the *Journal of Manipulative and Physiological Therapeutics* (JMPT), Murphy, Hurwitz et al.[17] present a case series of 27 patients with neck and/or arm pain with clear findings of cervical spinal cord encroachment on MRI. Donald Murphy, DC DACN of Rhode Island, the lead author and clinician, is author of the text previously mentioned and is a faculty member of the Brown University School of Medicine in Providence, Rhode Island. In summary:

a) Patients with medicolegal involvement were excluded, but otherwise this was a consecutive series of patients with neck and/or arm pain and clear evidence of spinal cord encroachment – meaning the presence of disc material, osteophytes, ligamentum flavum, hypertrophy or some combination of these distorting the shape of the cord or obliterating the cerebral spinal fluid signal on images as more fully described in the paper.

b) Patients had an average of 12 treatments (ranging between 2 and 32) with 18 receiving joint manipulation, 8 receiving low-velocity muscle energy techniques, and 1 receiving both.

c) Patient rate of improvement averaged 70% for pain and disability. (Bournemouth Neck Disability Questionnaire, Neck Disability Index, Numerical Pain Rating Scale). Three patients had a transient increase in pain lasting 1-4 days, but there were no major complications or new neurological symptoms or signs. The authors give a full descriptions of assessment, pre-manipulative positions, then careful choice of manual treatments not causing peripheralization of symptoms.

11. **Sub-acute and Chronic Neck Pain**. There is now good evidence supporting the effectiveness of chiropractic manipulation for patients with sub-acute or chronic non-specific/ mechanical neck pain. In summary:

a) Literature reviews published by Hurwitz, Aker et al. in *Spine*[18] and Aker, Gross et al. in the *British Medical Journal* in 1996[19], reported that manipulation and mobilization were both more effective than muscle relaxants and usual medical care in providing pain relief for patients with sub-acute or chronic neck pain. There has already been mention of the UK study by Khan, Cook et al. which reported the effectiveness of chiropractic manipulation for chronic neck pain patients.

b) Two important pieces of new evidence have been randomized controlled trials by Giles and Müller published in JMPT in 1999[20] and *Spine* in 2003. [21] The first compared needle acupuncture given by experienced medical acupuncturists, joint manipulation given by experienced chiropractors, and standard medication (NSAIDs - tenoxicam with ranitidine). Patients in the acupuncture and medication groups had no significant improvement during the trial on any of the outcome measures – which included a Visual Analogue Scale for pain, the Neck Disability Index for disability, and fitness for discharge from care. In a truly chronic population of 77 patients (average duration of pain was approximately 6 years) the manipulation group showed significant improvement on all measures with no patient made worse or experiencing side effects. Following 6 treatments given in a 3-4 week period, 39% in the chiropractic manipulation group were pain-free and discharged.

The second trial had a larger group of patients (number - 115), employed a wider range of subjective and objective outcome measures, and tested three types of medication (Celebrex, Vioxx and paracetemol) against needle acupuncture and chiropractic manipulation. Treatment was twice weekly for a maximum of 9 weeks. The chiropractic manipulation group again did significantly better than other groups. Complete recovery rates within the 9 weeks (i.e. asymptomatic status) were 27.3% for manipulation, 9.4% for acupuncture and 5% for medications.

Very few trials of treatments for patients with chronic spinal problems have the important data provided by long-term follow-up of patients. Giles and Müller's second trial's long-term results – 12 months after treatment ended – were published last year.[22] The early advantage of patients in the chiropractic manipulation group was maintained with only those in the spinal manipulation group gaining "significant broad-based beneficial . . . long-term outcomes".

12. **Manipulation and Exercise.** If patients with mechanical neck pain frequently have functional problems in both joints and soft-tissues, as already discussed, one would expect more lasting results if both were addressed through a combination of

manual therapy and rehabilitative exercises as recommended by Liebenson and others. That indeed is the finding in one of the strongest research trials in this field, a major randomized controlled trial from Bronfort, Evans, et al. from the Northwestern Health Sciences University and the Physicians Neck and Back Clinic in Minnesota.[23] Patients were 191 adults between ages 20 and 65 who had a primary problem of chronic mechanical neck pain (pain for 12 weeks or more and having no specific identifiable etiology . . . (and) that could be reproduced by neck movement or provocation tests.) They were randomly assigned to 1 of 3 treatment groups:

• Spinal manipulation and low-tech exercise – receiving chiropractic adjustment for joint dysfunction/subluxation in the cervical and thoracic spine plus supervised progressive strengthening exercises.

• MedX exercise- dynamic progressive resistance exercises on MedX machines.

• Spinal manipulation - chiropractic adjustment as in Group 1 plus detuned or sham micro-current therapy.

In all groups patients attended 20 one hour visits during an 11 week study period. Interventions are more fully described in the paper. All patients were also instructed in the use of home exercises.

Outcomes measured were pain (Numerical Rating Scale), disability (Neck Disability Index), functional health status (Short Form SF-36), satisfaction with care and degree of medication use at baseline, 5 and 11 weeks after the start of treatment, and then 3, 6 and 12 months after treatment.

During the 11 weeks of treatment all treatment groups steadily improved, but with no significant difference in results - except for patient satisfaction, which was significantly higher in the group receiving manipulation plus exercise.

However at one year follow up after treatment it was found that the groups receiving exercise, whether low-tech exercise in combination with chiropractic manipulation or high-tech exercise alone, did significantly better than the group receiving chiropractic manipulation alone.

This trial, following earlier studies which have suggested that patients with chronic neck pain have weak neck muscles, adds to the growing body of evidence that best practice for patients with sub-acute or chronic mechanical back or neck pain - as opposed to acute problems - should combine manipulation and exercise.

13. **Which Functional Deficits, Which Exercises and Manual Treatments?** For the past century the chiropractic profession has led the way in education, practice and research in the manual assessment and manipulative treatment of joint dysfunction/ subluxation, which lies at the center of the profession's art and science. The comprehensive assessment and management of soft-tissue dysfunction, however, is a newly emerging art with leaders from several professions – biomechanics, chiropractic, osteopathy, manual medicine, neurology and physical therapy.

The developments during the last two decades are now best described in Liebenson's new text which has authors from all these disciplines. With soft-tissue dysfunction the move is from general exercise protocols to specific manual techniques and exercises tailored to the needs of individual patients according to their specific functional restoration needs. Clinicians must now consider, amongst other things:

• Muscle relaxation techniques for overactive (hypertonic) muscles.

• Myofascial release treatments to counter adaptive shortening of muscle or fibrous adhesions.

• Exercises for flexibility or strength in specific muscle groups

• Stabilization exercises to improve motor control and endurance.

D. Safety

14. Manual treatments of the cervical spine, though maligned by some, are much safer than commonly used medical and surgical treatments for neck and head pain. The incidence of cervical artery dissection (CAD) and stroke associated with manipulation/ mobilization is generally accepted as one incident in 1 million treatments.[24] More exact figures on risk of harm from all treatments for neck pain will be known early next year when the Bone and Joint Decade Neck Pain Task Force chaired by Dr. Scott Haldeman reports following its six year program of literature review and new original research. However there are two recent publications that are of interest and merit comment.

15. One is the first published model on CAD. This, by prominent researchers Rubenstein, Haldeman and van Tulder and published in the May issue of JMPT[25], draws together all current knowledge and concludes that dissection following neck movements, cervical manipulation and similar trivial trauma from sports and other activities of daily living, is extremely unlikely unless a patient has both an underlying predisposition and one or more necessary triggers. In this model the four necessary elements for risk of CAD are:

• Genetic predisposition/underlying familial disorder (e.g. connective tissue disease, hyperhomocysteinemia, migraine, vessel abnormalities)

• Environmental exposure (e.g. infection, oral contraceptive use)

• Trivial trauma (e.g. common neck movements, sporting activities, manipulative therapy to the neck)

• Common risk factors associated with atherosclerosis (e.g. hypertension, diabetes mellitus, smoking).

16. The second publication is a rather interesting 'near miss' case from Kier and McCarthy at the Welsh Institute of Chiropractic, University of Glamorgan,[26] which illustrates the above but shows the value of good diagnosis. Kier and McCarthy refer to another published case where two Danish medical doctors used mobilization and manipulation inappropriately, and where the patients experienced CAD and stroke, but then tell this tale concerning their patient:

a) The patient was a 49 year old farmer with chronic episodic head and neck pain since the age of 19, not in severe pain, with unremarkable imaging and many things suggesting a mechanical origin for his problem and suitability for chiropractic adjustment.

b) However, a careful examination revealed various risk factors and signs suggesting potential for cardiovascular disease – elevated blood pressure, family history of cardiovascular disease including stroke, bilateral tinnitus and nausea during severe attacks, reduced cervical range of motion in all directions during severe attack, and inability of the chiropractor to reproduce the patient's head pain during examination.

c) He was referred to his general practitioner for further assessment prior to commencement of any chiropractic care, and the following week had a CAD and stroke leaving him hemiplegic and with speech impairment. As noted, a near miss.

E. Conclusion

17. We all now await the comprehensive and likely definitive literature review of all treatments for neck pain that will arrive early next year in the report of Haldeman's Bone and Joint Decade Neck Pain Task Force. This is seen to be so important that it is to be published simultaneously as a supplement in two leading journals – *Spine* and the *European Spine Journal.* Task Force leaders including President Scott Haldeman, DC MD PhD (neurologist, US), Scientific Secretary David Cassidy, DC PhD (chiropractic and orthopedic scientist, Canada), Eugene Carragee, MD (orthopedic surgeon, US) and Linda Carroll, PhD (psychologist, Canada) will be reporting results to the chiropractic profession at the World Federation of Chiropractic's 9th Biennial Congress and the European Chiropractors' Union's 75th Anniversary Convention in Vilamoura, Portugal, May 17-19, 2007 (www.wfc.org/congress2007). You will not want to miss this – be there. TCR

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