Electromyographic responses of paraspinal muscles to postural disturbance with special reference to scoliotic children.

Claude Perret, PhD; Jean Robert, DC

Background: EMG responses of erector spinae to a postural perturbation have been described and interpreted as an unloading reflex. Moreover, these responses have been found clearly and constantly abnormal in subjects presenting a progressive idiopathic scoliosis when compared with responses observed in subjects presenting a non-progressive scoliosis or in normal subjects.

Objective: To investigate responses in order to obtain more precise information on their components, on their origin and on their variations in scoliotic children.

Subjects: 13 scoliotic children, with 3 cases of fast progressive idiopathic scoliosis, as well as 3 healthy subjects.

Setting: The study was carried out at the Swiss Institute of Chiropractic in Bern, Switzerland.

Methods: The subjects were standing on a specially constructed platform that could be suddenly tilted either to the right or to the left. Thoracic and lumbar paraspinal muscle activity was recorded with pairs of self-adhesive surface bipolar EMG. The responses were analyzed to detect components and study their time course and relative amplitude in successive trials; characteristics common to different subjects were looked for.

Results: The presence of short-latency responses and later activities following a postural perturbation was confirmed. In a given subject, these components varied in amplitude and time course from 1 trial to another. On the other hand, the differences found across subjects were not significantly different from those found within the various subjects.
Conclusion: Our results exhibit some differences with previous data. They lead to a different neurophysiological interpretation and they indicate that the stimulus and the responses need more precise analysis before being used as a diagnostic and prognostic tool in evolutive scoliosis.

Key Indexing Terms: Scoliosis; Electromyography; Paravertebral Muscles; Posture; Diagnosis.

Areas of capsaicin-induced secondary hyperalgesia and allodynia are reduced by a single chiropractic adjustment - a preliminary study.

Parvaneh Mohammadian, PhD; Antonio Gonsalves, DC; Chris Tsai; Thomas Hummel, MD; Thomas Carpenter, DC

Introduction: The aim of the study was to investigate the hypoalgesic effects of a single spinal manipulation treatment on acute inflammatory reactions and pain induced by cutaneous application of capsaicin.

Methods: Twenty healthy subjects participated in the experiment, which consisted of 2 sessions. In both sessions, following control measurements, topical capsaicin was applied to the right or left forearm to induce cutaneous inflammatory reactions. The cream was removed after 20 minutes. Then, subjects received either spinal manipulation (SMT), or "non-spinal manipulative treatment" (N-SMT), respectively. In control as well as pre- and post-treatment intervals, the following tests were performed: measurement of the areas of mechanical hyperalgesia and stroking allodynia, assessment of spontaneous pain, and measurement of blood flow.

Results: The results confirmed that topical capsaicin-induced inflammatory reactions, based on occurrence of hyperalgesia and allodynia, augmented pain perception and increased blood flow following capsaicin application compared to the control session. When compared to N-SMT, spontaneous pain was rated significantly lower post-SMT (p<0.014). In addition, areas of both secondary hyperalgesia and allodynia decreased after SMT (hyperalgesia: p<0.007; allodynia: p<0.003). However, there was no significant treatment effect for local blood flow.

Conclusion: These results suggest hypoalgesic effects following a single SMT. As local vascular parameter was not affected by the single SMT, the hypoalgesic effects appear to be due to central mechanisms.
Key Indexing Terms: Chiropractic Manipulation; Hyperalgesia; Allodynia; Pain.

A randomized clinical trial comparing chiropractic adjustments to muscle relaxants for subacute low back pain.

Kathryn T. Hoiriis, DC; Bruce Pfleger, PhD; Frederic C. McDuffie, MD; George Cotsonis; Omar Elsangak, MBBCh, DC; Roger Hinson, DC; Gregoria T. Versoza, DC

Background: The adult lifetime incidence for low back pain is 75-85% in the United States. Investigating appropriate care has proven difficult since, in general, acute pain subsides spontaneously and chronic pain is resistant to intervention. Subacute back pain has been rarely studied.

Objective: To compare the relative efficacy of chiropractic adjustments to muscle relaxants and placebo/sham for subacute low back pain.

Design: A randomized, double-blind, clinical trial.

Methods: Subjects (N=192) experiencing low back pain of 2-6 weeks duration were randomly allocated to 3 groups, with interventions applied over 2 weeks. Interventions were either chiropractic adjustments with placebo medicine, muscle relaxants with sham adjustments, or placebo medicine with sham adjustments. Visual Analog Scale for Pain, Oswestry Disability Questionnaire, and Modified Zung Depression Scale were assessed at baseline, 2 and 4 weeks. Schober's flexibility test, acetaminophen usage and Global Impression of Severity Scale (GIS), a physician’s clinical impression used as a secondary outcome, were assessed at baseline and 2 weeks.

Results: Baseline values, except GIS, were similar for all groups. When all subjects completing the protocol were combined (N=146), the data revealed pain, disability, depression and GIS decreased significantly (p<0.0001); lumbar flexibility did not change. Statistical differences across groups were seen for pain, a primary outcome, (chiropractic group improved more than control group) and GIS (chiropractic group improved more than other groups). No significant differences were seen for disability, depression, flexibility or acetaminophen usage across groups.
Conclusion: Chiropractic was more beneficial than placebo in reducing pain and more beneficial than either placebo or muscle relaxants in reducing GIS.

Key Indexing Terms: Chiropractic; Central Muscle Relaxants; Low Back Pain; Randomized Controlled Trial.

Clinical importance of active scars: abnormal scars as a cause of myofascial pain.

Karel Lewit, Professor, MD; Sarka Olsanska, Mgr, physiotherapist

Background: Active scars are a model of soft tissue lesions. Soft tissues surround the locomotor system everywhere. These tissues shift and stretch in harmony with joints and muscles. Active scars interfere with this type of movement, thus disturbing the function of the entire motor system.

Objective: The purpose of this paper is to show the importance of such scars, their diagnosis and the importance of manipulative therapy.

Methods: After discussing the diagnosis, 51 cases are presented, the majority being scars after operation. The patients suffered from the various types of myofascial pain, from all sections of the locomotor system. The type of operation and the clinical symptoms are given. The method of treatment is soft tissue manipulation making use mainly of the barrier phenomenon.

Results: In 36 of these cases, treatment of scars proved highly relevant, giving striking results at first treatment and in the course of therapy. In 13 further cases, the scar was partly relevant, i.e., 1 of several pathogenic lesions. It proved irrelevant in 3 cases.

Conclusion: The treatment of active scars can be of importance in a great number of cases; untreated, active scars are an important cause of therapeutic failure. It also widens the scope of manipulative therapy.

Key Indexing Terms: Myofascial Pain; Soft Tissue; Chiropractic Manipulation.

Movement of the projected pedicles relative to the projected vertebral body in a fourth lumbar
vertebra during axial rotation.

Roger R. Coleman, DC; I. Walker Thomas

**Background:** One use of the anteroposterior lumbar radiograph is to determine axial (y-axis) rotation of the lumbar vertebrae. Rotation might be an element of interest to clinicians seeking to evaluate vertebral positioning.

**Objectives:** Correlate and quantify movements of the projected pedicles relative to the projected vertebral body during axial rotation and determine if vertebral asymmetry and changes in object film distance affect these movements.

**Design:** A 3-dimensional computer model of a fourth and fifth lumbar vertebra, a modeled X-ray source and a modeled film were produced. The vertebral model was placed in various degrees of axial rotation at a number of different object film distances. Lines from the source were passed through the pedicles of the 4th lumbar vertebral model and additional lines erected tangent to the lateral body margins. These lines were extended to points of contact with the modeled film.

**Results:** The projected pedicles move relative to the projected vertebral body during y-axis rotation. Vertebral asymmetry and object film distances can also affect the distance of the projected pedicle relative to the projected lateral body margin.

**Conclusion:** Axial rotation produces movement of the projected pedicles relative to the projected vertebral body. However, vertebral asymmetry and changes in object film distance also affect the position of the projected pedicles relative to the projected lateral body margin, and might serve as confounders to the clinician seeking to analyze vertebral rotation through the use of the projected pedicles.

**Key Indexing Terms:** Radiography; Vertebrae; Spine; Pedicle.

---

**Influence of active release technique on quadriceps inhibition and strength: a pilot study.**

Janice M. Drover, DC; Dominique R. Forand; Walter Herzog, PhD

**Objective:** To determine if Active Release Technique (ART) protocols could be used as an effective way to influence strength and muscle inhibition in the quadriceps muscles of athletes with anterior knee pain.
Design: Pilot clinical outcome study.

Method: The sample consisted of 9 (4 male, 5 female) athletes who were identified as suffering from unilateral anterior knee pain. A Biodex dynamometer and the interpolated twitch technique were used to determine isometric strength and inhibition in the quadriceps muscles, respectively. The treatment intervention consisted of the Active Release Technique treatment protocols for anterior knee pain. The experimental leg and contralateral leg were tested pre- and post-treatment, and the experimental leg was tested a third time approximately 20 minutes post-treatment.

Results: Knee extensor moments were calculated by multiplying the moment arm by the forces measured by the Biodex dynamometer. Percentage of muscle inhibition was calculated by dividing the Interpolated Twitch Torque (ITT) by the Resting Twitch Torque (RTT); that is, (ITT/RTT*100). A repeated measures ANOVA was used to compare pre-treatment and post-treatment values for strength and muscle inhibition for the experimental and contralateral knees. The results showed no statistical significance.

Conclusion: ART protocols did not reduce inhibition or increase strength in the quadriceps muscles of athletes with anterior knee pain. Further study is required.

Key Indexing Terms: Active Release Technique; Muscle Inhibition; Patellofemoral Pain Syndrome; Quadriceps; Chiropractic.

Upper crossed syndrome and its relationship to cervicogenic headache.
Michele K. Moore, DC

Objective: To discuss the management of upper crossed syndrome and cervicogenic headache with chiropractic care, myofascial release and exercise.

Clinical Features: A 56-year-old male writer had constant one-sided headaches radiating into the right eye twice weekly for the past 5 years. Tenderness to palpation was elicited from the occiput to T4 bilaterally. Trigger points were palpated in the pectoralis major, levator scapulae, upper trapezius and supraspinatus muscles bilaterally. Range of motion in the cervical region was decreased in all ranges and painful. Visual examination demonstrated severe forward translation of the head, rounded shoulders, and right cervical
Intervention and Outcome: The patient was adjusted using high-velocity, short-lever-arm manipulation procedures (diversified technique) and was given interferential, myofascial release and cryotherapy 3 times weekly for 2 weeks. He progressed to stretching and isometric exercise, McKenzie retraction exercises and physioball for proprioception, among other therapy. The patient’s initial headache lasted 4 days. He had a second headache for 1.5 days during his exercise training. During the next 7 months, while returning to the clinic twice monthly for an elective chiropractic maintenance program, his headaches did not reoccur. He also had improvement on X-ray.

Conclusion: The principles of upper crossed syndrome and the use of exercise, chiropractic care, and myofascial release in the treatment of cervicogenic headache are discussed. A review of the literature indicates that analyzing muscle imbalance as well as vertebral subluxation may increase the effectiveness of chiropractic treatment for cervicogenic headache.

Key Indexing Terms: Chiropractic; Headache; Myofascial Pain.

Reduction of cervical dystonia after an extended course of chiropractic manipulation: a case report.
George W. Kukurin, DC, DACAN

Objective: The diminution of the signs and symptoms of cervical dystonia following an extended course of specific chiropractic manipulation is described.

Clinical Features: A 38-year-old man had gross anterior-lateral torticollis, focal dystonia of the head and neck, and radicular-like pains which failed to respond to physical therapy, medication and injection.

Interventions and Outcomes: Two specific spinal manipulative technique systems unique to the chiropractic profession (Applied Biostructural Therapy and Atlas Coccygeal Technique) were applied to the patient. The patient’s grading on a modified cervical dystonia scale dropped from a grade 16 to a grade 5 after an extended course of these specific chiropractic manipulative techniques.

Conclusions: The application of Advanced Biostructural Therapy (ABT) and Atlas Coccygeal (ACT) chiropractic techniques for management of cervical dystonia is presented. Substantial reduction in the
cervical dystonia rating scale was observed with this approach, even after standard medical interventions had failed.

**Key Indexing Terms:** Chiropractic; Cervical Dystonia; Torticollis; Chiropractic Manipulation; Movement Disorder; Alternative Medicine.

---

**Popliteal aneurysm as a cause of leg pain in a geriatric patient.**

*Rod L. Kaufman, DC*

**Objective:** To discuss the management of a patient with unilateral lower extremity pain as a consequence of a popliteal aneurysm.

**Clinical Features:** An 85-year-old male had difficulty in ambulating due to low back and lower extremity pain. Standard tests demonstrated and reproduced pain at the lower back while inspection, palpation and auscultation revealed a pulsatile mass in the popliteal fossa of the right knee.

**Intervention and Outcome:** Specific joint manipulation for relief of low back pain was performed. Co-management of the patient with a vascular surgeon and subsequent surgical intervention resulted in relief of lower extremity pain.

**Conclusion:** Resolution of pain and guarded gait was accomplished by a multidisciplinary approach combining conservative care and invasive techniques.

**Key Indexing Terms:** Popliteal Aneurysm; Leg Pain; Low Back Pain.

Page printed from: