ORIGINAL ARTICLE

Comparison of Stretching Alone Versus Combination of Muscle Energy Technique and Stretching on Pain and Disability among Patients with Trigger Points in Cervical Region

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ABSTRACT

Objective: To compare effect of stretching combined with muscle energy technique on disability and pain in patients with trigger points in cervical region.

Study Design: Comparative clinical trial.

Place and Duration of Study: Intervention and assessment was done in Physical Therapy department of Shalamar Hospital, Lahore, Pakistan from 13 September 2018 to 29 March 2019.

Materials and Methods: It was a single blinded parallel arm study. Seventy-two patients recruited in the study by using probability simple random sampling. Patients with non-specific neck pain, trigger points in trapezius muscle, aged between 18 to 45 years were included in the study. Patients with history of road traffic accident, torticollis or complaint of spinal cord compression were excluded. Patients were divided in two equal groups by random number table. Group A received combination of stretching and muscle energy technique while group B received only stretching. Intervention repeated for 3 to 5 days, number of sessions was 3 days a week for 4 weeks. Assessment was taken baseline and after 4 weeks of intervention. Data was entered and analysed through SPSS version 21.

Results: The demographics of result showed that 54.2% male and 45.8% female participated in the study with 52.8% sedentary and 47.2% were active subjects. The results of the study showed statistically significant improvement on neck disability and pain (P value<0.05).

Conclusion: It is concluded that muscle energy technique with stretching is more effective for patients with trigger points in cervical region.

Key Words: *Muscle Energy Technique,Neck Disability Index, Stretching, Trigger point.*

Introduction

From last decade, neck pain is the fourth leading cause of disability according to the global burden of disease.[1]Neck pain is considered second most common cause of pain.[2]Almost half of the population suffers from neck painat least once in a life.[3]As per evidence, the prevalence of neck pain varies from 15 to 50% annually.[3-4] Neck pain is more common in females as compared to males and middle-aged population is commonly effected. [5-6]More often, it is idiopathic, and nature of pain is non-specific. [7]. Most of the neck pain is also linked with the different complications such as headache, back pain, arthralgia, and depression.[6] In regard to direct or indirect costs, neck pain is usually considered insensitive to different interventions and costly.[8]Chronic neck pain also causes usual absentees of office worker due to severity of pain.[9]

Myofascial Pain Syndrome is non-articular, nonspecific musculoskeletal pain, associated with regional pain and muscle tenderness characterized by trigger points, also known as trigger. Trigger points are associated with sensory, motor, and autonomic findings.[10]Trigger points are assessed on physical examination and by two palpation methods one is pincer grip method other is flat palpation method.[11]Most common clinical sign and symptoms of MPS having trigger points are aches and pain, muscle tightness or spasm, restricted ROM, and generalized muscle fatigue. Patients show local

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twitch response and positive jump sign. There exist wide variety in pain perception and intensity of pain ranges from mild ache to an excruciating burning pain, or both.[12] Patients also show sensory, motor, and autonomic symptoms.[13]

Patient education is very important component in treatment of myofascial pain syndrome. Patient is instructed about the home exercise program about the stretching strengthening and relaxation exercise, and postural awareness is also improved.[14]By improving diet and minimizing the modifiable risk factors can reduces the chances of trigger point development and can assist in synchronize the effect of treatment.[15].In cervical radiculopathy, for treating the pain and inflammation the first line of medication usually used are non-steroidal anti-inflammatory drugs (NSAIDs).[16]

In the non-surgical intervention of cervical radiculopathy electrotherapy may be used as an associated treatment, with numerous advantages.[17]About cervical radiculopathy treatment with massage, it is shown that very less information is found in exhaustive literature search specifically.[18]Muscle energy technique is new form of manipulative diagnosis and intervention in which activation of muscle done through command in specific direction and against resistance.[19]

As per evidence, neck pain leads to different pathologies and stretching helps in the management of neck pain. There is very little evidence that compare two interventions on trigger points release and adjustment of pain. The purpose of this study was to compare effect of stretching combined with muscle energy technique on disability and pain in patients with trigger points in cervical region.

Materials and Methods

The comparative clinical trial conducted by using single blinded. A sample of 72 patients recruited in the study that is calculated by using Open Epi online calculator with 95% confidence interval and 5% margin of error. The data was collected at Shalamar Hospital, Lahore, Pakistan from 13 September 2018 to 29 March 2019.Probability simple random sampling technique was used to recruit participants in the study. Study was completed in six months after the approval of synopsis from the Institutional Review Board of Lahore Medical and Dental College, Lahore. (LMDC/LCPT/ERB/PGS/0891) Diagnosed patients with trigger points on cervical region were included in the study. The diagnostic criteria for the trigger points were physical examination and positive Jump sign. Patients had trigger points in trapezius muscles with complaint of non-specific neck pain, both gender with age 18 to 45 years were included in the study. Patients with history of road traffic accident, complaint of torticollis, spinal cord compression, articular or any systematic disorder were excluded from the study. The recruited patients (n=72) were divided equally in to two groups by using simple random number table.

Group A patients received Stretching alone that comprised of 5 repetitions. The duration of single bout of stretch was 30 seconds. Group B received Muscle Energy Technique using post isometric relaxation, followed by passive stretching. Duration of stretching was 30 seconds while each maneuver homogenously repeated 5 times per treatment for 3 days in a week up to 4 weeks. Permission was sought from the institute and consent was taken from patient in English/Urdu according to understanding of patients. Patient's interaction with each other avoided so that they do not know the intervention of other group. Numeric Pain Rating Scale (NPRS) was used to check the pain intensity and Neck Disability Index (NDI) was used to check functional ability.

Patient's assessment was done on baseline and after fourth week of intervention. Both groups received conventional treatments as well that includes Ultrasound therapy (ITO US-100) for seven minutes in continuous mode, stretching and isometrics. All demographic information and outcome tool data were entered by SPSS version 21.

The demographic information was presented in the form of frequencies and percentages. Test of normality applied to check normal distribution of data and Independent T-test was used to determine the difference between the groups and quantitative data was presented by Mean and Standard Deviation

Results

The results of the study showed mean age and standard deviation was 36.32±1.46 and 54.2% male and 45.8% female participated in the study. The mean and standard deviation of Numeric Pain Rating Scale (NPRS) was 6.36±2.344 and 6.28±2.187 in group A and B respectively and 1.53±2.223 and 2.78±2.94 after 4 week of intervention that showed

significant difference between groups (P-value=0.012). The mean and standard deviation of NDI was 18.92±9.915 and 19.86±10.137 in group A and group B at baseline, 3.53±6.036 and 7.56±10.252 after 4 week of intervention that showed significant difference. (P-value=0.001)

Table I : Shows Demographics Information of the Participants (n=72)

Variables	Frequency	Percentage
Gender		
• Male	39	54.2%
• Female	33	45.8%
Life-style		
• Active	34	47.2%
• Sedentary	38	52.8%
Hypertension		
• Yes	24	33.3%
• No	48	66.7%
Headache		
• Yes	17	23.6%
• No	55	76.4%
Computer Usage		
• Yes	28	38.9%
• No	44	61.1%
Tension		
• Yes	47	65.3%
• No	25	34.7%
History of Trauma		
• Yes	22	30.6%
• No	50	69.4%

Table II : Shows Mean± Standard Deviation of Numeric Pain Rating Scale and Neck Disability Index in both groups. (n=72)

Variables		Group	Mean value	SD	P value
NPRS	**PRE**	**Group A**	6.36	2.344	0.660
		Group B	6.28	2.187	
	POST	**Group A**	1.53	2.223	0.012
		Group B	2.78	2.948	
NDI	**PRE**	**Group A**	18.92	9.915	0.856
		Group B	19.86	10.137	
	POST	**Group A**	3.53	6.036	0.001
		Group B	7.56	10.252	

Discussion

In this study, pain occurrence due to trigger points was assessed through Numeric Pain Rating Scale. In initial assessment, mean and standard deviation of pain was 6.36±2.344 and 6.28±2.187in group A and B respectively. Mean and standard deviation of group A was 1.53±2.223 and 2.78±2.948 in group B after 4 week of intervention that showed statistically significant P value=0.012. A study conducted in 2010 by Athanasios Trampas that showed significant effect of stretching on trigger points.[20]. Another study conducted by Kostopoulos that also compare the effects of passive stretching alone with passive stretching and intermittent compression and concluded that there is significant effect occur in both groups.[21]. A study conducted in India by the Chitra Kataria in 2012 that compare the effects of muscle energy technique with stretching along with conventional treatment and concluded that both groups showed statistically significant in reduction of pain with mechanical neck pain.[22].A study conducted by Gulnazsadria to compare the effect of muscle energy technique with the active release technique and concluded that both the groups show significant improvement in range of motion of neck.[23] A clinical trial conducted on patients to see the effects of muscle energy technique alone and in combination with the stretching technique in reducing the symptoms occur due to trigger points. The results of the study showed that combination of muscle energy technique and stretching is considered effective in reduction of pain.[24]

The result of study showed significant difference in disability of neck in group comparison while previous study also showed statistically significant improvement in neck disability index in patients with non-specific neck pain.[24] Another study showed conducted by Phadke A et al that concluded that muscle energy technique is more effective than stretching on functional disability in patients suffering from neck pain.[25] A systematic review recently published that also support that muscle energy technique play more effective role with conventional physical therapy treatment in patients with neck pain.[26]

Current study also reveals some other factors related to trigger point.30-40 year's age group was most effected by trigger points. One important factor was

that 38.9% patient had computer usage history. The benefit of the combined approach over stretching may be due to Muscle Energy Technique in combination facilitating causes reduction of tone in the involved tissues. The reduction in involved tissue tone results in change of neural command and increase circulation of the involved tissue. The change in the local environment of tissue leads to reboot neural command and results in reversing normal length, increased circulation, reduction in pain and improved neck mobility and functioning.[25]

Conclusion

In patients with trigger point neck pain, combined approach using both Muscle Energy Technique and stretching for the treatment of Trigger point release is effective in relieving pain and improving neck disability index as compared to stretching in isolation.

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CONFLICT OF INTEREST

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DATA SHARING STATMENT

The data that support the findings of this study are available from the corresponding author upon request.

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