Effect of Craniosacral Therapy on Chronic Mechanical Neck Pain

FAYROUZ M. SEIF EL-DIN, M.Sc.*; ALAA EL-DIN A. BALBAA, Ph.D.*; SAMY A. NASEF, Ph.D.** and ENAS M. ABD EL-MENAM, Ph.D.*

The Departments of Musculoskeletal Disorders & its Surgeries* and Basic Sciences**, Faculty of Physical Therapy, Cairo University

Abstract

Background: Chronic neck pain is one of the most common complaints in the general population and can result in substantial problems including the cost of treatment, disability and absence from work.

Purpose: This study was conducted to investigate the effect of craniosacral therapy on chronic mechanical neck pain.

Subjects: Thirty patients aged from 18-30 years old from both sexes were classified randomly into two equal groups.

Material and Methods: Study group (Group A) consisted of 15 patients who received craniosacral therapy, in addition to I.F and U.S for 4 weeks consecutively, while the control group (Group B) consisted of 15 patients who received only I.F and U.S for 4 weeks consecutively. Visual Analogue Scale (VAS), Range Of Motion (ROM) and Neck Disability Index (NDI) were measured pre-and post-treatment.

Results: There were significant differences (p<0.0001) between both Groups (A, B) post treatment in VAS, ROM, and NDI in favor of Group (A).

Conclusion: Craniosacral therapy is considered as an effective factor in improving pain, range of motion and neck functional disability in patients with chronic mechanical neck pain.

Key Words: Craniosacral therapy – Neck pain – CROM – NDI.

Introduction

NECK pain is the eighth leading cause of disability in the United States [1] and fourth worldwide [2]. Chronic neck pain is one of the most common complaints in the general population and can result in substantial problems including the cost of treatment, disability and absence from work [3]. Mechanical neck pain commonly arises insidiously [4], and is generally multi factorial in origin, including one or more of the following: Poor posture, anxiety, depression, neck strain, and sporting or occupational activities [5]. Treatment of neck pain can be delivered by analgesics, anesthetics, Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), muscle relaxants, opioids or corticosteroids [7]. Non-pharmacological therapies used in pain management include physical therapy modalities (electrical stimulation, ultrasound, superficial heat and cryotherapy), exercise, patient education and psychological intervention, and mobilization and manipulative techniques [8,9]. Craniosacral therapy is widely used in different clinic settings and conditions, in adults as well as children [10]. Craniosacral therapy, derived from osteopathic and chiropractic traditions, is a gentle hands-on technique that works to ease tension in the connective tissue around the brain, spinal cord, joints and organs [11]. It was reported that pain and quality of life/general well-being can be improved by the use of craniosacral therapy [12]. Osteopathic treatment was found to significantly decrease the quality and intensity of neck pain over a 4-week treatment period. The results showed significant reductions in pain intensity (VAS), pain quality (MPQ) and disability (NDI) throughout the treatment time [13].

The present study was conducted to investigate the effect of craniosacral therapy on pain, ROM and neck functional disability in patients with chronic mechanical neck pain.

Material and Methods

This study was conducted at outpatient clinic, Faculty of Physical Therapy, Pharos University during 2015. Thirty patients (12 males and 18 females) with chronic mechanical neck pain were
divided randomly into two groups (study and control) with equal number. Their ages ranged from 18-30 years old. The patients of study group received a program of treatment including craniosacral therapy plus Infra-red radiation and Ultrasound therapy. While the patients of control group received only Infra-red radiation and Ultrasound therapy.

**Instrumentations used in the study were:**
1. **Visual Analogue Scale (VAS)** to measure pain intensity [13].
2. **Cervical Range of Motion Instrument (CROM)** to measure flexion and extension, and cervical spine range of movement [14].
3. **Neck Disability Index (NDI)** to measure neck functional disability [15].

**Treatment procedure:**
- **Cranial base release:**
  The patient is crook lying on the table. Therapist is seated at the head of the table with arms resting on and supported by it. The fingertips, which are bent toward the patient's posterior neck, are positioned at the base of the occiput in the sub-occipital sulcus. Fingertips serve as a fulcrum for the patient's occiput. The back of the skull should rest comfortably in therapist palms. The patient should allow the full weight of the head to rest in therapist hands. The resultant pressure will induce tissue release at therapist fingertips. As relaxation proceeds and fingers sink deeper into the soft tissues, gentle cephalic traction is applied with fingertips for a few minutes. This movement allows the arch of the atlas to disengage from the occiput. Cephalic traction should be started only after a few minutes into the technique, to allow for initial relaxation. This “release” of deep structures of the upper neck reduces tension, improves drainage and circulation to the head, and helps reduce intracranial congestion. Time suggested for this treatment is 5-7 minutes [16].

- **Infra-red radiation:**
  Patients received 12 sessions for 4 weeks, for 10-15 minutes.

- **Ultrasound therapy:**
  Patients received 12 sessions for 4 weeks, for 5 minutes, frequency 1 MHz in continuous mode.

Data were analyzed using IBM SPSS advanced statistics version 23 [17]. Data were expressed as mean and standard deviation. Qualitative data were expressed as frequency and percentage. Comparisons between the two studied groups or within the group were done using student t-test (independent and paired t-test). All tests were two-tailed. A p-value ≤ 0.05 was considered significant.

**Results**

Regarding the effect of craniosacral therapy on pain, the means for the pre-study and control groups were 7.60 and 7.73, respectively with no significant difference (Table 1) and Fig. (2). On the other hand, the means for the post-study and control groups were 1.60 and 7.46, respectively with significant difference (p<0.0001).

The means of pre-and post-study group were 7.60 and 1.60, respectively (Table 1). A significant reduction (p<0.0001) in pain was obtained which was dependent on the craniosacral therapy plus infra-red radiation and ultrasonic therapy for the study group. While, for the control group, less significant reduction (p<0.05) in pain was observed. The means of pre-and post-control group were 7.73 and 7.46, respectively, which may due to Infra-red radiation and ultrasonic therapy only.

According to Visual Analogue Scale [18], craniosacral therapy plus infra-red radiation and ultrasonic therapy for the study group resulted in significant reduction in pain from severe pain (7.60) to mild pain (1.60), while for the control group, infra-red radiation and ultrasonic therapy only didn't change the degree of severity of the pain from pre to post treatment (7.73 to 7.46) (Table 1).

Craniosacral therapy is effective and is better than infra-red radiation and ultrasonic therapy in improving pain in patients with chronic mechanical neck pain.
Regarding the effect of craniosacral therapy on ROM for flexion, the means for the pre-study and control groups were 25.46 and 25.26 degrees, respectively with no significant difference (Table 2) and Fig. (3). On the other hand, the means for the post-study and control groups were 46.66 and 25.93 degrees, respectively with significant difference ($p<0.0001$).

The means of pre-and post-study group were 25.46 and 46.66 degrees, respectively (Table 2). A significant improvement ($p<0.0001$) in flexion was obtained which was dependent on the craniosacral therapy plus infra-red radiation and ultrasonic therapy for the study group. While, for the control group, less significant improvement ($p<0.01$) was observed. The means of pre-and post-control group were 25.26 and 25.93 degrees, respectively, which may due to infra-red radiation and ultrasonic therapy only.

According to cervical range of motion (CROM), since normal ROM for flexion is from 45.81 to 66.05 degrees [19], therefore craniosacral therapy plus infra-red radiation and ultrasonic therapy for the study group resulted in significant improvement in ROM for flexion from pre to post treatment (25.46 to 46.66 degrees) to be in normal range of motion, while for the control group, the results of ROM for flexion using infra-red radiation and ultrasonic therapy only were not in the normal range from pre to post treatment (29.20 to 29.86 degrees) (Table 2).

Craniosacral therapy is effective and is better than infra-red radiation and ultrasonic therapy in improving ROM for flexion in patients with chronic mechanical neck pain.

Regarding the effect of craniosacral therapy on ROM for extension, the means for the pre-study and control groups were 29.80 and 29.20 degrees, respectively with no significant difference (Table 3) and Fig. (4). On the other hand, the means for the post-study and control groups were 51.33 and 29.86 degrees, respectively with significant difference ($p<0.0001$).

The means of pre-and post-study group were 29.80 and 51.33 degrees, respectively (Table 3). A significant improvement ($p<0.0001$) in extension was obtained which was dependent on the craniosacral therapy plus infra-red radiation and ultrasonic therapy for the study group. While, for the control group, less significant improvement ($p<0.05$) was observed. The means of pre-and post-control group were 29.20 and 29.86 degrees, respectively, which may due to infra-red radiation and ultrasonic therapy only.

According to cervical range of motion (CROM), since normal ROM for extension is from 50.70 to 77.37 degrees [19], therefore craniosacral therapy plus infra-red radiation and ultrasonic therapy for the study group resulted in significant improvement in ROM for extension from pre to post treatment (29.80 to 51.33 degrees) to be in normal range of motion, while for the control group, the results of ROM for extension using infra-red radiation and ultrasonic therapy only were not in the normal range from pre to post treatment (29.20 to 29.86 degrees) (Table 3).

Craniosacral therapy is effective and is better than infra-red radiation and ultrasonic therapy in improving ROM for extension in patients with chronic mechanical neck pain.

Regarding the effect of craniosacral therapy on NDI, the means for the pre-study and control groups were 27.46 and 27.66%, respectively with no significant difference (Table 4) and Fig. (5). On the other hand, the means for the post-study and control groups were 9.46 and 26.00%, respectively with significant difference ($p<0.0001$).

The means of pre-and post-study group were 27.46 and 9.46 %, respectively (Table 4). A significant reduction (improvement) ($p<0.0001$) in NDI was obtained which was dependent on the craniosacral therapy plus infra-red radiation and ultrasonic therapy for the study group. While, for the control group, less significant reduction ($p<0.0001$) in NDI was observed. The means of pre-and post-control group were 27.66 and 26.00%, respectively, which may be due to infra-red radiation and ultrasonic therapy only.

According to neck disability index, where the normal value of NDI score is up to 10% [15], therefore craniosacral therapy plus infra-red radiation and ultrasonic therapy for the study group resulted in significant reduction in NDI score from pre to post treatment (27.46 to 9.46%) to be in the normal score value, while for the control group, the results of NDI score using infra-red radiation and ultrasonic therapy only were not in the normal score value from pre to post treatment (27.66 to 26.00%) (Table 4).

Craniosacral therapy is effective and is better than infra-red radiation and ultrasonic therapy in improving neck functional disability in patients with chronic mechanical neck pain.
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****: p≤0.0001. NS: Not Significant.
Neck pain is one of the most common conditions for referral to a physical therapist [20]. Chronic neck pain is defined as pain lasting longer than the expected time frame of healing. Loss of Range of Motion (ROM), weakness, dizziness, and feeling of stiffness is also evident [4]. Neck pain is often associated with limited range of motion and a subjective feeling of stiffness, and can be precipitated or aggravated by neck movements or sustained neck postures. Headache, brachialgia (pain in the brachium of the arm), dizziness, and other signs and symptoms may commonly present together with neck pain [13]. In many cases chronic neck pain is due to non-specific disorders of the muscles, tendons, joints and bones of the neck in association with unspecified degenerative changes [21].

The craniosacral therapy involves physical manipulation of the patient. Gentle pushing and massaging of the skull, spine, and other parts of the body supposedly produce changes in the inflammation and inflexibility. Craniosacral therapists use “release” and “pumping” manipulation to produce motion in that particular body area. Such physical manipulations purport to direct blood flow and eventually more movement in that particular area [22].

This study was designed to investigate the efficacy of craniosacral therapy on pain, ROM and NDI in patients with chronic mechanical neck pain. Thirty participants were divided into study group of 15 subjects receiving craniosacral therapy in addition to I.F and U.S, while the other 15 subjects of the control group received only I.F and U.S.

Results of this study showed:
- A significant reduction ($p<0.0001$) in pain was obtained for the study group. While, for the
Control group, less significant reduction ($p<0.05$) in pain was observed.

- A significant improvement ($p<0.0001$) in flexion was obtained for the study group. While, for the control group, less significant improvement ($p<0.01$) in flexion was observed.

- A significant improvement ($p<0.0001$) in extension was obtained for the study group. While, for the control group, less significant improvement ($p<0.05$) in extension was observed.

- A significant reduction (improvement) ($p<0.0001$) in NDI was obtained for the study group. While, for the control group, less significant reduction ($p<0.0001$) in NDI was observed.

In agreement with the results of this study Jäkel and Hauenschild, [12] the results of this review highlight that the most reported outcomes, pain and quality of life/general well-being, can be improved by the use of CST.

Also in agreement with the results of this study Fryer et al., [13] osteopathic treatment was found to significantly decrease the quality and intensity of neck pain over a 4-week treatment period. The results showed significant reductions in pain intensity (VAS), pain quality (MPQ) and disability (NDI) throughout the treatment time.

Also in agreement with the results of this study Upledger, [23] craniosacral therapy addresses many of the neuro-musculoskeletal, myofascial, and psycho-emotional factors that may serve as contributing factors to chronic neck and back pain.

Also supported by the results of this study Franke et al., [24] it was reported that osteopathic treatment is effective in treatment of chronic neck pain.

Conclusion:

On the basis of the results obtained in the present study, it could be concluded that craniosacral therapy is considered as an effective factor in improving pain, range of motion and neck functional disability in patients with chronic mechanical neck pain.

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