|| Print ISSN: 2589-7837 || Online ISSN: 2581-3935 ||

International Journal of Medical Science and Diagnosis Research (IJMSDR)

Available Online at www.ijmsdr.com

Volume 3, Issue 1; January: 2019; Page No. 75-80

TO SEE THE EFFECT OF FIRST RIB MUSCLE ENERGY TECHNIQUE ON PAIN IN CHRONIC MECHANICAL NECK PAIN PATIENTS-A RANDOMIZED CONTROLLED PILOT STUDY

Shail Sachdeva[1], Dr. Joginder Yadav[2], Dr. Mohit Gulati[3], Dr. Sonia Pawaria[4]

MPT (Musculoskeletal)[1,2,3] , MPT (Cardiopulmonary)[4]

[1] Student MPT Final Year Masters of Physiotherapy Shree Guru Gobind Singh Indraprasth University Gurgaon

[2] Dean Faculty of Physiotherapy Shree Guru Gobind Singh Indraprasth University Gurgaon

[3] Assistant Professor Faculty of Physiotherapy Shree Guru Gobind Singh Indraprasth University Gurgaon

[4] Assistant Professor Faculty of Physiotherapy Shree Guru Gobind Singh Indraprasth University Gurgaon

Conflicts of Interest: Nil

ABSTRACT:

BACKGROUND: .Mechanical neck pain is a standout amongst the most widely recognized musculoskeletal disorders. Both muscle energy technique (MET) and stretching are widely used techniques in the field of physiotherapy. MET is an advanced stretching techniques Muscle energy technique (MET) may be an useful intervention for treating such disorders.

OBJECTIVE: The aim of the study was to see the effect of MET for first rib restriction in pain in people with chronic mechanical neck pain patients.

METHODS: A randomized controlled pilot study was undertaken. 20 patients with chronic mechanical neck pain of age group 25-45 were randomly allocated to either the MET group or the control group. Treatment was given 3 times per week for 4 weeks. Pain intensity was assessed by Mc gill pain questionnaire immediately before treatment i.e; first day of treatment and again on last day of 4th week after the treatment.

RESULTS: Data was analyzed by SPSS 21 version pain showed a significant improvement in MET group A in comparison to control group B on 4th week post intervention($p<0.00$).

CONCLUSION: Muscle energy technique on first rib is proved to be an effective approach in improving pain in people with chronic mechanical neck pain patients. Therefore, it should be included in the rehabilitation as a manual therapy maneuver in chronic mechanical neck pain patients.

KEYWORDS: First rib restriction, neck pain, manual therapy intervention

Introduction

Neck pain is a major issue worldwide regarding in general wellbeing prosperity and also backhanded cost and its pervasiveness indicate incredible variety in both quality and results. For example point commonness ranges from 6% and 22% and one year pervasiveness somewhere in the range of 1.5% and 75%[1.]Neck pain is a condition marked with a course of remission and exacerbation which may be disabling in some individuals. Most of individuals did not experience complete resolution of the neck pain and accompanying disability[2.] Mechanical neck pain is a summed up neck and/or bear pain with mechanical characteristics, including manifestations incited by kept up neck postures, neck movement, or by palpation of the cervical muscles[3.]

The wellspring of side effects in mechanical neck pain isn't totally seen, however has been indicated

Corresponding author: Shail Sachdeva

to be identified with different anatomical structures, especially zygapophyseal or uncovertebral joints of the cervical spine[4]. As often as possible seen reason for the neck pain is cumbersome occupational postures, anxiety, stress, hard work, and physically demanding work[5].The significance of the first rib emerges from the way that it is in close relationship to the cervico-thoracic spine ,which is as often as possible associated with spondylotic changes , and the way that is positioned across the cervico-brachial and other critical structures held up at the junction of neck[6]. Despite the absence of research, this technique can give pain alleviation and help settle the muscle spasms related with first-rib dysfunction.

The first-rib mobilization and muscle energy technique can be utilized in conjunction with other manual and active therapies to relieve pain here, and clinicians should utilize persistent announced outcomes to help clear up the advantage of this technique in practice[7].A wide assortment of treatment protocols for mechanical neck pain are accessible be that as it may, the best maneuver remains a territory of discussion. Both muscle energy technique and stretching are effectively utilized in the treatment of non-invasive treatment yet muscle energy technique is a propelled stretching technique[8].

NEED FOR THE STUDY

Muscle energy technique is utilized as an application in multitude of joints identifying with the vast majority of the joints in the body, release of hypertonicity in the major muscles directly affects the joints in the vast majority of the cases muscle stretching is included yet when we are taking joint restriction no stretching of muscles are utilized despite movement to the new barrier after isometric contraction without force[9].

And no research has been done to remove such restriction of the joints causing dysfunction using muscle energy technique other than mobilizations.Therefore this study will add to the growing body of knowledge that involvement of first rib restriction in mechanical neck pain patients and the effect of breaking such restriction or barrier using muscle energy technique so provide an effective and advanced form of treatment.

Therefore the study was done to see the effect of first rib muscle energy technique in reducing pain in patients with mechanical neck pain patients.

Materials and Methods

PARTICIPANTS

After receiving ethical clearance from the institutional committee of Shree Guru gobind Singh University of Physiotherapy,

20 subjects with mechanical neck pain with first rib restriction utilizing kemp test were incorporated into the examination. Patients with neck pain of traumatic origin and inherent first rib, thoracic outlet syndrome and are utilizing non steroidal calming drugs and genuine comorbities are barred from the investigation.

Subjects who filled the inclusion criteria and exclusion criteria isolated into two groups by using simple random sampling method i.e, Group A included 10 patients who got the conventional physiotherapy and Group B included 10 subjects who got the first rib muscle energy technique alongside conventional physiotherapy. Every one of the subjects experienced baseline evaluation for neck pain (mc gill pain questionnare). Entire procedure of treatment program was explained to the subjects and consent was taken from every subjects.

PROCEDURE

Subjects in Group A received the muscle energy technique for first rib restriction. Patients are seated and the affected elevated first rib opposite foot of practitioner is placed on the table and patient non affected arm is ‘drapped’ on the practitioner flexed knee. The practitioner’s also flexes the elbow on the non affected side placed anterior to shoulder with the hand supporting the patient side of head. Then practitioner makes contact with the tubercle of the 1st rib with fingers or thumb of affected side (patient) taking out available soft tissue slack as steady force is applied in inferior direction. The practitioner eases his flexed leg and uses his supported hand to encourage patients neck into a side flexion and rotation and rotation to affected side so unloading

the scalene tension on that side and encourage the 1st rib to move anteriorly and inferiorly. The contact thumb or fingers on the rib tubercle/shaft take out available slack, and the patient is asked to inhale and hold breath for few seconds and at the same time gently press your head towards non affected side against hand. This 5-7 second effort will activate and isometrically contract the scalene muscle. On releasing the breath slack is taken out of soft tissues as all the movements which preceded the contractions are repeated. Two or three repetitions usually results in greater rib symmetry and functional balance[10.]

The treatment protocol given for 3 sessions per week for 4 weeks[11.]

Subjects in Group B Received the conventional physiotherapy treatment.

Patients were encouraged isometric neck exercises:

Patients were in sitting position on the working chair.

Isometric flexion - They were educated to put their dominant hand flat on the forehead. Next, they were advised to firmly push forehead against the right hand and hold for 5 seconds and were advised to rehash multiple times.

Isometric extension – Patients were instructed to put their dominant hand behind their head, over the occipit. Next, they were advised to firmly push the head backwards against the hand, and hold for 5 seconds and rehash multiple times.

Isometric side flexion – Patients were educated to put the right hand flat on the right side of the head. Next, they were advised to firmly push the head against right hand and hold for 5 seconds and rehash multiple times. Same exercise was rehashed with the left hand against the left side of the head.

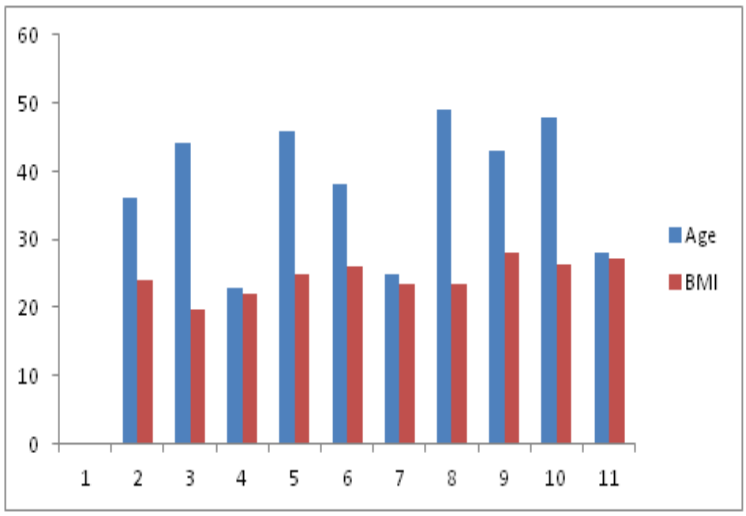
Isometric neck rotation – Patients were instructed to put the right hand on the right cheek. Next, they were advised to firmly turn the face against the right hand and hold for 5 seconds and rehash multiple times. Same exercise was rehashed with the left hand on the left cheek12.

RESULTS

The data was analyzed by using the software package SPSS 21 for window version. Mean and standard deviation of all the variables were calculated.

Table 1: Demographic characteristics of both groups.

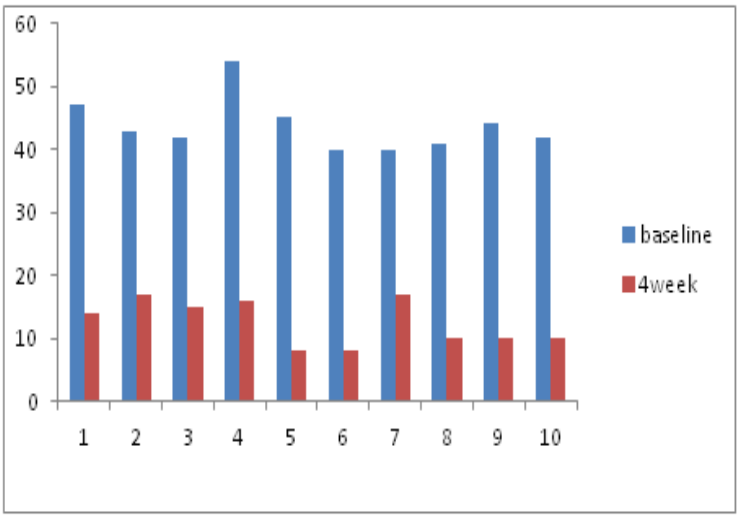
variable	Group A	Group B	t	P
AGE	38±9.68	34.90±8.10	.776	0.448^{NS}
BMI	24.54±2.50	24.68±2.86	.116	.909^{NS}



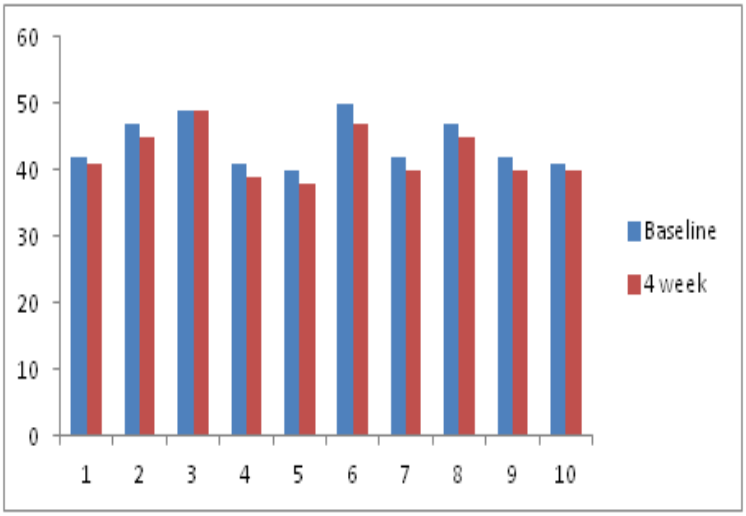
Graph 1: demographic characteristics of both groups

Table 2: shows effect on muscle energy technique at baseline and fourth week.

variable	Group A	Group B	T	P
Pain				
baseline	43.80±4.21	44.10±3.72	.169	.868^{NS}
4th week	12.50±3.65	42.40±3.77	17.98	.000**



Graph 2: effect of muscle energy technique on pain



Graph 3: effect of cervical isometrics on pain

DISCUSSION

Both muscle energy technique (MET) and stretching are broadly utilized techniques in the field of physiotherapy. MET is a propelled stretching techniques Muscle energy technique (MET) may be a valuable mediation for treating such clutters. MET reduced pain recognition by expanding stretch resistance. Stretching and isometric contraction while happening simultaneously stimulates the muscle and joint proprioceptors[13.] This thus would reduce the sensation of pain, making the consecutive stretch less demanding and more tolerable. This result acquired for pain decrease in the MET group could be similar to past study where pain intensity reduced MET over the neck area[14.] The conceivable mechanism for decrease in pain

intensity in MET group can be attributed to hypoalgesic effect. This can be clarified by the inhibitory golgi tendon reflex, initiated amid isometric contraction that prompts reflex relaxation of the muscle and activation of muscle and joint mechanoreceptors prompts sympatho excitation evoked by somatic efferents and localized activation of periaqueductal gray matter that assume job in diminishing modulation of pain. Nociceptive inhibition at that point happens at the dorsal horn of the spinal cord, as simultaneous gating happens of nociceptive impulses in the dorsal horn, due to mechano-receptor stimulation[15.] The present study was attempted to evaluate the effect of first rib MET on pain in patients with chronic mechanical neck pain patients and demonstrated 27% improvement in symptoms in group An in comparison to control group . The consequence of this study are similar to the aftereffect of study done by Yathera et al in which muscle energy technique is proved to be effective on upper trapezius trigger points[11.]

The level of pain decreased by isometric exercises because of increase endorphins that happens usually in the wake of training and better neuromuscular control. The solid muscle contractions occur amid isometric exercises which activate the muscle stretch receptors, afferent signals from these receptors cause endogenous opiods and the release of beta endorphins from the pituitary gland, which reduces pain[16.]

The after effect of the study led by Noelle M.Selkow found that momentary effects of muscle energy technique on pain in individuals with non explicit lumbopelvic pain which concluded that the effects of MET over past 24 hrs seems to be most significant[17.]

In this study significant improvement has been found in group who got the MET for first rib restriction along with conventional physiotherapy program. Results of this study proposed that MET is n effective methodology in treating first rib restriction related chronic mechanical neck pain. Notwithstanding, the effects of this technique by breaking the restriction obstruction has improvement in decreasing pain as an adjunct to conventional therapy which incorporates exercises and moist heat therapy as hot pack. Along these lines MET can be choosen over conventional treatment in improving pain in chronic mechanical neck pain patients.

RECOMMENDATIONS

Recommended on larger sample size.

Muscle energy technique can be compared with other electrotherapy modalities on effect of pain.

The long term effects can be evaluated.

CONCLUSION

First rib muscle energy technique can be incorporated in the management of patients with chronic mechanical neck pain. Thus the involvement of first rib restriction and treating such barrier will help patients suffering from pain and associated dysfunctions.

REFRENCES

1. Kejer R, KyrickKO etal The prevalence of neck pain in the world population; a systematic critical review of the literature.Eur spine j 2006 15;834-848
2. Cote P,Cassidy J.D, Carrol,etal The annual incidence and course of pain in general population based cohort study 2004 pain 112:265-275
3. Ferna´ndez-de-las-Pen˜as C, Palomeque-del-Cerro L, Rodrı´-guez-Blanco C, Go´mez - ConesaA. Changes in neck pain andactive range of motion after a single thoracic spine manipulation in subjects presenting with mechanical neckpain: a case series. J Manipulative PhysiolTher 2007;30:312e20.
4. Kanlayanaphotporn R, Chiradejnant A. The immediate effectsof mobilization technique on pain and range of motion inpatients presenting with unilateral neck pain: a randomizedcontrolled trial. Arch Phys Med Rehabil 2009;90:187e92.
5. Bovim G, Schrader H, Sand T. Neck pain in general population.Spine (Phila PA 1976) 1994;19:1307e9.
6. Michael Ashraf.First rib fixation and thoracic outlet syndrome. Journal of orthopaedic medicine.2016 pg 56-61.

7. Susan A saliba Manual therapy for first rib dysfunction athletic training and sports health care 2013.
8. Chaitow L. Muscle energy technique 3rd edition. Edinburgh:Churchill Livingstone ; 2008.p59,125.
9. Chaitow L. Muscle energy technique 3rd edition. Edinburgh:Churchill Livingstone ; 2008.p199-200.
10. Chaitow 'The Muscle Energy Technique" 3rd edition Toronto:Churchill Livingstone Elsevier; 2006 page no.229-230 chapter 6 MET in treatment of joints
11. G.Yatheendra Kumar, P.Snehaetal. Effectiveness of muscle energy technique, Ischaemic compression and strain counterstrain on upper trapezius trigger points :AComparitive study international journal of physical education, sports and health 2015;1(3):22-26
12. Esther Liyanage et al,Efficacy of Isometric Neck exercises and stretching with ergonomics over ergonomics alone in Computer ProfessionalsInternational Journal of Scientific and Research Publications, Volume 4, Issue 9, September 2014
13. Chaitow L. Muscle energy techniques. 3rd ed. Edinburgh: Churchill Livingstone; 2008. p. 59, 125, 128, 176e80, 185e7
14. Apoorvaphadke, effect of muscle energy technique and static stretching on pain and functional disability in patients with mechanical neck pain : a randomized controlled trial.Hong kong Physiotherapy journal 2016 35,5-11.
15. Chandanikumari,efficacy of muscle energy technique as compared to proprioceptive neuromuscular facilitation technique in chronic mechanical neck pain: a randomized controlled trial. international journal of health science and research vol 6;issue: 11;November 2016.
16. Denise K, Burns M and Wells R. Gross range of motion in cervical spine. The effect of osteopathic muscle energy technique in asymptomatic subjects.journal of osteopathic medicine. 2006;106(3):137-142.
17. NoelleM.Selkow, Terry L. Grindstaffetal Short term effects of muscle energy technique on pain in individuals with non specific lumbopelvic pain: a pilot study. Journal of manual and manipulative therapy volume 17 2013.