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ABSTRACTS FOR MARCH/APRIL 1994

Editorial Staff

Muscle Testing Response to Provocative Vertebral Challenge and Spinal Manipulation: A Randomized Controlled Trial of Construct Validity. Mitchell Haas, DC, David Peterson, DC, Dennis Hoyer, DC, Gregg Ross, DC

Abstract Objective: To evaluate the relationship of muscle strength response to a provocative vertebral challenge and to spinal manipulation.

Design: Prospective double-blind randomized controlled trial: crossover and between subjects designs.

Setting: Laboratory: Center for Technique Research.

Participants: 68 naive volunteers from the student body, staff, and faculty of the college.

Interventions: Provocative vertebral challenge: standardized 4 to 5 kg force applied with a pressure algometer to the lateral aspects of the T3-T12 spinous processes. Intervention: manual high velocity low amplitude adjustment or switched-off activator sham.

Main Outcome Measures: Piriformis muscle response was defined in two ways: reactivity (a decrease in muscle resistance, yes or no, following a vertebral challenge); responsiveness (the cessation of reactivity following spinal manipulation). Relative response attributable to the maneuver (RRAM): the percent of an outcome attributable to the challenge or adjustment itself.

Results: Average RRAM = 16% reactivity to vertebral challenge; average RRAM = 0% responsiveness to spinal manipulation. Six to 10% of muscle tests were positive regardless of examiner, previous finding or intervention.

Conclusions: For the population under investigation, muscle response appeared to be a random phenomenon unrelated to manipulable subluxation. In and of itself, muscle testing appears to be of questionable use for spinal screening and postadjustive evaluation. Further research is indicated in more symptomatic populations, different regions of the spine, and using different indicator muscles.

Key Indexing Terms: Outcome and Process Assessment, Chiropractic.

Sagittal Plane Rotation of the Pelvis during Lumbar Posteroanterior Loading Michael Lee, MBIomedE, Herman Lau, Grad Dip App Sc (Manip Physio) and Terence Lau, Grad Dip App Sc (Manip Physio)

Abstract Objective: To determine the extent of sagittal plane rotation of the pelvis during lumbar

spine posteroanterior loading.

Design: Quantitative study.

Setting: Biomechanics Laboratory, Faculty of Health Sciences, University of Sydney.

Participants: Ten male and female subjects with no recent history of significant low back pain.

Intervention: A mechanical device was used to apply forces to the L3 spinous process. Data were collected during slow cyclical loading.

Main Outcome Measure: The stiffness of the posteroanterior movement at the point of loading was measured, together with the sagittal plane rotation of the pelvis and the result to rotation provided by the bed on which the subject lay.

Results: Mean pelvic rotation was 2.1 degrees per 100 N applied force (SD 1.01 degrees/100 N). Mean posteroanterior stiffness was 13.4 N/mm (SD 3.13 N/mm) and resistance to pelvic rotation was 2.71 Nm/degree of pelvic rotation. (SD 0.84 Nm/degree).

Conclusion: During posteroanterior force application there is pelvic rotation of a magnitude which may be sufficient to have clinical significance. Abnormalities found during lumbar posteroanterior force application may originate in tissues caudad to the lumbar spine itself.

Key Indexing Terms: Biomechanics, Lumbar Region, Spine, Pelvis, Motion.

The Tension Headache, Migraine Headache Continuum: an Hypothesis Craig F. Nelson, DC

Abstract

There is evidence in the literature that tension-type and migraine headaches do not exist as discrete pathophysiologic entities, but form a continuum. The mechanisms for tension and migraine headaches are discussed and the evidence of this continuum, both basic scientific and clinical, is reviewed. A model for chronic headaches based on this evidence and based on clinical observations by the author is presented. Clinical and research implications of this model and means of testing the model are discussed.

Key Indexing Terms: Headache, Migraine.

A Preliminary Single Case Magnetic Resonance Imaging Investigation into Maxillary Frontal-Parietal Manipulation and its Short Term Effect upon the Inter-Cranial Structures of an Adult Human Brain Marc G. Pick, DC

Abstract Objective: To investigate the hypothesis that external cranial manipulation can cause change within the structures of the human brain.

Clinical Features: The single case study was performed on an asymptomatic 42-year-old man utilizing a mid-sagittal magnetic resonance image (MRI) scan. The MRI scan was administered without manipulative pressure but with the investigators contacts on the test subjects maxillary palate and frontal/parietal region surround the bregma. Measurements were taken along the superior border of the corpus callosum, the width of the fornix column, the exposed

anterior/superior wall of the lateral ventricle posterior to the fornix, the angular surface of the cerebellar central lobule and the posterior surface of the inferior colliculi.

Intervention and Outcome: Results from the second MRI (administered during the application of external cranial pressure) demonstrated elimination of a 5 mm peak along the superior border of the corpus callosum and a 4 mm reduction in the width of the fornix column. The exposed anterior/superior wall of the lateral ventricle posterior to the fornix column increased 51 degrees cephalad with manipulative application. The angular surface of the central lobule altered by minus 26 degrees, and the posterior surface of the inferior colliculi varied by minus 7 degrees. The subject experienced no change in his asymptomatic condition as a result of this study.

Conclusion: The present study supports the theory that external cranial manipulation affects the structure of the brain. It also suggests support for the theory regarding suture mobility.

Key Indexing Terms: Chiropractic Manipulation, Cranium, MRI.

Electrical Shock Injury Kevin A. Rose, DC

Abstract Objective: To discuss the case of a patient who received an electrical shock injury to the back of his head and was co-managed by a neurologist and a chiropractor. The common manifestations of electrical shock injuries are presented.

Clinical Features: The patient was a 31-year-old man. His initial symptoms consisted of headaches, dizziness, pain in the suboccipital area, tingling down both arms to the hands, nausea, blurred vision, increased sweating, chest pain, loss of appetite, and memory lapses. The patient received a neurological examination, MRI of the brain, EEG, brain stem auditory evoked response, and EKG. The neurologist's diagnosis was post-traumatic head syndrome following electrocution.

Intervention and Outcome: He was treated by a neurologist and a chiropractor, with fair results. Chiropractic treatments were directed towards correcting the fixations, fibrotic tissue, and joint proprioception in his neck using manipulation, physical therapy, and active care exercises.

Conclusion: Electrical shocks commonly cause immediate damage to the heart, nervous system, and musculoskeletal system. They can also cause delayed complications days to years later, including cholelithiasis, cataracts, and nervous system conditions such as ALS. Chiropractors can play an important role in managing the musculoskeletal manifestations of electrical shock injuries

Key Indexing Terms: Chiropractic, Electric Injuries.

Chiropractic Management and Manipulative Therapy for MRI Documented Cervical Disk Herniation David J. BenEliyahu, DC

Abstract Objective: This case study reports on three cases of patients with documented cervical disk herniations, who responded to chiropractic management and manipulative therapy.

Clinical Features: Three patients complaining of neck pain with radiation of pain and tingling into the upper extremities had positive magnetic resonance imaging scans consistent with cervical disk herniations. They also had positive neurophysiologic testing with positive thermography scans and electrodiagnostic studies.

Intervention and Outcome: the patients were prescribed a treatment regimen consisting of chiropractic management including bracing, physiotherapy, cervical manipulative procedures, traction and exercises. The patients responded well to care as evidence by post-treatment MRI, electrodiagnostic studies, clinical exam findings and thermography scan findings.

Conclusion: Patients with and without nerve root compression secondary to cervical disk herniation can and do respond well to chiropractic care. Chiropractic management of this condition can and should be employed prior to more invasive treatment.

Key Indexing Terms: Chiropractic, Magnetic Resonance Imaging, Thermography, Intervertebral Disk.

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