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Comparison of Efficacy of Myofascial Release and Positional Release Therapy in Tension Type Headache

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ABSTRACT

Study objectives*: Comparison of efficacy of Myofascial release and positional release therapy in tension type headache.*

Design: *Comparative study.*

Setting: *All the subjects were included from various clinics, hospitals and community in dehradun.*

Method: *Total of 28 subjects was recruited for study on the basis of inclusion and exclusion criteria after signing the informed consent form. Subjects were divided into two groups (A= MFR and B= PRT),*

Outcome Measures*: Visual analog scale (VAS), Headache disability index (HDI).*

Result*: Result of the study shows that although positional release therapy were significantly effective but MFR was found to be more effective than the PRT in reducing pain and disability in patient with tension type headache.*

Conclusion*: The present study concluded that both the technique is effective in improving the pain and disability in subjects with TTH. The study highlights that myofascial release technique is better choice of treatment in improving pain and disability in subjects with sub occipital muscle trigger point in tension type headache.*

Keywords: *Myofascial release therapy (MFR), Positional release therapy(PRT), Tension type headache(TTH), Visual Analog Scale(VAS), Headache disability index (HDI).*

INTRODUCTION

Headache disorders are one of the most common problems seen in medical practice. Among the many types of headache disorders, tension-type headache (TTH) is the most frequent in adults. Population-based studies suggest 1-year prevalence rates of 38.3% for episodic TTH (ETTH), and 2.2% for chronic TTH (CTTH).[1] The recent second version of the International Headache Society classification4 distinguishes between three forms of TTH mainly on basis of headache frequency: (1) Infrequent episodic TTH (fewer than 12 headache days per year), (2) Frequent episodic TTH (between 12 and 180 days per year), and (3) Chronic TTH (at least 180 days per year).[2]

TTH varies considerably in frequency and duration, from rare, short-lasting episodes of discomfort to frequent, long-lasting, or even continuous disabling headaches. The female-to-male ratio of TTH is 5:4 indicating that, unlike migraine, women are affected only slightly more than men.[2]Headaches generally are reported to occur in relation to emotional conflict and psychosocial stress, but the cause-and-effect relationship is not clear. Recently was demonstrated that depression increases vulnerability to TTH in patients who have frequent headaches during and after a laboratory stress test and that the induced headache was associated with elevated pericranial muscle tenderness.[2]

The increased myofascial pain sensitivity in TTH could be the result of release of inflammatory mediators resulting in excitation and sensitization of peripheral sensory afferents. The increased myofascial pain sensitivity in TTH also could be caused by central factors, such as sensitization of second-order neurons at the level of the spinal dorsal horn/trigeminal nucleus, sensitization of supraspinal neurons, and decreased antinociceptive activity from supraspinal structures.[2] Episodic tension-type headache was defined using IHS criteria as headache frequency of greater than 10 lifetime attacks, but fewer than 15 attacks per month; an average attack duration of 30 minutes to 7 days. Chronic tension-type headache was defined using IHS criteria, which are identical to those for ETTH except that the attack frequency was 15 or more attacks per month for at least 6 months.[3]

It has been postulated that tension type headache-related pain may be originated, at some extent, from referred pain from muscle trigger points (TrPs) located in head, neck and shoulder muscles.[4] Clinicians have recognized for more than a century that effective treatment of painful, tense, tender muscles includes stretching the involved muscle fibers, either locally in the region of tenderness (massage) or by lengthening the muscle as a whole. Frequently MTrPs were the cause of the symptoms and were what was being treated.[5]

Simons et al.(1999) described the referred pain patterns from different myofascial trigger points (TrPs) in head and neck muscles. Simons et al. (1999) define a TrP as a hyperirritable spot

associated with a taut band of a skeletal muscle that is painful on compression, palpation and/or stretch that usually gives rise to a typical referred pain pattern.[6]Referred pain evoked by suboccipital muscle trigger points (TrPs) spreads to the side of the head over the occipital and temporal bones and is usually perceived as bilateral headache.[6]Referred pain is an important characteristic of a trigger point. It differentiated a trigger point and tender point, which is associated with pain at the site of palpation only.[7]

Within the cervical musculature, suboccipital muscles can develop TrPs, accounting for a referred pain pattern that spreads to the side of the head over the occipital and temporal bones. This referred pain extends to both sides, thus being perceived as bilateral headache.[6]

PRT is a technique in which muscles are placed in a position of greatest comfort and this causes normalization of muscle hypertonicity & fascial tension, a reduction of joint hypomobility, increased circulation & reduced swelling, decreased pain and increased muscular strength.[8]

In PRT, the muscles are placed in greatest comfort position. The resultant relaxation of tissue leads to an improvement in vascular circulation and removal of the chemical mediators of inflammation. Thus, PRT may eliminate the peripheral & central sensitization.This technique may also reduce the central sensitization directly by the damping influence on the facilitated segment in the spinal cord.[8] PRT an effective treatment for T.T.H patients with trigger points in cervical muscles.[8]

PRT, with the treatment time selected for this study produced significant pain relief. Pain relief could have occurred due to the decrease in the intrafusal and extrafusal fiber disparity and reset of the inappropriate proprioceptive activity.[9]

So far no study has been done which compare the effectiveness of different technique of MFR and PRT in tension type headache as there is less literature available about the comparative effect of both these technique in the management of TTH.

METHODS

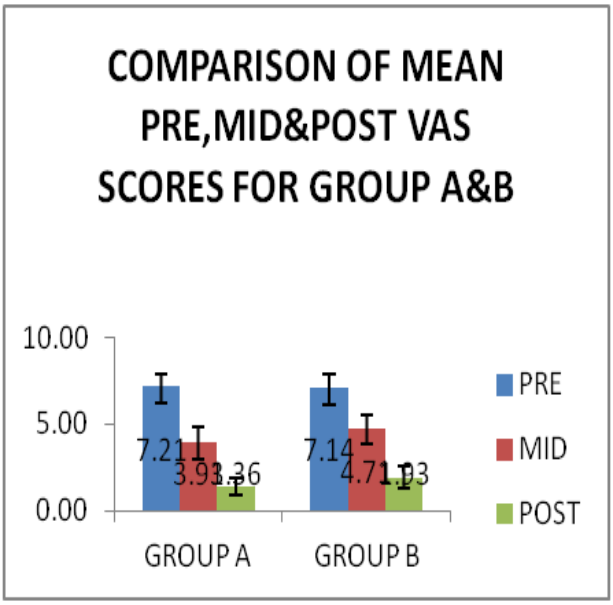
A total 28 male and female subjects with an age group 25-45 year were recruited for the study. They were recruited from various government, private hospitals and clinics, institute around Dehradun. Subjects were selected and assigned by convenient sampling and randomized distribution The subjects signed an informed a consent form, following which they were randomly assigned to two groups with 14 subjects in Group A and 14 subjects in Group B. Inclusion Criteria: Age- 25 to 45 years. Presence of trigger points in suboccipital area. Exclusion Criteria: History of medication from 1 year and more than 1 year for tension type headache. History of trauma to the cervical region,Vertebro basillar insufficiency.History of cervicogenic headache /migraine.Malignancy in the cervical area.Group A comprising of 14 subjects will receive Myofascial Release Technique. This technique of myofascial release is called as the “Cranio Base Release”. The patient is in supine position.Therapist is seated on a stool at the edge of the table. Elbows and supinated,

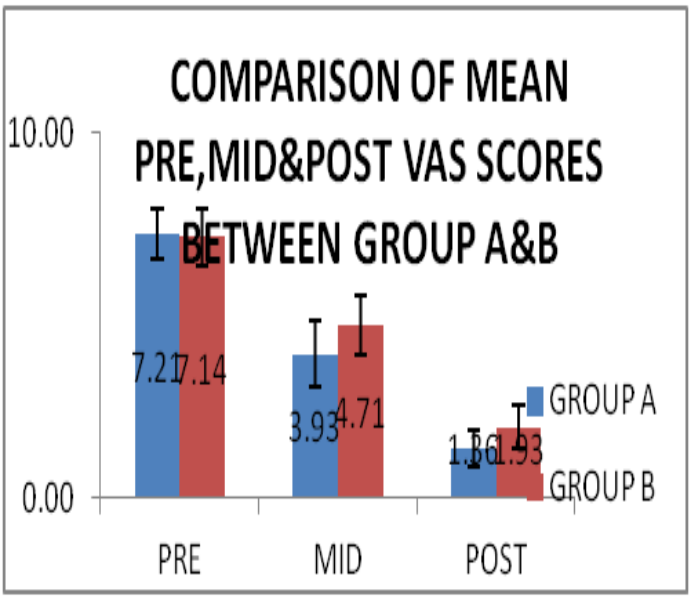
therapist's forearms to rest on the table .Ask the patient to lift his/her head off the table slightly. Position the tips of the first three fingers into the soft tissue immediately inferior to the occiput. The two index fingers are abutting each other at the midline.The fingers are stabilized in a flexed position-around 45^0 at the MP and PIP joints.The patient is asked to rest their head back down so the finger tips are in the suboccipital soft tissues and the finger pads rest firmly against the inferior aspect of the occiput. The head is also supported by the thenar eminences, at about the level of the superior nuchal line of the occiput. Once the position is perceived to be comfortable, a series of soft tissue responses will occur, characterised by local softening sensations followed by an increase in the weight of the head. Next, develop a line of tension through the suboccipital tissues, as well as into the periosteum of the occiput by separating the two hands.This is done by supinating the forearms which will lead to the two hands being pulled apart from each other.Another cycle of release will commence with associated changes in local tissue texture and tonus.Once this cycle is well established, apply slight traction. This technique will be given for 2 sessions per week with 3 repetitions for 4 weeks.

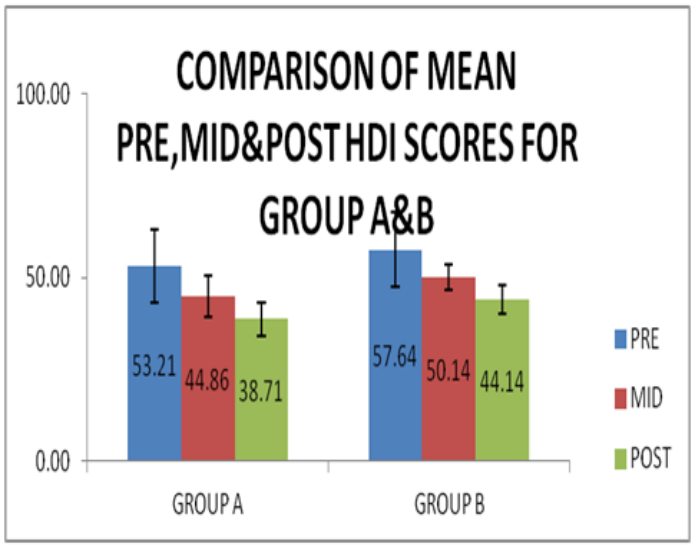
Group B will receive positional release technique (PRT). This technique of positional release is called as the "Exaggeration of distortion" The patient is in supine position.The subject will be asked to lie down on his untreating side (i.e. side which is to be treated will be up). Lightly pinch/squeeze the point to produce a score of 10 and try altering the position of the arm, perhaps taking it up and over the subject head to slacken the muscle the subject is palpating or alter the neck position by having it side bent towards the painful side on a thick cushion's.This position is held for 90 seconds. After the release the subject will be put back into normal position. This will be also done for 2 sessions per week with 2 repetitions for 4 weeks. After 4 weeks post intervention data will be collected.

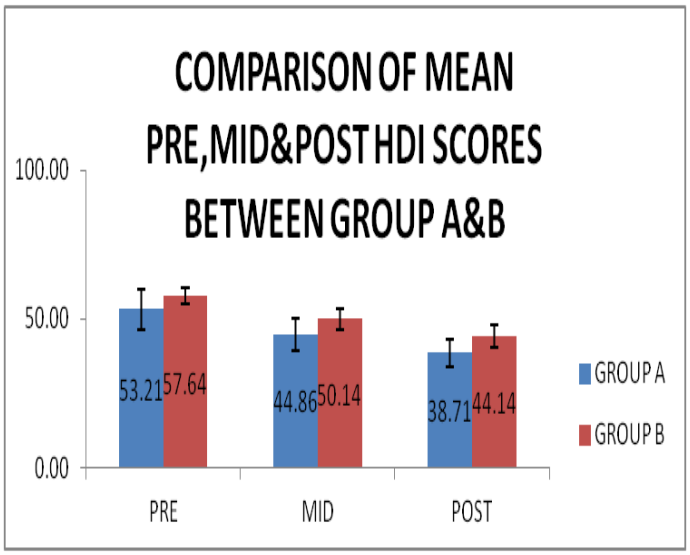
RESULT

- Data analysis was done using the SPSS 16.0 version.
- Independent t-test was done to compare pre, mid and post intervention reading of pain and disability within group A&B.
- Independent t-test was done to compare pre, mid and post intervention reading of pain and disability between group A&B.









DISCUSSION

In this study, we compared the effect of myofascial release and positional release therapy in tension type headache. Subject was divided into two groups: group A and group B. Group A was given myofascial released technique while group B was given positional release therapy. Pain and disability were assessed using VAS and HDI for 4 week protocol respectively. Within group and between- group comparisons of all the reading noted done. This study showed that treatment targeted at inactivating TrPs may be effective for reducing the intensity of tension type headache in patient with tension type headache.

The assumption of difference in the effect of MFR and PRT in reducing pain in patient with tension type headache were tested by comparing values between the group .It was observed that there was significant difference between the group, VAS score forthe both group A (MFR) and group B (PRT)with mean in pre intervention for group A&B (7.21 $\pm$ 0.699 & 7.14 $\pm$0.770), mid intervention for group A and B (3.93$\pm$0.917& 4.71$\pm$0.825),post intervention for group A&B (1.36$\pm$0.497,1.93$\pm$0.616) respectively. The result obtained by HDI for both group A&B were pre intervention(53.21+6.996&57.64+2.620), midintervention(44.86+5.517&50.14+3.549,posti ntervention(38.71+4.598&44.14+3.92) respectively. After the intervention considerable change was observed in the mean values of group A and B from that of baseline (VAS&HDI). Result of the present study revealed that there was a considerable effect of MFR on sub occipital

muscle in decreasing pain and disability in patient with tension type headache pain as compared to patient who received PRT on sub occipital muscle Myofascial Therapy represents a philosophy of care, rather than a series of techniques. A hallmark of most Myofascial work is the attempt to entrain the patient and clinician in such a way as to permit the patient response to manual contact to facilitate the treatment. Myofascial release is the interactive stretching techniques that require feedback from the patient's body to determine the direction, force and duration of the stretch and to facilitate maximum relaxation of tight or restricted tissue. MFR applied to a muscle increases the discharge from the GTOs and elicits inhibition of any further tensioning in that muscle. The Ruffini bodies respond to slow and deep melting techniques. Furthermore, the stimulation of the Ruffini bodies is linked to a reduction in the activity of the SNS. This certainly helps in understanding the effects of soft tissue manipulation on the ANS that were described earlier where both local and systemic changes in that system occur. Gamma neurons can be inhibited by supraspinal structures. The medial reticular formation plays a role in this inhibition. When certain forms of stimulation provided by an MFR practitioner, the interstitial fibres signal the blood vessels to increase the renewal speed of the ground substance. Hydration may occur but it is initiated through sensory fibres rather than mechanical force alone. An increase in the quantity of ground substance helps maintain the interfiber distance and lubricates the space between the fibres. This is fascial cohesiveness – the affinity of fibers that drives them to bind with their neighbours is balanced via an appropriate volume of ground substance.[10]

Myofascial release helped in breaking adhesions, increasing blood flow and lymphatic drainage helped to increase soft tissue extensibility which improved range of motion and thus muscle strength.[11]These results support our study where the pain threshold and disability improved significantly in MFR group.

In support of present study Positional release technique is thought to achieve its benefits by means of an automatic resetting of muscle spindles which would help to dictate the length and tone into the affected tissues.[12]

This reason supports the results of our study where the pain threshold improved in the PRT group. The mechanisms explaining the effects of SCS reported in clinical practice remain largely theoretical. Suggested factors in SCS intervention include aberrant neuromuscular activity mediated by muscle spindles and local circulation or inflammatory reactions influenced by the sympathetic nervous system. Aberrant neuromuscular activity between muscle agonist and antagonist, known as the Proprioceptive Theory, is the most common explanation for the effects of SCS. According to the Proprioceptive Theory rapid stretching injury stimulates muscle spindles causing reflexive agonist muscle contraction that resists further stretching. However, a reflexive counter-contraction resulting from pain induced withdrawal quickly reverses

the aggravating movement there by exciting antagonist muscle spindles. The resulting neuromuscular imbalance, perpetuated by opposing muscle spasms each unable to release due to ongoing muscle spindle excitation, can affect myofascial mobility and force transmission around neighbouring joints and muscles. Underlying muscle imbalance can persist long after the strain heals with lasting motor impairment evident long after pain symptoms subside. The Proprioceptive Theory is based on neurophysiologic regulation of muscle spindle activity that increases spindle activity and reflexive muscle contraction upon lengthening and decreases spindle discharge and reflexive contraction upon shortening. By passively shortening the dysfunctional agonist muscle long enough, SCS allows normal muscle spindle activity to return. Once agonist muscle spindle activity is reset, antagonist muscle spindle activity can also return to resting state, relieving aberrant neuromuscular activity and restoring normal function.[13]Results of the present study demonstrate that group A showed statistically significant improvement in pressure pain and disability when compared to group B.

LIMITATION

The study had a small sample size. Ergonomic advices not employed. Occupation relevance was not compared.

FUTURE STUDY

Other outcome measures can be used. Large population can be included in study. Follow-up period to assess long term benefits.

CONCLUSION

The present study concluded that both the technique is effective in improving the pain and disability in subjects with TTH. The study highlights that myofascial release technique is better choice of treatment in improving pain and disability in subjects with sub occipital muscle trigger point in tension type headache.

CLINICAL SIGNIFICANCE

Based on the result of this study we came to know about the effect of myofascial release technique on tension type headache and observed the changes in pain and disability related with the sub occipital muscles trigger point. In both groups both the techniques showed independent effectiveness in improving tension type headache. Depending on results we can emphasise that the effect of Myofascial Release Technique proved more effective for treating the case of Tension type headache then Positional Release therapy.

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