

Czarnecki P., Jokieli M. *What is the best treatment for lateral epicondylitis based on evidence? Issue Rehabil. Orthop. Neurophysiol. Sport Promot.* 2018;23:89–95. DOI: 10.19271/IRONS-00059-2018-23

WHAT IS THE BEST TREATMENT FOR LATERAL EPICONDYLITIS BASED ON EVIDENCE?

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SUMMARY

Lateral epicondylitis is commonly found pathology affecting relevant number of individuals. The pathology is unclear and treatment options include many possibilities from exercises, injections, orthoses, physical therapy to surgery. In clinical practice there is no standard of dealing with this condition thus many reviews and trials were undertaken to provide evidence supporting or rejecting some of the treatment methods.

Reviews from scientific databases were analyzed to draw some conclusions. For most of these methods there is no strong evidence for treatment effectiveness. Steroid injections and exercises have some support in literature and are still preferred by the clinicians. Surgical treatment is hard to assess as in many reviews the results are no better than non-surgical treatment.

Due to lack of strong data most of the therapy is case-oriented and should be selected regarding importance of adverse effect and risk.

JAKA JEST NAJSKUTECZNIEJSZA METODA LECZENIA ŁOKCIA TENISISTY?

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STRESZCZENIE

Łokieć tenisisty lub epicondylitis jest częstym schorzeniem. Przyczyna tych dolegliwości jest wciąż niejasna, a w leczeniu stosuje się wiele metod od ćwiczeń, ostryżnięć, ortez aż do leczenia operacyjnego. Pomimo wielu badań, nie przedstawiono opracowania określającego skuteczność różnych metod leczenia.

Celem pracy jest przedstawienie aktualnych dowodów naukowych potwierdzających skuteczność poszczególnych metod leczenia łokcia tenisisty. Przeanalizowano dostępne prace o charakterze ‘systematic review’.

Większość dostępnych analiz nie zawiera wystarczających danych, na podstawie których można wybrać skuteczne metody leczenia tego schorzenia. Większość prac nie dostarcza jednoznacznych dowodów określających przydatność poszczególnych metod leczniczych. W specyficznych wskazaniach, niektóre z metod mogą być skuteczne (ćwiczenia, leczenie operacyjne), ale ich dobór zależy od czasu trwania choroby, stanu pacjenta i preferencji leczącego.

Brak jest jednoznacznych dowodów potwierdzających lub kwestionujących skuteczność metod stosowanych w leczeniu łokcia tenisisty. Wciąż stosowanych jest wiele metod leczenia, a ich wynik jest zależny od wielu czynników.

Keywords: lateral epicondylitis, tennis elbow, literature review, treatment choice

Słowa kluczowe: lateral epicondylitis, łokieć tenisisty, przegląd literatury, leczenie

Date received: 10th January 2018

Data otrzymania: 10 stycznia 2018

Date accepted: 10th February 2018

Data zaakceptowania: 10 luty 2018

Introduction

Lateral epicondylitis, tennis elbow, extensors tendinopathy, etc. are frequently found and used names to describe patients with pain over lateral side of the elbow in the area of extensors origin. It is described as a result of acute or chronic overload which produce degenerative changes to the origin of ECRB (mostly) tendon.

It is usually diagnosed in repetitive workers (up to 15%) and can be important social problem leading to high costs of sick leave (30% of all cases, average duration 12 weeks) (Assendelft *et al.*, 1996).

Despite it is common and it can be easily diagnosed clinically, many controversies are still present including pathology itself and treatment. Still, patients are treated with no proven reason of the problem, without any visible abnormalities in imaging (US, MRI). Several patterns of this pathology were described, including degenerative changes in ECRB origin with fibroblastic transformation and, on the other side, neuropathological changes in sensory nerve endings suggesting neurogenic patomechanism. Also some risk factors and accompanying pathologies have been identified including: rotator cuff pathology, DeQuervain's disease, carpal tunnel syndrome, corticosteroid therapy and smoking history (Titchener *et al.*, 2013).

Also in clinical practice, different patterns of this pathology and different responses for the used treatment can be observed. Many treatment modalities are proposed including: rest, splintage, injections (steroid, Platelet Rich Plasma), physical therapy (extracorporeal shock wave therapy, laser, acupuncture, etc.), manual therapy of many kind (massage, trigger points inactivation), kinesiology taping, exercises and finally the surgery (Jones, 2009; Sims *et al.*, 2014).

Aim

The aim of this report is to present current treatment possibilities of lateral epicondylitis and evidence based data supporting their choice.

Material and methods

Cochrane, PubMed and Physiotherapy Evidence databases were searched and analyzed for recently published papers regarding tennis elbow, including mostly systematic reviews and randomized controlled trials. Treatment possibilities were divided into groups: physical therapy (acupuncture, massage, exercises, manual therapy, orthoses, injection), electrotherapy (laser, ultrasound, extracorporeal shock wave therapy) and operative treatment (open, arthroscopic and percutaneous).

Results

Acupuncture

Analyzed studies and systematic review suggest that this modality can be successful and helpful in short term, despite the method used (laser or needle) (Green *et al.*, 2002). No benefit lasting longer than 24 hours were described and no adverse effects of this invasive method were investigated in existing trials.

Extracorporeal Shock Wave Therapy

Many researches have been done in this area but no evidence was found for positive influence and symptoms relief in patients with chronic lateral epicondylitis (Sims *et al.*, 2014). Some data suggest improvement in cases with acute problem but adverse effects has to be expected as local redness and short term pain increase (Ediz and Alpayci, 2012).

Orthoses

Beneficial role is hard to prove taking also different types of orthoses under consideration (straps or wrist extension splint). Neither one of these or both together were significantly improving function or decreasing pain in longer term (Sims *et al.*, 2014; Struijs *et al.*, 2002).

Deep transverse frictions massage (Figure 1)

Cochrane library provides analysis of two randomized control trials with 57 participants with no sufficient evidence to determine the effects of deep transverse friction on pain, improvement in grip strength, and functional status for patients with lateral epicondylitis (Loew *et al.*, 2014).



muscle strength improvement (Peterson *et al.*, 2014).

Steroid injections

Available literature suggests that steroid injections can be beneficial in pain release thus enabling other treatment such as exercises, but in long term it is of no advantage that other methods (Saccomanni, 2010).

Platelet Rich Plasma injection

PRP injections despite many supportive papers are not proven to be superior than other injections (steroid or anesthetic) (Palacio *et al.*, 2016).



Figure 1. Soft tissue therapy in tennis elbow (deep and transverse massage).

Exercises

These are one of the most commonly used for treatment of tennis elbow. In randomized controlled trial comparing exercises and steroid injection, the injection was superior in pain relief only in initial period of treatment. In the end-point of 12 months, exercises program had better results than other methods investigated (Bisset *et al.*, 2006). Also type of exercises were investigated in 120 individuals with symptoms lasting over 3 months, and eccentric exercises were superior in pain relief and

Surgery

Investigations in this area have significant methodological limitations. Systematic reviews didn't find superior results with surgical treatment over non-operative treatment (Bateman *et al.*, 2017a). If the type of surgery is concerned, several trials with patients having symptoms longer than 5 months and failed previous treatment were identified by authors of meta-analyses. Generally, patients with less invasive techniques applied (radiofrequency, percutaneous) had the pain decreased

after 3 weeks those in cases of open surgery (Buchbinder *et al.*, 2011).

Discussion

Little evidence based data can be found in the literature regarding treatment of lateral epicondylitis. This situation reflects multifactorial etiology, unclear pathogenesis, different patterns in patients having these symptoms. Many treatment methods and complicated pattern of diagnostic chain make studies inconsistent, of small groups disabling selection of groups treated only with one modality (Sims *et al.*, 2014).

Based on clinicians preference in the choice of treatment analyzed in UK there is a strong shift into physiotherapy techniques (exercises mainly) which employs hand therapist and patient self-educated exercises (Bateman *et al.*, 2017b). This reflects also self-limiting and curing pattern of the pathology, especially in the initial status (up to 3 months). Based on further biomechanical studies the muscle imbalance between flexors and extensors (probably due to pain in acute phase) needs to be restored by specific set of exercises without exaggerating symptoms (Jokiel *et al.*, 2016; Peterson *et al.*, 2014).

The role of orthoses cannot be concluded based on the trials presented in the literature. The groups examined are too small and orthoses used of a different type (Struijs *et al.*, 2002). It is a matter of discussion if these devices should be concerned as a method of treatment or more a method of support and pain relief in patients that are unable to stop working or decrease their activities for the time of self-decrease of symptoms. From our experience we suggest orthoses for physical workers or amateur tennis players as a supportive method of diminishing the pain but patients often report different results.

Steroid injection is still one of the most often choices for surgeons in population of patients with tennis elbow lasting longer than 6 months with up to 3 injections possible in one case. This treatment is proven to be more

effective than placebo or Ciriex exercises but in short term only (up to 12 weeks) (Lewis *et al.*, 2005; Ansari *et al.*, 2016). Some authors believe that steroid injection masks symptoms, enables rehabilitation but delays resolution of the disease (Saccomanni, 2010).

PRP injections were commonly used last years as a way of treatment of many pathologies including lateral epicondylitis. Although the procedure is simple and assumes beneficial role of platelet derived growth factors and cytokines which may stimulate regeneration and healing processes in bone-tendon junction, the results in controlled trials remain not extraordinary and similar to steroids application and even local anesthetics (Palacio *et al.*, 2016). Some authors describe its beneficial value but the groups analyzed were also treated with other methods at the same time (Kund *et al.*, 2015).

Surgery is described as a last choice of treatment usually indicated in symptoms lasting longer than 6 months and without improvement with more safe methods. There is no clear evidence of the results of this treatment in comparison to other methods. There are studies comparing different techniques (percutaneous, arthroscopy, open), including long term results and short term adverse effects (postoperative pain and limitation of function). Some proofs can be found that less invasive techniques can be more beneficial (Buchbinder *et al.*, 2011). Even though from the surgeon perspective there are many variations of "open" technique starting from classical wide approach with identification of all the structures within extensors compartment, bone forage and decortication ending on small 2 cm approach with ECRB release only which also puts this type of treatment into big heterogeneous group (Figure 2). Still there is a little knowledge if this procedure helps by releasing the tension of the muscle or by denervation and induction of some healing process in the degenerative tissue. In this complicated area of surgical possibilities

some authors conclude that available data suggest that surgical interventions no more effective than nonsurgical and sham interventions (Bateman *et al.*, 2017a).

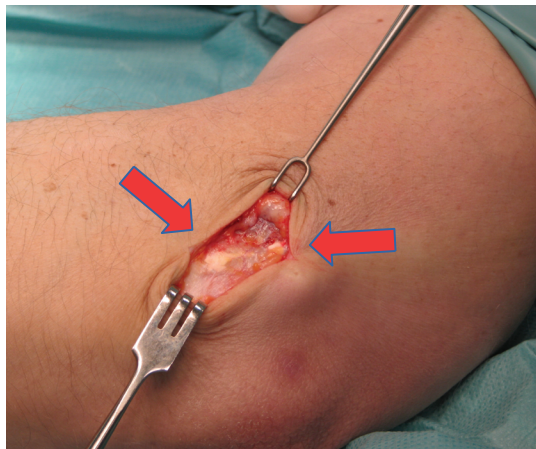


Figure 2. Standard approach to extensors origin at lateral epicondyle, steroid deposits (arrows) can be seen after previous treatment with injections.

Conclusions

Generally from papers and analyses presented it can be concluded that there are no proofs for effectiveness of deep frictional massage, ESWT and orthoses. Acupuncture and injections can be in use with limited success, mostly in short term, exercises should be performed eccentrically and have some good supports in trials. Surgery looks no better than non-surgical methods and should focus more on minimally techniques. There is no best treatment for this pathology.

Taking knowledge from experience and observations (not evidence based) and regarding multifactorial pathogenesis of lateral epicondylitis the approach to treatment should be interdisciplinary and case oriented, in the choice of the method some adverse effects or risk has to be taken into consideration providing a ladder of treatment. It should start from wait-and-see strategy followed by exercises program with some elements of manual therapy supported by pain relief (NSAIDs or injection if necessary). Surgery should be advocated in persistent cases but one should consider less invasive techniques.

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*Authors reported no source of funding.
Authors declared no conflict of interest.*

*Autor nie zgłosił źródła finansowania.
Autor nie deklarował konfliktu interesów.*

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