Universe International Journal of Interdisciplinary Research
(International Peer Reviewed Refereed Journal)
DOI No. – 05.2023-76634813

© UIJIR | ISSN (O) – 2582-6417
MAY 2023 | Vol. 3 Issue 12
www.uijir.com

EFFECT OF POSITIONAL RELEASE TECHNIQUE ON UPPER TRAPEZIUS MYOFICIAL TRIGGER POINTS

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INTRODUCTION

Myofascial release (MFR, self myoficial release) is an alternative medicine therapy claimed to be useful for treating skeletal muscle immobility and pain by relaxing contracted muscles, improving blood and lymphatic circulation and stimulating the stretch reflex in muscles.

Myoficial release therapy is a hands-on technique used to manage myofascial pain. "Myo" means muscle. "Fascial" refers to the connective tissue that covers and supports the muscles throughout your entire body. During myofascial release therapy, your therapist doesn't focus specifically on your muscles. They focus on releasing tension in your fascial tissues. fascia is flexible and stretchy. But it's strong. It provides structural support to your body and protects your muscles. Fascia is usually able to move without any restrictions. When your body experiences any kind of trauma, your fascia loses its flexibility. It becomes tightened and more rigid. The tightness can lead to pain and loss of motion, which can affect your quality of life.

Fascia is a thin, tough, elastic type of connective tissue that wraps most structures within the human body, including muscle. Fascia supports and protects these structures. Osteopathic practice holds that this soft tissue can become restricted due to psychogenic disease, overuse, trauma, infectious agents, or inactivity, often resulting in pain, muscle tension and corresponding diminished blood flow .(1)

Myofascial pain syndrome, a relevant musculoskeletal disorder, is most commonly known to occur due to repetitive tasks with long hours of static load, and is currently reported to affect nearly 85% of the population at some point in life [1, 2] . It is characterized by the presence ofTrigger Points (TrPs) which are small, hyperalgesic spots within the connective tissue that refer pain to distant sites [3] TrPs can be active or latent. Latent TrPs cause no pain until irritated by intense heat or cold. On the other hand, active TrPs can produce constant pain, decreased muscle tone, strength and range of motion (ROM), thus leading to disability [4].

TrPs can occur in any muscle, but it is usually seen to occur in muscles that help maintain posture [5].Trester et al. reported the most commonly involved muscle is the upper trapezius, and can be a potential contributing factor in conditions like non-specific neck pain and tension headaches where it is difficult to identify the pathoanatomical source of an individual's pain [6, 7, 8] The exact mechanism of formation of a TrP is unknown. According to Harden et al., TrPs that are associated with an end-plate disorder and increased release of acetylcholine, results in local ischemia and sensitization of nociceptors [9]. An increased release of inflammatory chemical substances including prostaglandins, histamine, serotonin and bradykinin is observed at the TrP site affecting the membrane of polymodal nociceptive receptors. This in turn causes peripheral sensitization, causing central sensitization and chronic pain [9, 10] Saavedra et al. showed that the EMG signal of the muscle with TrPs generates a greater change in the electrical signal in the resting position when compared to a normal muscle [11)

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Various therapeutic approaches are available for the treatment of TrPs, among which manual therapy is considered highly effective[12). It is known as a non-invasive treatment which can be used in conjunction with several electrical modalities [3]PRT relies on precise positioning of dysfunctional tissues in ways thatallow a spontaneous response reducing excessive tension or spasm [13]. Several studies have reported a reduction in TrP symptoms after its management by different procedures, especially muscle energy techniques and myofascial release therapy, but the effectiveness of PRT in remains unclear [14, 15].

Materials and Methods

Participants

unilateral upper trapezius MTrPs In this case series, a total of 20 patients visiting a Kailash hospital in greater noida Utter Pradesh with a present condition of were recruited. An informed consent was obtained from all participants once they had been screened for suitability and any relevant questions were answered on the procedure and data collection process.

Screening process protocol and rationale

At their first visit, all participants were screened for inclusion/exclusion criteria. Inclusion criteria- patients between ages 18 to 30 years irrespective of gender with active upper trapezius MTrPs or non-specific neck pain without any specific systematic disease being detected as the underlying cause of the complaints and less than 2 months duration. Patients responding with a cry, grimace or wince to palpation of the upper trapezius muscle called the 'jump sign'. Exclusion criteria- neck symptoms related to a motor vehicle collision or significant trauma, signs of serious pathology (e.g. malignancy, infection, inflammation, or fracture), signs of cervical spinal cord compromise (e.g. diffuse sensory abnormality, diffuse weakness, hyperreflexia, or the presence of clonus), one or more signs of nerve root involvement (e.g. dermatomal sensation changes, myotomal weakness, or diminished/absent tendon jerk reflexes), history of neck surgery in the past 12 months, history of cervical degenerative joint diseases, endocrine disorders, and autoimmune conditions (e.g. rheumatoid arthritis, fibromyalgia, etc.) or received trigger point injections in the upper trapezius muscle within the past 4 months.

Baseline assessment and key outcome measures

Subjective measures (verbal Numerical Pain Rating Scale (NPRS) and Neck Disability Index (NDI)) and objective outcome measure (active cervical contralateral flexion (ACLF)) were recorded for each participant at the first baseline assessment and thereafter at intervals of 2 weeks and 4 weeks. There is evidence to support the construct validity of the verbal NPRS [16]. For this, participants indicated the intensity of pain by reporting a number that best represented it, between 0 (no pain) and 10 (maximum pain) [17]. The NDI is a 10-item questionnaire which has shown to be a valid and reliable measure of disability in individuals with neck pain (ICC 50.70–0.89) [18]. It is scored from 0–50 points (0–100%) in which higher scores correspond to greater levels of disability [18]. ACLF was assessed using a universal goniometer which has demonstrated good to excellent interrater reliability [19]. The shoulder was stabilized to arrest elevation. Subjects were asked to sit upright and laterally flex their head towards the opposite side of involvement and the motion was stopped once the available ROM was completed. Each subject performed three test trials and the average was used for analysis.

Positional release technique protocol:

With the subject in seated position, the therapist stood posterior to the subject's shoulder [20]. The therapist the palpated for the tender point using a pincer grasp that produced a jump sign. The subject's arm was taken for flexion, abduction and external rotation with the head flexed to the treated side. This position of ease was maintained for about 90 seconds [20]. The technique was repeated thrice and the subject was slowly passively placed in neutral position of the cervical

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spine in between each trial. All participants were treated three times per week for 3 consecutive weeks and were instructed to maintain their normal activities while avoiding any undue stress to the neck.

Data analysis

Statistical package SPSS (IBM SPSS Statistics for Windows, ver. 21.0. Armonk, NY: IBM Corp.) was used to analyze the data. Descriptive statistics were used to explore the data and included the mean and Standard Deviation (SD) at baseline, 2 weeks and 4 weeks.

Results and Discussion

Twenty participants with active upper trapezius MTrPs or non-specific neck pain were recruited (12 females and 8 males); mean±SD age and BMI 29±12.48 years and 24.96±7.32 kg/m2 respectively. At baseline there were a total of 28 active MTrPs between 20 participants, on discharge no active MTrPs were found in the upper trapezius. There was a significant improvement in the outcome measures from baseline to 2 and 3 weeks (Table 1 and 2). A mean difference of approximately 5 points in verbal NPRS between baseline assessment and on discharge was found. On discharge the difference in ACLF indicated a mean increase of about 14o. Similarly, all participants reported an overall increase in NDI scores. The mean change in NDI at 3 weeks post discharge was around 35% (Table 2). These results suggest that application of PRT can improve outcomes of pain, ROM and disability. These findings are consistent with the results of Shawabka et al. who demonstrated that trigger point sensitivity reduces in response to a single application of PRT [21]. Saavedra et al. also found the PRT to be an effective alternative for relieving pain and reducing baseline EMG signals in the upper trapezius muscle with a TrP [11]. Our findings also came in agreement with Maseguer et al. who found that the PRT was beneficial in reducing tenderness represented by an increase in pressure pain thresholds of trigger points in the upper trapezius muscle of subjects with mechanical neck pain [22]. The PRT has also proved to be effective in individuals with tender points of low back pain, sports injuries of the upper extremity and tension headaches [23-25]. The application of PRT is claimed to reduce unusual firing from the site of muscular irritation.[20] PRT theoretically corrects neuromuscular hyperirritability and muscular hyper tonicity and reduces tissue tension allowing for the resolution of the inflammatory response and the release of the fascial restriction [26]. Based on previous literature, it appears that PRT techniques have the capacity to provide immediate relief of tenderness and local pain provoked by TrPs [21, 27]. The limitations of this study include a lack of comparison group. Reliability issues on physical examination and manual palpation of TrP diagnosis are reported by systematic reviews thus, creating a need for high TrP palpation/diagnostic studies. All data collection and interventions were performed by the same individual, posing a risk for researcher bias.

Table 1: Mean scores and SD of outcome measures

outcome Measure	Baseline	2 weeks	3 weeks
NPRS	6.30 ± 0.42	5.60 ± 0.74	1.50 ± 2.02
ACLF (Degree)	32.50 ± 3.10	52.90 ± 4.13	49.20 ± 22.43
NDI (Percentage)	26.20 ± 17.42	35.80 ± 7.28	13.30 ± 13.25

SD: Standard Deviation; NPRS: Numerical Pain Rating Scale; ACLF: Active Cervical Contralateral Flexion; NDI: Neck Disability Index.

Table 2: Change scores from baseline to 2 and 3 weeks.

Outcome measure	Difference from baseline assessment to 2 weeks	Difference from baseline assessment 3 weeks
NPRS	2.80 ± 1.25	5.50 ± 1.06
ACLF (degree)	8.20 ± 2.86	18.30 ± 1.52
NDI (Percentage)	24.84 ± 6.32	24.30 ± 6.46

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SD : Standard Deviation; NPRS: Numerical Pain Rating Scale; ACLF: Active Cervical Contralateral Flexion; NDI: Neck Disability Index.

Conclusion

Manual interventions such as the PRT can be useful to alleviating pain, improving range of motion and functional ability in patients with TrPs in the upper trapezius muscle. These findings contribute to the growing evidence and use of manual therapy in musculoskeletal pain syndromes. Results of this study should be accepted by caution given the reliability issues in physical examination and diagnosis of TrPs. Apart from the identified limitations, this case series will inform more rigorous investigations in this area of research.

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