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"TO KNOW EFFECTIVENESS OF MYOFASCIAL RELEASE TECHNIQUE (MFR) WITH ULTRASOUND IN CHRONIC TENNIS ELBOW CONDITION"

Physiotherapy

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ABSTRACT

At the lateral epicondyle of the humerus, there occurs a painful condition called lateral epicondylitis.Myofascial Release Technique (MFR) along with ultrasound was administered to the subjects. The post mean score of PRTEE questionnaire were compared for these treatment methods (Myofascial release technique and Ultrasound) of these independent subjects before and after the treatment.There is a significant difference noted in the pre and post treatment mean value as73.27 and 46.87 respectively. From the above data, the post treatment mean values are lower when compared to the pre treatment. The results show that MFR with ultrasound is aeffective pain reduction intervention in chronic tennis elbow condition.

KEYWORDS

Lateral Epicondylitis, Lateral Epicondialgia, Tennis elbow, PRTEE (Patient – rated tennis elbow evaluation) questionnaire.

INTRODUCTION

Lateral Epicondylitis is an overuse injury of the forearm and the wrist extensor muscle, which cause pain at the lateral elbow. Tennis elbow is hypothesised to be caused by repetitive microtrauma to the extensor carpi radialis brevis (ECRB) muscle, which leads to a primary tendinosis of the ECRB, with or without extensor digitorum communis (EDC) involvement. Both genders are affected equally[6].

The majority of times, there is no clear underlying aetiology for lateral epicondylitis. The wrist extensor and supinator muscles should not be overused, thus any action that does so may be harmful and the most frequently impacted.

Tennis players make up only about 5% of all suffers of Lateral Epicondylitis, so the term "tennis elbow" is deceiving. The incidence of tennis elbow, varies from about 1-3% in the general population to more than 50% among untrained tennis players.Equally prevalent in men and women, white people, and the dominant arm, lateral epicondylitis increases with age, peaking between the ages of 30 and 50, with a mean age of 42.

Classification of phases[9]:

Pathologic stages of Lateral Epicondylitis:
Stage Degenerative changes of tendinosis -

I. Peritendinous inflammation with no pathological alterations
II. Involving pathological alterations such as tendinosis or angiofibroblastic degeneration
III. Involving pathological changes and complete structural failure
IV. Involving fibrosis, soft matrix calcification, and hard osseous calcification, in addition to the features of stage II or III

The elbow and wrist-hand complexes have close anatomical and functional relationships because of the positioning of the hand and wrist muscles near the elbow and the fact that these muscles cross the elbow.

The pathophysiology of LE is still unclear and debatable. However, it is known that microscopic and macroscopic rips at the lateral epicondyle in the origins of the ECRB and other extensors are the earliest symptoms of LE. Granulation tissue and fibrosis follow this ripping. Angiofibroblastic hyperplasia, which is caused by avascular compromise and subsequent microtears in the origin of the ECRB[19], is cited by Nirschl as the main cause of the condition... According to a theory, tendinosis or tendinopathy is brought on by overusing a hypovascular zone, which then undergoes neovascularization. The disease hurts even if no inflammatory cells are present. Recent research revealed substance-P-containing sensory fibres and staining similar to CGRP (calcitonine gene-related peptide) in the genesis of the ECRB. The limited distribution of these neuropeptides in small capillaries suggests that neurogenic inflammation could be the source of pain perception[20].

LE causes pain near the distal lateral humerus, typically in the dominant arm. The pain is typically severe, sporadic, and extends all the way to the wrist on the forearm's extensor surface. Although acute discomfort might return after aggravating activities that require excessive forearm pronation with the elbow extended, its development is slow.

The wrist extensors' weakness can be found out by performing muscle strength tests. According to the "Mills' test," complete wrist and finger flexion along with full pronation prevents complete elbow extension or, at the absolute least, results in resistance at the elbow and pain at the epicondyle.When the forearm is pronated and the elbow is fully extended, "Maudsley's test"[22] induces discomfort at the lateral epicondyle.

The aim of the study is to know the effectiveness of myofascial release technique (mfr) with ultrasound in chronic tennis elbow condition

Study design: Prospective study design

Ethical clearance and informed consent:after obtaining ethical approval dated 29/08/2022, PMU/PMCH/IEC/237/2022. All participants completed the information and consent form at recruitment.

Source of the sample: Outpatient Department of Pacific College of Physiotherapy

Subjects: who had Chronic Tennis elbow .

Method of collection of data: Simple random method

Sample size: 30 subjects

Materials used: Informed consent, pen, paper, stop watch, assessment form, PRTEE questionnaire

Inclusion criteria:

Lateral Elbow pain for more than 2 months , Will consider adult age

group (> 40 years), both male and female patients , Will consider only chronic tennis elbow conditions ,Intent to take part in the study.

Exclusion criteria :
Subjects who has past history of elbow injuries (RTA, Radius and Ulna bone fractures) , Any open wounds on the Elbow joint , Malignancy, Recent surgery of the Elbow joint , Any deformity in elbow or upper limb , Dislocation of elbow joint.

Intervention
Myofascial release technique procedure:
With one hand on the patient, the procedure is started. Applying sufficient pressure will take up the skin's slack. The supporting surface should receive the pressure. The system becomes more fluid as a result of the therapist's touch, which raises body warmth and tissue energy levels.

The individuals were supine, with the affected side shoulder internally rotated, the elbow flexed to around 15 degrees, palm flat on table, and pronation. The therapist faces the ipsilateral hand while standing at the side of the table near the shoulder.

First step: On the humerus, close to the lateral epicondyle, the common extensor tendon (CET) and extensor retinaculum (ER) of the wrist were treated. periosteum with the fingertips, carrying this touch inferior to the common extensor tendon before descending to the extensor retinaculum of the wrist (5 minutes, 2 repetitions). During this technique, the patient slowly flexes and extends their elbow between 5° and 10°.

Treatment step two involves working over the ulna's periosteum with the hand's knuckles for five minutes, twice. The patients then alternated wrist deviations in the ulnar and radial directions.

Step 3: Spreading the radius from the ulna, contact the head of the ulna with the pads of one hand's finger and the dorsal tubercle of the radius with the pads of the other hand. The therapist applied a line of stress in a lateral and distal direction, engaging through to the periosteum. With a firm intention to spread the bones, it is carried for only a few centimetres (5 minutes, 2 repetitions).dosage of three 30-minute sessions every week for six weeks.

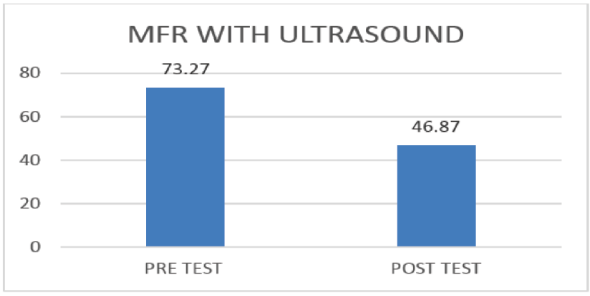
UltrasoundTreatment process:
Before the procedure began, the patient was informed of what to expect in terms of sensation. During the operation, the patient can feel a slight warmth. The foundation of the modality's treatment is the comfort of the patient. Patient position: The patient is seated in a chair with their forearms pronated and their elbows flexed. A pillow is on their lap. The position of the therapist is to sit in front of the patient. Technique: Time and intensity should be "0" (zero) before turning on the main power. All of the parameters were chosen, and the ultrasound machine was turned on.

The transducer head is then covered with the coupling medium, and the machine is turned on. The region to be treated is covered with a thin layer of a water-soluble gel, and the ultrasound transducer head is placed in contact with the gel. The common extensor origin of the forearm was the area where the transducer head was moved in a circular motion. Frequency: 1MHz; Intensity: 1 W/cm^2 Mode : Continuous; Treatment time : 5 minutes; Duration time: 6 weeks (3 times per week).

Statistical Analysis:
In this study, PAIRED T-TEST was used to analyse the improvements of the treatment within the groups. UNPAIRED T-TEST was used to compare both the groups.

Data Analysis
A sample of 30 Lateral Epicondylitis, subjects were selected and given MFR with ultrasound and the pre and post treatment values are caluclated.

RESULTS
30 individuals with lateral epicondylitis had participated in the study. The pre test and post test values are taken based on the pain rated tennis elbow evaluation scale. While the standard deviations are 4.480 and 3.441, respectively, there is a variable difference between the two. There is a significant difference noted in the mean value as 73.27 and 46.87 respectively before and after the treatment. From the above data, post treatment showed lower mean compared to pre treatment at the end of treatment phase.



DISCUSSION
The study was detailed and tailored to find whether the treatment of Myofascial release technique or stretching in combination with ultrasound has shown beneficial effects in the field of Rehabilitation.

MFR is the term for the administration a stretch with a modest load and a long duration to the myofascial complex with the goals of restoring ideal length, reducing pain, and enhancing function. Myofascial practitioners believe that by restoring the length and health of restricted connective tissue, pressure can be relieved on pain sensitive structures such as nerves and blood vessels. MFR generally used are either by direct technique MFR or indirect technique MFR. The rationale for these techniques can be traced to various studies that investigated plastic, viscoelastic, and piezoelectric properties of connective tissue. In this study direct technique MFR detailed by Stanborough was used through fingertips and knuckles in CLE subjects.

US stimulates mast cells, platelets, white blood cells with phagocytic functions, and macrophages during the inflammatory phase. For example, the application of ultrasound induces the degranulation of mast cells, causing the release of arachidonic acid which itself is a precursor for the synthesis of prostaglandins and leukotreine – which act as inflammatory mediators.

30 were received myofacial release with ultrasound. Subjects were re-assessed after 6 weeks of treatment protocol using Patient-Rated Tennis Elbow Evaluation as parameter. The pre and post experimental values were statistically analyzed using repeated measures of student's unpaired 't' test. In the present study, we found that there were significant differences between pre and post intervention measures. The results and mean values of the data were significant at p=0.00 which indicates that there is reduction of pain and difficulty in physical function. The results of this study indicate that Myofascial release technique with ultrasound is effective as a Rehabilitation tool(Therapeutic technique) in treating Tennis Elbow.

Limitations
The same study can be repeated in large number of samples. Treatment time in session may be increased for better functional outcomes. Carrying angle was not considered, decrease in carrying angle may produce undue strain on the tendinous junction that might have interfered the study

CONCLUSION:
From this experimental study it is concluded that Myofascial release technique (MFR) with ultrasound is effective in treating chronic Tennis Elbow condition.The measurement for pain was done by PRTEE (Patient – Rated Tennis Elbow Evaluation).

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