

Review of the literature supporting a scientific basis for the chiropractic subluxation complex

Dishman R. *J Manipul Physiol Ther* 1985; 8: 163-174

A review of the literature reveals strong evidence for both the mechanical model of disease production (structural) and the neurobiological model (functional). Outdated models which attempt to describe a scientific basis for chiropractic theory are inadequate and indeed harmful to the progress and acceptance of chiropractic. Pragmatic or empirical arguments that "Chiropractic works and that's what counts" have served a useful purpose, but now must be augmented by extant research findings. The "paradigm shift" is on. Research investigators around the world are focusing on the multiple components of the chiropractic subluxation complex (CSC), a definitive, provable clinical entity. No longer can "informed" critics support the accusation that "chiropractic practice is based upon irrational, untenable premises." Only a few more pieces of the puzzle need to be fitted into place to produce the "big picture," i.e., the vertebral column is one of the most neglected vital organs in the human body - the sine qua non of the neurobiomechanical system - which influences every structure and function. Historically, its role in maintaining health has been almost totally ignored and for nearly a century chiropractors have battled against the consequences of this neglect. The scientific community is about to see that chiropractic is leading the way in discovering the "new world" in health care. Past, present and future research is discussed.

KEY INDEXING TERMS: neurobiomechanical, facilitated segment, multicausal, vertebral dyskinesia, dysarthrosis, neurotrophic axonal transport, isotope labeling, somatosympathetic, paradigm shift, chiropractic.

Lumbar disc herniation: a comparison of the results of chemonucleolysis and open discectomy after ten years

Weinstein J, et al. *J Bone Joint Surg (Am)* 1986; 68-A: 43-51

Using data obtained by questionnaire in a retrospective review of patients with low-back and sciatic pain (eighty-five treated by injection of chymopapain and seventy-one, by open discectomy), the results at one and ten years after treatment were analyzed. For this analysis we used six measures of pain relief, six measures of the patients' course during the ten-year period since primary treatment, and four measures of the patients' history of employment or work since initial treatment. Validity studies demonstrated that the pain-outcome measures reflected the patients' condition adequately and that all six measures were significantly related to each other (Pearson's r , $p < 0.003$). The chymopapain and discectomy groups were not distinguishable on the basis of the pain-outcome measures. However, body mass was directly related to the presence of pain ten years after discectomy but not after injection of chymopapain.

Analysis of the progress measures (indicators of the course of the patients' pain during the ten-year period) showed that the rates of reoperation in the two treatment groups did not differ significantly, but the discectomy patients tended to have had a higher rate of re-

operation at both one and ten years after initial treatment. These measures did not show unequivocal superiority of one treatment compared with the other.

Using the work measures (assessments of the patients' history of employment since initial treatment), it was found that in both treatment groups the patients who returned to work six to twelve weeks after treatment despite persistent symptoms had significantly more pain at ten years ($p < 0.04$). Also, the patients who returned to work less than six weeks after treatment, while still symptomatic, showed a similar trend. On the other hand, among the patients who were still symptomatic at twelve weeks, it made no difference in the final results whether they returned to work at twelve weeks or thereafter. These findings support the notion that after either discectomy or chemonucleolysis, patients should return to work only after complete symptomatic recovery or a minimum convalescence of twelve weeks.

Torticollis in children caused by congenital anomalies of the atlas

Bouboussat J. *J Bone Joint Surg (Am)* 1986; 68-A: 148-188

Hemi-atlas is a rare congenital anomaly in the formation of the first cervical vertebra. It may cause a rather severe and progressive torticollis. When a child is young, the neck, despite the deformity, is flexible and the torticollis can be passively corrected. However, in some patients it becomes increasingly severe and fixed. I describe the findings in seventeen patients, seven of whom were operated on between 1975 and 1983. Treatment with a brace was shown to be ineffective. In patients with severe deformities, fusion of the upper part of the cervical spine is recommended. Fusion was obtained in all seven patients in whom it was attempted, and there was good postural correction in all. Early operation is recommended if the deformity is increasing. Gradual correction in a halo cast followed by posterior fusion is recommended as the treatment of choice in patients with severe torticollis.

Changes in the cervical spine in juvenile rheumatoid arthritis

Hensinger RN, et al. *J Bone Joint Surg (Am)* 1986; 68-A: 189-198

One hundred and twenty-one patients with juvenile rheumatoid arthritis were studied clinically and roentgenographically for evidence of disease of the cervical spine. None of the fifty-seven patients with pauciarticular-onset juvenile rheumatoid arthritis had cervical symptoms or signs, and only one had minor roentgenographic changes of disease in the cervical spine. In contrast, clinical stiffness and roentgenographic changes in the cervical spine occurred commonly in the fifty-one patients with polyarticular-onset disease and in the thirteen patients with systemic-onset disease. Despite extensive roentgenographic involvement of the cervical spine, however, pain in the neck was not a common complaint.

Neither severe pain in the neck nor torticollis, occurring either separately or concomitantly, is frequently found in patients with ju-

venile rheumatoid arthritis, and its presence may suggest an intercurrent problem such as a fracture or infection. As patients with juvenile rheumatoid arthritis rarely have disease in the cervical spine alone, the patient should be carefully examined for involvement of multiple joints.

Facet joint injection for low back pain: a clinic study

Lynch MC, et al. *J Bone Joint Surg (Br)* 1986; 68-B: 138-141

Therapeutic injection of facet joints is now widely practised, but British experience has been infrequently reported. We studied the results of injecting facet joints with a corticosteroid preparation in 50 patients suffering from the "facet syndrome". Our series included a number of extra-articular injections and these "failed injections" provide a useful control group. Results indicate that only intra-articular injections are effective; certainty of joint penetration can be ensured only by the routine use of joint arthrography.

The stages of disc degeneration as revealed by discograms

Adams M, et al. *J Bone Joint Surg (Br)* 1986; 68-B: 36-41

One hundred and thirty-nine discs from cadaveric lumbar spines were injected with a mixture of radio-opaque fluid and dye. Discograms were taken and the discs were then sectioned in the sagittal plane. Examination of the sections revealed that injected fluid did not at first mix with the disc matrix but pushed it aside to form pools of injected fluid. The location of these pools, and hence the appearance of a discogram, depended on the stage of degeneration of the disc. It is concluded that useful clinical information can be obtained from discograms.

Electromyographic evidence of paraspinal muscle spasm during sleep in patients with low back pain

Fischer A, et al. *Clin J Pain* 1985; 1: 147-154

Electromyogram (EMG) was recorded by surface electrodes from lumbar paraspinal muscles during a 24-h period using Medilog 4 channel battery operated portable tape recorder. On replay records the total electrical activity amplitude and duration of the activity was evaluated. Nine patients with low back pain and unilateral or prevailing one-sided palpable paraspinal muscle spasm (PS) were studied. The control group consisted of 12 participants without pain or palpable spasm. Sustained electrical activity was documented during sleep in lumbar paraspinal muscles of patients with low back pain and palpable spasm. This study demonstrated that in normal subjects without low back pain there is no EMG activity in lumbar paraspinal muscles during sleep. The EMG activity in spasmodic muscles was statistically significantly higher than in the nonspasmodic control subjects without pain.

KEY WORDS: Electromyography - Muscle spasm - Pain.

Innervation of synovial membrane and meniscus

Gronblad M, et al. *Acta Orthop Scand* 1985; 56: 484-486

Substance P-immunofluorescent nerves, which are closely connected to pain transmission, were shown in human knee synovial membrane and menisci. Both tissues also contained enkephalin-immunofluorescent nerves, which are probably involved in the modulation of pain transmission. Previous suggestions on the presence of nociceptive receptors in these non-cartilaginous joint structures, made on a histological basis, are thus confirmed by a specific immunohistochemical method.

Epidemiology of musculoskeletal disorders (complaints) and related disability in Canada

Lee P, et al. *J Rheumatol* 1986; 12: 1169-1173

Data on musculoskeletal disorders (complaints), collected as part of the Canada Health Survey were analyzed. Sixteen percent of those sampled reported having arthritis, rheumatism or back, limb or joint disorders with a greater prevalence among females and in the older population. In 21% this was associated with limitation of activity with an average of 11 disability days/person/year. Serious back disorders were reported in 4.4% of the population. While the majority of health consultations (53%) were with a physician, a substantial number (34%) were with chiropractors.

Age changes in lumbar intervertebral discs

Twomey L, et al. *Acta Orthop Scand* 1985; 56: 496-499

Measurements of disc thickness, shape and degeneration, using the criteria described by Rolander (1966), were recorded from 204 post-mortem lumbar spines. The "true average disc height" increased with age as the discs "sink" into the vertebrae. These results add information to previous studies which indicate that the *loss of transverse trabeculae of lumbar vertebrae is primarily responsible for the change in shape of both vertebrae and discs in the elderly*. While the incidence of disc degeneration does increase in old age, the majority of the discs examined did not show evidence of any such change.

The total body approach to the osteopathic management of temporomandibular joint dysfunction

Hruby RJ. *J Am Osteo Assoc* 1985; 85: 502-510

Dysfunction of the temporomandibular joint (TMJ) is being recognized clinically more and more. The skilled osteopathic physician can have a distinct advantage over other practitioners in the diagnosis and treatment of this disorder. This can be accomplished by having a systematic approach to the patient as a total structural-functional unit. The sequence of such an approach is described herein. Special attention is given to craniosacral techniques that may be employed in the management of TMJ dysfunction. The 2 case histories demonstrate

that, with skilled manipulative care, the need for further orthodontic or prosthodontic treatment can be lessened or sometimes entirely eliminated.

Clinical assessment of manipulation and mobilization of the lumbar spine

Di Fabio RP. *Physical Ther* 1986; 66: 51-4

The widespread use of manual therapy techniques suggests some degree of success in their application. In this article, I review the applied clinical research on the effectiveness of using manipulation or mobilization of the lumbar spine. The literature reviewed indicates highly equivocal results when the goal of therapy was to decrease pain and increase motion. Because of a high incidence of spontaneous recovery from low back syndromes, performance measures may appear to improve significantly when proper controls are not used. Evaluation of the therapeutic effects of manual therapy is complicated by potentially confounding variables when used with other physical therapy procedures. I discuss the need for further, well-designed studies.

KEY WORDS: Backache; Lumbar region; Manipulation, orthopedic; Physical therapy; Spine.

Effects of auricular transcutaneous electrical nerve stimulation on experimental pain threshold

Oliveri A. *Physical Ther* 1986; 66: 12-16

This study was conducted to examine the effects of high intensity transcutaneous electrical nerve stimulation at auricular acupuncture points on experimental pain threshold. Forty-five healthy adult male and female subjects were assigned randomly to one of two treatment groups or to a control group. Subjects in the two treatment groups received high intensity TENS to either appropriate or inappropriate (placebo) acupuncture points on one ear. Experimental pain threshold at the ipsilateral wrist was determined with a painful electrical stimulus before and after ear stimulation. Only the group receiving stimulation of appropriate ear acupuncture points exhibited a significant increase ($p < .01$) in experimental pain threshold after ear stimulation. The comparable placebo and control groups, again, did not exhibit significant pretest-posttest differences in experimental pain threshold. The results suggest that, if applied accurately, auricular TENS can increase pain threshold. Further research is needed to assess the effects of this technique on patient groups.

KEY WORDS: Acupuncture, Ear, Electric stimulation, Pain

Use of superficial heat versus ice for the rheumatoid arthritic shoulder: a pilot study

Williams J, et al. *Physiother Canada* 1986; 38: 8-13

To date, the use of superficial moist heat (hot packs) versus ice therapy for the relief of pain in the rheumatoid arthritic (RA) shoulder, and its effect on the range of motion, have not been adequately assessed. A controlled study was conducted to assess the effect of heat versus

ice on the pain scores and range of motion in 18 RA subjects with shoulder pain. Patients were randomly assigned to two groups. Comparative data were obtained with a pretest/post-test design. Group 1 received moist heat treatments and performed a program of exercises for three weeks, while Group 2 received ice treatments and followed a similar program of exercises. Evaluations by an independent evaluator, pre- and post-treatment, permitted a comparison to be made between the two treatments. Eight of the nine patients in the ice-treated group and seven of the nine in the heat-treated group had a reduction in their pain scores (mean score 6.9 versus 5.7, a nonsignificant difference). The heat-treated group showed a greater increase in abduction and flexion than the ice-treated group – the mean improvement being 26° and 12° versus 23° and 5°, respectively – although this difference was not statistically significant. The functional levels of the groups were similar at the onset of the study and no statistical improvement was demonstrated at the conclusion. Our study demonstrates that no statistical differences were found between the two treatments (ice treatment vs. moist-heat) and that both can be used successfully in the management of the rheumatoid arthritic shoulder.

KEY WORDS: Rheumatoid arthritis, shoulder, thermotherapy, cryotherapy

The efficacy of transcutaneous electrical nerve stimulation in dysmenorrhea

Mannheimer JS, et al. *Clin J Pain* 1985; 1: 75-83

This study determined the efficacy of two modes of transcutaneous electrical nerve stimulation (TENS) as a nonmedicinal means of pain control in dysmenorrhea. Twenty-seven subjects (nine per group) were randomly assigned to either conventional TENS (Group 1), strong low rate acupuncture-like TENS (group 2), or a control group (Group 3). Each group received similar instructions, used the same TENS units and electrodes and also completed a posttreatment questionnaire. A mean decrease in pain of 72.2%, 51.3%, and 26.1% was observed for Groups 1, 2, and 3, respectively. Statistical analysis revealed that the mean decrease in pain and duration of pain relief between the conventional and control group was statistically significant. This study indicated that TENS can provide a safe and effective nonmedicinal means of pain relief for dysmenorrhea.

KEY WORDS: Dysmenorrhea – Conventional TENS – Acupuncture-like TENS – Pain control – Pain mechanisms – Electrode placement.

Survey of passive acupuncture points on thoracic spinous processes in individuals suffering from pain

Dung HC. *Am J Acupuncture* 1986; 14: 15-21

There are six acupuncture points on the upper nine of the twelve spinous processes in the thoracic region. In individuals with a history of pain, the points frequently become tender upon fingertip palpation. Using the number of these points, it is possible to objectively quantify pain in the individuals suffering from pain. Pain in individuals with a large number of tender points is harder to manage than in those with a small number of tender points.