

Fifteen Papers from the World Chiropractic Congress (WCC)

Editorial Staff

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WCC (1st Prize)

Conservative low back treatment reduces inhibition in knee extensor muscles: a randomized, controlled trial. *Esther Suter, PhD, Gordon McMorland, DC, Walter Herzog, PhD, and Robert Bray, MD.*

Background: Knee joint pathologies, such as anterior knee pain (AKP), are associated with strength deficits and reduced activation of the knee extensors, called muscle inhibition (MI). Muscle inhibition is thought to prevent full functional recovery, and treatment modalities that help to reduce or eliminate MI appear necessary for successful rehabilitation.

Clinical observations suggest that AKP is typically associated with sacroiliac (SI) joint dysfunction. It is unknown if the SI joint dysfunction contributes to the knee extensor deficits, or if correction of the SI joint dysfunction alleviates MI.

Objective: The objective of this study was to assess if conservative low back treatment reduces lower-limb muscle inhibition.

Study Design: In a randomized, controlled, double-blinded study, the effects of conservative low back treatment on knee extensor strength and MI were evaluated in AKP patients.

Methods: Twenty-eight patients with AKP were randomly assigned to a treatment and a control group. After a lower back functional assessment, the treatment group received a conservative treatment in the form of a chiropractic spinal manipulation aimed at correcting SI joint dysfunction. The control group underwent a lower back functional assessment but received no joint manipulation. Before and after the manipulation or the lower back functional assessment, knee extensor moments, MI, and muscle activation during full effort, isometric knee extensions were measured.

Results: Patients showed substantial MI in both legs. Functional assessment revealed SI joint dysfunction in all subjects (23 symptomatic, 5 asymptomatic). Following the SI joint manipulation, a significant decrease in MI of 7.5% was observed in the involved legs of the treatment group. Muscle inhibition did not change in the contralateral legs of the treatment group, or the involved and contralateral legs of the control group. There were no statistically significant changes in knee extensor moments and muscle activation in either group.

Conclusions: The results of this study suggest that SI joint manipulation reduces knee extensor MI. Possibly, spinal manipulation may be an effective treatment of MI in the lower limb musculature.

Key Indexing Terms: sacroiliac joint; chiropractic manipulation; muscle; knee pain.

WCC-(3rd Prize)

A randomized controlled trial of chiropractic spinal manipulative therapy for migraine. *Peter Tuchin, GradDipChiro, Dip.OHS; Henry Pollard, GradDipChiro, GradDipAppSc.; and Rod Bonello, DC, DO*

Objective: To assess the efficacy of chiropractic spinal manipulative therapy (SMT) in the treatment of migraine.

Design: A randomized controlled trial of six months duration. The trial consisted of three stages: two months of data collection (pre-treatment), two months of treatment, and a further two months of data collection (post-treatment). Comparison of outcomes to the initial baseline factors was made at the end of the six months, for both a SMT group and a control group.

Setting: Chiropractic Research Center of Macquarie University.

Participants: One hundred and twenty-seven volunteers between the ages of 10 to 70 were recruited through media advertising. The diagnosis of migraine was based on the International Headache Society standard, with minimum of at least one migraine per month.

Interventions: Two months of chiropractic SMT (diversified technique) at vertebral fixations determined by the practitioner (maximum 16 treatments).

Main Outcome Measures: Participants completed standard headache diaries during the entire trial noting the frequency, intensity (visual analogue score), duration, disability, associated symptoms and use of medication for each migraine episode.

Results: The average response of the treatment group (n=83) showed statistically significant improvement in migraine frequency (p < 0.005), duration (p < 0.01), disability (p < 0.05), and medication use (p < 0.001), when compared to the control group (n=40). Four people failed to complete the trial due to various causes, including moving residence, a motor vehicle accident, and increased migraine frequency.

Expressed in other terms, 22% of participants reported more than a 90% reduction of their migraines because of the two months of SMT. Approximately 50% more participants reported significant improvement in the morbidity of each episode.

Conclusion: The results of this study support previous results which show that some people report significant improvement in migraines after chiropractic SMT. A high percentage (greater than 80%) of participants reported "stress" as a major factor for their migraines. It appears probable that chiropractic has an effect on the physical conditions related to stress and that in these people, the effects of migraine are reduced.

Key Indexing Terms: migraine; chiropractic; RCT.

(Private Practice Prize)

A combined approach for the treatment of cervical vertigo. *Eduardo S. B. Bracher,DC,MD; Clemente I. R. Almeida,MD; Roberta Ameida, MD; Andr  Duprat, MD; and Cheri Bracher,DC.*

Background: Cervical vertigo is a diagnosis commonly made at both ENT and chiropractic offices. Hypothesized nonvascular mechanisms are reviewed. Therapeutic approaches have been suggested in the literature, ranging from cervical immobilization to vertebral manipulation.

Objective: To characterize the patient population with cervical vertigo and observe therapeutic results of a treatment protocol using distinct conservative modalities.

Methods: Fifteen subjects with cervical vertigo were selected from patients presenting with dizziness at an ENT office. Diagnosis was based on specific criteria and otoneurologic exam. All patients were submitted to a treatment protocol that include spinal manipulation, manual therapy on affected muscle groups, analgesic electrotherapy, labyrinth sedation, surface electromyography biofeedback and exercise program. Evolution of dizziness complaints and related musculoskeletal dysfunction was observed.

Results: Musculoskeletal complaints were present in 93% of patients, mainly cervicalgia, shoulder girdle pain and tension-type headache. Median duration of musculoskeletal symptoms was 7.5 years, while the median duration of dizziness before the beginning of treatment was 52 days. Treatment duration averaged five sessions and 41 days. At the end of treatment, 60% of patients reported remission and 20% reported consistent improvement of vertigo. Remission of musculoskeletal symptoms was observed in 26.7% of patients and improvement in 60% of patients.

Conclusion: Chronic, non-traumatic cervical and shoulder girdle dysfunction was an important causal and perpetuating factor of cervical vertigo in the population studied. A consistent improvement was observed with the use of a conservative treatment protocol involving multiple modalities for patients with cervical vertigo. Controlled studies are needed to assess its validity.

Key Indexing Terms: chiropractic; vertigo; dizziness; neck pain; biofeedback.

(Plenary Paper)

The economic case for the integration of chiropractic services into the health care system. *Pran Manga, PhD.*

The role and position of chiropractic in the health care system must be transformed from being alternative and separate to alternative and mainstream. This transformation requires that chiropractic become integrated in the many health care delivery organizations that collectively constitute the health care system. There is solid and impressive economic and related justification for the desired integration. Chiropractic care is a cost-effective alternative to other professions' management of neuromusculoskeletal conditions. It is also safer, increasingly accepted by the public (as reflected in the growing utilization and high patient retention rates), and there is much and repeated evidence that patients prefer chiropractic to other forms of care for the more common musculoskeletal conditions. The public interest will be well served by this transformation. Musculoskeletal disorders and injuries are the second and third most costly categories of health problems in economic burden of illness studies. They rank first as a cause in the prevalence of chronic health problem and long-term disability, and rank at the top for activity limitations and short-term disability. They rank first as a reason for consultation with a health professional and second as a reason for the use of prescription and non-prescription drugs. These conditions are more prevalent among the poor, lower middle-income and elderly groups. Yet, those are precisely the groups who are lower users of chiropractic care for reasons of inadequate insurance coverage. The integration of chiropractic into the health care system should serve to reduce health care

costs, improve accessibility to needed care and improve health outcomes.

Key Indexing Terms: chiropractic; insurance coverage; cost-effectiveness; health care reform.

The integration of McKenzie methods in chiropractic practice. *Robin McKenzie,PT.*

This paper discusses the development of McKenzie methods and how they might be integrated into modern chiropractic practice. The McKenzie method is a system of diagnostic and therapeutic clinical reasoning, which holds efficacy of manipulation in a revered place. Though arising from physical therapy, it has much to offer chiropractic practitioners.

Key Indexing Terms: physical therapy; chiropractic; low back pain.

Public demand and the integration of complementary and alternative medicine in the U.S. health care system. *William Meeker,DC,MPH*

Public use of complementary and alternative medicine (CAM) grew 25% between 1990 and 1997, leading to a number of implications for chiropractic and the U.S. health care system. Information gleaned from recent surveys describes issues with regard to definitions of CAM; patterns of CAM use and their costs; attitudes of the public, health care providers and business entities; increasing scientific research; and changes wrought in the health care system. Almost one-third of the 629 million total visits to CAM providers in 1997 were to chiropractors (192 million). The new U.S. National Center for Complementary and Alternative Medicine (NCCAM) funds chiropractic and other CAM research as the regular part of its scientific portfolio. HMOs and other health care business entities are creating new markets for CAM services, including chiropractic. As a profession, chiropractic appears to be positioned somewhere between mainstream practice and CAM, with conflicting opinions apparently held by the public, the health care industry and chiropractors themselves. The benefits and risks of chiropractic identified with the CAM movement must be weighed carefully.

Key Indexing Terms: chiropractic; public health; health services research.

"MUJA" Manipulation under joint anesthesia/analgesia: A proposed interdisciplinary treatment approach for recalcitrant spinal axis pain of synovial joint origin. *Mark Michaelsen,DC.*

Background: Manipulation under joint anesthesia (MUJA) is an approach of treatment for patients with chronic, recalcitrant spinal axis pain of synovial joint origin. Manipulation under joint anesthesia is the synthesis of fluoroscopically guided intra-articular injection(s) of anesthetic and corticosteroid agents with targeted, manual mobilizations and/or manipulations of the injected joint(s).

Discussion: Manipulation under joint anesthesia should be viewed with guarded optimism, based solely on anecdotal experience. A number of physicians (specializing in targeted intra-articular "blocks" of spinal synovial joints) and chiropractors (specializing in manual mobilization and manipulation of spinal synovial joints) in and around Tyler, Texas (USA) have treated more than 1000 patients over the past seven years via the manipulation under joint anesthesia protocol. This experience includes treatment of the atlanto-occipital and lateral-atlanto-axial joints of the upper

cervical spine, the zygapophysial joints of the cervical spine from C2-3 to C6-7, the thoracic spine, and the lumbar spine, and the pelvic sacroiliac joints.

Conclusion: The following are types of patient-candidates suitable for manipulation under joint anesthesia: 1) patients with dominant spinal axis pain who have been unable to progress despite the passage of sufficient time (>2 months) and the delivery of prior treatments, including spinal manipulative therapy; 2) patients whose pain is so severe that standard manipulative therapy cannot be delivered with technical success; 3) patients with complex problems in whom it is determined that the diagnosis of synovial-joint-mediated spinal pain must be established prior to the safe delivery of manipulative therapy.

The integration of chiropractic education into a hospital setting - a South African experience. A. G. Till, DC, FCCS(C), and H. Till, MSc, MmedEd.

This paper examines differences between chiropractic and medical internship experiences, both internationally and in South Africa. The South African hospital experience is described and the future is discussed.

Key Indexing Terms: chiropractic; internships; South Africa.

Qualitative review of studies of manipulation-induced hypoalgesia. Howard Vernon, DC, FCCS.

Background: The number of studies which have investigated the direct analgesic effect of spinal manipulation on spinal or referred pain is quite small. As a result, our knowledge of this crucial aspect of manipulation is rather sparse. This paper will review a set of studies that have as their purpose the measurement of the immediate effect in the spinal and peripheral soft tissues of manipulation on pain or pain-related phenomena.

Methods: The literature was accessed by means of electronic searches of MEDLINE (1966-1998). Keywords were: manipulation, pain, and chiropractic. This search strategy is shown below. This search was complemented by citation reviews of important papers and chapters on the topic. Only studies which directly measured the effect of at least a single spinal manipulation on pain (i.e., tenderness, biochemical assay, referred pain, etc.) were selected. The selected studies have been reviewed descriptively; that is to say, no systematic assessment of their quality was conducted.

Results: The electronic search yielded 738 citations. Six hundred and forty-two (642) were found to be relevant to chiropractic. Of these, most were clinical descriptive articles of diagnostic and therapeutic procedures or case management. Most of the remainder were clinical trial reports or letters to the editor. Only five studies [references were selected according to the criteria above. In other words, less than 1% of the indexed literature on chiropractic/manipulation and pain involved studies that explored the mechanism of the putative effect of spinal manipulation on pain mechanisms. Six other studies were retrieved from citation reviews. These 11 studies were reviewed in chronological order of their publication.

Conclusion: The body of studies investigating the effects of spinal manipulation on pain directly is quite small. Nonetheless, if the theory of how manipulation exerts its therapeutic effects posits that the sensory input created by the intervention results in some form of inhibition of the pain experience, then the results of this small body of studies are largely consistent with one another

and with this theory. This review has highlighted the deficiencies in the extant studies and the many questions that remain to be addressed. Only a great deal more high-quality research will permit full elucidation of the hypo-algesic effects of spinal manipulation.

Key Indexing Terms: chiropractic manipulation; pain; randomized clinical trial.

Integration of traditional and complementary medicine into national health care systems. *Xiaorui Zhang, MD.*

The growth of complementary and alternative medicine in the Far East is discussed. The role of traditional medicine in the development of health care in Asia is presented, and integration of traditional and modern methods of health care are described.

Key Indexing Terms: chiropractic; traditional Chinese medicine; China.

Reflex effects of vertebral subluxations: the peripheral nervous system. An Update. *Philip Bolton, DC, PhD.*

Background: The traditional chiropractic vertebral subluxation hypothesis proposes that vertebral misalignments cause illness and/or disease. This hypothesis remains controversial.

Objective: To briefly review and update experimental evidence concerning reflex effects of vertebral subluxations. In particular, concerning peripheral nervous system responses to vertebral subluxations.

Data Source: Information was obtained from chiropractic and scientific peer reviewed literature concerning human or animal studies of neural responses to vertebral subluxation and/or vertebral displacement or movement.

Conclusion: Animal models suggest that vertebral displacements and putative vertebral subluxations may modulate activity in group I-IV afferent nerves. However, it is not clear if these afferents are modulated during normal day-to-day activities of living and, if so, what segmental or whole body reflex effects they may have.

Key Indexing Terms: chiropractic; vertebral subluxation; nervous system; afferents; joint biomechanics; muscle.

The reflex effects of subluxation: The autonomic nervous system. *Brian Budgell, DC.*

Background: The collective experience of the chiropractic profession posits that aberrant stimulation at a particular level of the spine may elicit a segmentally-organized response which may manifest itself in dysfunction within organs receiving autonomic innervation at that level. This experience is at odds with classical views of neuroscientists regarding the potential of somatic stimulation of spinal structures to effect visceral function.

Objective: To review recent findings from basic physiological research regarding the effects of somatic stimulation of spinal structures on autonomic nervous system activity and the function of

dependent organs.

Data Source: Findings were drawn from a major recent review of the literature on the influences of somatic stimulation on autonomic function and from recent original physiological studies concerning somatoautonomic and spinovisceral reflexes.

Conclusions: Recent neuroscience research supports a robust neurophysiological rationale for the concept that aberrant stimulation of spinal or paraspinal structures may lead to segmentally organized reflex responses of the autonomic nervous system that may alter visceral function.

Key Indexing Terms: chiropractic; autonomic nervous system; reflexes.

Mechanisms of neurovascular compression within the spinal and intervertebral canals. *Lynton G.F. Giles,DC,PhD.*

Objective: To describe some possible causes of encroachment upon human spinal and intervertebral canal (foramen) neurovascular structures.

Data Selection and Synthesis: A review of imaging films of patients aged 38 to 52 years and human autopsy histopathological sections from 40-60-year-old cadavers, to determine what structures may be responsible for neurovascular compression in individuals in this relatively young-to-middle age group and to illustrate some examples.

Results: Stenosis of the spinal and intervertebral canal neurovascular structures can be due to various bony and soft tissue structures. Stenosis can be related to osteophytosis of the vertebral body, uncovertebral joints and zygapophysial joints, to intervertebral disc protrusion, to ossification of the posterior longitudinal ligament and ligamentum flavum hypertrophy, or to buckling.

Discussion: Various forms of spinal and intervertebral canal stenosis can cause compression of neurovascular structures that may, in turn, be responsible for symptomatology. Of course, autopsy findings cannot be equated to painful syndromes in patients.

Key Indexing Terms: spine; stenosis; neurovascular compression; pathology.

The neurological effects of the adjustment. *Scott Haldeman, DC, MD, PhD, FRCP(C).*

This paper discusses the several theories pertaining to the chiropractic adjustment, including the nerve compression theory, reflex theories and pain relief theories. These theories are based upon the latest scientific evidence but lack evidence of validity.

Key Indexing Terms: chiropractic; neurology; pain.

Motor control problems in spinal pain patients: A new direction for therapeutic exercise. *Gwendolen Jull,MPh,FACP and Carolyn Richardson, BPhy, PhD.*

A motor control exercise protocol for back pain. Recent research into muscle dysfunction in low

back pain patients has led to discoveries of impairments in deep muscles of the trunk and back. These muscles have a functional role in enhancing spinal segmental support and control. The muscle impairments are not those of strength but rather problems in motor control. These findings call for a different approach in therapeutic exercise, namely a motor learning exercise protocol. The specific exercise approach has an initial focus on retraining the cocontraction of the deep muscles, the transversus abdominis and lumbar multifidus. Initial clinical trials point to the effectiveness of the approach in both acute and chronic low back pain patients in terms of reducing the neuromuscular impairment and controlling pain.

Key Indexing Terms: low back pain; motor control; exercise; transversus abdominis; lumbar multifidus.

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