IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 4, Issue 5 Ver. I (Sep. - Oct. 2015), PP 13-16
www.iosrjournals.org

The Effect of Mobilisation and Core Muscle Strengthening For Cervical Spine in Relieving Cervicogenic Headache

Prachi G. Wade[1], C.V.John Franklin[2]
[1](Physiotherapy Dept, Padmashree Dr. D.Y. Patil College Of Physiotherapy, Pune, Maharashtra, India)
[2](Physiotherapy Dept, Padmashree Dr. D.Y. Patil College Of Physiotherapy, Pune, Maharashtra, India)

Abstract :
Aim: *To study the effect of headache snags and core strengthening for cervical spine in relieving cervicogenic headache*
Objectives: *1) To study the effect of headache snags and core muscle strengthening on cervical spine in relieving cervicogenic headache.*
Methodology*: 30 subjects with age group 20 to 45 years, both males and females, who fulfilled the criteria were randomly selected. Examination of cervical spine was done. The data was documented and statistically analyzed*
RESULT: *When the results were compared within the group **w**ith the help of paired t test the p value for VAS was (p=0.000) and the p value for strength of core muscle was (p=0.000).*
Conclusion: *Thus the result shows that headache SNAG with deep core muscle strengthening is more effective than TENS with deep core muscle strengthening.*
Keywords: *Cervicogenic headache, headache SNAG, mobilization, TENS, deep core mucles strengthening*

I. Introduction

The International Headache Society (IHS) defines cervicogenic headache as "chronic, hemi cranial pain syndrome in which the source of pain is located in the cervical spine or soft tissues of the neck but the sensation of pain is referred to the head". The term cervicogenic headache (CeH) was introduced by Sjaastad et al. (1983) to describe a distinct headache syndrome, indicating that the pain is believed to originate from the neck. Neck pain is a commonly reported problem that affects 70% of individuals at some time in their lives. At any given time, approximately 10% to 20% of the population reports neck problems. [(1, 2, 3)] Approximately 47% of the global population suffers from a headache [(4,5)] and 15-20 % of those headaches are cervicogenic[(6,7)]. Females seem more predisposed to CGHs affecting four times as many women as men.

Patients with cervicogenic headache will often have altered neck posture. The headache can be triggered or reproduced by active neck movement, passive neck positioning. Pain is explained by the convergence of descending afferent trigeminal nerve input and afferent input from C1 through C3 spinal levels synapsing at the brainstem nucleus. Convergence at the trigeminocervical nucleus may allow for referral of pain from the neck to the trigeminal sensory receptive fields in the face and head (Bogduk, 1994).

Deep cervical muscle weakness is one of the reasons for cervicogenic headache. The actions of these muscles are craniocervical flexion and maintain intersegmental stability for midcervical muscles (sternocleido mastoid and scalene) to act, thus strengthening these muscles is also important. Zito et al have confirmed the importance of examination of the C1-C2 segment in cervicogenic headache diagnosis To assist in the diagnosis of cervicogenic headache and, in particular, C1-C2 segmental dysfunction, Hall and Robinson have suggested using the cervical flexion-rotation test (FRT). Normal range of movement is 44° to each side [(8)]. The available treatments for cervicogenic headache are Medications, Maitland + exercises, Mulligan SNAG, TENS.

Cervicogenic headache is often misdiagnosed and unrecognized. The prevalence of cervicogenic headache in the general population is estimated to be approximately 2.5% (shofferman 2002). Limited researches are currently available on cervicogenic headache. Research on non-pharmacological treatment for cervicogenic headache is limited. Pharmacological treatments have adverse effect of rebound headache and gastrointestinal complications. Hence this study will help us to find out safe and non-pharmacological treatment for cervicogenic headache. Very little is known about efficacy of headache SNAG and core muscles strengthening of cervical region on cervicogenic headache. Also combined effect is yet to be explored. Although the Mulligan concept is frequently used in clinical practice [(9)] there is limited evidence for its effect and there are no clinical trials that have investigated this technique for the treatment of cervicogenic headache. Thus the effectiveness of mulligan's headache snag and core muscles strengthening on cervicogenic headache has been studied.

II. Material And Methodology

Participants: 30 subjects with age group 20 to 45 years, both males and females, having unilateral headache associated with neck pain, lasting for 2-3 weeks, tenderness of cervical spine on manual palpation were included. Subjects with bilateral headache, Migraine, Tension type headache, Condition where manual therapy is contraindicated, e.g., hyper mobility of joint, osteoporosis, metabolic bone disease, neurological deficit (multilevel PIVD) and cervical myelopathy were excluded. Those who fulfilled the criteria were randomly selected. Examination of cervical spine was done pre and post therapy which included VAS and strength of deep core cervical muscles. The session was for 6 days (excluding Sunday).

Interventions: The experimental group received an accessory motion (SNAG) for patients who were having headache at the time of assessment where patients head was cradled between therapist's body and the right forearm. The right index and middle and ring finger wrapped around the base of the occiput and the middle phalanx of the little finger lies over the spinous process of C2 and the lateral border of the left thenar eminence lies over the right little finger. A gentle pressure is applied in a ventral direction on the spinous process of C2 while the skull remains still due to the control of right forearm. This was combined with deep core muscle strengthening of cervical muscles with a pressure biofeedback unit (Stabilizer) where a folded cuff of the sphygmomanometer was kept under the upper cervical spine and inflated to 20 mmHg. The patient was asked to nod and the pressure on the cuff was increased to 22 mmHg and he was asked to hold the pressure steady for 10 sec and this was repeated 10 times.

An accessory motion combined with spinal movement (C1-C2 self-sustained natural apophyseal glide [SNAG-MWM] was given to the patients without headache at the time of assessment where medial border of the first phalanx of right hand was kept on the transverse process of C2 vertebrae; reinforcement was given by pulp of the left phalanx. Glide was then given in direction to the eyeball and patient was asked to do rotation of the opposite side. This was again combined with deep core muscle strengthening for cervical region.

The control group received TENS on the paraspinal region of the cervical spine combined with deep core muscle strengthening for cervical region.

III. Result

Table 1: Comparison of mean at pre and post therapy in Experimental and Control group

MEAN	EXPERIMENTAL		CONTROL	
	Pre	**Post**	**Pre**	**Post**
VAS	6.8	1.8	6.12	3.52
STRENGTH OF DEEP CORE MUSCLE	20.8	26.13	19.14	22.57

Table 2: Comparison of mean difference of VAS between Experimental and Control Group

MEAN DIFFERENCE	EXPERIMENTAL	CONTROL
VAS	5	2.6

Table 3: Comparison of mean difference of Strength of Deep Core Muscle between Experimental and Control

Group

MEAN DIFFERENCE	EXPERIMENTAL	CONTROL
STRENGTH OF DEEP CORE MUSCLES	5.333	3.429

FIGURE 1: Comparison of mean of VAS at pre and post therapy in Experimental and Control Group

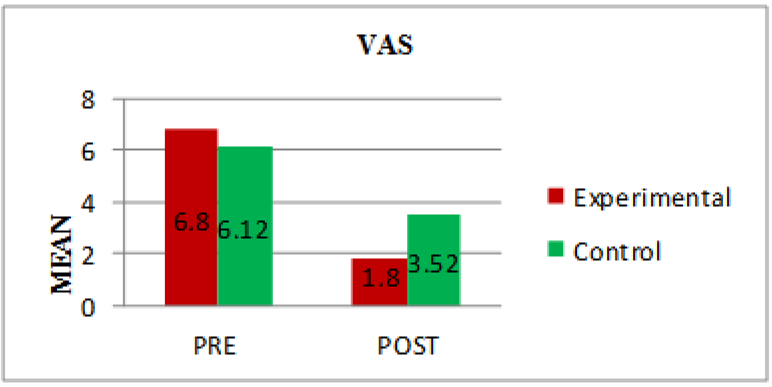


FIGURE 2: Comparison of mean of strength of deep core muscle at pre and post therapy in Experimental and Control Group

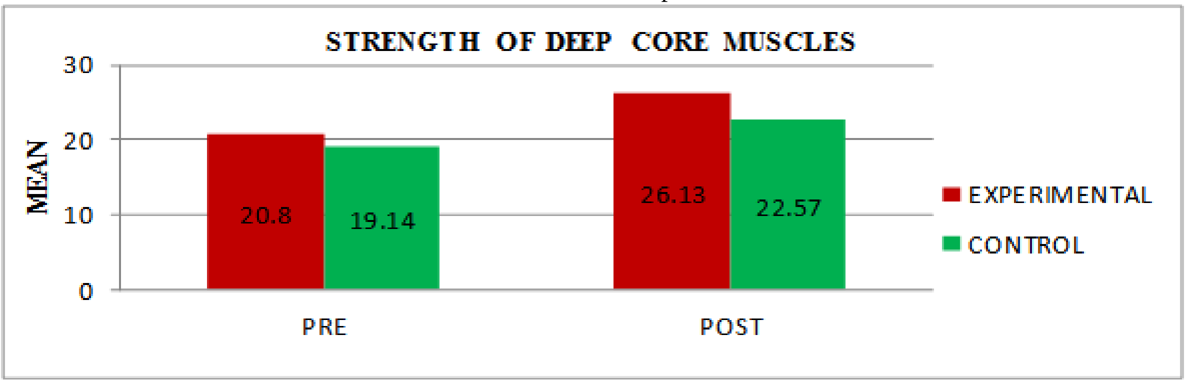


FIGURE 3: Comparison of mean difference of VAS between Experimental and Control Group

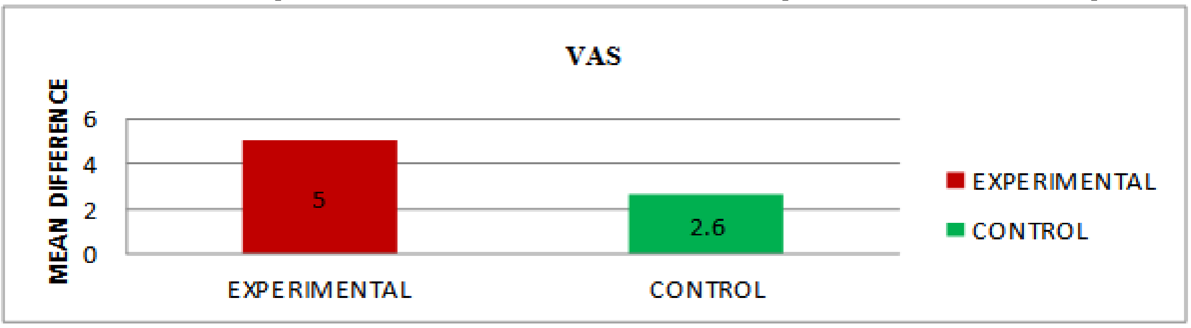
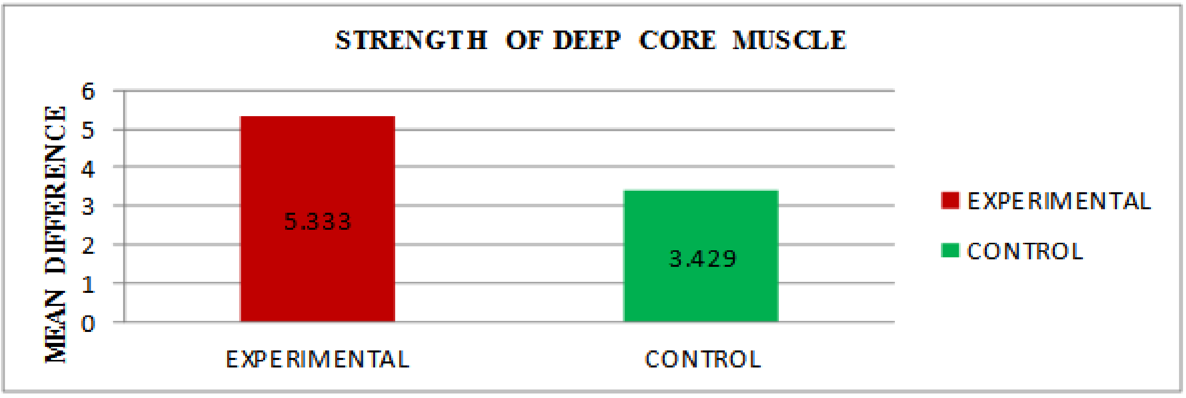


FIGURE 4: Comparison of mean difference of Strength of Deep Core Muscle between Experimental and Control Group



Interpretation

Pre and Post treatment was compared with Paired 't' test. Experimental Group showed reduction in pain (VAS) that is statistically significant (p=0.000), increase in strength which is statistically significant (p=0.000). Control Group showed reduction in pain (VAS) that is statistically significant (p=0.000), increase in strength which is statistically significant (p=0.000). Experimental and control Group were compared using unpaired t test the p value was found to be p=0.000 (VAS) which is significant, the mean difference of strength was compared p value was found to be p=0.003 which is significant.

IV. Discussion

The term Cervicogenic headache (CeH) was introduced by Sjaastad et al. (1983) to describe a distinct headache syndrome, indicating that the pain is believed to originate from the neck. Pain is localized to the sub-occipital region and aggravated by sustained neck postures. Significant limitation is present in this patient's deep cervical flexor muscles. Although deficiency in cervical flexor muscle control has been associated with CGH few studies have been done to determine if training the deep neck flexors to improve their performance would have an influence on headache frequency and intensity.

Mulligan has described a novel approach for the management of articular dysfunction in cervicogenic headache. In this approach an accessory motion combined with spinal movement (C1-C2 sustained natural apophyseal glide [SNAG]) is used to restore normal range of C1-C2 rotation when the FRT reveals substantial rotation limitation at this segment. Although the Mulligan concept is frequently used in clinical practice, there is limited evidence for its effect and there are no clinical trials that have investigated this technique for the treatment of cervicogenic headache.

One possible mechanism by which the C1-C2 SNAG reduces headache symptoms is by the neuro-modulation effect of joint mobilization. In addition, descending pain-inhibitory systems may be activated, mediated by areas such as the periaqueductal gray of the midbrain. The end range positioning in rotation with the C1-C2 SNAG may engage these inhibitory systems and reduce pain. An explanation of the increase in cervical rotation range on the FRT is that the C1-C2 SNAG decreases joint stiffness. Mobilization is thought to break down adhesions and stretch surrounding tissues. The third occipital nerve, or medial branch of the C3 dorsal ramus, curves medially and dorsally around the superior articular process of the C3 vertebra and crosses the C2-3 joint. Additionally, the C2-3 joint is innervated by articular branches from the third occipital nerve or from a communicating loop between the C2 dorsal ramus and the third occipital nerve. Therefore, the C2-3 joint is the only joint in the upper cervical spine where the nerve which innervates the joint crosses directly over the articular surfaces. Therefore, one may postulate that mobilization would help restore normal mobility, and thus, reduce firing of the pain receptors which are activated when the joint is under excessive mechanical stresses. Additionally, improving mobility of the joint could therefore activate the joints' type I and I1 receptors which inhibit pain. Therefore, mobilization of this joint could contribute to the attenuation of headaches caused from cervical joint dysfunction. Non-invasive techniques for treatment of cervical headaches include transcutaneous electrical nerve stimulation (TENS), massage, exercise, manipulation or mobilization. Transcutaneous electrical nerve stimulation and massage often have palliative effects; they have been criticized as not addressing the primary pathological lesion, and treat only the symptoms.The C2-3 joint has been reported with headaches with increased stress. This may be because stress results in an increase in muscle activity via the reticular activating system. The primary muscles involved are the antigravity muscles which maintain the upright posture of the neck. Specifically, the sub occipital muscles may be activated as they help maintain proper head position in the upright posture. Their increased activation could stimulate the development of myofascial trigger points resulting in headaches. The importance of the muscle system to CGH is shown by the long-term improvement in headache symptoms as a result of exercise designed to retrain the muscle system in patients with CGH. Impairments in muscle strength and endurance of the deep neck flexors appear to be one of the defining features of CGH.

V. Conclusion

Thus the result shows that headache SNAG with deep core muscle strengthening is more effective than TENS with deep core muscle strengthening.

Acknowledgment

I would express my gratitude to a number of people who gave me guidance, inspiration, and suggestions all through the dissertation, without whom this study could not have been a success. I am honored to express my deep and sincere gratitude towards my Guide Dr. C.V. John Franklin (PT), without his help and guidance it would not have been possible to cease this dissertation effortlessly and productively.Special thanks to physiotherapy staff & colleagues for their co-operation during my course of project. Last but not least, we are indebted to our very own college Dr.D.Y.Patil College Of Physiotherapy for giving us a platform to express and exhibit our talent. Thank you.

Reference

[1]. Helewa A, Goldsmith CH, Lee P, et al. The prevalence of neck pain in a university community. PhysTher 1994;74:S26.
[2]. Holmstrom EB, Lindell J, Moritz U. Low back and neck/shoulder pain in construction workers: Occupational workload and psychosocial risk factors: Part 2. Relationship to neck and shoulder pain. Spine 1992;17:672–7.
[3]. Hult L. Cervical, dorsal, and lumbar spinal syndromes. ActaOrthopScand 1954;17:175–277.
[4]. Stovner L., et al. , The global burden of headache: a documentation of headache prevalence and disability worldwide. Cephalalgia, 2007. 27(3): p. 193–210. [PubMed]
[5]. 15. Jensen R., Stovner L.J., Epidemiology and comorbidity of headache. Lancet Neurol, 2008. 7(4): p. 354–61. [PubMed]
[6]. Haldeman S., Dagenais S., Cervicogenic headaches: a critical review. Spine J, 2001. 1(1): p. 31–46.[PubMed]
[7]. 17. Nilsson N., The prevalence of cervicogenic headache in a random population sample of 20–59 year olds. Spine (Phila Pa 1976), 1995. 20(17): p. 1884–8. [PubMed]
[8]. Hall T, Robinson K. The flexion-rotation test and active cervical mobility--a comparative measurement study in cervicogenic headache. Man Ther. 2004;9:197-202.
[9]. Efficacy of a C1-C2 Self-sustained Natural Apophyseal Glide (SNAG) in the Management of Cervicogenic Headache: Toby Hall, MSc, Post Grad Dip Manip Ther1 • Ho Tak Chan, BSciPhysio, M Manip Ther, M Sports Physio.