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Chiropractic Treatment of Lateral Epicondylitis: A Case Report Utilizing Active Release Techniques

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Abstract

Objective: The purpose of this report is to describe the chiropractic management of a case of lateral epicondylitis with active release techniques (ART).

Clinical features: A 48-year-old white man presented to a chiropractic clinic with a complaint of left lateral elbow pain that began 2 years previous with insidious onset. The patient reported an inability to play 18 consecutive holes of golf due to the pain.

Intervention and outcome: Treatment consisted of 5 sessions of ART (a soft tissue technique that is applied to muscles, fascia, tendons, ligaments, and nerves) applied to the left elbow soft tissue over a duration of 3 weeks. The patient reported an absence of pain and ability to consistently play 18 consecutive holes of golf up to 3 times per week at 4 and 8 weeks post-treatment.

Conclusion: This patient with lateral epicondylitis responded favorably to chiropractic treatment using the application of ART, as demonstrated by reduced pain and increased functional outcomes.

Introduction

Lateral epicondylitis, commonly known as tennis elbow, is described as a painful condition affecting the lateral aspect of the elbow that is aggravated by active and resisted wrist extension and direct palpation of the lateral epicondyle of the humerus, the radiohumeral joint space, or the proximal forearm extensor muscles.[1–4] This condition is most notably reported in athletes participating in racquet sports such as tennis. However it has been reported to affect other athletes as well such as golfers.[5–7] Despite its well known relationship with athletes, lateral epicondylitis is primarily seen in workers engaging in repetitive rotation, extension and/or flexion of the forearm. It has been reported that lateral epicondylitis affects 1% to 3% of the general population and affects women more so than men.[5,8–13]

Generally, lateral epicondylitis is considered a self-limiting condition and recovery is seen with 1-2 years of conservative management. In some instances the condition may continue longer, with approximately

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10% of cases requiring surgical treatment.[14–17] The choices of conservative treatment options are diverse and best management strategies remain controversial.[9] This may be due to a current absence of universally accepted pathophysiological understanding, poor or biased methods of current studies, the existence of multiple variables which may influence outcomes, and the mere self-limiting character of the condition.[18,19]

This study describes the chiropractic management of a patient with chronic lateral epicondylitis using the application of active release techniques (ART).

Case Report

A 48-year-old white man presented to a chiropractic clinic with left lateral elbow pain. The complaint originated 2 years previously with an insidious onset. Self-management strategies including over-the-counter non-steroidal anti-inflammatory medication, ice, and stretching were unsuccessful. The patient reported a slow progression of symptoms culminating in intense pain following playing 18 holes of golf 3 days prior to initial consultation. At the time of presentation, the patient described an achy pain in the left elbow and an intense sharp pain upon pressing on lateral portion of the elbow joint. He denied any sensation of numbness, tingling, burning and/or muscles weakness. Pain was reported as a 7/10 on a numeric pain rating scale. The patient described golfing as the only consistent provocative activity with other random activities which require the use of the left hand and forearm cause pain intermittently. Review of past medical, health, and family histories revealed no previous history of related complaints, no additional co-morbidities, or additional items of note.

Physical examination revealed a decrease in left elbow extension active range of motion due to pain, a positive resisted wrist extension test (ie, Cozen's Test), pain upon palpation of the lateral epicondyle of the left humerus and hypertonicity of the following musculature: left flexor carpi ulnaris, left pronator teres, left common extensor group, and left extensor digitorum. Upper extremity deep tendon reflex testing and sensory and motor strength testing revealed no abnormal findings.

The patient was prescribed a treatment plan consisting of 2 treatments weekly for duration of 3 weeks with treatment consisting of ART addressing the following tissues: left flexor carpi ulnaris musculature, left pronator teres musculature, left extensor retinaculum, common extensor musculature of the left forearm, and left extensor digitorum musculature. Abnormal tissues were treated by applying tension by hand to the dysfunctional areas combined with specific patient movements to encourage normal tissue motion. The patient reported a gradual decrease of symptoms following each visit. Five treatment sessions were administered in a duration of 2 1/2 weeks. Upon re-examination at the fifth visit, the patient reported the only provocative activity as "strongly pushing directly on an extremely localized area of the lateral epicondyle." The patient rated his pain upon provocation as a 1/10 on a numeric pain rating scale. Re-examination revealed full active range of motion of the left elbow in all ranges, negative resisted wrist extension test (Cozen's Test), absence of palpatory findings and no hypertonicity of the left elbow and forearm musculature. At this time the patient additionally reported he had played 18 holes of golf 3 times in the previous week without any pain. The patient was released from care following the fifth visit and was instructed to return for care on an as needed basis.

The patient was contacted via telephone for follow up at 4, 8, and 16 weeks post treatment and reported no pain and stated that he had been golfing 2 to 3 times per week with no pain. No adverse events were reported throughout care. The patient gave consent for his health information to be reported in this study.

Discussion

Chronic tendon injuries are a common reason for presentation to health care providers and may significantly impact one's ability to work, exercise, and perform routine activities of daily living.[21–23] Lateral epicondylitis is typically attributed to activities that require the repetitive use of the soft tissues. Although chronic tendon injuries, such as lateral epicondylitis, are traditionally described as a "tendonitis", this term may not be appropriate. The term "epicondylitis" implies a response of bleeding and successive inflammation. However overuse or chronic tendon injuries show no evidence of acute or chronic inflammation.[21,24] Overuse soft-tissue injuries and chronic tendon injuries typically appear in tissues with poor vascularity and repetitive muscle contraction.[21] Upon repetitive use, these tissues produce elastic forces within a tendon that may cause micro-traumatic injury.[18] This type of cumulative micro-traumatic injury has been shown to yield angiofibroblastic degeneration and collagen disarray, which contrasts the typical cellular and protein responses linked to traditional inflammatory processes.[2,21,25–28]

Therefore, the term "lateral epicondylitis" may be misleading and can be replaced with a more appropriate nomenclature of "lateral epicondylosis".[21,26–28]

Generally, the common extensor muscles of the forearm, particularly the extensor carpi radialis brevis, is the location of the pathology.[18] The origin of the extensor carpi radialis brevis attaches proximally at the common extensor origin on the anterior aspect of the lateral epicondyle of the humerus and lies deep to the extensor carpi radialis longus and extensor communis attachment. This attachment point is also shared with the extensor digitorum, extensor digiti minimi, and extensor carpi ulnaris muscles. The primary motion of this muscle group is to extend the hand at the wrist.

Patients with lateral epicondylitis typically present with a complaint of gradually increasing elbow pain. Upon examination, patients often report sharp pain upon palpation of the lateral epicondyle of the humerus and possible tenderness of the common extensor musculature of the forearm. Positive provocative testing includes Cozen's test and Mill's test. Cozen's test requires the patient to actively make a fist, pronate the forearm, and radially deviate and extend the wrist while the examiner applies resistance to the motion at the wrist. (Fig 1) Resulting pain in the region of the lateral epicondyle of the humerus indicates a positive sign for lateral epicondylitis.[29] Mill's test is performed with the examiner palpating the lateral epicondyle and passively pronating the patient's forearm, flexing the wrist fully, and extending the elbow. (Fig 2) Resulting pain in the area of the lateral epicondyle of the humerus indicates a positive sign for lateral epicondylitis.[29] Additionally, it is important to rule out other differential diagnoses such as capitellum fracture, lateral collateral ligament injury, osteochondritis dessicans, posterior interosseus nerve syndrome, radial head fracture and synovitis.[18]

In this case, the patient expressed that he golfed regularly and complained of long-standing pain about the lateral epicondyle of the left humerus that was exacerbated with playing golf. Although the term "golfer's elbow" is associated with medial epicondylitis, lateral epicondylitis in golfers seems to occur at the same rate as medial epicondylitis.[30] In right handed golfers, such as the patient described in this case, lateral epicondylitis often develops in the left elbow. This may be attributed to forceful impact at the hand/wrist and lateral elbow musculature with left elbow extension during the power portion of the downward stroke and increased torque on the left common wrist extensor musculature during swing follow through.[30–32] Although the pronator teres muscle does not attach to the lateral epicondyle of the humerus, the presence of pronator teres involvement in lateral epicondylitis is not uncommon. This may be due to increased muscle co-activation at the time of ball impact.[33] It has also been proposed that there is a modulation of motor activity in chronic elbow pain resulting in a decrease in agonist muscle activity (muscles of the common wrist extensor group) and an increase in antagonist muscle co-activiation.[34,35] This may explain the presence of

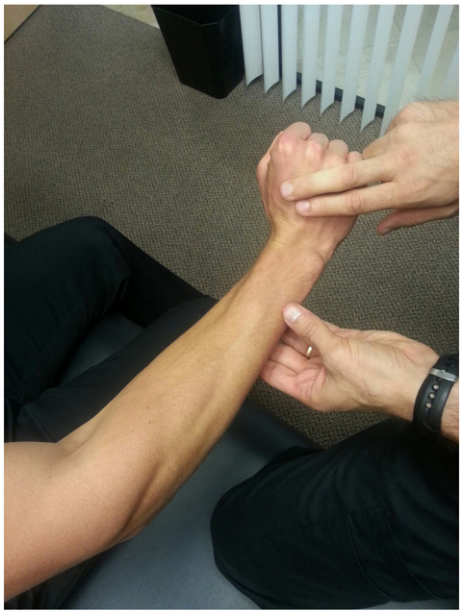

Fig 1. Cozen's test requires the patient to actively make a fist, pronate the forearm, and radially deviate and extend the wrist while the examiner applies resistance to the motion at the wrist. Cozen's test aims to identify the presence of lateral epicondylitis.[29]

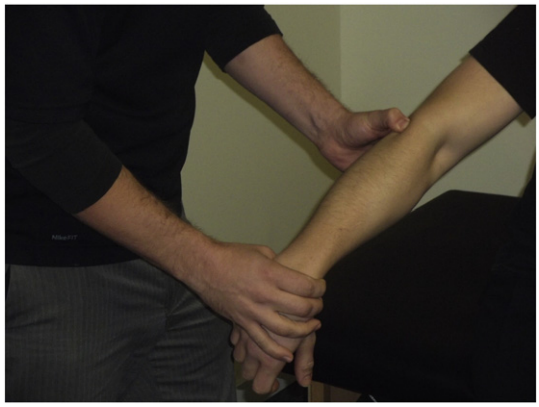

Fig 2. Mill's test is performed with the examiner palpating the lateral epicondyle and passively pronating the patient's forearm, flexing the wrist fully, and extending the elbow. Mill's test aims to identify the presence of lateral epicondylitis.[29]

pronator teres and flexor carpi ulnaris musculature involvement in this case.

Conservative treatment options remain abundant and there is currently a lack of evidence to support any single method of treatment.[18–20] Currently there is a limited, but growing, amount of literature indicating positive outcomes following the application of ART in certain musculoskeletal conditions, including 1 case involving lateral epicondylitis.[18,36–48] ART is described as a hands-on touch and case-management system that allows a practitioner to diagnose and treat soft-tissue injuries.[49] ART is founded on the principle of recognizing and treating cumulative injury disorder (CID).[49] CID is described by Leahy as a group of injuries to muscles, tendons, bones, blood vessels, fascia, and/or nerves which leads to the cumulative injury cycle. The cumulative injury cycle is defined as a perpetuating cycle characterized by weak and tight musculature, soft tissue tension, decreased circulation, localized edema, cellular hypoxia resulting in fibrosis adhesions, microscopic tissue injury and inflammation that can be identified and reduced with ART intervention.[49] As it relates to this case, ART intervention is further based on the observation that the anatomy of the forearm has traversing tissues situated at oblique angles to one another that are prone to reactive changes producing adhesions, fibrosis and local edema and thus pain and tenderness.[48–50] During this therapy, the clinician applies a combination of deep manual tension at the area of tenderness and the patient actively moves the targeted tissue from a shortened to a lengthened position.[49] It is achieved by employing a specific contact to the effected tissue and taking the tissue from a shortened position to a fully lengthened position while the manual contact remains stationary allowing the soft tissue to pass longitudinally beneath the contact.[49] (Fig 3) This procedure is generally recommended to be conducted 3-5 times per specific tissue and/or until the clinician subjectively determines the tissue is functioning properly.[49]

It appears the patient in this case responded favorably to manual therapy intervention, consisting of ART therapy only. It is interesting to note that other case reports indicating positive outcomes following ART interventions have been reported; however most consist of a multi-modal treatment approach.[18,36–48]

Lateral epicondylitis is a common musculoskeletal injury that is largely seen as a result of soft tissue overuse that leads to angiofibroblastic and collagen degeneration. Currently, there is a wide array of treatment options, though evidence to suggest the effective use of a singular treatment is lacking. Positive, yet miniscule amounts of data exist concerning the application of ART in the management of certain musculoskeletal conditions, including lateral epicondylitis. Further studies are needed to better understand ART and best treatment options.

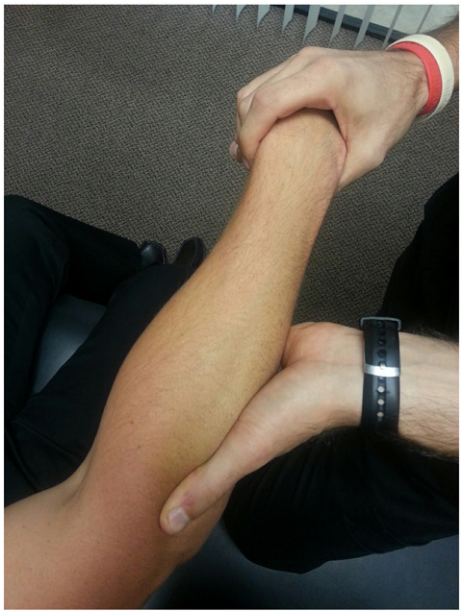

Fig 3. ART common extensors protocol.

Limitations

A weakness of this study is a lack of objective outcome measurements utilized throughout the case. As with any single intervention, there is no way to determine the extent to which any individual treatment may or may not have contributed to the perceived beneficial outcome and to what extent the condition self-resolved. The findings from this case may not necessarily be applicable to other similar cases.

Conclusion

In this case, the administration of ART appeared to reduce symptomatology and allow functional restoration for a patient with chronic lateral epicondylitis.

Funding Sources and Conflicts of Interest

No funding sources or conflicts of interest were reported for this study.

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