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Conservative management of a case of medial epicondylosis in a recreational squash player

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Objective: *This case study was conducted to evaluate the treatment and management of a patient presenting with medial elbow pain diagnosed as medial epicondylosis.*

Case: *A 35 year old male presented with medial elbow pain of 4–6 weeks duration that worsened after playing squash.*

Treatment: *A course of fascial stripping techniques was initiated, including: cross friction massage, instrument assisted fascial stripping to the medial epicondyle area and over the belly of the pronator teres muscle, ischemic compression of a trigger point in the pronator teres, active assisted compressions to the trigger point noted in the pronator teres, and mobilizations of the carpals, specifically the scaphoid. Instructions were given to the patient regarding icing the elbow and daily eccentric exercises. At a one year follow up, the patient reported complete resolution of symptoms with no recurrence.*

Conclusion: *Conservative management, including eccentric exercises, mobilizations, and fascial stripping appear to be beneficial in the treatment of medial epicondylosis.*
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KEY WORDS: epicondylosis, elbow, pain

Objectif : *La présente étude de cas a été réalisée afin d'évaluer le traitement et la gestion d'un patient souffrant de douleurs à la face interne du coude diagnostiquées en tant qu'épicondylite médiale.*

Cas : *Homme de 35 ans souffrant de douleurs à la face interne du coude depuis 4 à 6 semaines et qui se sont aggravées en jouant au squash.*

Traitement : *Un traitement basé sur des techniques de crochetage des fascias a été mis en place, avec notamment : des massages transversaux, crochetage des fascias à l'aide d'instruments dans la zone de l'épicondyle médial et à la surface du muscle rond pronateur, compression ischémique d'un point de déclenchement dans le muscle rond pronateur, compressions actives assistées du point de déclenchement observé dans le muscle rond pronateur, et mobilisations des os carpiens, plus particulièrement le scaphoïde. Il a été demandé au patient de déposer de la glace sur le coude et d'effectuer des exercices excentriques. Lors du suivi après un an, le patient a indiqué que les symptômes avaient complètement disparu et qu'aucune récurrence n'était à signaler.*

Conclusion : *Les traitements conservateurs, comprenant notamment des exercices excentriques, des mobilisations et le crochetage des fascias semblent être bénéfiques en vue du traitement de l'épicondylite médiale.*
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MOTS CLÉS : épicondylite, coude, douleur

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Introduction

A search of the literature for "epicondylitis" yields a plethora of information mainly regarding lateral elbow pain. There is much less information regarding pain of the medial elbow. This outcome is likely due to the fact that lateral epicondylitis is diagnosed between three and ten times more frequently than the medial version.[1,2,3] One review reports that of all diagnoses of epicondylitis, medial epicondylitis makes up 9.8% to 20% of all cases.[2] In general, lateral epicondylitis is thought to be due to repetitive trauma injuries whereas medial epicondylitis occurs due to valgus stress placed on the elbow as well as forceful work.[4,5] The term "epicondylitis" has been abandoned by many researchers as it implies an ongoing inflammatory process. Studies of the histological nature of these conditions have shown that the condition on the lateral side of the elbow, and likely the medial side as well, is actually "a degenerative or failed healing tendon response characterized by the increased presence of fibroblasts, vascular hyperplasia, and disorganized collagen."[1,6] The term epicondylosis, which is a more appropriate term in light of these findings, will therefore be used for the remainder of this paper, although a search of the literature using the term "medial epicondylosis" does not yield many articles.

The incidence of presentation of peripheral conditions to chiropractors is reported as 17.1% of chief complaints.[7] According to the National Board of Chiropractic Examiners 2005 Job Analysis of Chiropractic, the chief presenting complaint on initial visit of 8.3% of chiropractic patients in 2003 was in an upper extremity. The prevalence of medial epicondylosis is 0.4% according to the literature.[8] Studies have noted that the dominant arm is involved in 82% of cases, the mean age was 45 years, and 51% of sufferers are female.[9,10] Gender association in medial epicondylosis remains controversial with some studies reporting a gender bias towards females and another refuting it.[8,9] Prevalence seems to be higher in the following categories: age range of 45–65, current and former smokers, high body mass index, larger waist circumference, higher waist to hip ratio, and type 2 diabetes.[8] Despite the common name of "golfers elbow" it is reported in one study that 90–95% of those affected were not atheletes.[1] Grip strength measures, which are generally negatively affected with lateral epicondylosis, do not seem to be as reliable a measure of pain or disability in medial epicondylosis.[11] The prognosis for medial epicondylosis is reported as an 81% resolution over a three year period.[4]

Medial epicondylosis exhibits characteristic pain along the medial aspect of the elbow, which is exacerbated by resisted wrist flexion and/or forearm pronation.[5] The vast majority of cases of medial epicondylosis can be treated using conservative methods, although severe cases of prolonged duration (over 6 to 12 months) may require a surgical consultation regarding release of the common flexor origin.[9] The purpose of this paper is to present a case of medial epicondylosis in a 35 year old male recreational squash player that was managed using conservative methods.

Case report

A 35 year old male presented with a complaint of right forearm pain that had been worsening gradually over the past month. He is right hand dominant and explained that he had been living overseas in a secluded camp in the desert as he works in the oil industry. While in camp, he reported that he did not have access to therapy or medical attention unless an emergency occurs. The job rotation he worked was seven weeks in camp and 3 weeks off, during which time he returned to Canada and elected to seek care for his right elbow pain. As his time was very limited, he requested a rapid series of treatments and an exercise program that he could do at home when he returned overseas. He reported that his forearm pain began 4–6 weeks prior to his initial visit, and that he was an avid amateur squash player. He had been playing approximately 5–6 times per week for over one year. He report that although he has had pain and has noted some weakness in his grip, he has continued to play squash and notices that forearm pain increases after playing squash. He also notes that it takes a longer period to warm up to play a game than was previously the case but does not have pain during a squash game. When not playing squash, he reports that reaching and gripping increases his pain. He has been unable to identify anything that relieves the pain. He reports that this pain has been worsening, and that he elected to rest for two weeks and avoid playing squash prior to his consultation with the chiropractor but has not noted any improvement in pain. The pain is described as dull and achy in nature and he rates the pain as a 3/10 in intensity on a verbal analog scale where 0 is no pain and 10 is the worst pain he has ever experienced. He indicates that the

pain is specifically in his medial right ventral forearm just inferior to the elbow and described it as being "in between the bones." The patient denies pain referral and the presence of any parathesias in the arm or hand. He reports that he has never had this pain before.

On examination, visual inspection did not reveal any bruising, redness or edema in the area. Palpation revealed tenderness and a tender point in the pronator teres muscle. Palpation over the medial epicondyle revealed pain and reproduced symptoms described by the patient. Neurological testing was found to be unremarkable with respect to sensation, motor and reflex testing bilaterally over all dermatomes tested for the upper extremities. The following orthopaedic tests were performed and were found to be negative: Pronator teres test (resisted pronation of the forearm), Mills test for lateral epicondylitis (with the elbow extended and the shoulder relaxed the wrist is passively stretched in flexion and pronation). The following tests were found to be positive: Passive test (with an extended elbow and relaxed shoulder the wrist is passively extended and supinated) and active resistive medial epicondylitis test (with the upper extremity relaxed and the elbow flexed slightly the patient is instructed to actively resist wrist flexion and pronation). From testing, reported symptoms and history, the patient was diagnosed with medial epicondylosis.

The patient began a series of four treatments that occurred within one week as he was at the end of his vacation time and would be returning to his camp. A course of fascial stripping techniques was initiated, including: cross friction massage, instrument assisted fascial stripping to the medial epicondyle area and over the belly of the pronator teres muscle using gua sha tools, ischemic compression of the trigger point found in the pronator teres, active assisted compressions to the trigger point noted in the pronator teres, and general mobilizations of the carpals, specifically the scaphoid as this carpal was noted to be restricted on motion palpation.[2,5,7,9,10,13–17,19–21] Similarly, joint play of the elbow was found to be unremarkable. The patient was instructed to ice his forearm and medial elbow daily for 10 minutes followed by a 20 minute break with an immediate repetition of this icing cycle four times for pain control. In addition he was given an eccentric exercise to do daily for his right arm that consisted of using a 1–2 pound weight supported in his right hand with his forearm flexed and supinated while supported on a table.[6,18] He was instructed to use his left hand to assist in moving his right to a flexed position of the wrist and then to allow the wrist to extend slowly and fully. In order to achieve full wrist extension, the wrist and hand must hang over the edge of the table, see figures A1 and A2.

Figures A1 and A2 *Eccentric Exercise given to Patient*

The patient was instructed to do three sets of 15 repetitions of this exercise three times per day. The patient verbally reported a 40–50% improvement after the fourth visit at which time he had to return overseas. The patient was followed up one and two weeks later via e-mail. At the one week follow up, he reported that he did not have access to ice but had continued to do the exercises daily. He reported that he continued to avoid playing squash and that there had been no change in symptoms since the previous visit. At the two week follow up he reported that he continued to participate in his exercise program almost daily and that he had attempted to play one game of squash which increased his symptoms slightly. The patient was again followed up at 8 and18 weeks after discontinuing treatment. At these junctures, he reported that he no longer had pain on a daily basis but reported that he was not playing squash as regularly as he had prior to his injury and that there was no change between week 8 and 18 in his symptoms. He continued his exercise program throughout this period. He reported that in the previous seven weeks he played squash twice per week and experienced minor symptoms for a day or two following each game. At a one year follow up, he reported that he no longer had any symptoms persisting and had no pain

while playing or after playing squash and had returned to his previous level and frequency of play. He was unable to recall when he discontinued his exercise program but reported that he had discontinued the program.

Discussion

Elbow pain may have numerous causes including those that are common such as medial or lateral epicondylosis, partial or full tearing of the medial or lateral collateral ligaments of the elbow, cubital tunnel syndrome, pronator quadratus syndrome, intra-articular injuries, epiphesial injuries, symptomatic osteophytes and anterior interosseous nerve entrapment.[7,12,13] Less commonly, elbow pain may be associated with radial head subluxation, infiltration by tumour, little league elbow and osetochondritis dessicans of the capitellum.[7,12,13] These conditions should remain on a practitioner's differential diagnosis list when presented with a case of elbow pain.

Medial epicondylosis is the most common diagnosis for complaints of medial elbow pain.[14] Medial epicondylosis is characterized by medial elbow pain that is worsened by resisted forearm pronation and wrist flexion and is usually of insidious onset.[5,11,14,15] Pain on palpation is usually found distal and lateral to the medial epicondyle, and may extend one to two centimeters distally, over one of the following muscles: pronator teres, flexor carpi radialis, palmaris longus, flexor digitorum superficialis, and/or the flexor carpi ulnaris[2,4,5,9,11,14,15] The pronator teres or the flexor carpi radialis are most often involved.[5,12–15] This condition commonly affects athletes, especially those placing a valgus stress on their elbow during play, but also may affect a non-athletic population for a similar biomechanical reason.[1,2,12,15,16] Range of motion, grip and generalized strength, and sensation are usually unaffected and radiographs of the elbow are usually unremarkable.[5] If the patient is a throwing athlete or the condition is chronic, radiographs may show calcification of the medial collateral ligament or traction spurs.[5,15] Ligamentous instability of the ulnar collateral ligament may be present in some cases but is not essential for diagnosis.[1,5,12] Several orthopaedic tests including Cozen's test, golfer's elbow test, Mill's test, Kaplan's test and Polk's test may be used to differentiate between medial and lateral epicondylitis.[1] The tests done to identify lateral epicondylosis include Cozen's test and Kaplan's sign. Polk's test may be used to diagnose either medial or lateral epicondylosis.[1] It is performed with a bent elbow in either variation. Pain produced while lifting an object such as a heavy text book with the forearm pronated (palm down) is indicative of lateral epicondylosis while pain produced while lifting the object with a supinated forearm (palm up) is indicative of medial epicondylosis.[1] Mills test and golfer's elbow test are used to identify medial epicondylosis.[17] A positive Mill's test is indicated with pain being reproduced at the medial elbow on resisted palmar flexion of the wrist with a straight elbow.[1] Golfer's elbow test is positive when resisted elbow and wrist flexion of a bent elbow and extended wrist cause pain at the medial elbow.[1] According to one Malanga and Nadler's text, none of the aforementioned elbow tests have reliability/validity tests reported.[26] In fact, this source reports that "there are no named tests for evaluating medial epicondylosis(sic)" and references the resisted wrist flexion and pronation test for this condition.[26] It was reported that "there are no studies evaluating the specificity and sensitivity of the above test."[26]

The muscles originating from the medial epicondyle include pronator teres, flexor carpi radialis, palmaris longus, flexor digitorum superficialis, and/or the flexor carpi ulnaris. These are illustrated in figure B (reprinted with permission).[18] All of these muscles, except for the palmaris longus which is an abductor, are active in flexion of the elbow, and flexion, adduction and pronation of the wrist.[4] The median and ulnar nerves lie in close proximity and underneath these structures and may get compressed in severe cases of medial epicondylosis. Tinel's sign or percussion over the cubital tunnel, and the local of these nerves, may therefore elicit symptoms.[1,6]

With the presence of only medial elbow pain in this case the following causes of elbow pain were eliminated as they generally present on the lateral side of the elbow: lateral epicondylosis, lateral collateral ligament injury, radial head subluxation and osteochondritis dessicans of the capitellum. Little league elbow, being a growth plate injury was eliminated due to the patient's age of 35 years. As no parathesia or other nerve symptoms were reported and the neurological assessment was unremarkable, cubital tunnel syndrome, pronator quadratus syndrome and anterior interosseous nerve entrapment were ruled out. If the patient did not respond to conservative management, radiographs and/or a bone scan could have been performed to help to rule out rheumatologic or other intra-articular

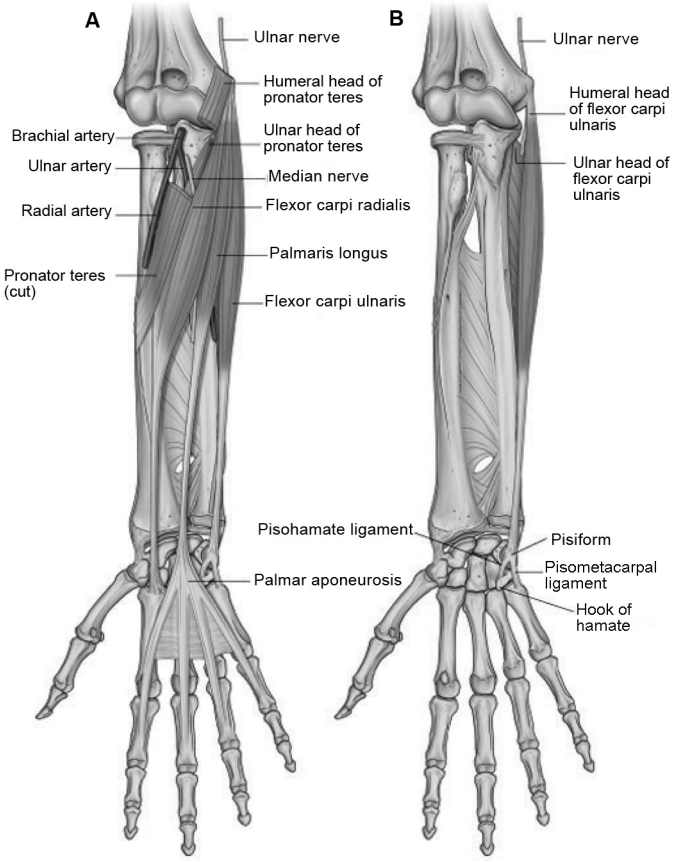

Figure B[18] *Musculature of the Medial Elbow*

causes as well as stress fracture and the rare possibility of infiltration by tumour. Unless there are signs of muscle atrophy or motor involvement, a conservative approach to treating medial epicondylosis should be attempted before considering a surgical referral.

Previous studies have reported the successful management of medial epicondylosis with relief of inflammation and include: cessation of the activity causing irritation, ice, oral anti-inflammatory medication, corticosteroid injection, physical therapy modalities including ultrasound, IFC, noxious level electrical stimulation and low intensity laser, myofascial trigger point therapy, range of motion and stretching exercises, and surgery to release the common flexion origin.[2,5,7,9,10,13–17,19–21] Cyriax physiotherapy consisting of deep transverse friction at the site of the lesion and Mill's manipulation, manipulation of the wrist, and eccentric strength exercises have been found to be possibly beneficial specifically for lateral epicondylosis, however their utility in medial epicondylosis has not been studied.[6,22,25] While some studies list extracorporeal shock wave therapy as useful in the treatment of lateral epicondylosis, research for this case uncovered a study concluding otherwise and reported that previously reported success may be due to inappropriate study designs.[23] Non-surgical conservative treatment is highly successful and should be explored thoroughly prior to consideration of surgery. Although this is the case, between 5 to 26% of patients may have a recurrence of symptoms and 40% may have prolonged minor discomfort following conservative treatment.[2] Surgical intervention should only be considered when persistent pain is experienced that limits activity after a failed conservative program of 3–6 months.[15]

There are several factors that may have influenced the favourable outcome of this case. Mobilizations of the bones of the wrist, specifically the scaphoid, as it was noted on motion palpation to have insufficient normal motion, were done to re-establish normal motion of the wrist articulations in an attempt to decrease pressure on the surrounding tendons which lead back to the medial and lateral elbow. The eccentric exercises were attempted due to the success of such programs seen for lateral epicondylosis with the hypothesis that this type of rehabilitation may prove beneficial if adapted for medial epicondylosis. Soft tissue techniques including fascial stripping were used to attempt to break down scar tissue that may have accumulated in the area.[24] With the onset of manual therapy, the patient seemed to have a rapid reduction of subjective symptoms, but it is important to note other factors that may have produced a favourable outcome in this case such as the cessation of playing squash and therefore rest to the affected elbow.

Further study is needed to identify other possible treatment avenues such as specific rehabilitative exercises including the eccentric exercise described in this case study. Exercises that influence the strength, stability and endurance of the muscles of the medial elbow may provide a useful tool in the treatment of medial epicondylosis. This research might take the form of other case reports or a small scale clinical trial to compare the effectiveness of treatment with and without specific exercise prescription.

Summary

Although favourable results were obtained, it is important to remember that the nature of this investigation was that of a case study, and therefore treatment was applied to only one patient. Limited as it may be, this case does demonstrate the conservative management of medial epicondylosis using fascial stripping, trigger point therapy, wrist mobilization and a home therapy program consisting of eccentric exercises geared towards strengthening of the wrist flexors. Conservative management of medial epicondylosis should be explored prior to more invasive procedures such as corticosteroid injections or surgery.

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