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TO EVALUATE THE ROLE OF POSITIONAL RELEASE TECHNIQUE ON PAIN AND HEADACHE DISABILITY IN CERVICOGENIC HEADACHE PATIENTS IN MIDDLE- AGED POPULATION. A PILOT STUDY.

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Conflicts of Interest: Nil

ABSTRACT:

Background: Headaches are a typical condition influencing 47% of the worldwide population, with Cervicogenic Headaches representing 15-20% of all chronic and recurrent headaches. Patients with CGH showed decreases in the quality of life similar to Migraine and Tension-type headache patients, with even lower scores for physical functioning.

Methods: Total of 20 patients was taken based on inclusion and exclusion criteria, who were divided into two groups i.e. PRT Group (GROUP A) and CONTROL Group (GROUP B). Group A received PRT and Group B received conventional treatment with ergonomic care 3 sessions per week for 4 weeks. Baseline measurement was taken on day one of the study for which pain was measured by the Numeric pain rating scale (NPRS), Headache disability was measured by Headache disability index (HDI). All measurements were repeated after 4 weeks.

Results: Significant decrease of Pain and Headache disability were found in the group who received PRT along with ergonomic care.

Conclusion: Positional release technique is an effective approach to reduce the pain and headache disability thus improving the patients physical functioning.

Key Words: Cervicogenic headache (CGH), Positional release technique (PRT), neck pain, headache.

Introduction

Headaches have a high prevalence in western culture and it's a sort of burden on the health of people worldwide which is expressed by The World Health Organization (WHO).[1]

Cervicogenic headache affects 2.2-2.5% of middle-aged population. A CGH can likewise be named as occipital headaches, are the most widely persistent symptoms occurs because of the involvement of neck/spine trauma for instance whiplash injury.[2] A Headache is standout amongst the most well-known wellbeing related condition in India, with about 15% of individuals are taking painkillers for a headache at any given time.[3] CGH is thought to emerge from musculoskeletal disorders of the neck.[4]

The International Headache Society characterized CGH as a secondary headache, which implies a headache is caused by a disorder of the cervical spine and its segment bony, disc and soft tissue elements.[5]The IHS has distinguished that there are 14 distinctive subtypes and subcategories of headache characterizations. These headaches have been delegated either primary resulting from a vascular or muscular region, or secondary, which result from another source, for example, inflammation or head and neck injuries.[6]

Neck pain and cervical muscle tenderness are common and noticeable side effects of primary headache disorder.[7] Less commonly, head pain

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may actually emerge from bony structures or soft tissues of the neck and is called as cervicogenic headache.[8] CGH can be perplexing pain disorder that is refractory to treatment if it is perceived. The condition's pathophysiology and source of pain have been debated, however the pain is likely alluded from at least one muscular, neurogenic, osseous, articular, or vascular structures in the neck.[9]Patients with CGH showed decreases in the quality of life similar to migraine and tension-type headache patients, with even lower scores for physical functioning.[10]

CGH is ordinarily associated with cervical myofascial tender spots or cervical spine dysfunction. The detailed pervasiveness of CGH varies from 13.8% to 17.8% of the headache population in various epidemiological studies.[11]The prevalence of CGH in the general population is 0.4% and 2.5%, with a female dominance (2:1).[12] However, Sjaastads and Bakketeig[13] reported a predominance of 4.1% with no female dominance, yet in pain management clinics, the prevalence is as high as 20% of patients chronic headache.[14]

The IHS classification depicted that the pain unilateral and bilateral, influencing the head or face however has most usually influenced the neck occipital area, frontal region or retro-orbital region. CGH is normally connected with sub-occipital neck pain, yet can be related with ipsilateral arm discomfort.[2]

As indicated by Silberstein CGH is characterized as pain either in cranial area, neck, upper trapezius or sternocleidomastoid(SCM) region which transmits as per their specific pattern.[15] It has been stated that the suboccipital muscles are a causative factor in both cervicogenic neck pain and headache and in addition, may end up atrophic further confounding the pain syndrome.[16,17] The Rectus capitis posterior minor (RCPMn) muscle has been portrayed by Mcpartland and Brodeur[16] as containing a high density of muscle spindles and along these lines, dysfunction at this level may disturb proprioception of the head and cervical spine. Constant postural stress has been proposed to cause hypertonicity of the suboccipital musculature, prompting tension being transmitted to the pain-sensitive Dura bringing about chronic headaches. Patients with CGHs frequently have the tightness of the SCM, upper trapezius, levator, scalenes, suboccipital, pectoralis minor and major muscles.[18]

Physical therapy is usually utilized for the management of patients with CGH. Previous precise reviews reported fundamental evidence for the application of upper cervical spine manipulation or mobilization for the administration of CGH. A recent review of manual therapies proposes that spinal manipulation may be a successful treatment in the management of CGH patients.[12]A study directed in Australia revealed that upper cervical spine mobilization or manipulation was the most utilized intervention by physical therapists.[19]There are different treatment strategies that healthcare professionals can use in the treatment of CGH. Treatment incorporates invasive and non-invasive techniques, in which the invasive treatment technique comprises injections, dry needling, and surgery.[2] The non-invasive treatment comprises of Ultrasound therapy[20], TENS, Massage, Exercises, manipulation, or mobilization.[2] Treatment choices for trigger points includes ischemic compression and Positional Release Therapy (PRT).[21,22]

PRT is a method in which muscles are set in a place of greatest comfort and this causes normalization of muscle hypertonicity and fascial tension, a decrease of joint hypomobility, increased circulation and reduced swelling, reduces pain and increased muscle strength (D'Ambrogio et al., 1997).[22] Therefore, the purpose behind this investigation was to evaluate the effectiveness of positional release therapy technique in the management of CGH.

METHODOLOGY

This study was done in physiotherapy department of SGT University Gurugram. The study was approved by the Ethical research committee

Twenty subjects with a CGH were taken in a study where the pain was measured by NPRS and headache disability was measured by HDI. Participants were incorporated into the study if

they have fulfilled the criteria[12] of Age – 18 to 30, Both male and female and they had diagnosis of CGH by the criteria of Sjaastad and Fredriksen, moderate disability patients were taken in the study and had tenderness grade 3. Participants were evaluated by the doctor and reassessed by a physiotherapist and included in the study. Participants were excluded from the study if they showed other primary headaches (i.e. a migraine, tension-type headache), suffers from bilateral headaches.[12]Any contraindications to manual therapy. Headache subjects were excluded if they had a history of combined forms of a headache, in case of a migraine with aura subjects, or they had a history associated to neck injury or condition.[23]

Subjects who fulfilled the inclusion and exclusion criteria were isolated into two groups by simple random allocation method(chit method) i.e. Group A included 10 patients who received PRT along with conventional treatment and ergonomic care and Group B included 10 patients who received conventional treatment and ergonomic care. All subjects underwent baseline assessment for pain (Numeric pain rating scale), for headache disability (Headache disability index). The whole procedure of the treatment program was explained to the subjects and written informed consent was taken from all the subjects.

PROCEDURE

Subjects in Group A got PRT[22] along with conventional treatment and ergonomic care for 4 weeks which includes ultrasonic therapy for 5 minutes for each muscle (SCM, UPPER TRAPEZIUS and RCPMN) then PRT was given at the most hyperirritable spot in the muscle belly. Three muscles were taken for the treatment i.e.

Upper trapezius

The patient was lied down in a supine position, the therapist places the upper trapezius muscle in a specific position as follows: the patients head were flexed along the side toward the trigger point and his/her shoulder was abducted 90 degrees. In that position, the therapist monitored the trigger point with her index finger and maintain pressure from the thumb on that position until the point when the relief was felt. This was repeated for 3-4 times with 20 seconds of relaxation time.

Sternocleidomastoid

The patient was lied down in a supine position, therapist palpate to find a tender spot with a pincer grasp. Therapist monitored the tender point with an index finger and maintain pressure on that tender spot by turning the neck on the same side keep the pressure on that trigger point until the point when relieve was felt. This was repeated for 3-4 times with 20 seconds of relaxation period.

Rectus capitis back minor

The patient was lied down in a supine position, therapist palpate to find a tender spot with a pincer grasp. Therapist monitored the tender point with an index finger and maintain pressure on that tender spot by extended the neck and keep the pressure on that trigger point until the point when relieve was felt. This was be repeated for 3-4 times with 20 seconds of relaxation period.

A hot pack was given to the patient after the end of session for 10-15 minutes.

Subjects in Group B got Ultrasonic therapy along with ergonomic care where ultrasonic therapy is given to each muscle (Upper trapezius, Sternocleidomastoid, rectus capitis posterior minor) for 5 minutes[24] at most hyperirritable spot within the muscle belly with a frequency according to the position of muscle superficial and deep 3 times a week for 4 weeks.

A hot pack was given to the patient after the end of session for 10-15 minutes.

Ergonomic care is given in both the groups where patients are taught to correct their posture in their work profile and in the home as well.

RESULT:

The data were analyzed by using the SPSS software 21 for window version. Mean and standard deviation of all the variables was calculated. The level of significance was set at $p<0.05$. Independent T-test was used to compare the pre and post values in both the groups.

Table 1: Subjects baseline characteristics represented as Mean ± SD

VARIABLES	EXPERIMENTAL GROUP (N=10) MEAN ± S.D	CONTROL GROUP (N=10) MEAN ± S.D	P- VALUE	T- VALUE
AGE	21.9+3.6	23.7+3.5	0.28	1.10
BMI	22.8+5.3	23.4+2.0	0.75	0.34
NPRS	6.0+1.1	5.7+1.0	0.55	0.60
DISABILITY	56.8+14.0	47.6+12.6	0.14	1.53

NS- Non significant

Table 2: comparison of variables between the groups

VARIABLES	EXPERIMENTAL GROUP MEAN ± SD	CONTROL GROUP MEAN ± SD	P- VALUE	T- VALUE
NPRS 0^{TH} WEEK	6.0±1.1	5.7 ±1.0	0.55	0.60
NPRS 4^{TH} WEEK	0.6 ± 0.8	4.2 ± 1.3	0.00	6.97
DISABILITY 0^{TH} WEEK	56.8 ± 14.0	47.6 ± 12.6	0.14	1.52
DISABILITY 4^{TH} WEEK	11.2 ± 5.0	39.4 ± 12.3	0.00	6.66

Notes- Data are presented as mean ± SD. Results of analysis were done by independent T-test which shows that group A showed significant difference which is an experimental group where participants received positional release technique. A marked decrease in pain and headache disability is seen in the result.

P* <0.05 represents significant difference.

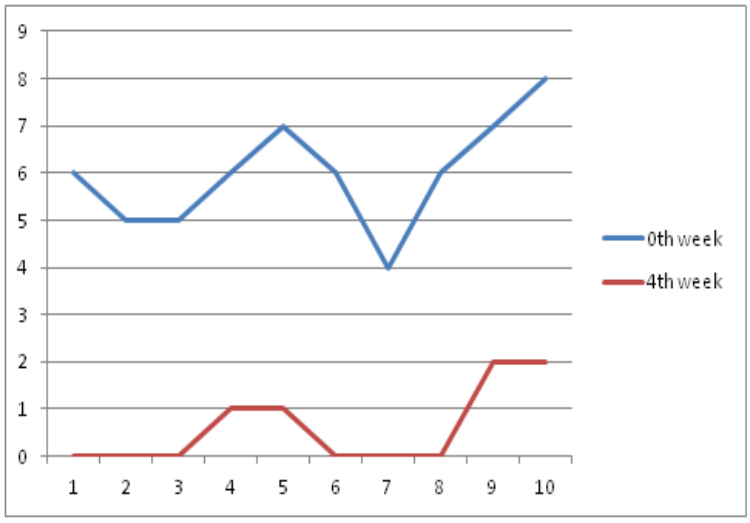

Figure 1: changes NPRS (pain) at baseline and after intervention in the group A

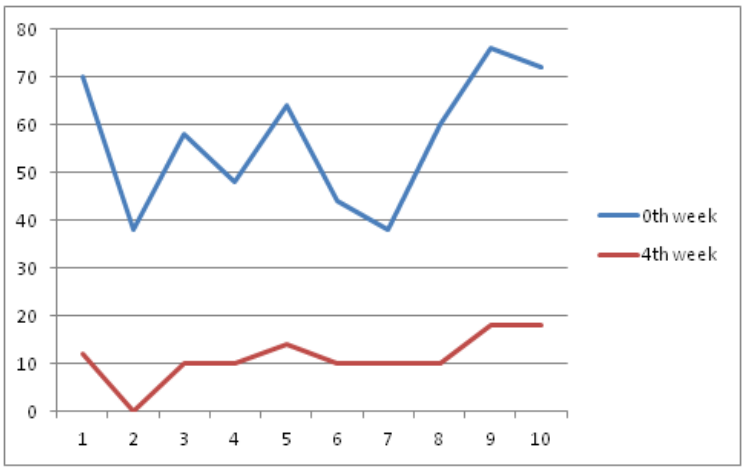

Figure 2: changes in headache disability at baseline and after intervention in group A

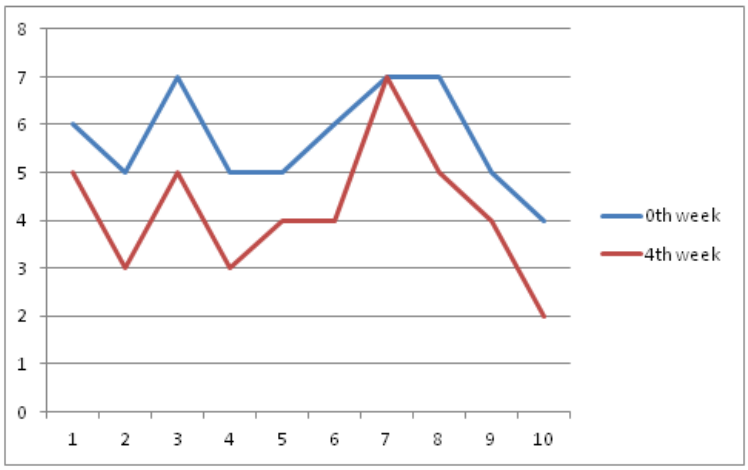

Figure 3: changes NPRS (pain) at baseline and after intervention in the group B

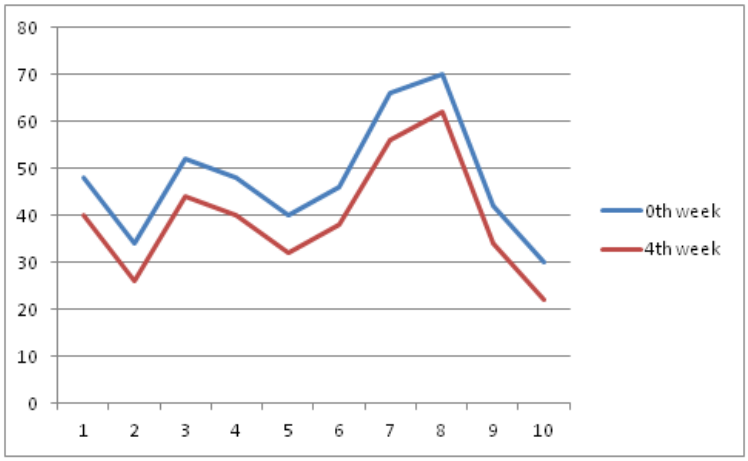

Figure 4: Changes in headache disability at baseline and after intervention in group B

DISCUSSION

This study was done to see the effectiveness of PRT along with ergonomic care and conventional treatment on pain and headache disability in CGH patients. This examination found significant decrease in pain and headache disability in patients with CGH. This study indicated that PRT given to the tender points in the SCM, UT and RCPMN muscle primarily decreased the

recurrence of a CGH and intensity of pain and headache disability.

This study is novel on the grounds that past examinations exploring manual and conventional treatments in patients with CGH yet not PRT are given to cure CGH. There is just a single report in which researcher gave trigger point treatment to the masticatory muscle in patient with CGH.[25]Some authors suggested that SCM muscle is the common source of myofascial CGH.[26] But, Gema Bodes Pardo[12] stated that not all patients with CGH had an active trigger point in sternocleidomastoid muscle.

The key role of chronic pain syndrome is trigger points[27] which prompts local ischemia that leads to pain.[21]There is efflux of various substances for example, histamine, bradykinin, and serotonin that are inflammatory in nature. Those substances prompt sensitization of nociceptive receptors of membranes which causes CGH because of central sensitization.[28]

PRT is a treatment technique that is gaining popularity. It is a therapeutic technique that uses tender points and a position of greatest comfort to resolve the associated dysfunction. The clinician who utilizes PRT would put the tender point in the position of greatest comfort, shortening the muscle in an effort to relax the tissues and reduce the trigger point.[29]

Jones suggested that when a muscle is strained by a sudden unexpected force, its antagonists attempt to stabilize the joint, bringing about counter-strain of the muscle in a resting shortened position. Before the antagonists are counter-strained, gamma neural activity is heightened as a result of its shortened position, making the spindle more sensitive propagating development of restrictions, sustained contraction, and TP development. Use of PRT relaxes the muscle spindle mechanism of the counterstained tissue, diminishing abberent gamma and alpha neuronal activity, accordingly breaking the sustained contraction.[30]

We discovered that patients with CGH received PRT along with ergonomic care and conventional treatment experienced a decrease in pain and enhancement in physical functioning by decreasing the headache disability. PRT can be an ideal treatment for treating CGH patients.

CONCLUSION

This study provides preliminary evidence that such a trial is feasible. The results of this pilot study show that PRT can reduce pain and headache disability and improve physical function in patients with CGH. Studies including large sample size and longer follow up periods are suggested.

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