

TENNIS ELBOW: ITS ORIGINS AND TREATMENT

UDC:796.342:616-001
(Original scientific paper)

**Daniela Georgieva¹, Poposka Anastasika¹ Poposka¹, Milan Samardziski¹,
Zoran Bozinovski¹, Roza Dzoleva-Tolevska¹, Jasmina Nanceva¹, Rexhep Seljmani¹,
Antonio Georgiev², Vujica Zivkovic³, Mitricka D. Stardelova³**

¹University Clinic for Orthopedic Surgery, Clinical Center Mother Teresa- Skopje, Ss. Cyril and Methodius University – Skopje, Republic of Macedonia

²PHO Cardiology – Prima, MIT University, Skopje, Republic of Macedonia

³Faculty of Physical Education, Sport and Health, Ss. Cyril and Methodius University – Skopje, Republic of Macedonia

¹University Clinic for Orthopedic Surgery, Clinical Center Mother Teresa- Skopje, Ss. Cyril and Methodius University – Skopje, Republic of Macedonia

²PHO Cardiology – Prima, MIT University, Skopje, Republic of Macedonia

³Faculty of Physical Education, Sport and Health, Ss. Cyril and Methodius University – Skopje, Republic of Macedonia

Abstract

Tennis elbow or lateral epicondylitis is a type of repetitive strain injury, resulting from tendon overuse and failed healing of the tendon. The extensor carpi radialis brevis muscle plays a key role. This disease is a very common cause of the elbow pain in people and athletes between the ages of 30 and 50 years old. Aim: The aim is to present origins and treatment of tennis elbow or lateral epicondylitis. Material and methods: The study included 90 patients having tennis elbow, and they were divided to two groups according to different conservative treatment. Clinical and radiographic examinations (X-ray, ultrasonography and MRI) were analyzed during the evaluation. In this retrospective study 2 patients were followed with colour Doppler ultrasound. Results: Exactly 80 patients became symptom-free and regained normal function after 1 year. 6 patients in group 1 and 4 patients in group 2 returned 1 year later complaining persistent pain of the area of elbow, and minimized the participation in sportive activities. Conclusion: Conservative therapy is the best choice for treatment of tennis elbow.

Key words: tennis elbow, sport injuries, treatment.

Introduction

Tennis elbow is a condition that causes pain around the outside of the elbow. It is clinically known as lateral epicondylitis. The forearm muscles and tendons become damaged from overuse, repeating the same strenuous motions again and again. The extensor carpi radialis brevis muscle plays a key role. Any activity, including playing tennis, which involves the repetitive use of the extensor muscles of the forearm can cause acute or chronic tendonitis of the tendinous insertion of these muscles at the lateral epicondyle of the elbow (fig. 1). The pathophysiology of lateral epicondylitis is degenerative. Histological findings include granulation tissue, microrupture, degenerative changes, and there is no traditional inflammation. Lateral epicondylitis in tennis players is caused by the repetitive nature of hitting thousands of tennis balls, which leads to tiny tears in the forearm tendon attachment at the elbow (Faro F, Wolf JM, 2007).

Lateral epicondylitis is a common musculoskeletal condition. One in three people have tennis elbow at any given time. In tennis players, about 38% have reported current or previous problems with their elbow. It is often caused by other activities that place repeated stress on the elbow joint, such as other athletes, golfers, baseball players, bowlers, gardeners, carpenters, mechanics or playing the violin. The condition is more prevalent in tennis players and individuals over 40. Men and women are equally affected. Symptoms of lateral epicondylitis consists of pain on the other part of the elbow, point tenderness over the lateral epicondyle (a prominent part of the bone on the outside of the elbow), pain from gripping and movements of the wrist (especially wrist extension and lifting movements), pain from activities that use the muscles that extend the wrist. Symptoms associated with tennis elbow include: radiating pain from the outside of

the elbow to the forearm and wrist, pain during extension of wrist, weakness of the forearm, a painful grip while shaking hands or torquing a doorknob, and not being able to hold relatively heavy items in the hand (Nirschl RP, 1992).

Tennis elbow cannot be diagnosed from blood tests and by X-rays. It is usually diagnosed by the description of pain and findings from a physical exam, such as worsening of the pain with passive wrist flexion and resistive wrist extension (Cozen's test). Ultrasonography and magnetic resonance imaging are other valuable tools for diagnosis.

From all tennis elbow cases 80-95% are treated by conservative methods (relax the affected arm, cold compress for a few minutes several times a day, orthotics, physiotherapy, non-steroid anti-inflammatory drugs, corticosteroid injection) (Coombes BK, Bisset L, Vicenzino B, 2010). Surgery may be used as a last resort to remove the damaged part of the tendon. Surgical techniques can be done by open, percutaneous or arthroscopic surgery. Tennis elbow left untreated can lead to chronic pain that degrades quality of daily living (Nirschl RP, Ashman ES, 2004).

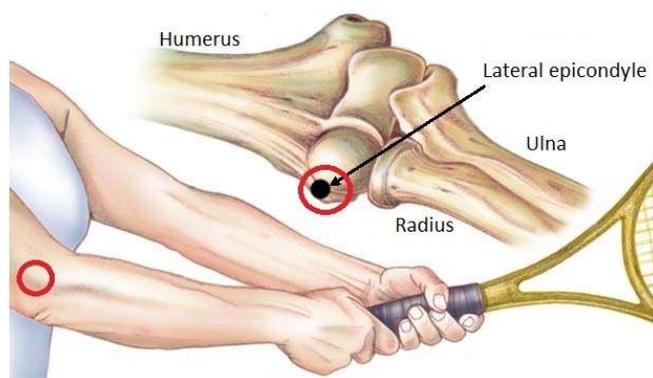


Fig. 1. Tennis elbow

Aim

The aim of this work is to show origins and treatment in patients and athletes with tennis elbow.

Patients and methods

The study was worked out at the University Orthopaedic Surgery Clinic, Faculty of Medicine in Skopje. During the years 2010 to 2014, 90 patients between ages 20 to 50 years were observed for lateral epicondylitis. The patients complained of suddenly pain localized around the outside of the elbow. The patients were divided to two groups of 45 patients each. All patients were treated with conservative treatment: relax the arm, cold compress, orthotics, physiotherapy, non-steroid anti-inflammatory drugs, corticosteroid injection. Group 1 was treated combination conservative methods and corticosteroid injection (fig. 2), and group 2 was treated only with conservative methods end without corticosteroid injection. Due to the variations of development of the elbow, the symptoms and clinical findings had to substantiate the X-Ray, ultrasonography and MRI evidence in order to diagnose tennis elbow or lateral epicondylitis. Also, at the University Cardiology Clinic 2 patients were followed with colour Doppler ultrasound because of pain, swelling and palpable cooler upper limb.



Fig. 2. Corticosteroid injection

Results

According to sex both groups consisted of 49 (54%) male patients and 41(46%) female patients. The average age of the patients was 38 years. Follow-up examinations were also carried out in the 90 patients treated by the previously reported conservative methods. Patients treated with conservative methods and corticosteroid injection (group 1) had lower complete recovery at 1 year. Patients treated only with conservative methods also had recurrence rate at 1 year. These patients had resumed normal daily activities six months after completion of the various modalities of conservative treatment, and had attained freedom from pain within a year. They demonstrated full ability to participate in vigorous activities at work and sport. Thus, they did not return further for examination, except for 6 patients in group 1, and 4 patients in group 2 who returned 1 year later and complained of enlargement of the area of the elbow. This area was sensitive, more often tender on palpation, with the elbow fully extended – which is the origin of the extensor carpi radialis brevis muscle from the lateral epicondyle. To complete diagnosis we used X-ray and ultrasonography in all 90 patients. Magnetic resonance imaging was done only in 4 patients (two in each group), confirmed excess fluid and swelling in the affected region in the elbow. Colour Doppler ultrasound showed normal vascularization of the upper limbs in both investigated patients. In these patients with further investigations proved seropositive rheumatoid arthritis as the reason for the beginning of lateral epicondylitis.

Discussion

The term tennis elbow first appeared in an 1883 paper by Mayor called Lawn-tennis elbow. In tennis player, 40% have reported current with their elbow. Less than one quarter (24%) of these athletes under the age of 50 reported that the tennis elbow symptoms were “severe” and “disabling,” while 42 % were over the age of 50. Tennis elbow is more prevalent in individuals over 40, and equally affects both sexes. In our study the average age of the patients was 38 years. 54% were male, and 46% were female patients. (Nirschl RP, 1992).

Studies show that trauma such as direct blows to the epicondyle, a sudden forceful pull, or forceful extension cause more than half of these injuries. It has also been known that incorrectly playing tennis may cause early stages of tennis elbow as shock is received when mishitting the ball (Bisset L, Paungmali A, Vicenzino B, Beller E, 2005). Ciriax proposes that there are microscopic and macroscopic tears between the common extensor tendon and the periosteum of the humeral epicondyle. Kaplan noted the constriction of the radial nerve by adhesion to the capsule of the radiohumeral joint and short extensor muscle of the wrist.

Diagnosis is made by clinical signs and symptoms, X-ray (usually normal), medical ultrasonography (displays thickening and heterogeneity of the common extensor tendon, calcifications, intrasubstance tears, and marked irregularity of the lateral epicondyle), and MRI (excess fluid and swelling in the affected region in the elbow, such as the connecting point between the forearm bone and the extensor carpi radialis brevis) (Bisset L, Paungmali A, Vicenzino B, Beller E, 2005).

Many papers and studies report that 80-95% of all tennis elbow cases can be treated without surgery. In some cases, severity of tennis elbow symptoms mend without any treatment, within six to 24 months, but untreated elbow can lead to chronic pain that degrades quality of living. Corticosteroid injection may be effective in short term, little benefit after a year, compared to a wait and see approach (Krogh TP, Bartels EM, Ellingsen T, Stengaard-Pedersen K, Buchbinder R, Fredberg U, Bliddal H, Christensen R, 2013). In our study, we have conservative treatment of all respondents with excellent result. Only in few cases symptoms persist for 1 year. Complications from repeated steroid injections include skin problems such as hypopigmentation and fat atrophy leading to indentation of the skin around the injection site. Response to initial therapy is common, but so is relapse (25% to 50%) and, or prolonged, moderate discomfort (40%) (Coombes BK, Bisset L, Brooks P, Khan A, Vicenzino B, 2013).

The most important is prevention. Increased incidence with increased playing time is statistically significant only for respondents under 40. Individuals over 40 who played over two hours had a two fold increase in chance of injury. Those under 40 had a 3.5 times increase compared to those who played less than two hours per day. Poor technique increases the chance for injury much like any sport. Therefore, an individual must learn proper technique for all aspects of their sport. Other ways to prevent tennis elbow are: decreases of playing time if feeling pain, stay in good physical shape, strengthen the muscles of the forearm, the upper arm, the shoulder and upper back (Lo MY, Safran MR, 2007).

Conclusion

The goals of treatment are to reduce pain, promote healing, and decrease stress and abuse on the injured elbow. A big part of managing the condition is educating the patients, athletes and coaches about the condition and the importance of not over training. It is important to manage the young tennis players training program to change technique and alleviate the problem.

References

- Faro F, Wolf JM. (2007). Lateral Epicondylitis: Review and Current Concepts. *The Journal of Hand Surgery*, 32 (8): 1271–1279.
- Nirschl RP. (1992). Elbow tendinosis/tennis elbow. *Clin Sports Med*, 11 (4): 851–70.
- Coombes BK, Bisset L, Vicenzino B. (2010). Efficacy and safety of corticosteroid injections and other injections for management of tendinopathy: a systematic review of randomised controlled trials. *Lancet*, 376 (9754): 1751–67.
- Nirschl RP, Ashman ES. (2004). Tennis elbow tendinosis (epicondylitis). *Instr Course Lect*, 53: 587–98.
- Bisset L, Paungmali A, Vicenzino B, Beller E. (2005). A systematic review and meta-analysis of clinical trials on physical interventions for lateral epicondylalgia. *British Journal of Sports Medicine*, 39 (7): 411–22.
- Coombes BK, Bisset L, Brooks P, Khan A, Vicenzino B. (2013). Effect of corticosteroid injection, physiotherapy, or both on clinical outcomes in patients with unilateral lateral epicondylalgia: a randomized controlled trial. *JAMA*, 309 (5): 461–9.
- Krogh TP, Bartels EM, Ellingsen T, Stengaard-Pedersen K, Buchbinder R, Fredberg U, Bliddal H, Christensen R. (2013). Comparative effectiveness of injection therapies in lateral epicondylitis: a systematic review and network meta-analysis of randomized controlled trials. *The American journal of sports medicine*, 41 (6): 1435–46.
- Lo MY, Safran MR. (2007). Surgical treatment of lateral epicondylitis: a systematic review. *Clinical orthopaedics and related research*, 463: 98–106.

Corresponding Author:

Ass. Prof. dr sci. Daniela Georgieva
 PHI University Clinic for Orthopedic Surgery,
 Bul. “Majka Teresa” bb,
 1000, Skopje,
 Republic of Macedonia.
 e-mail: deni.georgieva@yahoo.com