

Lateral epicondylitis

Current concepts



CPD 

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Background

Lateral epicondylitis, more commonly referred to as 'tennis elbow', is a common condition seen in general practice. It affects approximately 4–7 per 1000 individuals. Despite this, the aetiology and pathophysiology remain poorly understood. Often presenting as lateral elbow pain, the differential diagnosis includes entrapment syndromes, cervical radiculopathy, osseous pathology and inflammatory conditions. Though in 90% of cases the condition is self-limiting, persistent symptoms can be difficult to manage.

Objective

In this article, a review of recent English-language journal articles explores current concepts related to lateral epicondylitis and examines the evidence behind the recommendation for the use of non-operative and operative treatment modalities.

Discussion

Lateral epicondylitis is an enthesopathy associated with the origin of the extensor carpi radialis brevis (ECRB) muscle. A clinical history and examination is usually sufficient to make a diagnosis. Maudsley's and Cozen's clinical tests have a high sensitivity in diagnosing lateral epicondylitis. The available evidence supports the use of non-operative treatment modalities in managing this condition. When comparing the different operative treatments described, there appears to be no significant advantage of intervention over the natural history of lateral epicondylitis.

LATERAL EPICONDYLITIS is a common cause of upper extremity pain. It affects 1–3% of adults each year, with an annual incidence of 4–7 per 1000 individuals.^{1,2} It is commonly referred to as 'tennis elbow'; however, it was first described by Runge in 1873 and originally coined 'lawn tennis arm'.³ Despite its eponymous name, it is estimated that only 10% of individuals affected by this disorder play tennis.⁴ There is no sex bias in this condition, and incidence peaks during the fourth and fifth decades of life.⁵ There is an association with manual labour, vibrating tools and arm dominance.⁶

Presentation

Most patients present with lateral elbow pain, usually radiating distally along the extensor muscle mass, exacerbated by wrist and finger extension against resistance. The natural history of lateral epicondylitis is generally self-limiting, with duration of symptoms ranging between six and 24 months, and complete resolution for 90% of affected patients within one year.⁷ Symptoms have an insidious onset and are not usually related to a specific traumatic event. Pain is exacerbated during lifting activities or holding the forearm in pronation.

Although lateral epicondylitis is a benign and mostly self-limiting process, the symptoms do not feel harmless to a patient. Driven by dependence on their dominant hand, there is a stronger

correlation between the intensity of a patient's pain and their level of stress.⁸ One study of 542 workers presenting for their annual medical examination found that the workers' probability of seeking care for an upper extremity disorder such as lateral epicondylitis over the following 12 months was predicted by psychological factors rather than by baseline physical demands or demographics.⁹

Pathophysiology

The pathological process is best described as an overuse syndrome of the extensor muscles leading to a degeneration of the extensor carpi radialis brevis (ECRB) tendon's enthesion or tendon to bone insertion, also known as enthesopathy. Histological tissue samples from patients with lateral epicondylitis show macroscopic changes at the origin of the tendon and microscopic features including vascular proliferation, hyaline degeneration, fibroblastic proliferation and calcific debris. These changes are characteristic of a degenerative tendinosis rather than an inflammatory process.¹⁰

Diagnosis

Clinical examination

Diagnosis of lateral epicondylitis is largely based on clinical history and examination. Radiological investigations have very little to add to the diagnostic work-up. Patients usually complain of

pain over the lateral elbow. On physical examination, tenderness can be elicited anterior and just distal to the lateral epicondyle at the origin of the ECRB and longus muscles. Provocation tests such as Maudsley's and Cozen's tests have been described by Saroja et al (Table 1); the tests have a relatively high sensitivity based on a series of 30 patients, and positive findings are indicative of lateral epicondylitis.¹¹ However, these two tests have a poor specificity, and a positive finding does not exclude other differentials such as radial nerve entrapment, cervical radiculopathy or osseous pathology including osteoarthritis, inflammatory arthritis, osteochondritis dissecans or a loose body.

Radiological examination

Imaging is not required for a diagnosis of lateral epicondylitis. However, in the presence of restricted range of motion, crepitus or loose body symptoms, plain radiographs – specifically anteroposterior, lateral and radiocapitellar views – are recommended to exclude any alternative osseous pathology.¹²

Ultrasonography and magnetic resonance imaging (MRI) can show thickening, hypoechogenicity or defects in the tendo-osseous enthesis. However, these imaging findings do not correlate with the prognosis and are not necessary for diagnosis.^{13,14} MRI signal changes interpreted as defects or ligament tears in the lateral elbow should not be treated as diagnostic of lateral epicondylitis. MRI findings may promote a perception that surgical intervention is required.

Management

Despite its relatively high prevalence, there is currently no universally recognised effective and consistent management of lateral epicondylitis that is superior to the natural history of the disease. Different modalities of treatment listed in medical journals include a wide range of therapies from injections of botulinum toxin, platelet-rich plasma and shockwave therapy to multiple published open and arthroscopic surgical techniques, with reported varying degrees of success.¹⁵

Non-operative treatment

There is extensive literature investigating non-surgical treatments for lateral epicondylitis. Review of the literature suggests there are no proven treatments available for lateral epicondylitis that are better than the placebo effect when it comes to changing the natural course of the condition. Savegh et al performed a meta-analysis identifying 22 high-quality studies performed with randomisation and placebo control evaluating the effectiveness of physical therapy, multiple injection modalities, transcutaneous electrical nerve stimulation and extracorporeal shockwave treatment (ESWT). No treatment showed benefit over placebo in the intermediate or long term.¹⁶

Price et al conducted a double-blinded randomised control trial (RCT) of multiple injecting agents including hydrocortisone, triamcinolone and lignocaine, which showed better pain relief with steroids at eight weeks when compared with local anaesthetic alone but no difference in pain relief at 24 weeks.¹⁷ Coombes et al compared corticosteroid injections,

physical therapy and a combination of both, finding that physical therapy had no influence on pain scores, while patients who received steroid injections had poorer pain scores at 12 months when compared with placebo injections.¹⁸

The prospective RCT by Tyler et al showed significant improvement in pain and function at six weeks with eccentric exercises. An eccentric contraction is the motion of an active muscle while it is lengthening under load.¹⁹ The mechanisms by which eccentric exercises relieve lateral epicondylitis symptoms remain unclear, but it is hypothesised that symptom relief may be due to changes in the neuromuscular output caused by performing these exercises.²⁰ Struijs et al found that combination therapy of a brace plus physiotherapy was superior to either treatment alone.²¹

A systemic review of glyceryl trinitrate for treating tendinopathies by Challoumas et al identified three studies of good or moderate quality showing less pain and local tenderness in short- to medium-term follow-up of the topical glyceryl trinitrate group when compared with placebo.²² A Cochrane review by Green et al found topical application of nonsteroidal anti-inflammatory drugs (NSAIDs) was effective in relieving tennis elbow pain in the short term.²³

Operative treatment

Referrals to orthopaedic surgeons for the management of lateral epicondylitis are not infrequent. Open and endoscopic debridement of the ECRB, debridement and reattachment of the ECRB origin, forage of the lateral epicondyle and

Table 1. Maudsley's and Cozen's provocation tests

Name	Sensitivity	Test description	Positive test
Maudsley's test	88%	The patient is instructed to sit with their elbow flexed at 90° and forearm pronated. The patient then extends their middle finger against resistance.	Lateral elbow pain
Cozen's test	84%	The patient stands with the affected elbow fully extended and forearm pronated. The clinician places their thumb over the lateral epicondyle and instructs the patient to clench their first and extend, pronate and radially deviate their wrist against resistance.	Lateral elbow pain

anconeus flap coverage have been described in the literature.²⁴ An extensive search of the literature is unable to identify any high-quality surgical studies performed with a large patient group or free of bias that show a clear benefit of surgery. Furthermore, in the experience of the senior author (VS), at the time of surgical debridement, there is often no clear pathological appearing tissue that can clearly be identified.

A Cochrane review of surgery for lateral elbow pain in 2011 found five small randomised studies with insufficient power to perform a meta-analysis.²⁵ In these underpowered studies, percutaneous release of ECRB resulted in slightly better function than open release, ESWT resulted in better improvement of night time pain than percutaneous tenotomy at 12 months, and the remaining trials found no difference in interventions. Further prospective double-blinded RCTs are required to determine whether surgery can modify the disease course in lateral epicondylitis.²⁵

Conclusion

Treating lateral epicondylitis can be frustrating for both patients and clinicians. Patients may feel frustrated about the prolonged duration of their pain and functional impairment. It is recommended to avoid unproven investigations or interventions to prevent reinforcement of ineffective coping strategies. Providing unproven treatment can give a patient false hope and likely medicalise the natural history of a common condition that can present in middle age.

Appropriate education of patients regarding the nature of the illness, lifestyle modifications to avoid aggravating activities and appropriate use of analgesics including NSAIDs are critical in early effective management. Additional supportive measures – such as splinting, eccentric loading exercise and early referral to physiotherapists and/or occupational therapists – assist with pain management and decreasing the associated psychological stress.

Evidence regarding the efficacy of surgery in the management of

lateral epicondylitis is limited. Larger, well-designed RCTs are necessary to investigate the true value of these treatment strategies. On the basis of current available evidence, it is difficult to recommend surgical intervention as a reliable modality to address pain associated with lateral epicondylitis.

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