

Role of Fortend in Treating Lateral Epicondylitis. A Retrospective Study

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Abstract

Introduction: Curcumin, is a natural polyphenol product found in turmeric, and it has primary anti-inflammatory and antioxidative properties. It modulates several molecules in the cell signal transduction pathway to exert the therapeutic benefits. It is widely used to treat multiple medical illnesses and has shown many health advantages. Bromelain, an enzyme obtained from pineapple is shown to promote tendon healing through anti-oxidant and immunosuppressive effects. This study is conducted to assess the effectiveness of Fortend, a drug consisting of MicroActive Curcumin, Epigallocatechin gallate Bromelina with Coenzyme Q10, Manganese and Selenium in treating Lateral Epicondylitis (LE).

Materials and Methods: This was a non-controlled, non-randomized retrospective observational clinical study. Records of all patients that were treated for LE in multiple centres between 1st April 2022 to 30th June 2023 with elbow disorders were assessed for eligibility. The inclusion criteria of the study are patients who have been diagnosed clinically to have LE through history, physical examinations and special tests and have been offered at least one course of Fortend. The exclusion criteria include patients with connective tissue disorders, previous history of surgery to the elbow, incomplete follow-up records and/ or without consent. One course of treatment consists of taking one tablet of Fortend per day for 20 days consecutively and a maximum 2 courses are offered based on clinical response. Patients were followed up at 1 month, 3 months and 6 months after initiating Fortend. The outcomes were assessed using Visual Analog Score (VAS) and Disabilities of the Arm, Shoulder, and Hand (DASH) score.

Results: A total of 260 patients that fulfilled the inclusion and exclusion criteria were selected for the study. VAS were 6.9 ± 1.0 at first baseline, 5.6 ± 0.8 at 1 month ($p=0.03$), 3.8 ± 0.6 at 3 months ($p<0.001$) and 1.7 ± 0.7 at 6 months ($p<0.001$). DASH scores were 57.8 ± 3.8 at baseline, 41.5 ± 5.8 at 1 month ($p<0.001$), 26.5 ± 4.6 at 3 months ($p<0.001$) and 14.6 ± 3.2 at 6 months ($p<0.001$).

Discussion: Fortend has anti-inflammatory and anti-oxidative properties. It is being used widely in the world to treat many medical illnesses and can be used to treat tendinopathy. This study has shown that the use of Fortend in lateral epicondylitis yields promising results with fast recovery and minimal tolerable side effects. In addition, patients also can avoid any form of injections or surgery for lateral epicondylitis which has inconsistent results.

Conclusion: Fortend is a safe and effective adjunct to conservative treatment of lateral epicondylitis to relieve pain and improving function.

Keywords: Fortend; Tennis Elbow; Anti-inflammatory; Anti-oxidative; Pain

Introduction

Lateral epicondylitis (LE), also known as ‘Tennis Elbow’, refers to a degenerative rather than inflammatory process involving predominantly Extensor Carpi Radialis Brevis (ECRB) leading to chronic incapacitating pain over the lateral aspect of the elbow [1]. 1% to 3% of the general population are affected, mostly over 40 years with similar gender distribution [2]. Its incidence has been increasing in the past decade due to more occupational and sports-related injuries involving the elbow. Classical signs of acute inflammation are absent, and this condition is characterized by the presence of ‘angiofibroblastic hyperplasia’ in the histological analysis, consisting of a mixture of immature collagen fibers with fibroblastic and vascular components which are consistent with degenerative nature of the disease [3]. These changes are a consequence of failure in reparative responses in ECRB rather than a result of the inflammatory process. This disorder commonly starts with microtrauma of the extensor tendon at the origin site due to repetitive wrist extension coupled with forearm rotation by disproportionate use and stress [4].

Treatment of LE is divided into non-operative and operative methods. Non-operative treatment consists of rest, non-steroidal anti-inflammatory drugs, orthosis, physical therapies, and injections. Injections that are commonly given to the patients which have been published include steroids, platelet rich plasma or botulinum toxin [5]. Operative treatment for LE consists of debridement of the ECRB tendon through arthroscopic or open surgery or percutaneous release of common extensor origin [2]. A standard protocol that describes the treatments for LE is lacking due to the heterogeneity of treatment methods in the literature review [6]. These surgical techniques also often yield inconsistent results due to a lack of randomised control trials to support the treatment regime [6].

Fortend is a drug that consists of active ingredients of MicroActive Curcumin, Epigallocatechin gallate Bromelina with Coenzyme Q10, Manganese and Selenium. Curcumin is polyphenol natural product extracted from the plant *Curcuma longa*. Recent databases in vitro and in vivo reported curcumin has anticancer, antiviral, antiarthritic, anti-amyloid, antioxidant and anti-inflammatory properties. The underlying mechanism that contributes to these properties is complex and appears to involve the regulation of various molecular targets. Some of the examples are transcription factors, growth factors, inflammatory cytokines, protein kinases and other enzymes like cyclooxygenase 2 and 5 lipoxygenase [7]. These extended spectrum of actions of Curcumin could be used in treating LE. Bromelain, another active component of Fortend, which is extracted from pineapple, has antioxidant and immunosuppressive effects, decreases lymphocyte rolling and reduces malondialdehyde (MDA), contributes to tendon healing [8].

This study was done to assess the effectiveness of Fortend in treating LE and to our knowledge this is the first study to report the outcomes of Fortend use in the treatment of LE.

Materials and Methods

The non-controlled, non-randomized retrospective observational study was carried out at multiple general practitioner clinics and medical centres enrolled patients who were diagnosed with LE between 1st April 2022 to 30th June 2023. A review of elbow disorder database from outpatient unit of each institution was done to identify patients with LE. The inclusion criteria of the study were patients who have been diagnosed clinically to have LE through history, examinations, and special test. Patients with connective tissue

disorders, history of surgery to the elbow, incomplete follow up record and without consent were excluded. The course of treatment consists of taking one tablet of Fortend per day for 20 days consecutively. Patient was given another course of Fortend if persisting elbow pain is significant based on the clinical judgement of the treating surgeon. The patients were seen in the clinic at 1 month, 3 months, and 6 months after completion of the treatment. Patient demographics and the outcomes which include Visual Analog Score (VAS) and Disabilities of the Arm, Shoulder, and Hand (DASH) score at each visit were collected. Any side effects of taking the medications were documented. Paired sample t test was used to analyse the data using SPSS version 25. P value < 0.05 was taken as significant.

Results

We found 634 cases related to elbow disorder from the outpatient database review. 260 patients with LE that fulfilled the inclusion and exclusion criteria were recruited for the study.

Number of patients	260
Mean age	41.3 years (35.0- 52.0)
Gender	
Man	98
Woman	162
Mean duration of pain	2.9 months (2-4)
Courses of treatment	
1	233 patients
2	27 patients

Table 1: Showing demographic of patients included in the study.

Mean age of patients that took part in the study was 41.3 years. (35.0-52.0) majority of the patients were Woman. Patients presented with mean duration of pain for 2.9 months (2-4) before starting the Fortend treatment. 89.6% of patients needed only single course of Fortend treatment to recover from LE. 15% of the patients were on oral steroid or had history of steroid injection before commencing the Fortend treatment.

Duration (month)	0	1	3	6
Mean VAS (SD)	6.9±1.0	5.6±0.8	3.8±0.6	1.7±0.7

Table 2: Showing mean value of VAS scores.

Mean value of VAS at first visit was 6.9±1.0 and subsequently improved to 5.6±0.8 at 6 weeks follow up. The P value was 0.03. The VAS further improved to 3.8±0.6 at 12 weeks follow up. The P value was less than 0.001. VAS was 1.7±0.7 at final follow up. The P value was less than 0.001.

Duration (month)	0	1	3	6
Mean DASH (SD)	57.8±3.8	41.5±5.8	26.5±4.6	14.6±3.2

Table 3: Showing mean value of DASH scores.

Mean value of DASH score at first visit was 57.8±3.8 and the score improved to 41.5±5.8 at 6 weeks follow up. The P value was less than 0.001. DASH score further improved to 26.5±4.6 at 12 weeks follow up. The P value was less than 0.001. DASH score at final follow up was 14.6±3.2. The P value was less than 0.001.

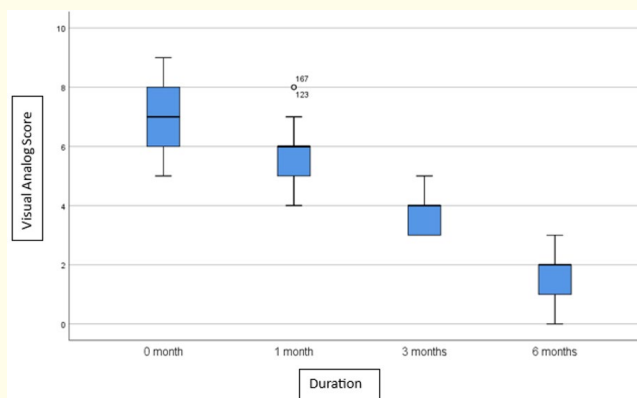


Figure 1: Showing Box plot for VAS.

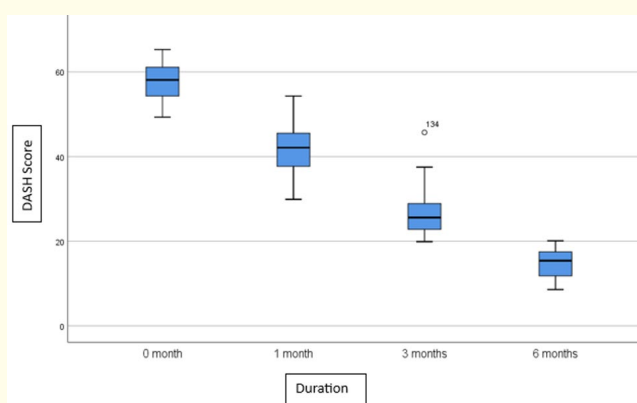


Figure 2: Showing Box plot for DASH score.

Discussion

Many studies have documented that LE usually resolves spontaneously within 1-2 years [9]. Hence, the first option that is available for managing LE is 'wait and see'. This concept is obsolete in our modern era due to advancements in medicine and increased expectations among patients suffering from LE. The disadvantage of this wait-and-see policy is the uncertain progress of Lateral Epicondylitis, in which some patients may develop partial or complete tendon tears. [10] In addition, prolonged pain may affect patients' quality of life. Patients may not be able to carry out activities of daily living, meet the demands of their occupation or take part in sports activity for at least 1 year.

Physiotherapy is an established method of treatment that is commonly offered to patients who suffer from LE. The efficacy of the exercise regime could be questioned due to a lack of high-level published evidence. Bisset et al conducted a meta-analysis and did not provide any conclusion on the use of stretching exercises [11]. Loew LM et al found that deep transverse friction massage for LE was not beneficial to patients [12]. Literature review also showed that the use of physical modalities such as shockwave, laser, low-frequency transcutaneous electrical nerve stimulation, ultrasound or pulsed magnetic wave therapies for LE is not supported by concrete

published studies [13]. Evidence to support the use of orthoses in LE is also lacking. Wrist or forearm splints or braces have proven to be ineffective in treating LE [14].

Injection of the common extensor origin of the elbow is another universally used technique for the treatment of LE. Substances that are used for injection include corticosteroid, platelet rich plasma, autologous blood, and dextrose solution. Corticosteroid is the most widely used substance and it provides considerable pain relief for a few weeks' duration. However, patients may be subjected to complications like infection, skin changes and tendon rupture.

Evidence that favours corticosteroid injection for LE is scarce. A study conducted by Smidt et al. comparing corticosteroid injection, physiotherapy, and no treatment showed that the benefit of corticosteroid injection for LE is short-term and noticeably worse compared to physiotherapy and no treatment after 1 year [15].

Another substance that gaining popularity for LE injection is PRP. The assessment of the outcomes of PRP injections for LE is still in progress and published results remain inconsistent. Murray et al. did a literature review on six articles and recommended the use of PRP injection for LE [16]. However, De Vos et al's review using seven articles, mostly like articles reviewed by Murray et al. and concluded that PRP injection does not favour the clinical improvement of LE [17]. Cal Robinson et al also stated that several questions need to be answered before use of PRP become more conclusive in treating LE [18]. The use of autologous blood injections also have been assessed and studies showed inferior efficiency compared to PRP and better medium- and long-term outcomes compared to corticosteroid [19]. Use of Botulinum toxin injections for LE should be discouraged because the improvement in pain is only for the short term and is mostly associated with digit paresis and weakness of finger extension [20]. Recent systematic review by Thomas M. Best et al concluded that a further high level of evidence is needed to support the use of PRP, whole blood, prolotherapy and Polidocanol injection in treating LE for long-term success [21].

Another less-understood topic in the treatment of LE is the role of surgery. There is no clear protocol exists to offer surgery for LE, and at present surgery is recommended based on expert opinion rather than objective indication [6]. Kachooei AR et has stated in the study that patients are more prone to undergo surgery if the initial assessment of the elbow pain is done by a surgeon [22]. Buchbinder et al. in a meta-analysis neither buoyed nor rebutted the effectiveness of surgery in the treatment of LE [23]. Some studies have even mentioned that surgical interventions do not produce better results than PRP therapy. Karaduman et al. have analysed and concluded that PRP therapy was more effective than surgery [24]. Thus, whether surgery can offer better results than non-operative treatments is still inconclusive and current evidence is insufficient to favour surgery. Numerous publications that describe a variety of surgical techniques only make surgical treatments exist merely as other options which the surgeons feel cannot be removed from treatment protocol. In a nutshell, more publications are needed to support the role of surgery in LE and the type of surgery that will benefit the patients should be clearly stated [25].

The most important principle in treating patients with LE is to offer rapid recovery from the devastating condition to maintain patients' social and professional responsibilities. This study showed that the use of Fortend for the treatment of LE allowed rapid recovery from pain and the ability to return to functions as early as 3 months. Curcumin, one of the active components in the Fortend, modulates several molecules in the cell signal transduction pathway to exert the therapeutic benefits which are seen among patients recovering from LE. A study done by Buhrmann et al. has stated the potential role in treating tendinopathy through the modulation of nuclear factor kappaB (NF-kappaB) through phosphatidylinositol-3K/Akt and the tendon-specific transcription factor scleraxis in tenocytes [26]. Same mechanism also improves tendon tissue fibrosis induced by tendinopathy and stimulates the induced apoptosis of tendon stem cells [27].

This study showed that patients with lateral epicondylitis have significant improvement in pain scores and functional improvement after taking Fortend. Most of the patients just need to take one course of the treatment. In the study, 89.6% of patients took one course of Fortend in contrast to 10.4% of patients who took two courses of Fortend for the recovery from LE. 32 patients had gastrointestinal side effects such as burning epigastric pain, bloating, nausea, or excessive belching. 8 patients needed treatment for these side effects.

All the patients are willing to repeat the course of treatment if symptoms reoccur again in the future. We believe that Fortend offers many advantages in the treatment of LE. Patients have shown rapid functional improvement and recovery in pain score, and it is relatively safe with minimal side effects. Patients are free from the side effects of long-term painkillers. The risk of surgery for LE which have inconsistent results can be minimised.

Conclusion

Fortend is safe and is recommended as an adjunct to conservative treatment of LE as it is proven effective in relieving pain and improving function.

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