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A study of treatment of lateral epicondylitis with corticosteroid injection

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Abstract
Background: Lateral epicondylitis (LE) of the elbow is a frequently encountered condition in general practice. The aim of the study was to assess efficacy of local corticosteroid injection in treatment of lateral epicondylitis.
Materials & methods: In this study, we included 60 patients treated with local steroid injections in lateral Epicondylitis and regular follow up was done. Pain intensity and functional outcomes were measured using Visual Analogue Scale (VAS). Patients with lateral epicondylitis of at least 6 weeks' duration were included whereas patients with bilateral involvement, Infection, tumours of upper extremity, Pregnancy and Uncontrolled Diabetes were excluded. Regular follow up was taken at 2, 8 & 24 weeks.
Results: in this study, 60 patients were included out of which 18 were male and 42 were female patients with 30-50 years was major age group affected. Corticosteroid injections revealed improvement in pain and functional status in first 4 weeks and further improvement up to 6 weeks which then remained constant up to 6 months without any complications. Recurrence of symptoms was noticed in 16 patients at 10-12 weeks post injection.
Conclusion: Corticosteroid injections have a short-term beneficial effect combined with rehabilitation.

Keywords: Tennis elbow, lateral epicondylitis, corticosteroid, injection

Introduction
The most common overuse syndrome is related to excessive wrist extension and commonly referred to as tennis elbow (TE), although more common in non-tennis players. It is also commonly referred to as ‘‘lateral epicondylitis’’, but this is usually a misnomer because, in general, microscopic evaluation of the tendons does not show signs of inflammation, but rather angiofibroblastic degeneration and collagen disarray. On histological level light microscopy reveals both an excess of fibroblasts and blood vessels that are consistent with neovascularisation or angiogenesis [1]. The tendons are relatively hypovascular proximal to the tendon insertion. This hypovascularity may predispose the tendon to hypoxic tendon degeneration and has been implicated in the etiology of tendinopathies [2].
Lateral epicondylitis is the most commonly diagnosed condition of the elbow and affects approximately 1% to 3% ofthe population. It is characterised by pain and tenderness over the lateral humeral epicondyle and pain on resisted dorsiflexion and radial deviation of the wrist. The condition mostly occurs in patients whose activities require strong gripping or repetitive wrist movements. Individuals between the ages of 35 and 50years are at high risk. The dominant arm is most frequentlyaffected [3, 4, 5].
It is usually a self-limiting condition, often resolving in 6–12 months regardless of treatment, but complaints may last up to 2 years or longer [6]. Owing to considerable pain and discomfort, many patients need time off from work.
Numerous methods have been advocated for treating elbow tendinosis, including rest, non-steroidal anti-inflammatory medication, bracing, physical therapy, extracorporeal Shockwave therapy, and botulinum toxin injection. Injection of corticosteroids, which was considered to be the gold standard before is actually controversial. Whole-blood injections and various types of surgical procedureshave also been recommended [7, 8, 9].

Compared with physical therapy, corticosteroid injectionshave some clear advantages. It is easy to administer and the treatment is relatively cheap. In the current study, we assessed efficacy of local corticosteroid injection.

Materials & methods

A total of 60 patients presenting with pain at the lateral epicondyle region were selected for this prospective study. Diagnosis was mainly on clinical grounds i.e. pain on the lateral side of the elbow, tenderness over the extensor origin in the forearm, a positive tennis elbow pain test (Mills' sign) with pain the lateral epicondyle when the elbow is actively moved from flexion to full extension with the forearm in the prone position and the wrist in flexion [10], and positive chair test with pain in the region of lateral epicondyle when a chair is lifted with one hand in a position with the forearm pronated and the wrist is in flexion [11]. Age more than 18 years with history of at least 4 weeks of unsuccessful conservative treatment and willing to participate in the study were included in this study. Patients with associated conditions involving the upper limb such as injury to the elbow, carpal tunnel syndrome, medial epicondylitis, radial tunnel syndrome, and effusion about the anconeal triangle, indicating an intraarticular disease, and Uncontrolled Diabetes were excluded from the study. Also, patients with previous injections for lateral epicondylitis were not included in the study. All the patients irrespective of the previous treatments or duration of the symptoms were started with conservative treatment. They were treated with local steroid injection after failed conservative treatment at 4 weeks after taking informed written consent.

All included patients on the 1st visit were evaluated by a fullmedical history and physical examination then marked the levelof pain on the visual analog scale (VAS) (0–10). The scorerecords the patient's reported pain using a scale of 0–10, where0 is pain-free and 10 is the worst pain imaginable.

Materials required for injection of Corticosteroid

1. Inj. Methyl-prednisolone 40mg × 2 ml
2. 5 cc Sterile Syringe with needle
3. Sterile needle 18 no.
4. Betadine Solution
5. Savlon
6. Spirit

Fig 1: Materials required for injection of corticosteroid

Injection Technique

The elbow is flexed 90° with the palm down. Pronation of the hand is preferred to supination because it is more readily fixed in this position. Inj. Methyl prednisolone acetate I.P. 40mg × 2 ml with an 18-gauge needle is introduced immediately anterior and distal to the lateral epicondyle at the point of maximum tenderness under all sterile aseptic precautions. By inserting, injecting, withdrawing, slightly redirecting, and reinserting without emerging from the skin, the area literally is peppered with small injections [12].

During the injection a sensation like crepitation or cracking is felt. The needle should be handled lightly and inserted gently to avoid damage if the bone is contacted, as is frequently the case [12].

After the procedure all patients were instructed to rest theelbow and wrist for 48 Hrs. Patients instructed to receive acetaminophen for pain while the use of any non-steroidalanti-inflammatory medication is strictly prohibited.

The patients in the study were seen 2 weeks after the start of the treatment and a second injection was given if there were persistent symptoms. The patients were evaluated by Visual Analogue Score (VAS) at 2 & 6 months after the injection.

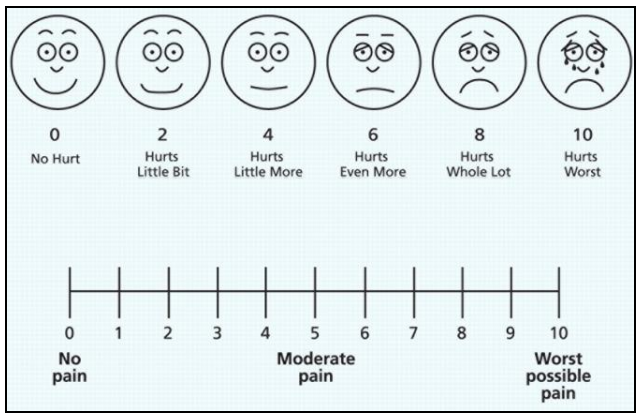

Fig 2: Visual Analogue Scale (VAS)

Results

A total of 60 patients diagnosed with lateral epicondylitis were included in this study.In our study, the majority of the patients are found to be between the age group of 30-50 years. Study includes 18 male & 42 female patients with 38 having right side & 22 having left side affected.

Table 1: Age Distribution

Age Group	No. of patients
21-30	2 (3.3%)
31-40	28 (46.7%)
41-50	24(40%)
51-60	6 (10%)
Total Patients	60 (100%)

Mean VAS score was 6.93 ± 1.04 at the baseline and 1.23 ± 2.14 at 6 month follow-up ($p<0.05$) which is statistically significant. Result revealed greatest improvement in pain and functional status in first 4 weeks and further improvement up to 6 weeks which then remained constant up to 6 months. None of the patients had suffered any complications such as hypopigmentation of the skin, post-injection flare, facial flushing, or infection during the study. Additionally, no complications attributable to local effects of corticosteroids, such as tendon rupture. However, 16 out of 60 patients had recurrence of pain at 10-12 weeks which were advised physiotherapy later on.

Discussion

Lateral epicondylitis is a common problem with many available treatment methods. The most commonly recommended treatment is physiotherapy and bracing. Approximately 87% of the patients benefit from this combination of treatment methods [13]. Corticosteroid injection, although now days considered as controversial was the gold standard treatment for lateral epicondylitis. However, studies showed that, it is merely the best treatment option in the short term when compared with physiotherapy/bracing.

Often, poor results are seen after 12 weeks of follow-up [14] which is comparable to our study. Treatment with corticosteroids has a high frequency of relapse and recurrence, probably because intra-tendinous injection may lead to permanent adverse changes within the structure of the tendon and patients tend to overuse the arm after injection as a result of direct pain relief [14]. In our study, the recurrence rate was 26.66%.

Smidt *et al*. [15] in a meta-analysis compared the effects of steroid injections with placebo injection, local anaesthetics, another steroid or another non-operative treatment. Results were not significantly different in the intermediate and long term. However, the studies acknowledging relatively good results of a wait-and-see policy, physiotherapy, and even corticosteroid injections included patients who all had non-chronic lateral epicondylitis i.e. patients with complaints of less than 6 months duration which is comparable to the current study. Smidt *et al*. [16] showed most patients recover from lateral epicondylitis within 1 year but beyond 6 months no much natural recovery is seen.

For those who do not recover can go for various types of surgical. Verhaar *et al*. [17] noted an improvement in 60 to 70% of the patients after surgical treatment, although more recently higher success rates (80%-90%) have been reported. [18] Patients remain, however, interested in an option alternative to surgical intervention in routine OPDs.

Short term follow up was the only limitation of the study.

Conclusion

Corticosteroid injections have a short-term beneficial effect on lateral epicondylitis, but might have a negative effect in the intermediate term. Rehabilitation in form of exercise with stretching must be considered with local corticosteroid injection.

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