Research Paper Review

Clinical reasoning for manual therapy management of tension type and cervicogenic headache

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Fernandes-de-las-Penas C & Courtney CA

ABSTRACT

In recent years, there has been an increasing knowledge in the pathogenesis and better management of chronic headaches. Current scientific evidence supports the role of manual therapies in the management of tension type and cervicogenic headache, but the results are still conflicting. These inconsistent results can be related to the fact that maybe not all manual therapies are appropriate for all types of headaches; or maybe not all patients with headache will benefit from manual therapies. There are preliminary data suggesting that patients with a lower degree of sensitization will benefit to a greater extent from manual therapies, although more studies are needed. In fact, there is evidence demonstrating the presence of peripheral and central sensitization in chronic headaches, particularly in tension type. Clinical management of patients with headache needs to extend beyond local tissue-based pathology, to incorporate strategies directed at normalizing central nervous system sensitivity. In such a scenario, this paper exposes some examples of manual therapies for tension type and cervicogenic headache, based on a nociceptive pain rationale, for modulating central nervous system hypersensitivity: trigger point therapy, joint mobilization, joint manipulation, exercise, and cognitive pain approaches.

Author's Affiliations:

Department of Physical Therapy, Occupational Therapy, Rehabilitation and Physical Medicine, Universidad Rey Juan Carlos, Madrid, Spain; Department of Physical Therapy, University of Illinois at Chicago, USA.

ANALYSIS

Reviewed by Dr. Jeff Muir DC, (Research Review Service)

BACKGROUND INFORMATION:

Headaches are increasingly common in today's society and by some estimates, represent the most common problem for which patients seek care (1). Tension-type (TTH), cervicogenic (CGH) and migraine headaches are the most common forms of headaches, the socio-economic costs of which are very high (2).

Several therapeutic approaches have been proposed for the management of headaches, ranging from pharmacological interventions to manual therapies or relaxation/cognitive treatments. Although the scientific basis for their recommendation continues to be limited (3), manual therapies have received endorsement from organizations such as the European Federation of Neurological Societies as a treatment option that should always be considered for the treatment of headaches. Patients seem to agree, as alternative medicine therapies are the most utilized treatments by individuals with headaches (4).

With these observations in mind, the objective of this paper was to discuss:

1. The scientific evidence for manual therapies in tension-type and cervicogenic headache,
2. the clinical variables that may identify patients with tension-type and cervicogenic headache who will benefit from manual therapies,
3. the presence of sensitization mechanisms in tension-type and cervicogenic headaches, and
4. manual therapies proposed for headaches based on nociceptive pain rationale.

PERTINENT RESULTS:

Scientific Evidence for Manual Therapy in Tension-Type and Cervicogenic Headache:

Of the several manual therapies proposed for management of TTH and CGH, including spinal manipulation, massage, stretching, connective tissue treatment, myofascial induction, dry needling, spinal mobilization, or neuromuscular approaches (5), spinal manipulation and/or mobilization are likely most commonly utilized (6). Several systematic reviews have investigated the effectiveness of spinal manipulation/mobilization and, while generally supporting their use for treatment of TTH and CGH, the methodological quality of several of these studies is low (7), somewhat mitigating the robustness of this recommendation. Based on these reports, spinal manipulation/mobilization is: not supported in the treatment of migraine headaches (8), is inconclusive for TTH (9) and is beneficial for CGH (10). Concerns regarding the potential adverse effects of spinal manipulation in the cervical spine have been raised by critics of this treatment; however, studies have shown that, if all contraindications and red flags are ruled out, clinicians can prevent close to half of all adverse effects, as only 10.4% are unpreventable (11). As always, clinical decision-making exists in the rational confluence of patient presentation and preferences, existing research evidence, clinical experience and weighing of risks and benefits of proposed treatments.

Other therapeutic strategies, such as massage, compression and stretching, are targeted to treatment of soft tissues of the body. Findings of systematic reviews of these treatments have been inconsistent, although the general consensus is that these treatments, especially massage therapy, are beneficial in TTH headaches (12, 13).

Identification of Potential Clinical Variables in Tension Type and Cervicogenic Headache:

The inconsistent results of studies evaluating the use of manual therapies for TTH and CGH may result from most study protocols not containing an attempt to sub-group patients who may benefit from specific interventions. As with many other musculoskeletal conditions, not all patients with headaches will respond to manual treatment (14). Some authors have attempted to sub-group patients and develop predictive variables, which are outlined below. Readers should note that this research is not

yet conclusive, gleaned primarily from small, lower quality studies.

Variables likely to result in a positive response to manual therapies in headache patients:

- Higher frequency of attacks
- Younger age
- Provocation/relief of headache with movement
- Shorter headache duration (< 8.5 hours/day)
- Shorter headache frequency (< 5.5 days/week)
- Less body pain
- Lower vitality
- Presence of active trigger points in suboccipital, superior oblique, sternocleidomastoid or upper trapezius muscles
- Restricted cervical rotation
- Lower tenderness
- Disability

In general, it is thought that patients with a lower degree of sensitization and less impairment in the cervical spine will benefit to a greater extent from manual therapies, although further studies are clearly needed.

Sensitization Mechanisms in Tension Type and Cervicogenic Headache:

The hyperalgesic and allodynic responses seen in individuals with TTH support roles for both central and peripheral sensitization in headaches (15). This suggests that both hyper-excitability of the central nervous system and a reduction in inhibitory mechanisms are involved in tension type headache (16, 17). Currently, the most accepted theory suggests that central sensitization due to prolonged peripheral nociceptive inputs from peripheral tissues contributes primarily to TTH (18) and inconclusively to CGH (19). Studies involving local injections of analgesic agents have noted that treatment of peripheral structures (trigger points) has a positive effect on TTH (20, 21). These studies support the notion that central sensitivity can be modulated by decreasing peripheral nociceptive input.

Manual Therapy Strategies for Headaches:

In patients with predominantly peripheral mechanisms (peripheral sensitization):
Early and appropriate local treatments and functional activity should be encouraged. For patients with TTH, manual therapy addressing trigger points and exercises targeting the neck flexor/extensor synergy may be appropriate. For patients with CGH, a multimodal manual therapy management approach including upper cervical and thoracic spine joint mobilization and/or manipulation and deep cervical flexor endurance exercises is recommended.

In patients with predominantly central processes/central sensitization:
A multimodal manual therapy and cognitive approach should be encouraged. Patients should be educated regarding optimization of normal functional movements. Treatment should have two objectives:

- decreasing central sensitization by addressing central mechanisms (perhaps pharmacologically) and peripheral mechanisms (via manual therapies), and
- increasing the activation of descending inhibitory systems through exercise and education.

CLINICAL APPLICATION & CONCLUSIONS:

The evidence related to manual therapies in headaches is somewhat controversial and certainly inconsistent at this point. This may surprise some clinicians! What we do know is that both peripheral and central sensitization mechanisms are thought to play a role in the pathophysiology of headaches. Therefore, clinicians should be cognisant of the role of therapeutic strategies that exert a modulating effect on the central nervous system when managing patients with headaches. Other components of a holistic approach include considering each individual's potential mitigating factors, additional health concerns, headache triggers, potential food sensitivities, lifestyle habits, stress level, sleep hygiene, hydration, corrective eyewear etc. – there are many factors that can influence headache presentation and subsequent response to manual therapy!

STUDY METHODS, STRENGTHS & WEAKNESSES

The authors attempted to compile a review of the current evidence regarding the use of manual therapies in the treatment of tension-type and cervicogenic headaches. While presenting a relatively comprehensive and balanced review of our current knowledge, they did not outline their search strategy, their inclusion/exclusion criteria regarding cited studies and, in general, did not provide a specific methodology for their compilation process, thus potentially limiting the robustness of their findings and recommendations. Narrative reviews or discussion papers like this one must be interpreted and applied appropriately within the context of research hierarchy, where systematic reviews and meta-analyses represent higher levels of study design that can provide more conclusive recommendations.

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