

Effect of Myofascial Release and Deep Transverse Friction Massage as an Adjunct to Conventional Physiotherapy in Case Unilateral Upper Trapezitis - Comparative Study

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Abstract: ***Background:** Trapezitis is defined as an 'inflammation of trapezius muscle'. The upper trapezius muscle designed as postural muscle and its highly susceptible to overuse. The pain is present during rest and aggravated during activity; it may be referred to other areas from the site of primary inflammation. Passive range of motion may be painful & restricted due to pain and protective spasm in antagonist muscle group. The present study was conducted to find out effect Myofascial release and deep transverse friction massage in Trapezitis subjects. Method: An Experimental study was conducted at Krishna College of Physiotherapy, Karad. 30 subjects with age group between 20-40 years were taken. A total of 30 subjects were selected and were equally divided in to two groups. Both the Groups received hot moist pack while Group A received Myofascial release technique, and Group B received deep transverse friction massage Results: Analysis using pairs 't' test and wilcoxon matched pairs test found statistically significant improvement (p=0.0001) in pain and functional disability within the groups. Comparative Analysis using Unpaired 'T' test found statistically significant difference in ROM both the techniques. Conclusion: Present study concluded that both the techniques shown to have equal effect on improving pain and range of motion. In addition results supported that Myofascial release therapy with conventional therapy was more effective in improving pain, ROM in unilateral upper Trapezitis subjects. Thus, the alternative hypothesis is proved.*

Keywords: Myofascial release technique, deep transverse friction massage, HMP (hot moist pack) Trapezitis

1. Introduction

The trapezius muscle is one of two large superficial muscle that extended longitudinally from the occipital bone to the lower thoracic vertebrae and laterally to the spine of scapula (shoulder blade) its function are to move the scapulae and support the arm.^[1]

Trapezitis is defined as an 'inflammation of trapezius muscle'. The upper trapezius muscle designed as postural muscle and its highly susceptible to overuse.^[2] The pain is present during rest and aggravated during activity; it may be referred to other areas from the site of primary inflammation. Passive range of motion may be painful & restricted due to pain and protective spasm in antagonist muscle group.^[3]

Trapezitis is mainly caused due to stress and tension, repetitive movements, head forward posture, sitting without back support, working with the no arm support, prolong head bending activity, using thick pillow, tight pectoral major muscle, severe neck spasm.^[4]

Hot moist pack (HMP) (Silica gel pack) causes greatest temperature elevation in skin and subcutaneous tissue. Heating the tissue can causes rise in temperature which results in increased metabolic activity, increased blood flow, stimulation of neural receptors in skin or tissues.

These changes in the tissue may be produced by local, general or remote effects. It has been found to be helpful in diminishing pain and decrease local spasm. Main use of hot moist pack are decrease pain, muscle relaxation.^[5]

Myofascial release technique is a soft tissue mobilization technique, define as the facilitation of mechanical neural and psychophysiological adaptive potential as interface via the Myofascial system by MFR there is change a in the viscosity of the ground substance to a more fluid state which element the fascia's excessive pressure on the pain sensitive structure and resorts proper alignment. This technique acts as a catalyst in the reduction of trapezius spasm.^[6]

Deep friction massage is a specific connective tissue massage that was developed by James Cyriax.^[7] The purpose of deep friction massage is to maintain the mobility within the soft tissue structures of ligament, tendon, and muscle and prevent adherent scars from forming. The massage is deep and must be applied transversely to the specific tissue involved unlike the superficial massage given in the longitudinal direction parallel to the vessels which enhances circulation and return of fluids.

2. Review of Literature

- Jay kain, PT, PhD, atc, IMTC, Laura Martorella, PT, DPE, *Edward swanson, PT, MBA, MEd, Sandra, sego, Phd have proposed in their comparative study of an indirect tri planer myofascial release technique and hot

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pack that MFR was shown to be as effective as hot pack in increasing range of motion. Author had taken randomly two groups. Group A received the indirect tri-planer MFR technique once for 3 min. Group B received hot pack application for 20 min.

- **Ravnish v, N1, shridhar2, sneha helen3²⁰** Proposed that effectiveness of Myofascial release technique versus positional release technique with LASER in patients of unilateral upper Trapezitis. Author concluded that both group had shows significant improvement in reduction of pain, functional limitation and improved range of motion.
- **Ekta s.chaudhary *1@, nehal shah, neeta vyas2** , Ratan khuman1# Dhara chavda , Gopal Nambhi**sr.** lecturer ** principal**lecturer musculoskeletal & sports physiotherapy , C . U shah physiotherapy college surendranagar , Gujarat India ²⁸proposed that comparative study of myofascial release technique and cold pack in upper Trapezitis . Author concluded that the MFR shows greater effectiveness as compared with cold pack and exercises in treatment in upper Trapezitis spasm.
- **Cesar Fernandez-de las-penas, PT*, cristina alonoso-Blanco, PT, josus Fernandez-carnero, PT, juan carlos miangolarra , MD, PhD** Proposed that the immediate effect of ischemic compression technique and transverse friction massage on tenderness of active and latent Myofascial trigger points : pilot study Author concluded that both techniques are more effective in reducing tenderness in MTrPs
- **Melvin F. Baron , pharma D, MPA; Associate professor university of southern California school of pharmacy sandrs k. jean, MS; medical writer university of southern California school of pharmacy**proposed that moist heat therapy for natural pain relief
- **Seung-je SHIN, duk-byun AN, jae-seop OH and Won-gyu YOO** proposed that changes in pressure pain in upper trapezitis muscle cervical range of motion and cervical flexion relaxation after overhead worker
- **Jermamy Reynolds . D. Marsh . Heilo loller. julian zener . G. banister** proposed that cervical range of motion foe neck dimensions
- **Muhammad nazim farooq , nihammad A. Mohensi Bandpl mudassar Ali Ghazanfar Ali khan²⁵** proposed that reliability of universal goniometry for assessing active cervical range of motion in asymptomatic healthy person
- **Anne M . Boostra , Henrica R. schiphorst preuer , Michel F. Reneman jitze B posthnumus and Royn E. stewart**proposed that reliability validity of the visual analogous scale for disability in patients in musculoskeletal pain.

3. Material and Methods:

Subjects who were referred to physiotherapy department diagnosed by orthopedician or Physiotherapist, as unilateral upper Trapezitis were selected. Further they were screened clinically and diagnosis was confirmed. Considering inclusion and exclusion criteria they were requested to participate in the study. The nature of study and intervention were explained to the subjects and those willing to participate were included. Before proceeding to intervention

a written consent was taken from subject. A brief demographic data including name, age, gender, side affected as per data collection sheet were recorded. By using random sampling method the participants were divided into two groups by chit method; Group A and group B, both groups received a baseline treatment (Hot Moist Pack for 10 days).

Subjects with unilateral upper Trapezitis were assessed by Visual Analogue Scale (VAS), Range Of motion for Lateral flexion of neck.. Measurement of VAS, ROM on all subjects on the first day before intervention and after 10 days of interventions.

4. Statistical Analysis

Procedure

Both the groups received hot moist pack for 20 min at affected area .was given in common as a part of the conventional treatment.

Group A

In this group subjects were given(MFR) Myofascial Release Technique and HMP. Before the application of MFR technique subjects were to ask to expose the affected part, removed synthetic material and ornaments .Subject was in supine lying. aqua sonic gel was applied over affected area. Therapist was standing behind the subject in walk standing position. Therapist placed left hand under subject's neck to stabilized proximal fibers of upper trapezius and maintain the subject's head in midline. To begin the unilateral focused stretched of upper trapezius, placed the thumb of right hand on muscle fibers proximal to the cervical spine, stretched down and slightly out following curve of muscle fibers. Held 90 seconds for the release and stretched again until soft end feel is reached.

Group B

In this group subjects were given Deep Transverse Friction Massage(DTFM) and HM. Before the application of DTFM technique subject were ask to exposed the affected part, remove synthetic material and ornaments . Evaluated the proper location of tender point with palpation of specific tendon, ligament and muscle was done. Friction massage was given across in affected fibers . Subject was in prone lying position. Transverse friction massage was given with the forefinger and reinforced with the middle finger. This technique was executed with the muscle in relaxed position, as recommended by James Cyrix (1992. and was applied for 3 minutes. Friction were applied slowly with the pressure slightly painful. This intervention was given for 10 sessions in 2 weeks for both groups .After 10 days the subjects assessed for outcome measure.

Findings

Statistical analysis was done manually as well as using the statistics software INSTAT so as to verify the result obtained. Various statistical measures such as mean, standard deviation, and paired and unpaired test of significance, Mann whitney test and Wilcoxon matched pairs test were utilized for this purpose. Probability values less than 0.005 were considered statistically significant and

probability values less than 0.001 were considered statistically extremely significant.

5. Result

Table 1: Comparison of values of visual analogue scale

Group	Pre- treatment		Post-treatment	
	Mean ± SD	Median	Mean ± SD	Median
A	6.167 ± 1.029	6.000	1.1 ± 1.258	1.000
B	7.1 ± 1.352	7.000	3.6 ± 1.556	3.500
'p'	0.0001		0.001	

The table also shows the comparison of mean and standard deviation of pre and post values of Group A and B. In the Group A, the mean VAS score on pre intervention was 6.166 ± 1.029 which was reduced to a mean of 1.1 ± 1.258 post sessions. The P value by Paired t test was found to be <0.0001 which is extremely significant. In Group B, the mean VAS score on pre intervention was 7.1 ± 1.352 which was reduced to a mean of 3.6 ± 1.556 post intervention. The P value by Paired t test found to be <0.0001 which is extremely significant

Table 2: Comparison of values of ROM score.

Group	Pre- treatment		Post-treatment	
	Mean ± SD	Median	Mean ± SD	Median
A	28.8 ± 4.507	30.007	36.933 ± 4.148	0.002
B	28.066 ± 3.973	30.000	34.8 ± 4.443	35.000
'p'	0.0002		0.0001	

The table also shows the comparison of mean and standard deviation of pre and post values of Group A and B. In the Group A, the mean ROM score on pre intervention was 28.8 ± 4.507 which was increased to a mean of 36.933 ± 4.148 post intervention. The P value by Pair t test was found to be < 0.0002 which is extremely significant. In Group B, the mean ROM score on pre intervention was 28.066 ± 3.973 which was increased to a mean of 34.8 ± 4.443 after treatment intervention. The P value by pair t test found to be 0.0001 which is extremely significant.

6. Discussion

Trapezius pain is the classic stress pain and it is most common musculoskeletal disorder. It is usually caused by placing too much stress and strain over the trapezius muscle. The upper trapezius muscle is designed as postural muscle and it is highly susceptible to overuse.⁸

The purpose of this study was to compare efficacy of combination of Myofascial release and conventional therapy with deep transverse friction massage and conventional therapy in unilateral upper Trapezitis.

Heat gives the sedative effect.⁹ present study also support that hot moist pack leads to relaxation of the trapezius muscle which in turn reduces pain and inflammation which improves neck range of motion

Myofascial release technique is a soft tissue mobilization technique⁶, MFR there is change in the viscosity of the ground substance to a more fluid state which element the

fascia's excessive pressure on the pain sensitive structure and resorts proper alignment .this technique acts as a catalyst in the reduction of trapezius spasm. Paired t test was used to analyze the effect of Myofascial release with conventional therapy which showed that there was significant improvement in pain ($t_{19}=13.636$, $p<0.0001$), ROM ($t_{19}=4.938$, $p0.0002$), post treatment.

The purpose of deep friction massage is to maintain the mobility within the soft tissue structures of ligament, tendon, and muscle and prevent adherent scars from forming. The massage is deep and must be applied transversely to the specific tissue involved unlike the superficial massage given in the longitudinal direction parallel to the vessels which enhances circulation and return of fluids.¹⁰ present study also supports that deep transverse friction helps in reducing pain and enhances muscle relaxation improving neck range of motion Paired t test was used to analyses the effect of deep transverse friction massage as an adjunct to conventional therapy (HMP) which showed that there was significant improvement in pain ($t_{19}=10.103$, $p<0.0001$), ROM ($t_{19}=10.715$, $p<0.0001$), post treatment

The result from the statistical analysis of present study supported alternative hypothesis which stated that there will be equal beneficial effect to the subjects treated with Myofascial release technique and deep transverse friction massage in clinically diagnosed upper Trapezitis subjects.

Hence above result showed that subjects treated with Myofascial release technique and deep transverse friction massage showed better pain relief on VAS and increase range of motion. Both the techniques are equally effective in improving range of motion and reducing pain

Thus it can be stated from above study that simple, safe, physical treatment procedures like Myofascial release technique and deep transverse friction massage as an adjunct to conventional therapy are of great value. This provides a low, easy means of treatment in subjects with unilateral upper Trapezitis.

7. Conclusion

In conclusion The present study provided evidence to support the use Myofascial release technique and deep transverse friction massage with conventional treatment in reducing pain, improving ROM(lateral flexion of neck) In addition results supported that Myofascial release therapy with conventional therapy was more effective in improving pain, ROM in unilateral upper Trapezitis subjects.

8. Further Scope

The Sample size used in this study was relatively small. This makes it difficult to extrapolate the results on general population. This study can be done on larger population.

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