ORIGINAL ARTICLE

Effects of Muscle Energy Technique with Sustained Natural Apophyseal Glides on Range of Motion in Subjects with mechanical Neck Pain

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ABSTRACT

Objective: To determine the effect of sustained natural apophyseal glides (SNAGs) along with muscle energy technique (MET) on pain and range of motion in subjects with mechanical neck pain.

Methods: This interventional study was carried out at physical therapy department of Kulsum International Hospital, Islamabad from January to May 2017, including 60 participants with mechanical neck pain who fulfilled inclusion criteria and gave written and verbal consent. Subjects were provided with MET and SNAGs thrice a week for 8 weeks. Numeric pain rating scale and inclinometer were used as outcome measures. Data was taken at baseline and after 8 weeks of intervention. Six subjects dropped out and 54 subjects were evaluated at the end of study. Data was analyzed by SPSS v21.

Results: There were 26 males and 28 females who participated in study. Pain improved from 7.20±0.91 to 2.75±0.90 with p value .009. Ranges improved as; flexion from 73.53±2.74 to 80.94±4.64 with significance .010, extension from 62.61±2.08 to 67.33±2.20 with significance <.001, right side banding from 32.64±3.36 to 37.88±3.14 with p value <.001, left side bending from 33.00±2.32 to 39.51±2.74 with p value .001, right side rotation from 79.72±2.70 to 86.03±3.27 with p value <.001 and left side bending from 80.05±2.47 to 85.90±3.69 with p value 0 .005.

Conclusion: SNAGs combined with MET improve range of motion and reduce pain in subjects with mechanical neck pain.

Key Words: Muscle energy technique, Sustained natural apophyseal glides, Mechanical neck pain, Cervical range of motion.

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INTRODUCTION:

Mechanical neck pain also known as non-specific neck pain is diagnosed on the basis of symptoms that are not caused by any serious cervical spine pathology i.e. malignancy, trauma or radiculo-pathy etc. There are very least chances of tissue injuries associated with mechanical neck pain. Common causes of mechanical neck pain are facet joint irritation or dysfunction[1].

Majority of population worldwide has to suffer disability throughout their lives because of neck and back pain. Neck pain is considered to be fourth leading cause of disability and has the prevalence of 30%. It comes in episodes that resolve without any intervention, but in about 50% of population pain remains the same and causes limitations in their participation[2]. Two third of the adult population experience neck pain at some point of their lives that causes high socioeconomic impacts[3].

General physician usually take no serious action regarding mechanical neck pain and symptomatic treatment is prescribed to patient[4]. The cases referred to physiotherapy are also less that ultimately leads to more disability in patients with neck pain. The common interventions used in physiotherapy to alleviate neck pain and improve range of motion are manual therapy techniques, exercises and modalities. Manual therapy is been observed to improve pain and range in subjects

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with neck pain[5]. Manual therapy techniques focus on joint function, stability and range of motion as well as symptom severity[6]. Evidences have shown effectiveness of manual therapy alone and in combination with other exercises and modalities as well[3]. Transcutaneous electrical nerve stimulation, ultrasound and active exercise are considered to be best for combination with manual therapy for treatment of neck pain and improvement in range of motion. There are also evidences of strengthening exercises in mechanical neck pain[7].

One of the major manual therapy techniques is Mulligan's sustained natural apophyseal glides (SNAGs) used to manage various spine dysfunctions[8]. SNAGs are observed to alleviate symptoms associated with cervical spine disorders for i.e. neck pain, headache and range restriction[9]. Other technique that has been observed to show positive effects on restricted range and improvement in somatic function is Muscle energy technique (MET)[10]. As both techniques have shown effects in improving restrictions and symptoms associated with cervical pain, it would have more benefit for the patient to have combination treatment comprising of SNAGs and MET. It may cause early relief and hence reduce costs of extended physiotherapy sessions for management of neck pain.

METHODS:

This is an interventional study where 54 subjects with mechanical neck pain aged 20 to 45 years were assessed during January to May 2017. Subjects with any history of trauma, surgery or systemic pathology were excluded. Sixty participants fulfilled inclusion criteria and were enrolled after taking written and verbal informed consent. Approval of the study was taken from Kulsum International Hospital, Islamabad. Baseline assessment was done prior to initiation of treatment plan. Numeric pain rating scale (NPRS) and inclinometer for range of motion were used as outcome measures.

Subjects were provided with sustained natural apophyseal glide (SNAGs) along with muscle energy technique. Subject was as laying in supine position, the subject's head was moved to comfortable barrier point of limitation and he/she was asked to push his/her head against therapist hand with a force of approximately 20% of his/her strength, meanwhile the therapist resist his/her movement. This position is sustained for 810 seconds, while maintaining that position as the subject to inhale a breath deeply and when subject exhaled his breath, therapist moved to next barrier after sustaining 8 to 10 seconds then took 2 to 3 seconds of relaxation, then repeated the same regime for 3 to 7 times. After this SNAGs were applied for 7 to 10 times. Sessions were repeated 3 times a week for 8 weeks. 6 subjects were dropped out of the study. Reassessment of 54 participants was done after 8 weeks and data was evaluated by SPSS 21.0.

RESULTS:

The study population comprising of 54 subjects suffering from mechanical neck pain, including 26 males and 28 females who complete all the intervention sessions upto 8 weeks. The various demographic variables are mentioned in table I.

Table I: Demographic Statistics of Participants

Variable		Total (n=54)
Gender	Male	26
	Female	28
Congenital Conditions		0
Medical Conditions	Hypertension	17
	GIT	2
	Renal	1
	Cardiac	0
Past Surgeries	Orthopedic	2
	GIT	4
	Others	0
Addictions	Smoking	9
	Alcohol	0
Allergies	Pollen	4
	Chemical	2

Pain and cervical range of motions were observed before and after intervention in term of flexion, extension, right sided bending, left sided bending, right sided rotation and left sided rotation. The patients experienced a gross improvement in their pain and various movements. The paired sample t-test was used to compare outcome measure values before and after provision of treatment (Table II).

Table II: Pain and Cervical range of motion in study participants

Parameter	Pre-Intervention (Mean SD)	Post-Intervention (Mean SD)	P value
Pain	7.20 0.91	2.75 0.90	.009
Flexion	73.53 2.74	80.94 4.64	.010
Extension	62.61 2.08	67.33 2.20	<0.001
Right side bending	32.64 3.36	37.88 3.14	<0.001
Left side bending	33.00 2.32	39.51 2.74	0.001
Right side rotation	79.72 2.70	86.03 3.27	<0.00
Left side rotation	80.05 2.47	85.90 3.69	0.005

DISCUSSION:

The study focused on two major symptoms of mechanical neck pain; pain and restricted range of motion and effect of SNAGs with MET on these symptoms. Many studies have been conducted before to assess the effectiveness of both SNAGs and MET. A randomized control trial conducted by Apoorva Phadke et al. in 2016 in which they assessed the effect of muscle energy technique and static stretching on pain and functional disability in subjects with mechanical neck pain. The research showed that muscle energy technique is more effective for mechanical neck pain as compared to static stretching and conventional treatment techniques. Muscle Energy Technique has gross effects in subjects of mechanical neck pain. Current study has shown that MET with SNAGs improve range of motion and reduce pain[11].

A case report by Sudarshan Anandkumar to check the effect of sustained natural apophyseal glide combined with neurodynamics in the subject of cervical pain and radiculopathy. This case report has shown that SNAGs with neurodynamics can reduce symptoms of neck pain and radiculopathy, and can improve cervical range of motion and functional abilities.[12] Present study has also shown reduction in symptoms in cervical pain.

Burns et al conducted a randomized control trial and studied effects of muscle energy technique on cervical spine, and concluded that MET is responsible for improving cervical range of motion[13]. Current study has also shown that MET can improve cervical range of motion, augmented with SNAGs can amplify the effects of MET.

Another trial conducted by Kanlayana-photporn et al in 2008 studied effects of mobilization for relief of pain and improvement in range of motion in patients with mechanical neck pain and found that mobilization improved range and reduced pain in subjects on immediate basis[14]. Present study also signifies that SNAGs can reduce pain and improve range in mechanical neck pain; the difference was addition of MET along with SNAGs.

CONCLUSION:

Sustained natural apophyseal glides (SNAGs) combined with muscle energy technique (MET) improve range of motion and reduce pain in subjects with mechanical neck pain.

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