

Clinical Practice Guideline: Spinal Manipulation for Treatment of Headache

Date of Implementation: September 18, 2008

Product: Specialty

POLICY

American Specialty Health – Specialty (ASH) clinical committees have determined that spinal manipulation for treatment of headaches including tension-type, migraine (with and without aura), and cervicogenic is established as clinically effective, is professionally recognized, and has a favorable benefit:risk profile.

PROCESS AND DEFINITIONS

When developing, reviewing, and approving clinical policy, ASH peer-review committees consider whether the technique/procedure:

- Is established as clinically effective by:
 - Scientific information published in an acceptable peer-reviewed clinical science resource, and
 - The consensus opinion of the Evidence Evaluation Committee (EEC) when available;
- Is professionally recognized by:
 - Inclusion in the educational standards accepted by the majority of the professions' educational institutions,
 - Wide acceptance and use of the practice, and
 - Recommendations for use made by healthcare practitioners practicing in the relevant clinical area;
- Poses a health and safety risk; and
- Is plausible or implausible
 - A belief, theory, or mechanism of health and disease that can be explained within the existing framework of scientific methods, reasoning, and available knowledge is considered plausible.
 - A treatment intervention or diagnostic procedure that requires the existence of forces, mechanisms, or biological processes that are not known to exist within the current framework of scientific methods, reasoning, and available knowledge is considered implausible.

Substitution harm (indirect harm): Compromised clinical outcomes caused by:

- Utilizing a specific diagnostic or therapeutic procedure when the safety, clinical effectiveness, or diagnostic utility is either unknown or is known to be unsafe, ineffective, or of no diagnostic utility, *instead of* a diagnostic or therapeutic procedure known to be safe, be clinically effective, or to have diagnostic utility; or

- The utilization of a diagnostic or therapeutic procedure that is substantially less effective or safe than another procedure with established safety, and clinical effectiveness or utility.

Labeling effects (non-specific harm): The harm that results from identifying in a patient a condition or a finding that is not clinically valid.

Safe: The terms “safe” and “safety,” are used only with specific reference to the absence of direct harm. Direct harm would include any injury to a patient caused by the mechanical, thermal, biological, chemical, pharmacological, electrical, electromagnetic, or psycho-dynamic properties of a diagnostic or therapeutic procedure, and as such, the procedure would be considered unsafe.

Direct harm: Any injury to a patient caused by the mechanical, thermal, biological, chemical, pharmacological, electrical, electromagnetic, or psycho-dynamic properties of a diagnostic or therapeutic procedure.

Benefit versus risk profile: The relative effectiveness or utility of a therapeutic intervention or diagnostic procedure versus its potential for direct harm.

- Positive (benefits outweigh risks),
- Negative (risks outweigh benefits), or
- Equivocal (available information is inconclusive).

Description/Background

Headache disorders represent a significant healthcare burden. A recent review of the epidemiology of headaches found that the global point prevalence of any clinically significant headache disorder is 47% (10% for migraine, 38% for tension-type headaches, and 3% for other forms of chronic headaches). Lifetime prevalence of these conditions rises from 47% point prevalence to 66% lifetime prevalence. Between 65% and 75% of all headache sufferers are women.

Evidence and Research

An early review by Astin and Ernst (2002) evaluated all trials of spinal manipulation for all types of headaches. They identified eight relevant studies. These reviewers note significant methodologic, analytic, and quality concerns with the Tuchin, et al. study (which reports the most positive findings of the three migraine studies); concerns that have been expressed by others. Regarding the Nelson, et al. study (which compared spinal manipulation to amitriptyline), the reviewers criticized the lack of a placebo control. Finally, the Bitterli, et al. study is handicapped by a very small sample size (30 patients in three [3] groups). The review concludes:

“In conclusion, it is unclear from the findings of this systematic review whether or not spinal manipulation is an effective treatment for headache disorders.”

Methodological limitations coupled with the small number and considerable heterogeneity of the randomized trials we were able to identify make it difficult to rule out nonspecific (placebo) factors as an explanation for the clinical improvements that were consistently observed across trials, irrespective of headache category.”

The review by Fernández-de-las-Peñas, et al. (2006) of spinal manipulation for tension-type headache identified one additional study) which compared spinal manipulation alone to a combined spinal manipulation and manual traction therapy. In this study the spinal manipulation-alone group showed greater pain relief. Overall, the conclusion of this review is that *“The hypothesis that spinal manipulative therapy may have specific effectiveness in reducing the pain from tension-type headache is neither supported nor refuted by the research to date.”*

Bronfort, et al., have published systematic reviews and summary articles on this topic. The first (2001) evaluated spinal manipulation for all types of headache. A later review (2004) included other non-invasive physical treatments such as TENS and other physical therapy modalities. This review was published under the auspices of the Cochrane Collaboration. The review concludes, *“It appears that spinal manipulation has an effect comparable to commonly used first-line prophylactic prescription medications for tension-type headache and migraine headache.”* And, *“spinal manipulation appears to have a better effect than massage therapy for cervicogenic headache.”* Bronfort et al. (2010) published a comprehensive summary on the scientific evidence regarding the effectiveness of manual treatments for the management of conditions. Headaches were addressed within this report. Authors reported that moderate quality evidence exists supporting spinal manipulation as similar effectiveness to first line prescription medication (amitriptyline) for prophylactic treatment of migraine headache. For tension-type headaches, they report that evidence is inconclusive for spinal manipulation alone or in combination with other therapies other than massage. They also concluded that moderate quality evidence exists that spinal manipulation is more effective than placebo, friction massage, and no treatment and similar in effectiveness to exercise. Bryans et al. (2011) evaluated chiropractic care for headaches. They concluded that spinal manipulation improves migraine and cervicogenic headaches. Spinal manipulation for tension-type headache was equivocal.

Posadzki and Ernst (2011) completed a review of RCTs on spinal manipulation for tension-type headache. Five RCTs were included and four (4) suggested that spinal manipulation was more effective than drug therapy, usual care or no intervention. They also did a systematic review for spinal manipulation and cervicogenic headache. They noted that results were mixed and studies were methodologically flawed (Posadzki and Ernst, 2011). Lastly, they completed a review for migraine headache and spinal manipulation. They concluded that current evidence does not support the use of spinal manipulation for treatment of migraine headaches (Posadzki and Ernst, 2011). Another systematic review of RCTs by Chaibi and Russell (2012) concluded

that spinal manipulation may be effective for cervicogenic headache but that given poor methodology, the results are difficult to evaluate. Chaibi et al. (2011) completed a systematic review on manual treatments for migraine headache. They concluded that spinal manipulation may be equally effective as propranolol and topiramate for management of migraine headache.

Conclusions

The above discussion notwithstanding, there is a fair degree of consistency among these systematic reviews on a number of issues. Based on these consistent findings and on the original literature itself, the evidence on the effectiveness of spinal manipulation for headache can be summarized thusly:

1. There are no RCTs evaluating spinal manipulation for cluster headache.
2. There are no RCTs evaluating spinal manipulation for abortive treatment of headaches.
3. Many of the studies are of poor quality and there is insufficient homogeneity among these various studies to perform a meta-analysis.
4. The relative contribution of non-specific treatment effects has not been established.
5. Overall, this set of studies does not provide dispositive answers to the range of relevant questions regarding the effectiveness of spinal manipulation for headaches.

The following findings are also supported by the systematic reviews, albeit less consistently as discussed above:

1. Spinal manipulation may be an effective treatment option for most forms of headache. These include:
 - a) Tension-type headache
 - b) Migraine headache
 - c) Cervicogenic headache
2. There is no evidence supporting the use of spinal manipulation for cluster headaches. Unlike primary headaches listed above, there does not appear to be a neuromusculoskeletal component (e.g., stress, tension) associated with cluster headaches.

References

- Astin, J. A., & Ernst, E. (2002). The effectiveness of spinal manipulation for the treatment of headache disorders: A systematic review of randomized clinical trials. *Cephalalgia*, 22(8), 617-623.
- Borusiak, P., Biedermann, H., Bosserhoff, S., Opp, J. (2010). Lack of efficacy of manual therapy in children and adolescents with suspected cervicogenic headache: Results of a prospective, randomized, placebo-controlled, and blinded trial. *Headache*, 50(2), 224-230.
- Bronfort, G., Assendelft, W. J., Evans, R., Haas, M., Bouter, L. (2001). Efficacy of spinal manipulation for chronic headache: A systematic review. *Journal of Manipulative and Physiological Therapies*, 24(7), 457-466.

- 1 Bronfort, G., Nilsson, N., Haas, M., Evans, R., Goldsmith, C. H., Assendelft, W. J., Bouter, L.
2 M. (2004). Non-invasive physical treatments for chronic/recurrent headache. *Cochrane*
3 *Database Systemic Reviews*, (3), CD001878.
- 4
- 5 Bronfort, G., Haas, M., Evans, R., Leininger, B., Triano, J. (2010). Effectiveness of manual
6 therapies: The UK evidence report. *Chiropractic & Osteopathy*, 18, 3.
- 7
- 8 Bryans, R., Descarreaux, M., Duranleau, M., Marcoux, H., Potter, B., Ruegg, R., Shaw, L.,
9 Watkin, R., White, E. (2011). Evidence-based guidelines for the chiropractic treatment of
10 adults with headache. *Journal of Manipulative and Physiological Therapies*, 34(5), 274-
11 289.
- 12
- 13 Chaibi, A., Tuchin, P. J., Russell, M. B. (2011). Manual therapies for migraine: A systematic
14 review. *The Journal of Headache Pain*, 12(2), 127-133.
- 15
- 16 Chaibi, A., Russell, M. B. (2012). Manual therapies for cervicogenic headache: A systematic
17 review. *The Journal of Headache Pain*, 13(5), 351-359. doi: 10.1007/s10194-012-0436-7
- 18
- 19 Demirturk, F., Akarcali, I., Akbayrak, T., Citak, I., Inan, L. (2002). Results of two different
20 manual therapy techniques in chronic tension-type headache. *Pain Clinic*; 14, 121–128.
- 21
- 22 Fernández-de-las-Peñas, C., Alonso-Blanco, C., San-Roman, J., Miangolarra-Page, J. C.
23 (2006). Methodological quality of randomized controlled trials of spinal manipulation and
24 mobilization in tension-type headache, migraine, and cervicogenic headache. *The Journal*
25 *of Orthopaedic and Sports Physical Therapy*, 36(3), 160-169.
- 26
- 27 Fumal, A., Schoenen, J. (2008). Tension-type headache: Current research and clinical
28 management. *The Lancet, Neurology*, 7(1), 70-83.
- 29
- 30 Haas, M., Spegman, A., Peterson, D., Aickin, M., Vavrek, D. (2010). Dose response and
31 efficacy of spinal manipulation for chronic cervicogenic headache: A pilot randomized
32 controlled trial. *The Spine Journal*, 10(2), 117-128.
- 33
- 34 Headache Classification Subcommittee. International Classification of Headache disorders.
35 *Cephalalgia* 2004. Vol 24: supplement 1.
- 36
- 37 Howe, D. H., Newcombe, R. G, Wade, J. B. (1983). Manipulation of the cervical spine – A
38 pilot study. *The Journal of the Royal College of General Practitioners*, 33, 574-579.
- 39
- 40 Jensen, R. (2003). Diagnosis, epidemiology, and impact of tension-type headache. *Current and*
41 *Pain Headache Reports*, 7(6), 455-459.

- 1 Jensen, R., Stovner, L. J. (2008). Epidemiology and comorbidity of headache. *The Lancet,*
2 *Neurology*, 7(4), 354-361.
- 3
- 4 Jull, G., Trott, P., Potter, H., Zito, G., Niere, K., Shirley, D., Emberson, J., Richardson, C.
5 (2002). A randomized controlled trial of exercise and manipulative therapy for
6 cervicogenic headache. *Spine*, 27, 1835-1843.
- 7
- 8 Lenssinck, M. L., Damen, L., Verhagen, A. P., Berger, M. Y, Passchier, J., Koes, B. W. (2004).
9 The effectiveness of physiotherapy and manipulation in patients with tension-type
10 headache: A systematic review. *Pain*, 112(3), 381-388.
- 11
- 12 Leonardi, M., Steiner, T. J., Scher, A. T., Lipton, R. B. (2005). The global burden of migraine:
13 Measuring disability in headache disorders with WHO's Classification of Functioning,
14 Disability and Health (ICF). *Journal of Headache Pain*, 6(6), 429-440.
- 15
- 16 Nelson, C. F. (1994). The tension headache, migraine headache continuum: A hypothesis. *J*
17 *Manipulative Physiological Therapy*, 17(3), 156-167.
- 18
- 19 Nelson, C. F., Bronfort, G., Evans, R., Boline, P., Goldsmith, C. H., Anderson, A. V. (1998).
20 The efficacy of spinal manipulation, amitriptyline and the combination of both therapies
21 for the prophylaxis of migraine headache. *Journal of Manipulative and Physiological*
22 *Therapies*, 21, 511-519.
- 23
- 24 Nilsson N. (1995). A randomized controlled trial of the effect of spinal manipulation in the
25 treatment of cervicogenic headache. *Journal of Manipulative and Physiological Therapies*,
26 18, 435-440.
- 27
- 28 Nilsson, N., Christensen, H. W., Hartvigsen, J. (1997). The effect of spinal manipulation in the
29 treatment of cervicogenic headache. *Journal of Manipulative and Physiological Therapies*,
30 20, 326-330.
- 31
- 32 Nordin, M., Carragee, E. J., Hogg-Johnson, S., Weiner, S. S., Hurwitz, E. L., Peloso, P. M.,
33 Guzman, J., van der Velde, G., Carroll, L. J., Holm, L. W., Côté, P., Cassidy, J. D.,
34 Haldeman, S.; Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its
35 Associated Disorders. Assessment of neck pain and its associated disorders: results of the
36 Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its Associated Disorders.
37 *Spine* 2008;33(4 Suppl):S101-22.
- 38
- 39 Parker GB, Pryor DS, Tupling H. Why does migraine improve during a clinical trial? Further
40 results from a trial of cervical manipulation for migraine. *Aust NZ J Med* 1980;10:192-8.

- 1 Parker GB, Tupling H, Pryor DS. A controlled trial of cervical manipulation of migraine. *Aust*
2 *NZ J Med* 1978;8:589-93.
- 3
- 4 Peres MF, Gonçalves AL, Krymchantowski A. Migraine, tension-type headache, and
5 transformed migraine. *Curr Pain Headache Rep* 2007;11(6):449-53. Review.
- 6
- 7 Posadzki P. Is spinal manipulation effective for pain? An overview of systematic reviews. *Pain*
8 *Med.* 2012;13(6):754-61.
- 9
- 10 Posadzki P, Ernst E. Spinal manipulations for tension-type headaches: a systematic review of
11 randomized controlled trials. *Complement Ther Med.* 2012;20(4):232-9.
- 12
- 13 Posadzki P, Ernst E. Spinal manipulations for cervicogenic headaches: a systematic review of
14 randomized clinical trials. *Headache.* 2011;51(7):1132-9.
- 15
- 16 Rasmussen BK. Epidemiology and socio-economic impact of headache. *Cephalalgia.* 1999;19
17 Suppl 25:20-3.
- 18
- 19 Rasmussen BK. Epidemiology of headache. *Cephalalgia.* 2001;21(7):774-7.
- 20
- 21 Stovner LJ. Headache: new concepts, models, and treatments. *Lancet Neurol.* 2008;7(1):11-2.
- 22
- 23 Tuchin PJ, Pollard H, Bonello R. A randomized controlled trial of chiropractic spinal
24 manipulative therapy for migraine. *J Manipulative Physiol Ther* 2000;23(2):91-5.
- 25
- 26 Vernon H, Jansz G, Goldsmith CH, McDermaid C. A randomized, placebo-controlled clinical
27 trial of chiropractic and medical prophylactic treatment of adults with tension-type
28 headache: results from a stopped trial. *J Manipulative Physiol Ther.* 2009 Jun;32(5):344-
29 51.
- 30
- 31 Victoria Espí-López G, Arnal-Gómez A, Arbós-Berenguer T, González ÁA, Vicente-Herrero
32 T. Effectiveness of Physical Therapy in Patients with Tension-type Headache: Literature
33 Review. *J Jpn Phys Ther Assoc.* 2014;17(1):31-8.