



Cervicogenic Headache Revisited

New Research and Chiropractic Management

“In my experience, cervical migraine is the type of headache most frequently seen in general practice and also the type most frequently misinterpreted. It is usually erroneously diagnosed as classical migraine, tension headache, vascular headache. . . . Such patients have usually received an inadequate treatment and have often become neurotic and drug-dependent”.

Frykholm, neurosurgeon, Sweden (1972)¹

“Manipulation is effective in patients with cervicogenic headache”.

Duke University Evidence-Based Practice Center, USA (2001)²

A. Introduction

HEADACHE IS ONE OF THE most frequent reasons people seek medical advice and is the primary complaint of about 10% of chiropractic patients^{3,4}.

Headaches may have a ‘sinister’ cause, such as accidental injury, a space-occupying lesion in the brain or other disease process. In that case they are secondary headaches. However the great majority of headaches are ‘benign’, not linked to any specific injury or disease, and are known as primary headaches. Benign does not mean mild – symptoms may be frequent and severe. The three most common types of primary headaches are migraine, tension-type headache (TTH) and cervicogenic headache (CGH)⁵.

Back in the 1960s the various categories of primary headache were thought to be distinct. That thinking still influences much clinical practice and public perception. However by 1988, when the International Headache Society (IHS) published a new classification of headaches⁶ it was known:

- The diagnosis and classification of primary headaches were extremely confusing and difficult areas. A headache may

have various causes – genetic, neurological, biomechanical, vascular, physiological, environmental (e.g. certain foods and drink). New findings were casting doubt on the peripheral nervous system as the main source of pain. The “most fundamental problem”, noted the IHS, was that there was “a complete absence of laboratory tests which can be used as diagnostic criteria for any of the primary headache forms”.

- There was a continuum between what had been thought to be separate types of headache – migraine could convert to chronic TTH, episodic TTH could convert to chronic headache.

- Movement abnormalities or dysfunctions in the cervical spine were a significant contributing factor to primary headaches. Where patients met the diagnostic criteria for migraine or TTH they might also have cervicogenic headache (CGH – headache born in the cervical spine).

Figure 1 gives the IHS criteria for CGH.

The 1972 quote from Frykholm that opens this article speaks to this diagnostic confusion and unfortunately remains valid in general practice today.

2. While there is still much to learn there has been a wealth of new research since the early 1990s. With respect to CGH:

(a) **Anatomical Basis.** In 1995 Hack et al., dental researchers at the University of Maryland in Baltimore, presented new evidence of bridges of connective tissue between the posterior muscles and the pain-sensitive dura (myodural bridges) in the upper cervical spine that gave a much stronger anatomical basis for CGH⁷. See Figure 2 for details. These and other connective tissue and ligamentous bridges were confirmed by subsequent studies and surgeries.

(b) **Definition.** CGH, rather narrowly defined by the IHS as in Figure 1,

Professional Notes

Comfrey Root Extract for Back Pain

A new trial from Germany published in the British Journal of Sports Medicine reports the effectiveness of an ointment with comfrey root extract for patients with acute upper or lower back pain.

The ointment had been shown to be effective for a variety of muscle and joint complaints such as ankle sprain and osteoarthritis of the knee – this was a first trial for back pain. Points are:

(a) At the German Sport University in Cologne and related centres 120 patients/subjects were randomly assigned to 2 treatment groups receiving an ointment application 3 times daily for 5 days – one receiving the active ointment or verum (35% comfrey root extract, 60% ethanol) the other receiving a placebo ointment that looked the same but had no active ingredient.

(b) The primary outcome measure was pain intensity on active standardized muscle-specific movements measured by VAS. In the comfrey extract group, pain intensity decreased by 33% at visit

Figure 1. IHS Classification – Cervicogenic Headache (1988)

11.2.1 Cervical spine

Diagnostic criteria:

A. Pain localized to neck and occipital region. May project to forehead, orbital region, temples, vertex or ears.

B. Pain is precipitated or aggravated by special neck movements or sustained neck posture.

C. At least one of the following:

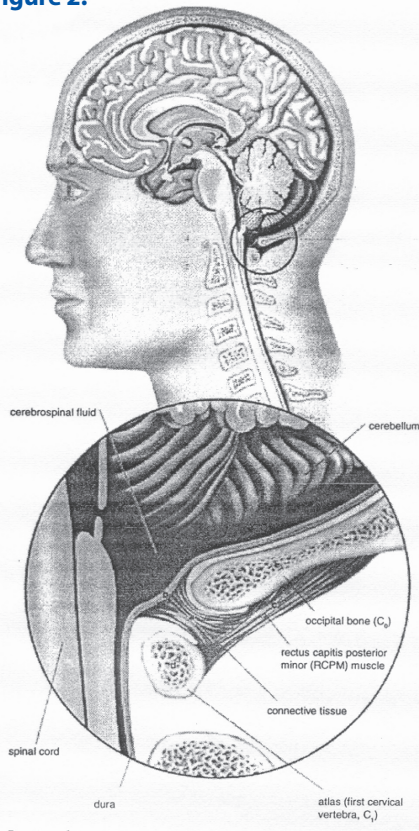
1. Resistance to or limitation of passive neck movements
2. Changes in neck muscle contour, texture, tone or response to active and passive stretching and contraction
3. Abnormal tenderness of neck muscles

D. Radiological examination reveals at least one of the following:

1. Movement abnormalities in flexion/extension
2. Abnormal posture
3. Fractures, congenital abnormalities, bone tumours, rheumatoid arthritis or other distinct pathology (not spondylosis or osteochondrosis)

Comment: Cervical headaches are associated with movement abnormalities in cervical intervertebral segments. The disorder may be located in the joints or ligaments. The abnormal movement may occur in any component of intervertebral movement, and is manifest during either active or passive examination of the movement.

Figure 2.



Reprinted from the *Anatomist's New Tools*, Hack DG, Dunn G et al. (199) 1998 Medical and Health Annual, Encyclopaedia Britannica.

received a wider definition from the North American Cervicogenic Headache Society (NACHS), a multidisciplinary society promoting the study of CGH:

“Referred pain perceived in any region of the head caused by a primary nociceptive source in the musculoskeletal tissues innervated by cervical nerves”.

(c) **Research.** A systematic review from the respected Duke University Evidence-Based Practice Center in 2001 summarized the research evidence to that time concerning the safety and effectiveness of various physical and behavioral treatments for CGH and TTH. It found that, even on the narrow definition given by the IHS, CGH was one of the most common forms of headache, similar in prevalence to migraine, and that the one physical or behavioral treatment with proven effectiveness was manipulation. Manipulation had two distinct advantages over use of medication – first it targeted the source of pain rather than control of symptoms, and second it was safe with fewer side effects.

With respect to TTH, the effectiveness of manipulation was “less clear” because there were only three randomized controlled trials (RCTs), none with a placebo or non-treatment group. However the trials suggested effective-

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ness. The largest, by Boline et al. in the US, reported that chiropractic manipulation was superior to amitriptyline in terms of reduced headache frequency and severity⁸.

How can manipulation be effective for patients with TTH? That question highlights the diagnostic and classification difficulties. Some patients diagnosed as having TTH, because they do not fall within the IHS definition of CGH – perhaps because they have no neck pain or headache provoked by neck movements, nonetheless have spinal joint dysfunctions – also known as subluxation in chiropractic practice. When these mechanical restrictions are corrected with manipulation, associated muscle tension is resolved.

In 2002, the year following the Duke University review, Spine published the first physiotherapy trial of manipulative therapy for patients with CGH. This also reported effectiveness. Jull et

al. in Australia reported a multi-center RCT from six universities in five states⁹. The goal of the trial was to assess the short and long-term effectiveness of two physical approaches to management of CGH which were being recommended as a first line of PT management – manual therapy and low-load exercise to re-educate muscle control of the cervico-scapular region. Summary details are:

- The 200 subjects were adults with signs of CGH according to Sjaastad et al.¹⁰ (unilateral headache associated with neck pain and aggravated by neck movements, joint tenderness on palpation of the upper cervical spine, and a headache frequency of at least one per week for a period of 2 months or more). Patients who had had physiotherapy or chiropractic treatment for headache in the past 12 months were excluded.

- Treatment was over a period of 6 weeks, including a minimum of 8 and a maximum of 12 treatments for up to 30 minutes per visit. They were randomly allocated to 1 of 4 groups – manual therapy (a combination of low and high-velocity techniques), exercise (program of low-load endurance exercises to train muscle control of the cervico-scapular region, not strength training), a combination of both, and a control group that received no physical therapy or other interventions. Medication use was not withheld but was monitored in headache diaries.

- The primary outcome measure was change in headache frequency, and secondary measures were changes in headache intensity and duration and in neck pain. Results were assessed at baseline, in the week immediately after treatment (week 7) then at 3, 6 and 12 months after the intervention.

- In all three active treatment groups there was significant reduction in headache frequency and intensity and in neck pain immediately after treatment, as compared with the control group, and these differences were still evident at 12 months follow-up.

Combined therapy was not significantly superior to either active treatment alone, but 10% of patients gained relief from combined therapy. The authors, and prominent US chiropractic researcher Dr. John Triano in his invited commentary in *Spine*, agree that the trial supports the now established practice that a combination of manual treatment

and exercise is best for patients with chronic CGH and/or neck pain.

- Finally and importantly, use of medication decreased substantially in the three active treatment groups but increased by 33% in the control group – a finding of major health, cost and policy significance.

3. The Jull et al. study provided for 8-12 treatment sessions over 6 weeks. Chiropractic trials have typically provided for 2-3 treatments per week for between 3 and 6 weeks. How many treatments are necessary or, in technical language, what should the optimal dosage be?

That was the central question in an important new trial by Haas et al.¹¹ from the Western States Chiropractic College in Portland, Oregon. This Report now reviews that trial in some detail and then comments on overall chiropractic management of patients with headache – the diagnostic process and management, which involves much more than chiropractic manipulation or adjustment.

B. The Western States Trial

4. This latest trial of chiropractic spinal manipulative therapy (CSMT) for cervicogenic headache (CGH) is from an interdisciplinary team of researchers led by Mitchell Haas, DC, Center for Outcome Studies, Western States Chiropractic College, Portland, Oregon. They are Haas, Adele Spegman, PhD, RN, Geisinger Center for Health Research, Danville, Pennsylvania, Mikel Aickin, PhD, Family & Community Medicine, University of Arizona, Tucson and David Peterson, DC and Darcy Vavrek, ND from WSCC. It was funded by the US National Institutes of Health and is published in *The Spine Journal*, official journal of the North American Spine Society (NASS), the leading medical society for spine care in North America.

Haas and fellow researchers had previously completed a smaller feasibility trial of CSMT for CGH in which they found “significant sustained reduction in headache pain” during 9 weeks follow-up after up to 12 treatment sessions of CSMT and physical modalities over a 3 week period.

The purposes of the present trial were twofold. First purpose was to test the efficacy of CSMT by comparing it with the control or placebo intervention

of light massage. The second was to compare two frequencies or dosages of treatment – 1 and 2 treatments weekly for 8 weeks, or a total of 8 or 16 treatments respectively.

As in other trials Haas et al. begin their report by emphasizing the huge burden of headache on individuals and society:

- At any one time the percentage of the population suffering from primary headaches (i.e. the point prevalence) is about 16%, with 5% of adults suffering from headache daily.

- Migraine, tension-type headache and CGH account for the majority of this. The point prevalence of CGH as defined by the IHS is up to 4.6% (Because much migraine and tension-type headache is now known to have a cervical spine dysfunction component the overall significance of the cervical spine in headache will be much higher).

- In the US in 1997 it was estimated that headaches accounted for 157 million lost days at work, costing society \$50 billion in absenteeism and medical benefits.

- Substantial consumer use of complementary and alternative medicine (CAM) has been documented, with patients reporting “helpfulness” compared with conventional medicine as the main reason for using CAM.^{12,13}

(a) **Design and Participants.** Eighty participants were treated at four sites – the WSCC outpatient clinic and three Portland area private chiropractic clinics. Volunteers were recruited by advertisements, and were eligible if they had a history of at least 5 CGHs per month for a minimum of the last 3 months, and met the IHS criteria A to C given in Figure 1 (see Page 2 of this Report). In addition they had to have at least moderate pain intensity – a minimum score of 25 on a 100-point pain intensity scale.

Exclusion criteria included the taking of prescription medication or use of manipulation or professional massage for headache/neck pain in the past 3 months. Patients were also ineligible if they were experiencing other types of headache that might confound the effects of manipulation – such as cluster, metabolic/toxic, and sinus headaches, and headaches associated with tumors or diseases. Patients were permitted to have migraine and TTH because a com-

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Comfrey Root Extract for Back Pain

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two and by 95.2% after visit five. Reductions in the placebo group were 12% and finally 37.8%. This represented a significant treatment difference with early onset.

(c) Secondary outcome measures were back pain at rest, change in pressure algometry values, change in disability measured by Oswestry Disability Index and global assessment of efficacy by patients. On these measures there were also significantly better results for the comfrey root extract group.

Giannetti, Staiger et al. report that their results are "clear-cut and consistent across all primary and secondary efficacy variables. Comfrey root extract shows a remarkably potent and clinically relevant effect in reducing acute back pain". On one hand the results look clean, on the other hand the authors appear to be affiliated with a company manufacturing the product.

(Giannetti BM, Staiger C et al. (2010) *Efficacy and Safety of Comfrey Root Extract Ointment in the Treatment of Acute Upper or Lower Back Pain : Results of a Double-blind, Randomised, Placebo-controlled, Multicentre trial*. Br J Sports Med 44:637-641).

World Notes Source: World Federation of Chiropractic

Canada – Congratulations are due to Canadian chiropractic and medical researcher Dr. Paul Bishop (*right*) and co-authors Geoffrey Quon, DC, Charles Fisher, MD and Marcel Dvorak, MD for winning the 2010 Outstanding Paper Award for Medical and Interventional Science from the North American Spine Society (NASS).



This is for a paper titled *The Hospital-Based Interventions Research Outcomes (CHIRO) Study: A randomized Controlled Trial on the Effectiveness of Clinical Practice Guidelines in the Medical and Chiropractic Management of Patients with Acute Mechanical Lower Back Pain*. This study compared two protocols for the management of patients with acute low-back pain – usual family physician-directed care and care according to current clinical practice guidelines (reassurance and avoidance of passive treatments; acetaminophen; four weeks of lumbar chiropractic spinal manipulative therapy).

The guidelines-based treatment was associated with significantly greater improvement.

Dr. Bishop will receive this award, which carries a prize of \$10,000 and is described by Dr. Scott Haldeman as "one of the most competitive and prestigious awards given out by NASS", at the NASS Annual Meeting in Orlando, Florida October 5-9, 2010. The full paper is to be published in *The Spine Journal* later this year.

The Canadian Chiropractic Association (CCA) reports continued development of its own clinical practice guidelines – which are available for review and use by chiropractors everywhere. For published guidelines on whiplash-associated disorders in adults,

and on adult neck pain not due to whiplash, go to www.chiropracticcanada.ca.

Denmark – Below is first notice of the new Danish Chiropractic Research Stipend. This offers funding of up to DKK1 million (approximately US\$175,000) per project for chiropractors residing outside Denmark who wish to conduct research as a PhD student or at a post-doctorate level. The overall grant framework is DKK2 million per year.

The joint sources of the funds are the Danish government and chiropractic profession. In Denmark there is state funding for chiropractic services. Since 1991 there has been agreement between the Danish Chiropractors' Association (DCA) and the government that a small portion of each treatment fee will go into a research fund jointly administered by the DCA and the government. This fund, which has been instrumental in developing chiropractic research capacity in Denmark, now produces approximately US\$3 million per annum. Part of those funds are now being made available internationally.



Danish Chiropractic Research Stipend

Foto: Mikkel og Thomas

The Danish Chiropractors' Association and The Foundation for Chiropractic Research and Postgraduate Education (a research foundation established by Denmark's healthcare authorities and the Danish Chiropractors' Association) have set up the international Danish Chiropractic Research Stipend.

A primary objective of the stipend is to strengthen the bonds between Danish and foreign research environments; this includes underpinning foreign researchers' contributions to building up and further developing a knowledge environment in Denmark.

It is possible to apply for funding from The Foundation for Chiropractic Research and Postgraduate Education to support research conducted by a foreign chiropractor at a Danish research institution.

An application form must be used to apply for support. The form and further details about application guidelines are available on the Danish Chiropractors' Association's website: www.danskkiropraktorforening.dk

The application must include a detailed description of the project, including its objective, as well as a specification of the amount being applied for and the amount of funding received from the home country of the researcher in question.

There are two application deadlines every year: **15 August and 15 January**. Applications will be processed at a meeting of The Foundation for Chiropractic Research and Postgraduate Education in late October and late April respectively. Applicants will be directly informed of the results.

Further details are available by contacting the Danish Chiropractors' Association at: dkf@danskkiropraktorforening.dk

Further details available at

www.danskkiropraktorforening.dk

News and Views

Norway – At the European Chiropractors' Union Convention in London Dr. Øystein Ogre (*right*), President of the Norwegian Chiropractors' Association since 2002, was elected ECU President.



Dr. Ogre (Palmer College 1980) has been in private practice in Fredrikstad, Norway since 1981 where he works in a multidisciplinary setting and has an extensive sports chiropractic practice. For 15 years he was the chiropractor for the Fredrikstad Football Club, a leading team in the Norwegian Premiership League, and he served as President of the Club from 1994-1996.

Achievements of the profession in Norway during his presidency include the right to certify sick leave; the right to refer patients to hospital, medical specialists and physiotherapy; reimbursement for all patients; the implementation of a mandatory one year internship program; and state funding for supervisors of interns and continuing education.

Additionally there has been a vote by the Norwegian Parliament in support of starting chiropractic education in a university in Norway – for which plans are now well advanced. This is an important year for the Norwegian Chiropractors Association – the NCA has its 75th Anniversary Convention in Bergen October 22-23, 2010.

United States of America – The National Center for Complementary and Alternative Medicine (NCCAM) at the National Institutes of Health (NIH) is the US government agency that funds a significant amount of chiropractic research, including the Haas et al. headache trial discussed in the main article in this report. It also provides information for the public on chiropractic and other forms of CAM.

• For NCCAM website information on chiropractic go to www.nccam.nih.gov/health/chiropractic.

• For the September 2010 issue of the monthly NCCAM newsletter, which has featured articles on chiropractic generally and the newly published Haas et al. trial, go to www.nccam.nih.gov/news/newsletter/2010_september.

The newsletter article on chiropractic includes MRI images illustrating the effects of spinal manipulation from an NCCAM-funded study led by Gregory Cramer, DC, PhD of the National University of Health Sciences, Lombard, Illinois. NCCAM's chiropractic program officer, quoted in the newsletter, is Partap Khalsa, DC, PhD.



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mon pathway has been proposed for these headache types and CGH, and they have been shown to be responsive to CSMT. In fact most respondents did report migraine or TTH, usually migraine.

(b) Interventions. All visits lasted 10 minutes. The 2 CSMT groups, those receiving 1 treatment per week over 8 weeks and those receiving 2 treatments per week, received high-velocity low-amplitude spinal manipulation of the cervical and upper thoracic spine at each visit as described by Peterson and Bergmann¹⁴ and commonly used by chiropractors. This was from experienced clinicians. To relax the patient there was use of a moist heat pack applied to the neck and upper back for 5 minutes, and 2 minutes light massage and discussion of patient progress, all consistent with common practice.

Light massage (LM) was chosen as a control treatment to isolate the benefits of CSMT from those of simple touching or laying on of hands. Further the LM was much lighter and shorter than deep massage as used in massage practice, and previous research had shown CSMT to be more effective than deep massage. The two LM groups received 5 minutes of moist heat and 5 minutes of LM consisting of gentle effleurage (gliding) and gentle pétrissage (kneading) of the neck and shoulder muscles. Participants in the CSMT and LM groups that received only 8 treatment visits also attended 8 examination visits so that they experienced equal time exposed to clinicians. These examination visits were also a total of 10 minutes – 2 minutes discussion and 8 minutes standardized manual examination including motion and static palpation.

(c) Outcome Measures. The primary outcome measure was the Modified Von Korff (MVK) pain scale for CGH. This averages three 11-point numerical rating scales – which measure self-reported level of CGH pain today, worst CGH pain in the last four weeks, and average CGH pain in the last 4 weeks.

A secondary outcome measure was the MVK disability scale – the average of three 11-point scales evaluating interference with daily activities, social and recreational activities and the ability to work outside or around the house.

These two scales are scored from 0 to 100, with lower scores representing less pain and disability. The scales have been shown to be reliable, valid and responsive for measurement of pain and disability, and were chosen for these reasons together with their simplicity and acceptability to participants. Other secondary outcomes were number of CGH and other headaches over the previous 4 weeks, and use of prescription/over-the-counter/supplement or botanical medications.

Study outcomes or results were assessed through phone interviews by a blinded research assistant at 4, 8, 16 and 20 weeks after commencement of treatment, and a mailed questionnaire at 12 and 24 weeks.

(d) Results. Twenty participants were randomly allocated to each of the 4 groups. A trial size of 80 persons was chosen to give sufficient statistical power to the study to detect a difference of 10% between rates of improvement in the 4 trial groups. For example, a 40% improvement in the CSMT group receiving 16 treatments in comparison with a 30% improvement in those receiving 8 treatments, or a 20% improvement in the CMST groups but a 10% improvement in the LM groups. A 10% difference was regarded as clinically important. Baseline characteristics for the 4 groups – such as socio-demographic status, health status, expectation of success of treatments, and medication use – were generally consistent.

However Haas et al. report not only observed average or mean results for each group, but also adjusted mean differences that allow for all baseline differences.

At baseline participants averaged approximately 4 CGHs per week, and CGH pain and disability levels on the MVK scales were 54.3 and 45.0 respectively. This represents consistent, moderately severe, disabling headaches. Haas et al. present detailed results in tables, but in summary:

- **Pain Severity.** For the primary outcome of pain reduction on the MVK scale there were clinically important and statistically significant benefits favoring both CSMT groups over the LM groups. This was achieved during the 8 treatment weeks and was maintained in the 16 weeks follow-up. All groups improved during the trial but the adjusted mean difference (AMD) was 10.3 greater pain reduction in the CSMT groups at 12 weeks, 9.8 at 24 weeks.

The group receiving 16 visits for CSMT had greater pain reduction than those receiving 8 visits, but this did not reach the level of clinical importance. These results are shown in Figure 3.

- **Disability.** For the secondary outcome measure of disability on the MVK scale, interventions “demonstrated similar trends” to those for pain, but AMDs were “slightly smaller” and didn’t reach the level of clinical importance.

- **Frequency of Headaches.** There were statistically significant superior results favoring both groups receiving CSMT. For them the number of headaches in the past 4 weeks was reduced by more than half at the end of treatment - from approximately 16 headaches in the past 4 weeks to under 8. That improvement remained at 24 weeks. Again there was a trend to greater improvement with 16 treatments, but this did not reach statistical significance.

- **OTC Medication Use.** There was a statistically significant advantage for CSMT over LM groups, with CSMT patients using a third less over-the-counter (OTC) medication compared with baseline at 24 weeks. There was no reduction at 24

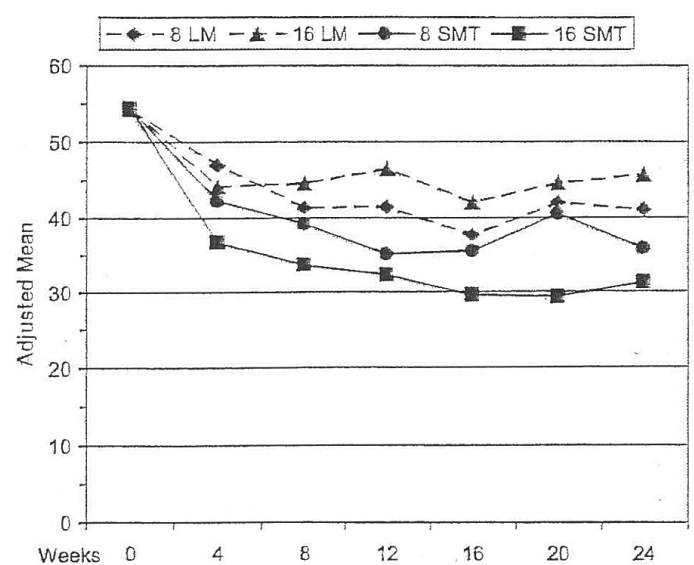


Figure 3. Adjusted mean cervicogenic headache (CGH) pain. The analysis assumes that all groups start at the grand baseline mean pain (Shown at Week 0).

Reprinted from Haas et al. The Spine Journal (2010)

weeks in the LM groups. (No one in the trial was taking prescription medication).

• **Overall Conclusions.** Discussing their results on the pain scale, Haas et al. conclude that clinically important differences between CSMT and LM were observed for CGH pain and disability. Somewhat greater improvement was generally seen for 16 CSMT visits over 8. This did not reach clinical importance in the primary analysis but did so in some respects in an alternative analysis. Therefore this study neither supports nor rules out additional benefits from the higher dose of 16 visits.

While on average CSMT patients cut their number of headaches in half by 8 weeks and sustained a clinically important improvement of about 20 of 100 points on the pain scale, Haas et al. comment that “there is further room for improvement in CGH outcomes”, which may come from other modalities, exercise and integrative care models. These of course are integral parts of common chiropractic practice, which is much more than the CSMT being studied in the trial. This we now turn to explore.

C. Chiropractic Management

5. **Diagnosis.** The first and principal question is whether a patient’s headaches are primary or secondary. There are many causes of secondary headaches but those of most concern to the examining doctor are space-occupying lesions (tumors), temporal arthritis, meningitis, acute glaucoma and subarachnoid hemorrhage.

A thorough history and physical examination, always important but especially so with headaches, will identify secondary headaches. Only rarely will sophisticated/expensive tests be necessary. Red flags suggesting a serious underlying cause are:

• **Recent Onset.** Less than six months. Most patients with chronic primary headaches (TTH, CGH or migraine) consult a health professional only after a long history of suffering. A patient with headaches caused by an underlying disease process is likely to consult a doctor much sooner because of the severity of the headaches or associated symptoms. Recent onset is a red flag, particularly with adults.

• **Positional Headache.** A headache that is aggravated by changes in position, for example moving from a reclining to an upright position, suggests an increase in intra-cranial pressure and a sinister cause. If so, one would expect that coughing, sneezing or similar activities would also exacerbate the headache. Migraine headaches or other vascular headaches may be sensitive to these activities, but to a lesser degree.

• **Focal Neurologic Signs.** The presence of any hard neurological signs accompanying a headache. These may include motor or sensory deficits, cranial nerve palsies, visual losses, or cerebellar signs. Any one of these signs indicates a likely intra-cranial lesion. A migraine aura may include some of these neurologic deficits, but only on a temporary or transient basis.

• **Cognitive Changes.** Memory loss or confusion are among the more common signs and symptoms accompanying a space-occupying lesion or increase in intra-cranial pressure. A spouse, close friend or relative can be very helpful in identifying these changes in a patient.

• **Progressive Headaches.** Headaches that are progressive in frequency, intensity or both, suggest an evolving process, and

an intra-cranial mass or lesion. Any change in headache patterns should be viewed with suspicion.

6. Many headache patients receive advanced imaging which in theory can better answer the question whether or not there is a space-occupying lesion. But studies show that only 5% of patients with brain tumors offer headache as their primary complaint, and that over 10,000 patients have to be scanned to produce a single positive scan¹⁵.

7. There is now abundant evidence that migraine and TTH are part of a continuum rather than separate entities, and that cervical spine dysfunction plays a role in both. However at different ends of the continuum there are pure TTH and pure migraine and it is still clinically useful to ask: “To what extent is the patient’s headache migrainous or tension-type in nature”? Characteristics are given in Figure 4.

8. In chiropractic practice the terms “cervicogenic” and “vertebrogenic” headache are often used as descriptors rather than an IHS diagnosis of CGH. To avoid confusion, and to capture not only CGH but also migraine and TTH caused fully or in part by the cervical spine, it may often be best for chiropractors to use the terminology “headache from cervical spine dysfunction (CSD)”.

9. **Treatment.** Clinical trials, such as that by Haas et al., tend to isolate and study the efficacy (effectiveness under controlled trial conditions) of a single aspect of treatment. While CSMT to the cervical and thoracic spine to correct CSD is a central aspect of chiropractic management, it is only one part. The point has already been made that most headaches are multifactorial. Other aspects of chiropractic management include identifying and managing:

(a) **Headache triggers.** Commons ones are:

- Substances – chocolate, red wine, caffeine containing beverages, MSG, yeast breads, sausages, cured meats, tomatoes, aged cheese.
- Behaviors – too much sleep, too little sleep, excessively vigorous exercise, missing meals.

Figure 4. Clinical characteristics of tension and migraine headaches

<i>Tension Headache</i>	<i>Migraine Headache</i>
Dull Pain	Sharp pain
Bilateral pain	Unilateral pain
No nausea	Nausea
Mild/Moderate pain	Severe pain
Steady pain	Throbbing pain
Suboccipital/Supraorbital pain	Periocular pain
Mild light and sound sensitivity	Extreme light and sound sensitivity
Frequent headaches	Infrequent headaches
Headaches long lasting	Headaches short lived
Able to exercise with headaches	Exertion exacerbates headaches
No prodromal symptoms	Prodromal symptoms
“Live with it” headaches	Disabling headaches

- Environmental stimuli – bright lights, loud noises, strong odors, emotional stress.

(b) Rebound Headaches. Medication rebound is recognized as a significant cause of headaches¹⁶. Migraine patients who make frequent use of powerful vasoconstrictors such as ergotamine tartrate experience a vascular rebound – a vasodilatation when the medication is discontinued or its effects wear off. This requires additional vasoconstriction medication to compensate, and a vicious cycle is established. The same cycle can arise from daily use of over-the-counter (OTC) medication such as aspirin or acetaminophen. Effective treatment of patients' headaches may require weaning them from their OTC medications. A headache diary, in which a patient records his or her use of prescription or OTC medication, is helpful in identifying this problem.

(c) Psychological Factors. The last thing a headache patient wants to hear, but often does, is "It's all in your head". This is said dismissively, suggesting that the pain is not real. The pain is real – but it is also true that psychological factors play an important role in headache. Headaches, like all chronic pain syndromes, can create altered and abnormal psychological states.

There is also a common mechanism between headaches and depression. Serotonin, a neurotransmitter for the pain inhibition system in the cervical spine, is also the biochemical component most closely associated with depression. Indeed, serotonin agonist-type medications are used both for the treatment of depression and headaches. There is a reciprocal relationship between depression, anxiety and headaches. Headaches can be both a cause and an effect of these problems. This should be considered in all headache patients.

(d) Life Style Factors. A significant part of chiropractic man-

agement is advice on stress reduction and other life style factors – including rest, exercise, diet, and ergonomic and other postural advice.

(e) Contributing Spinal Dysfunction. Cervical spine dysfunction (CSD) may be a compensation for imbalances and dysfunction elsewhere in the spine, which may in turn arise from anatomical or functional leg length differences. Therefore chiropractic management addresses all joint dysfunction in the spine, pelvis and extremities. Prescription of custom orthotics and manipulation/adjustment of the sacroiliac joints may be a significant part of management of CSD and headaches.

Finally, the optimal management of headache for many patients may often be achieved through a multidisciplinary approach. However the accumulating research evidence, now strengthened with the impressive new trial from Haas et al., suggests that Frykholm was right almost 40 years ago when he explained that there is a cervical spine component in most headaches – and that a much higher number of headache patients should be receiving skilled examination and treatment of cervical spine dysfunction. **TCR**

References

- 1 Frykholm R. (1972) *Cervical Migraine: The Clinical Picture*. In: Hirsch C, Zotterman Y, eds. *Cervical Pain*. Oxford England: Pergamon Press, 13-16.
- 2 McCrory DC, Penzien DB et al. (2001) *Evidence report : Behavioral and Physical Treatments for Tension-Type and Cervicogenic Headache*, Des Moines, Iowa, Foundation for Chiropractic Education and Research. Product No. 2085.
- 3 Kelner M, Hall O, Coulter I (1980) *Chiropractors, Do They Help*. Fitzhenry and Whiteside, Toronto (Canada).
- 4 Straton RG, Sweeney J, Grandage J (1990). *Review of the Relationship of Chiropractic Services to the Public Health System in Western Australia*. Health Department of Western Australia, Perth, Australia.
- 5 Nilsson-Grunnet N (2002) *Epidemiology of Headache*. Eur J Chiropr (49):33-5.
- 6 *Classification and Diagnostic Criteria for Headache Disorder, Cranial Neuralgias and Facial Pain*. (1988) IHS Classification Committee, Cephalalgia 8 Suppl 7:1-93.
- 7 Hack GD, Koritzer RT et al. (1995) *Anatomic Relation Between the Rectus Capitis Posterior Minor Muscle and the Dura Mater*. Spine 20(23):2482-2486.
- 8 Boline P, Kassak K, Bronfort G, Nelson C, Anderson A (1995) *Spinal Manipulation vs Amitriptyline for the Treatment of Chronic Tension-Type Headaches*. J Manipulative Physiol Ther 18:148-154.
- 9 Jull G, Trott P et al. (2002) *A Randomized Controlled Trial of Exercise and Manipulative Therapy for Cervicogenic Headache*. Spine 27 (17):1835-1843.
- 10 Sjaastad O, Fredriksson TA (2000) *Cervicogenic Headache; Criteria, Classification and Epidemiology* Clin Exp Rheumatol 18(Suppl 19):S3-6.
- 11 Haas M, Spegman A et al. (2010) *Dose Response and Efficacy of Spinal Manipulation for Chronic Cervicogenic Headache: A Pilot Randomized Controlled Trial* The Spine J 10:117-128.
- 12 Astin JA (1998) *Why Patients Use Alternative Medicine: Results of a National Study*. JAMA 279:1548-53.
- 13 Eisenberg DM, David RB et al. (1998) *Trends in Alternative Medicine Use in the United States*. JAMA 280:1569-75.
- 14 Peterson DH, Bergmann TF (2002) *Chiropractic Technique: Principles and Practice*. 2nd ed St. Louis, MO: Mosby.
- 15 Weingarten S, Kleinman M, Elperin L, Larson E (1992) *The Effectiveness of Cerebral Imaging in the Diagnosis of Chronic Headaches*. Arch Intern Med 152:2457-2462.
- 16 Granella F et al. (1987) *Drug Abuse In Chronic Headache: A Clinico-epidemiologic Study*. Cephalalgia 7:15-19.

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