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### Low-back pain of mechanical origin: randomised comparison of chiropractic and hospital outpatient treatment

Meade T, Dyer S, Browne W, Townsend J.  
BMJ 1990; 300:1431-1437.

**Objective** – To compare chiropractic and hospital outpatient treatment for managing low-back pain of mechanical origin.

**Design** – Randomised controlled trial. Allocation to chiropractic or hospital management by minimisation to establish groups for analysis of results according to initial referral clinic, length of current episode, history, and severity of back pain. Patients were followed up for up to two years.

**Setting** – Chiropractic and hospital outpatient clinics in 11 centres.

**Patients** – 741 Patients aged 18–65 who had no contraindications to manipulation and who had not been treated within the past month.

**Interventions** – Treatment at the discretion of the chiropractors, who used chiropractic manipulation in most patients, or of the hospital staff, who most commonly used Maitland mobilisation or manipulation, or both.

**Main outcome measures** – Changes in the score on the Oswestry pain disability questionnaire and in the results of tests of straight leg raising and lumbar flexion.

**Results** – Chiropractic treatment was more effective than hospital outpatient management, mainly for patients with chronic or severe back pain. A benefit of about 7% points on the Oswestry scale was seen at two years. The benefit of chiropractic treatment became more evident throughout the follow up period. Secondary outcome measures also showed that chiropractic was more beneficial.

**Conclusions** – For patients with low-back pain in whom manipulation is not contraindicated chiropractic almost certainly confers worthwhile, long term benefit in comparison with hospital outpatient management. The benefit is seen mainly in those with chronic or severe pain. Introducing chiropractic into NHS practice should be considered.

### Migraine – a risk factor for dissection of cervical arteries

Chatillon J, Ribeiro V, Mas J, Youl B, Bousser M.  
Headache 1989; 29:560-561.

A case control study technique was employed to test for an association between non-traumatic cervical artery dissection and several possible risk factors. A significant positive association was shown with migraine, independent of type and treatment regimen. No such relationship was found with smoking history, hypertension or past oral contraceptive use. There was, however a significant and independent association with current oral contraceptive use.

### The natural history of burst fractures at the thoracolumbar junction

Willen J, Anderson J, Toomoka K, Singer K.  
J Spinal Disorders 1990; 3(1):39-46.

Conservative management of 54 patients with thoracolumbar (T12 and/or L1) burst fractures was investigated. The fractures were subdivided according to the Denis classification and a modification was suggested. Most type A and B fractures showed good results regarding reduction and neurological improvement. However, severe type B (with anterior column compression and spinal canal narrowing exceeding 50%), D, and E fractures were to a large extent complicated by intractable low-back pain, neurological involvement, and signs of instability. This study suggests predictors for complications in patients with burst fractures in the thoracolumbar junction. These are (a) compression rate of the anterior column exceeding 50%, (b) narrowing of the spinal canal exceeding 50%, (c) signs of rotational malalignment in fracture level, and (d) level of the injury (L1 fractures).

### Anatomical and radiologic studies on the lumbar meningeal ligaments of humans

Scapinelli R. J Spinal Disorders 1990; 3(1):6-15.

Among the minor soft structures of the lumbar spinal canal that computed tomography can visualize, the meningeal ligaments have been neglected. There are no specific reports on this subject, and the only knowledge we have comes from very ancient and nearly forgotten anatomical works. From our studies on cadaveric specimens, it has been confirmed that the ligaments consist segmentally of ventral and lateral fibrous bands, connecting the outer surface of the dura to the endosteum of the spinal canal. The most characteristic component is the ventral one, running from the anterior wall of the dural sac to the posterior longitudinal ligament and vertebral endosteum. Due to their anchoring function, the ligaments are significantly developed at the level of the dural conus (sacro-dural ligaments of Trolard and Hofmann). On *in vivo* computed tomography studies, the ligament image appears most commonly on transverse scanograms of the lumbar segments as a median sagittal septum, easily identifiable when the extradural fat that it crosses is abundant. The meningeal ligaments may be implicated in pathological conditions of the spinal canal. They can calcify singly, though very rarely, and this process must be differentiated from degenerative marginal spurs, calcific disc herniation, circumscribed calcification of the posterior longitudinal ligament, or partial diaphragm.

### Comparing the cost of spinal MR with conventional myelography and radiculography

du Boulay G, Hawkes S, Lee C, Teather B.  
Neuroradiol 1990; 32:124-136.

All spinal magnetic resonance imaging examinations carried out during a three month period were analysed retrospectively in order to determine the clinical reasons for the scan requests. Technical details of the examinations they received and the clinical profiles formed a data set which revealed 10 separate "Clinical groups" for management purposes. Hardware, salary and expendables were costed as though the imaging unit had been sited within a National Health Service radiology



department. A spread sheet was designed capable of calculating costs per patient for a variety of types of working week and of different staffing structures, sensitive to the mixture of clinical groups referred for examination. The spreadsheet also accommodated straight line depreciation for hardware value and interest rates for borrowed capital. A second, prospectively observed, sample of spinal MR examinations was used to improve the accuracy of the timing of the length of patient examinations. Costs were compared with those for patients submitted for myelography and radiculography at the adjacent hospital during the same period. The comparison indicated that spinal MR was less costly than myelography and radiculography. The most important element of the extra cost of myelography related to the need to admit patients to hospital for at least one night for this examination because of the likelihood of headache and other common (though usually minor) complications following lumbar puncture and/or the injection of contrast medium. From the limited information that it was possible to obtain in the period of follow up, it appeared that MR had either been superior or equivalent to myelography or radiculography in all the clinical groups of patients where both could be tested. There were a number of groups in which no myelograms had been requested, presumably because clinical suspicions had pointed toward conditions like tumours, developmental abnormalities and demyelinating diseases in which neurologists and neurosurgeons have already made up their minds about the superiority of MR.

#### Night backache in pregnancy – hypothetical pathophysiological mechanisms

Fast A, Weiss L, Parikh S, Hertz G.  
Am J Phys Med Rehab 1989; 68(5):227–229.

One-hundred women responded to a questionnaire dealing with night backache during pregnancy. All the women were in the second half of their pregnancy. Sixty-seven percent of the women reported discomfort and/or backache during the night. We hypothesize that hypervolemia combined with obstruction of the inferior vena cava, caused by the enlarging uterus, is the underlying pathomechanism leading to night backache. Patients with inadequate venous collateral circulation may develop excessive pressure within the venous system, the vertebral bodies and overdistension of venous channels distal to the occluded zone. These changes may lead to hypoxemia, metabolic disturbances, irritation of unmyelinated nerves and result in night backache.

#### Spondylolysis and spondylolisthesis among young athletes

Marciniak R. Ann Sport Med 1988; 4:125–126.

I report on the incidence of spondylolysis and spondylolisthesis in 1,289 Polish athletes. Of the subjects examined, 5.51% were found to have spondylolysis, and 2.4% were found to have spondylolisthesis. I also found that for the spondylolytic defects, anterior-posterior lateral and oblique views were in most cases adequate to assess the lytic lesion. In cases in which this could not be clearly identified, tomograms were found to be beneficial. In the cases of spondylolisthesis, the lateral view was found to be most valuable for diagnosis. Oblique x-ray views did not add any additional information. I discuss the incidence of spondylolysis and spondylolisthesis and appropriate x-ray views for diagnosing these conditions among athletes.

#### Carpal tunnel syndrome in vibration disease

Koskimies K, Farkkila M, Pyykko I, Jantti V.  
Br J Indus Med 1990; 47:411–416.

The presence of carpal tunnel syndrome (CTS) in 125 forestry workers with exposure to vibration was examined clinically by electromyography and by determining vibration detection thresholds. Numbness of the hands was present in 43%, history of diminished hand muscle force in 15%, and Raynaud's phenomenon in 27%. The muscle weakness correlated significantly with motor nerve conduction velocity in the median nerve in both hands. In 25 forestry workers CTS was diagnosed. The condition was bilateral in 48%; otherwise it was more common on the right side. Fifteen patients were referred for surgery but because of spontaneous recovery or refusal by the patients only five underwent surgery; of these four improved. The motor conduction velocity of the ulnar nerve was decreased among patients with CTS supporting the idea that entrapment neuropathies in the hands may be due to tissue swelling caused by vibration at work. Total exposure time to vibration correlated with the decrease in motor conduction velocity in the ulnar nerve.

#### A comparison of chiropractic, medical and osteopathic care for work-related sprains and strains

Johnson M, Schultz M, Fergusson A.  
JMPT 1989; 12:335–344.

The cost of care and the number of days lost because of work injury were analyzed from information gathered in a postal card survey sent to all Iowa back or neck injury claimants (sprain/strain) on record for 1984. Descriptive findings for the flow of care of the respondents were evaluated and a comparison made of the benefits and costs of care received by patients treated by chiropractic doctors (DCs), medical doctors (MDs) or osteopathic doctors (DOs). The analysis focused on those workers who lost enough time from work to qualify for compensation (4 days or more), whose cases were closed and who received all their care from one health professional. For those who received care from DCs ( $n = 266$ ), the mean number of compensated days lost from work was at least 2.3 days less than for those who were treated by MDs ( $n = 494$ ;  $p < 0.025$ ) and at least 3.8 days less for those who were treated by DOs ( $n = 102$ ;  $p < 0.025$ ). Consequently, much less money in employment compensation was paid, on the average, to those who saw DCs. Findings on provider care costs are less clear-cut because care-cost data on only a portion of the cases was recorded on the State records used. For the data available, the median provider cost was highest for patients who saw DCs, but the mean was highest for those who saw MDs. The study showed that 38% of claimants did change doctors. When change of provider occurred, days lost from work and cost of care varied widely across the care options, but generally, fewer workdays were lost and lower amounts of disability compensation and provider cost paid when chiropractic was included in the care pattern.