

Original Research Article

Efficacy of Scaphoid Mobilization on Pain, Physical Function and Kinesiophobia in Patients with Lateral Epicondylitis

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ABSTRACT

Background: Lateral epicondylitis is musculoskeletal condition involves the origin of extensor carpi radialis brevis, leading to pain on resisted wrist extension. The regional interdependence model focuses on impairments present in proximal or distal segments and hence effect of scaphoid mobilisation was studied in management of lateral epicondylitis. Aim And Objectives: To find out the effect of scaphoid mobilization in lateral epicondylitis on A) pain & physical function using patient rated tennis elbow evaluation questionnaire B) Kinesiophobia using Tampa scale.

Methodology: A pre-post experimental design with 30 subjects aged 18-35 years (24.4 ± 4.687), unilateral lateral epicondylitis were selected. PRTEE & Tampa scale was noted before intervention. Total 9 Treatment sessions were given in 3 weeks. Maitland mobilization Grade 1-2 for scaphoid was given. PRTEE and Tampa scale was noted after 3 weeks of intervention.

Results: Repeated measure ANOVA was done by comparing mean values of pre-pain (27.4 ± 3.874) with post-pain (23.2667 ± 4.185) on PRTEE scale is statistically significant (p value <0.0001). Comparing mean values of function pre (25.7666 ± 4.974) with post (22.5333 ± 5.257) on PRTEE scale is statistically significant (p value <0.0001). Comparing mean values of pre- total score ($53.1666 + 6.909$) with post-total score (45.4666 ± 8.191) on PRTEE scale is statistically significant (p value <0.0001). Comparison of mean values pre (39.4 ± 11.316) and post (39.4 ± 11.316) for Tampa Scale is considered extremely significant (p value <0.0001)

Conclusion: Scaphoid mobilisation is effective in improving pain and physical function in patients with lateral epicondylitis.

Keywords: Lateral Epicondylitis, Scaphoid Mobilization, Regional Interdependence, PRTEE, TAMPA scale, Kinesiophobia, Maitland.

INTRODUCTION

Lateral epicondylitis (“tennis elbow”) is characterized as pain on the lateral side of the elbow that is aggravated with movements of the wrist, by palpation of the lateral side of the elbow, or by contraction of the extensor muscles of the wrist. ⁽¹⁾ Lateral epicondylitis is the most

frequent type of myo-tendinosis and can be responsible for substantial pain and loss of function of the affected limb. ^(1,2)

It specifically involves the origin of the extensor carpi radialis brevis muscle, usually 1-2cm distal to lateral epicondyle. ⁽³⁾ There are a multitude of mobilizations/manipulations that can be performed for the

wrist, hand, and fingers due to the complex bony architecture of this region. ⁽⁴⁾

The term 'Regional Interdependence' or RI has recently been introduced into the vernacular of physical therapy and rehabilitation literature as a clinical model of musculoskeletal assessment and intervention. ⁽⁵⁾ The underlying premise of this model is that seemingly unrelated impairments in remote anatomical regions of the body may contribute to and be associated with a patient's primary report of symptoms. ⁽⁵⁾ The clinical implication of this premise is that interventions directed at one region of the body will often have effects at remote and seeming unrelated areas. ⁽⁵⁾ The concept that a patient's primary musculoskeletal symptom(s) may be directly or indirectly related or influenced by impairments from various body regions and systems regardless of proximity to the primary symptom(s). ⁽⁵⁾

The fear avoidance model is psychiatric model that shows how individuals develop chronic musculoskeletal pain because of avoidant behavior based on fear. ^(6,7) This model explains how these individuals experience acute discomfort and delays the situation by using the avoidant behavior, a lack of pain increase reinforces this behavior. ^(6,7)

Research involving the fear avoidance model has led some question its accuracy in representing or predicting the actual avoidance of physical activity due to negative reinforcement. The fear avoidance model may be simplistic for every situation involving the fear, discomfort and/or chronic pain. Its effectiveness is generally acknowledging for diagnosing and understanding how humans positively or negatively react to fear and anxiety. ^(7,8)

Increased vulnerability provides positive feedback to the perceived level of pain and rewards avoidant behavior for removing unwanted stimuli. ⁽⁸⁾

NEED FOR STUDY

In Tennis elbow, patient suffers with pain on wrist extension. Generally, a physiotherapist advises this movement to be stopped which will provoke pain and disability, in turn patient too have fear avoidance in movement of elbow and wrist. All these leads to reduced movement more pain and increased disability in patients with tennis elbow. There is a growing body of literature demonstrating that interventions applied to one anatomical region can influence the outcome and function of other regions of the body that may be seemingly unrelated based on Regional interdependence model. Hence in this study we tried to find out the effect of Scaphoid mobilization on pain, physical function with the help of PRTEE questionnaire & on Kinesiophobia using Tampa scale in treatment of lateral epicondylitis.

MATERIALS & METHODOLOGY

In this pre-post, experimental study, 30 subjects were selected with lateral epicondylitis. This was an interventional type of study which was done in and around various hospitals in pune. The inclusion criteria included patients with unilateral side lateral epicondylitis including both males and females between the age group 18-35. The exclusion criteria focussed on patients who underwent surgery at elbow within 1 year, patients with cervical radiculopathy and patients who received steroid injections.

PROCEDURE: The institutional ethical commit clearance was obtained. Written inform consent was taken. 30 subjects were assessed and evaluated with the Patient-Rated Tennis Elbow Evaluation Questionnaire and Tampa scale for Kinesiophobia prior to the intervention.

Each subject rested the forearm of his or her affected side on a table with the palmar side of the hand facing down. The therapist sat at a right angle to the subject's affected side and gripped the subject's scaphoid bone between his thumb and index finger. He strengthened this grip by placing the thumb and index finger of his other hand on top of

them. The therapist then extended the subject's wrist dorsally at the same time the scaphoid bone was mobilized ventrally (Posterior anterior glide). Dosage – 10 carpal mobilizations in one set. 3 sets were given per session. Treatment was given for 9 sessions (3 sessions per week). Maitland Grade 1 and 2 oscillations were given. ⁽⁹⁾

STATISTICAL ANALYSIS

30 subjects were selected with random sampling with 22 males and 8 females with age distribution with mean age 24.4 ± 4.687 . Data analysis was done using the Repeated measure ANOVA.

Comparison of pain mean values on PRTEE scale was done with p value <0.0001 which is considered extremely significant. The mean for pre-intervention was 27.4 ± 3.874 . Similarly, for the 1st week the mean was 26.1333 ± 3.866 . For 2nd week the mean was 24.8666 ± 4.133 . The mean for post-intervention was 23.2667 ± 4.185 .

Comparison of function mean values on PRTEE scale was done with p value <0.0001 which is considered extremely significant. The mean for pre-intervention was 25.7666 ± 4.974 . For 1st week the mean was 24.9666 ± 5.048 . For 2nd week the mean was 23.7333 ± 4.785 . The mean for post-intervention was 22.5333 ± 5.257 .

Comparison of total score mean values on PRTEE scale was done with p value <0.0001 which is considered extremely significant. The mean for pre-intervention was 53.1666 ± 6.909 . For 1st week the mean was 51.1 ± 6.885 . For 2nd week the mean was 48.6 ± 6.986 . The mean for post-intervention was 45.4666 ± 8.191 .

Comparison of mean values for Tampa Scale was done with two-tailed p value <0.0001 which is considered extremely significant. The mean for pre-intervention was 39.4 ± 11.316 and the mean for post-intervention was 29 ± 10.59 .

DISCUSSION

The Result shows that there is significant improvement in physical function and total score after scaphoid

mobilization in patients with tennis elbow because of following possible mechanisms. ⁽¹⁰⁾

Also, there is improvement in physical movement i.e., kinesiophobia has reduced significantly after scaphoid mobilization in patients with tennis elbow.

Various studies have shown that passive mobilization treatment techniques frequently used by physical therapists, may produce an initial hypoalgesia and concurrent excitation in the motor system and the sympathetic nervous system. ⁽¹⁰⁾

The clinical efficacy of manipulation therapy has been demonstrated in randomized clinical trials which report benefits in term of pain relief and rapid restoration of function. This may be due to direct effects on articular structures, modulation of nociceptive afferent transmission within the CNS and psychological influences. ⁽¹⁰⁾

Effects of a non-thrust manual therapy in patients with chronic lateral epicondylalgia shown to result in increased pain-free grip, pressure pain threshold, as well as a sympathetic nervous system response as indicated with measures of skin conductance and blood flux. ⁽¹⁰⁾

The regional interdependence model focuses primarily on where the movement impairments present, which may be at the site of pain or at proximal or distal joints. The regional interdependence model focuses on how joints interact with each other neurologically and biomechanically. ⁽¹¹⁾

Manual therapy stimulates cutaneous and articular mechanoreceptors which can modulate muscle tone and pain. Also, it has been shown to impact the local tissue environment via its impact upon nociceptor function. It has been shown to impact supraspinal descending pain inhibition. ⁽¹¹⁾

Fear avoidance, pain catastrophizing, and anticipation can impact musculoskeletal function and pain. Altering a patient's perception of pain allows for improved neuromuscular function. The musculoskeletal interdependence between regions of the body does not exist in

isolation. Changes in the musculoskeletal system must also be accompanied by changes in neurophysiology because these and other systems work in concert to perform tasks. Interventional-based studies have demonstrated that treatments targeting one area of the body can affect neuromuscular performance in remote regions of the body. It has been demonstrated that manual therapy and spinal manipulation can alter local and distal motor neuron excitability. (11)

Confrontation and avoidance are postulated as the two extreme responses to this fear of which the former leads to the reduction of fear over time. The latter however leads to the maintenance or exacerbation of fear possibly generating a phobic state. (12)

The aim of this project is to review the existing evidence for the mediating role of pain-related fear, and its immediate and long-term consequences in the initiation and maintenance of chronic pain and disability. (12)

An increasing number of investigations have corroborated and refined the fear-avoidance model. Several fear-related processes will be discussed including escape and avoidance behaviour resulting in poor behaviour performance, hypervigilance to internal and external illness information, muscular reactivity and physical disuse in terms of deconditioning and guarded movement. (12)

The implications of the recent finding for the prevention and treatment of chronic musculoskeletal pain were discussed, although there are still many unresolved issues which merit future research attention, pain-related fear and avoidance appear to be essential feature of the development of a chronic problem for a substantial number of patients with musculoskeletal pain. The possible precursors of pain-related fear including the role negative appraisal of internal and external stimuli, negative affectivity and anxiety sensitivity may play key role in kinesiophobia. (12)

Kinesiophobia is a commonly seen factor among the patients with musculoskeletal pain, which ought to be taken into consideration when designing and performing rehabilitation programmes. Aspects of cognitive treatments focusing on these attitudes and beliefs are now commonly used in the behavioural treatment of musculoskeletal pain and significant effects are particularly found in the patients reporting high levels of pain-related fear. (13)

Use of scaphoid mobilization and advice on fear avoidance beliefs with kinesiophobia also showed an effect on patients' beliefs and clinical outcomes. Positive results for this unique project were found regarding the musculoskeletal pain, with the help of Tampa scale for kinesiophobia and patient rated tennis elbow evaluation. (13)

The study also explored the effectiveness of fears, beliefs and kinesiophobia in patients with lateral epicondylitis at the time of a hospital visit. The moderate disability between pain and kinesiophobia suggest that there are findings which support the fear avoidance model in the patients with lateral epicondylitis during mobilization of scaphoid. (13)

CONCLUSION

Scaphoid mobilisation is effective in improving Pain, Physical function, and reducing Kinesiophobia in patients with Lateral epicondylitis.

Limitation of Study & Future Scope

Limitation of study

- Small sample size.
- Duration for study was less.
- Control group can be added to reduce possible bias in study.

Future Scope

- Study can be done in different geographical area.
- Larger sample size.
- Duration of study can be increased.
- Advanced equipment's can be used for better assessment like Algorimeter for

pain, hand dynamometer for grip strength.

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