



Case report

Effect of Cyriax physiotherapy and conventional ultrasound on lateral epicondylitis

Gouri Kalaskar, Indrani Gurjalwar, Pratik Phansopkar*, Neha Chitale, Om C. Wadhokar, Sakshi P. Arora

Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences, Wardha, Maharashtra, India

ABSTRACT

The disorder essentially inside the radio humeral joint with constant impairing pain in the elbow, is named as tendonitis, tennis elbow, lateral epicondylalgia or lateral epicondylitis. The precise explanation for tendonitis is not however, identified. It is quite common in people whose jobs demand recurring forearm movements (e.g., court game sportsmen and woodworkers). It is normally because of additional fast, wearisome, recurrent eccentric contractions and gliding joint gripping activities. It normally affects dominant arm. The typical amount of associate degree episode of epicondylitis in span of six months and two years. In tennis elbow macroscopic and microscopic lesions appears within the Extensor Carpi Radialis Brevis (ECRB) muscle. Effectiveness of the interventions on the pain and the functional improvement was assessed by VAS (visual analogue scale) and the Tennis Elbow Function Scale (TEFS) respectively. The findings of the study will greatly contribute for the evidence on the utilization of the Cyriax Physiotherapy in tennis elbow condition. A case of 22 years old female is discussed in the report who presented with pain and mild swelling in right elbow which was gradual in onset and due to which she had trembling hand while doing flexion and extension which was present since last two days. Through assessment, patient's history and treatment have been discussed in the case study. This case study found that the therapeutic intervention had a positive impact on the patient's discomfort, range of motion, and activities of daily living (ADL).

Keywords: Cyriax Physiotherapy, Ultrasound, Lateral Epicondylitis, Mill's manipulation, Deep Friction Massage.

Received – 10-06-2021, Accepted- 05-01-2022

Correspondence: Pratik Phansopkar* ✉ drpratik77@gmail.com

Department of Musculoskeletal Physiotherapy, Ravi Nair Physiotherapy College, DMIMS, Wardha, Maharashtra, India.

INTRODUCTION

An injury of the wrist due to overuse of extensors leading to inflammation and eventually degenerative changes such as tendinosis and micro-teared fibrous tissue at these points usually called as “tennis elbow”, lateral epicondylitis^[1]. The incidence of lateral epicondylitis is 7 to 20 times higher than that of medial epicondylitis. Prevalence is normal in the dominant arm, with a prevalence of 1-3 percent in the general population, but it rises to 19 percent in people 30-60 years old^[2]. Periostitis, extensor carpi radialis brevis (ECRB) tendinosis, epicondylalgia, tennis elbow, and lateral epicondylitis are all terms for pain around the lateral elbow. Pain relief, inflammation, and microbleed, as well as encouragement of relief and regeneration, restoration of functions, and prevention of recurrence, are the key goals in the treatment of tennis elbow^[3]. Cryotherapy, supplemented by analgesics, NSAIDS, and other local physiotherapy techniques, is a useful modality in the acute level^[4]. The Cyriax method (CA) combines deep transverse friction (DTF) massage with Mill's manipulation, which occurs immediately after the DTF massage^[5]. The therapeutic benefits of DTF massage come from breaking down adhesions between healing connective tissue and underlying tissues,

softening scar tissue and mobilising cross-links between shared collagen fibres. DTF massage also results in vasodilation and increased blood flow to the affected region. This improves the transportation of endogenous opiates and promotes the elimination of chemical irritants, resulting in a reduction in pain^[6]. A structured physiotherapy rehabilitation program is necessary of such patients^[7].

Patient information

A 22 year old female who is district level badminton player visited to physiotherapy OPD on 15 January 2021 with the chief complaint of pain and swelling over the right elbow on the extensor (lateral) side and also complaint trembling in the right wrist and forearm while doing flexion and extension since 5 days back. As per information provided by the patient on 11 January while performing her daily chores (activities) she experienced pain on lateral side of the elbow which was gradual on onset and progressive while radiating to the hypothenar eminence of the palm with which she also experienced trembling in the wrist while lifting objects. The pain usually more aggravated at the time of performing any work and at night and while relieved at rest. Investigation generally include special test of elbow

(Cozen's test and mill's test) and manual muscle testing and she was clinically diagnosed with tennis elbow.

On examination, swelling was seen on the extensor origin of the right elbow and upper 1/3rd of the forearm. Patient had bearable pain and rated it 7 on visual analogue scale. On palpation grade 3 tenderness was noted on the lateral epicondyle of the humerus. A trigger point was present in the extensor carpi radialis brevis muscle.

Table 1: Timeline

Evaluation	Date
Symptoms arousal	11 Jan 2021
Evaluation and Investigation	16 Jan 2021
Beginning of PT treatment	18 Jan 2021
Revaluation to check improvement in patient's symptoms (improvement was seen in outcome measure)	29 Feb 2021
Revaluation to check improvement in patient's symptoms (significant improvement was seen in outcome measure)	14 Feb 2021

Table 2: VAS And TEFS SCORE Pre And Post Treatment

	Pre-Treatment	Post Treatment
VAS Score	7	2
TEFS	31	14

Table 3: Muscle strength before and after the treatment

Elbow Muscles	Pre-Treatment		Resistive Isometric Grading	and	Post Treatment		Resistive Isometric Grading
	MMT				MMT		
Flexors	3		Painful and Weak		4		Painless and Strong
Extensors	3		Painful and Weak		4		Painless and Strong
	Right	Left			Right	Left	
Supinators	3-	3-	Painful and Weak		4	4	Painless and Strong
Pronators	3-	3+	Painful and Weak		4	4	Painless and Strong

Table 4: Rehabilitation Plan

1 ST WEEK	Cyriax Physiotherapy + Therapeutic Ultrasound
2 ND WEEK	Cyriax Physiotherapy + Therapeutic Ultrasound
3 RD WEEK	Cyriax Physiotherapy + Therapeutic Ultrasound
4 TH WEEK	Cyriax Physiotherapy + Therapeutic Ultrasound

Figure 1: Treatment



The therapeutic interventions were started from first day after taking written consent from the patient. The specific intervention were used for the treatment was Mill's manipulation and intense friction massage are combined with 8 minutes of clinical ultrasound in Cyriax physiotherapy. The patient received treatment three days a week for four weeks, for a total of 12 sessions.

The first week of Cyriax physiotherapy consists of a burst of deep transverse friction (DTF) massage accompanied by a single application of Mill manipulation. The patient was seated comfortably with completely supinated elbow and in 90 degrees of flexion for deep transverse friction massage for tennis elbow. After palpating the anterolateral side of the lateral epicondyle of the humerus, the tender area was drawn. With the side of the thumb tip, a deep transverse friction massage was applied. On the tenoosseous junction, pressure was applied in a posterior direction. After applying it for 10 minutes to prepare the tendon for Mill's manipulation, the numbing effect was achieved. Image 1 depicts the hand positioning for the DTF.

Mill's manipulation

Manipulation by Mill Patients were seated comfortably in the Mills manipulation position, with the affected extremity in 90 degrees of abduction and enough internal rotation so that the olecranon faced up. One hand was used to hold the patient's wrist in complete flexion and pronation, while the other was held over the olecranon. The therapist should apply a high-velocity low-amplitude thrust at the end range of elbow extension shown in image 2 when in complete wrist flexion and pronation.

The ultrasound parameters were 100 percent service cycle, 1 MHz, and 0.8 W/cm² over the region of the lateral epicondyle for 5 minutes. This treatment protocol was performed for 4 weeks and 3 times in a week for complete 12 sessions, prior Ultrasound and after Cyriax physiotherapy. In the first week here were no changes in the outcome measures, but from 4th treatment session the discomfort was resolving. In the second week's 3rd session the revaluation was performed to check improvement in symptoms which was better than before. From this session onwards she was improving with her hand grip strength and function and her hand and forearm trembling was also resolving. Pain was also improving. Again, in the last session there was significant improvement in the symptoms on 14 Feb 2021, where overall function and pain improved.

After four weeks of regular treatment (3 sessions/ week) patient had significant improvement in her symptoms. There was improvement in patients elbow muscle strength. Also, pain had subsided so the VAS rating which was 7 pre-treatment reduced to 2 after regular treatment of four weeks. Improvement was also seen in Tennis Elbow Function Scale (TEFS) have been shown in table 3.

DISCUSSION

This was one of the challenging cases which we handled

successfully in our department. As physiotherapists are known for their healing hands this case can be a perfect example for that as patient was purely treated with manipulations with application of electrical modality which was therapeutic Ultrasound [8]. Hence, we concluded that manipulations can be successfully used to treat elbow disorders like this Lateral epicondylitis.

The pathological changes in the tendons have been labelled as fibroangiomatic hyperplasia, a term that defines a poor-quality, slow-healing, and painful tissue. A recurrence is likely if the patient returns to the precipitating activity before the inflammatory response has fully subsided and the patient has gained adequate muscle strength and endurance [9]. Adhesions between the tendon and the joint capsule may develop in long-term cases [10].

Baktir et. al. in 2019 observed in his study that Low-level laser therapy only helped with pain, but when combined with iontophoresis, it helped patients with lateral epicondylitis improve their pain and function [11]. Physiotherapy has significant effect in improving quality of life [12][13].

CONCLUSION

Tennis elbow, due to which pain, reduced grip strength affect person's overall daily activities. A physiotherapist plays an important role in treating such overuse injuries and recovering patient to its normal activities of daily life. Here after 4 weeks of routine care there was substantial improvement in pain, grip strength and hand function. Hence, in improving overall function.

Abbreviations

ADL – Activities of Daily living

MMT – Manual muscle Testing

TEFS – Tennis Elbow Function Scale

VAS – Visual Analogue Scale

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How to cite this article

Gouri K, Indrani G, Pratik P, Neha C, Om C. W, Sakshi P. A, 2022. Effect of Cyriax Physiotherapy and Conventional Ultrasound on Lateral Epicondylitis. *J. Med. P'ceutical Allied Sci.* V 11 - S 1, Pages - 248 - 250. doi: 10.55522/jmpas.V11S1.1248.