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Relation Between Postpartum Headache and Cervical Range of Motion

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Abstract: Headache patients often complain about neck pain. Furthermore, neck problems can worsen the headache in females in the postpartum period. Females with neck pain usually have decreased the cervical range of motion. Nonetheless, studies assessing the cervical range of motion in postpartum headaches are scarce. The Purpose of the study was to determine if there is a relation between postpartum headache and cervical spine range of motion. Thirty women diagnosed with postpartum headache, their ages ranged from 25-35 years old and their number of parity ranged (2-3) times were selected randomly from the outpatient clinic of New Cairo Hospital. The patients were evaluated by Universal goniometer (UG) to measure the cervical spine range of motion and Headache disability index (HDI) to quantify the impact of headache on daily living. There was a statistical analysis showed that there was a positive weakcorrelation between headache and ROM of neck left side bending and flexion, while there was no correlation between headache and ROM of neck extension, right side bending and right and left rotation. Postpartum headache patients have decreased cervical range of motion.

Key words: Postpartum · Headache · Cervical Range Of Motion

INTRODUCTION

The headache presents as intermittent episodes and progresses to continuous pain. Pain may be triggered or exacerbated by neck movement or a particular neck position; also can be triggered by applying pressure over the ipsilateral upper part of the back of the neck or the ipsilateral occipital region [1].

Headache occurring during the postpartum period may be primary or secondary. Primary headaches include migraine, tension-type, cervicogenic and cluster headaches. These occur frequently in the normal population and may be observed in the postpartum period. Secondary headaches include headaches due to regional anesthesia complications [e.g. Postural puncture headache (PDPH)], obstetrical disease (e.g., hypertensive disorders) or intracranial pathology (e.g., cerebral venous thrombosis) [2].

In the postpartum period, a headache result of epidural anesthesia appeared after epidural anesthesia. It is caused by a decrease in CSF pressure, which occurs unexpectedly 1 to 7 days after the puncture [3].

Tension and migraines headaches are the most common types of headaches. The most significant risk factors for the development of postpartum headache were: inadvertent Dural puncture, previous headache history, multiparty, shorter pushing in the second stage of labor and increased maternal age [4].

Tension-type headache (TTH) affects daily functioning, resulting in limitations in performance and participation. Although TTH is the most prevalent headache disorder, resulting in greater social burden than migraine [5].

Pregnant women tolerate numerous anatomical, physiological, hormonal and biomechanical changes [6], The most significant of which is weight gain. The anterior mass on the trunk is increasing with an average of 0.29 kg per week in the lower trunk segment, which leads to changes in gait patterns, in the thoracic and lumbar regions of the spine, sacrum and pelvis and the kinematics of lower limb joints.Moreover, it can present a risk factor for musculoskeletal pain. It is noted that between 20% and 90% of women suffer from spinal pain. The pain can restrict pregnant women in their ability to work and reduce their physical activity [7, 8].

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Neck pain is a common problem in pregnancy, is the cause of many aches and pains. The posture will change during pregnancy because of the baby weight, so the muscles will need to do a great deal of adaptation. Just when the ache subsides after the baby has grown slightly and the uterus has shifted, the baby will grow more and the pain will keep in a new area of your neck [9].

To keep the line of gravity in the correct position, the thoracic curvature starts increasing in opposite direction (kyphosis) to return the line of gravity to the back of the lumbar curve to reduce pressures on the lumbar discs, put the head in front and reduces the compression and irritation of the dura mater and the synovial membrane of the facet joints in lumbar area [10].

One of the most common of postural problems is the forward head posture(FHD). the effect of posture is becoming more evident. "Spinal pain, headache, mood, blood pressure, lung capacity " are among the functions most easily caused by posture [11].

Limited neck mobility has been considered a major feature of tension-type headache patients [12]. Patients who have MTrPs often persistent pain that usually results in a decreased range of motion of the muscle.In the head and neck region, myofascial pain patients with trigger points can manifest as tension headache, TMJ pain [13].

According to Simons *et al*. [14] the MTrPs in the mid portion of the anterior border of the upper trapezius muscle, that refer pain unilaterally upward along the posterolateral aspect of the neck. The referred pain, when intense, extends to the side of the head, centering in the temple and back of the orbit also, it may be including the angle of the jaw.

MATERIALS AND METHODS

Study Design: One group of 30 women diagnosed with a postpartum headache. They examined by universal goniometer (UG) to measure the cervical range of motion and evaluate headache disability by headache disability index (HDI). All subjects signed a consent form before their inclusion.

Participant: This study was conducted on thirty post-partum women complaining from headache pain selected randomly from the outpatient clinic of the new Cairo hospital. Their ages were ranged from 25 to 35 years old. All women suffered from headache pain for at least 7 days following delivery.

Measurement Procedure: All patients were given a full explanation of the protocol of the study and consent form was signed for each patient before participating in the study.

Assessment of Cervical Range of Motion: Cervicalmobility was assessed using objective measures and a standard procedure for measuring the cervical range of motion (UG Universal Goniometer).

During the evaluation, the subjects remained seated in a relaxed position. Subjects were asked to sit comfortably on a chair, with both feet on the ground, ankles, knees and hips at 90, with their back supported on the back of the chair.

The patients were asked to move the head as far as possible in a standard fashion: flexion, extension, right and left side bending and right and left side rotation. Each movement was performed three times. These movements were then scored and averaged. Before measurements, all the patients were requested to carry out all neck movements to end range to familiarize themselves with the testing method and to reduce the creep Farooq *et al*. [15]. All the patients were provided with the same and consistent verbal instructions to accomplish these measurements.

Headache Disability Index: To quantify the impact TTH has on daily living the HDI was administered. the HDI consist of 25 items each requiring a "yes" (4 points), "sometimes" (2 points) or"no" (0 points) response based on items derivedempirically from case history responses from subjects with a headache. this index has been reported in the headache literature as a criterion standard measure for disability in patients with headache [16].

Headache disability index (HDI) has 25-items which probes the functional and emotional effects of headache on everyday life. the HDI has high internal consistency reliability and good content validity [17].

RESULTS

The current study was conducted on 30 participants (30 female), diagnosed with a postpartum headache.Results demonstrated that there was no correlation ($p>0.05$) between headache disability index and ROM of neck extension, right side bending and right and left rotation (Table 1).

As presented in table (1), that there was a positive weak correlation ($p<0.05$). This means that change in the headache Disability Index is consistent with the change

Table 1: Correlations between Headache Disability Index and ROM of neck flexion, extension, right and left side bending and rotation.

		ROM of Neck Flexion	ROM of Neck Extension	ROM of Neck Right side bending	ROM of Neck left side bending	ROM of Neck Right rotation	ROM of Neck left rotation
Headache Disability Index	Pearson correlation coefficient (r)	0.440	0.292	0.357	0.463	0.190	0.168
	p-value	0.015*	0.117	0.053	0.010*	0.315	0.374

Significant at the alpha level ($p < 0.05$).

in ROM of neck flexion. As well as, there was a positive weak correlation ($p<0.05$) between headache Disability Index and ROM of neck left side bending.

DISCUSSION

The headache is a common complaint in the postpartum period which resulting in decreased cervical range of motion and affected the physical activity and negative psychosocial impact on the woman.

This study was carried out to assess the headache effects on the cervical range of motion. This study demonstrates that the thirty women evaluated by universal goniometer to assess the range of motion and by the Headache disability index to evaluate the disability level.

To the best of our knowledge, no previous studies assessed cervical mobility in postpartum headache.

The current study usedthe goniometer device as an assessment method to evaluate the Cervical range of motion. since it provides more reliable measures compared with other clinical evaluation methods [18].

The current study results showed there was no statistically significant differencebetween headache disability index and ROM of neck extension, right side bending and right and left rotation ($p>0.05$) and there was a positive weak correlation ($p<0.05$) the headache Disability Index and ROM of neck flexion and left side bending.

Despite the lack of convincing evidence for the role of cervical musculoskeletal dysfunction in headache [19], it has been demonstrated that myofascial trigger points on the head and neck may play an important role in the origin, maintenance, or perpetuation of headache. The opposite is true as well. Because of the cervical-trigeminal disorders or dysfunctions in the distribution of the trigeminal nerve may trigger or worsen pain in the neck [11]. Therefore, we hypothesized that individuals with a chronic headache would also show signs of chronic functional impairment in the neck, manifested by a reduction in the CROM. In such cases, reductions in neck mobility are most likely a consequence of the protective posture against pain [20].

The result of current study is supported by Simons *et al*. [14] described the referred pain patterns from different myofascial trigger points (TrPs) in head and neck muscles, which produced pain features that are usually found in patients suffering from TTH.

Simons *et al.* [14] stated that postural abnormalities in the cervical spine might be responsible for the activation of TrPs in these muscles. One frequently noted abnormal posture is an excessive forward head position, or forward head posture (FHP). Hyperextension of the neck or increased cervical lordosis is a common consequence of FHP. The forward head posture is usually associated with shortening of the posterior cervical extensor muscles. Greenfield *et al*. [21].

The result of this study correspond to those by Ordway *et al.* [22] also showed that FHP could dramatically affect neck mobility This is expected, as FHP may lead to excessive compression on the facet joints and posterior surfaces of the vertebral bodies, thus affecting the biomechanics of the head and the neck. Simons *et al.* [14] claimed that the referred pain evoked by upper trapezius, sub-occipital muscles spread to the head and was usually perceived as bilateral headache. Ferguson *et al*. [23] have suggested that the referred pain from TrPs and TrPs themselves are important in the patients' perception of TTH.

This study demonstrated that there is an association between FHP, sub-occipitalactive TrPs and CTTH. This finding is important because there ferred pain pattern from these TrPs was consistent with the headache pattern of subjects with CTTH. Although suggested recently by Ferguson *et al.* [23] the referred pain pattern from headache TrPs has not been considered in previous controlled studies of headache subjects. Also this study agreed with Fernández *et al*. [20] which hypothesized that individuals with a chronic headache would also show signs of chronic functional impairment in the neck, manifested by a reduction in the CROM. In such cases, reductions in neck mobility are most likely a consequence of the protective posture against pain.

In a study proposed by Fernandez *et al*. [24] indicated that a group of patients with TTH showed less neck mobility than healthy controls. Macdonald [25]

reported that Muscles with active MtrPs have a restricted passive (stretch) ROM because of pain, as reported previously. The limitation of stretch due to pain is not as great with active movement as with passive lengthening of the muscle, at least partly due to reciprocal inhibition. Therefore, more restricted neck mobility may have occurred, as MTrPs were more prevalent in the CTTH group.

These findings agreed with those of Martins *et al.* [26], which reported that the Head movement can worsen a headache, which may be manifested by reduced CROM.

There was a significant increase in the headache questionnaire scores induced decrease the ROM. Pervious finding agrees with Walmsley *et al.* [27] they concluded that the FHP may lead to excessive compression of the facet joints and posterior surfaces of the vertebral bodies, thus affecting the biomechanics of the head and the neck. Sohn *et al.* [28] the active MTrPs may be the contributing factor in causing and maintaining TTH. Although the FHP is suggested to activate MTrPs because it is related to the shortening of the head and neck muscles, the FHP may be the result of CTTH. The differences in neck mobility are also caused by abnormal head posture or chronic pain. Finally, we had hypothesized that the laterality of pain could also cause unilateral impairments in the CROM since it has been suggested that nociceptive inputs from head and neck muscles may produce continuous ipsilateral afferent bombardment of the trigeminal nerve [22].

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