ORIGINAL ARTICLE

Outcome of Steroid Injection for Remission in Symptoms in Patients of Lateral Epicondylitis

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Abstract

Background: Lateral epichondylitis is a painful condition caused by overuse of common extensor muscles of elbow, when performing any repetitive activity, not just tennis. The mainstay of treatment is corticosteroid injections, though their effectiveness has not been well established by controlled studies.
Objective: The objective of this study was to assess the efficacy of steroid injection in terms of pain relief in patients with lateral epicondylitis / tennis elbow at the common extensor tendon origin.
Study Design: Descriptive Cross-Sectional Study.
Place and Duration of Study: The study was carried out at OPD of Orthopaedics unit II, Jinnah Hospital Lahore from May 2012 to November 2012.
Subjects and Methods: 60 patients suffering from tennis elbow fulfilling the inclusion criteria were included in the study. All the patients received single dose of corticosteroid injection and Visual Analogue Scale assessed the outcome at 4th week interval in terms of pain relief. The main outcome variable, efficacy was described as frequency distribution table.
Results: Out of sixty patients in the study, intervention was effective in 54 (90.0%) patients (VAS=0) and was not effective in 6 (10.0%) patients. (VAS = 1- 6).
Conclusion: Corticosteroid injection for the treatment of Tennis Elbow is very high. So, it is recommended that it should be used as first line therapy as treatment for tennis elbow.
Key Words: lateral epicondylitis, Tennis elbow; steroid injection; visual analogue scale.

Introduction

Lateral epichondylitis informally called Tennis elbow is a tendinopathy of the common extensor origin of the lateral elbow. Patients usually present with gradual onset of pain on extension movements of the wrist and fingers and supination of the forearm. This condition is described as a partially reversible but degenerative overuse-underuse tendinopathy. [1,2]

Tennis elbow is very common in any sports that use racquets like playing tennis and other racquet sports, though the injury can happen almost to any person, [3] occurs more frequently in non-athletes than athletes. [4]

Tennis elbow is a frequently occurring tendinopathy than medial-sided elbow pain, and [4-7] times more frequent than its counterpart. [5-7] The incidence of tennis elbow in general population is equal both in men and women, and in sports like tenniss, male players are more often affected than female players with condition more common in the dominant extremity. The average age of presentation of tennis elbow to physicians with lateral epicondylitis is [4,2], and there is a bimodal distribution among the general population. Young athletes more often present with acute onset of pain on extension of movements and chronic, intractable symptoms typically occur in older patients. [8]

In general population the incidence of TE was reported to be 1-3% in various studies.[9] Tennis elbow is the most common occupational or work related condition all over the world. Histopathology of the affected tendon shows that there is degenerative changes termed as tendinosis, The tendon involved is the common extensor tendon and the Extensor Carpi Radialis Brevis (ECRB) tendon are more commonly involved in lateral epichondylitis.[10] However there is current consensus that process initiates as micro tear in ECRB tendon.[11]

There are various treatment modalities for TE. Anti-inflammatory drugs, local steroid injection, electromagnetic field treatment, Botulinum toxin injections, extracorporeal shock wave therapy, splintage & physical therapy modalities are conservative methods. 95% of cases respond successfully to conservative treatment. [3] Surgical procedures to release tendons binding to lateral

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epicondyle were described for inefficient conservative treatment. [3,12]

The mainstay of treatment offered by surgeons is corticosteroid injections for the condition, though the effectiveness of therapy has not yet been well established by randomized controlled studies. Several surveys for treatment preferences of tennis elbow by orthopaedic surgeons and rheumatologists showed that there is a wide-ranging preference for this therapy to treat the condition along with selection of steroids, dose and formulaiton.[12]

The efficacy of steroid injections for tennis elbow has better outcome in terms of pain relief than pooled other treatments in acute or sub acute tendenitis. According to a study done in France, in 2009, 95% of patients reported pain relief at 4-8 weeks after steroid injection, locally. [13] Toker et al in his study evaluated patients for pain with a VAS (0 to 10 points) and clinical examination of elbow before start of therapy and after one month. 72.7% of patients were pain free after one month of local steroid injection. [14]

3-5ml mixture of steroid (Prednisolone, 40mg/1ml) & local anesthetic like Lignocaine 2% is given at most tender point on lateral epicondyle & area is rubbed for a while to have even distribution of solution. Corticosteroids' being a potent anti-inflammatory reduces inflammation by limiting the capillary dilatation and permeability of the vascular structures at the site of inflammation. Side effects of local corticosteroid injections are infections at site of injection, skin depigmentation, subcutaneous atrophy, and less commonly tendon rupture. These complications are usually due to poor injection technique, using large doses, frequently repeating injections and or a failure to prepare the steroid solution properly. [15]

Several studies has shown corticosteroid injection more superior to botulinum toxin type A another form of treatment for tennis elbow used for relieving pain in tennis elbow assessed at the end 4 wks after injection. Botulinum toxins do not relieve pain significantly in patients but is also associated with muscle weakness. The muscle weakness caused by the toxin is not likely to be the only mechanism of relief of pain as observed in other studies. [16]

In these days of increasing accountability the price of the various options for treatment must be justified with respect to the clinical benefit. The concurrent presence of other co morbidity in patients presenting with tennis elbow for example gastritis, acid peptic diseases, hypertension, renal problems, and injudicious use of drugs one must explore treatment options that are safe cost effective and devoid of systemic side effects. A little work has been done in Pakistan to see the outcome of local steroid injection in patients of TE. Secondly, this is the technique, which is cheapest, simplest, safest & most effective in treating pain of the TE, requiring no or very little hospital stay. Moreover, the studies, which have been done all over the world, show variable results regarding the efficacy of this modality of treatment.

This study was done with intention to form guideline for healthcare professional to opt this modality as a 1st line treatment.

Materials and Methods

The study was carried out at OPD of Orthopedics Unit II at Jinnah Hospital Lahore, from May 15 2012 to November 14 2012. This study included 60 patients of TE with 95% confidence level, 10 % margin of error and taking expected efficacy of 80% in terms of no pain on physical examination of patient after treatment with steroid injection for tennis elbow. Inclusion criteria were 30-60 years of age of either sex, having history of moderate to severe pain (VAS = 5- 10) at elbow less than 30 days, with positive clinical examination (discomfort on supination while applying resistance or performing resisted extension of a pronated wrist).

Patients already treated for tennis elbow using any fore mentioned modality of treatment, having any superficial or deep skin infections on or around the elbow and with united, mal-united or non-united fractures around the elbow diagnosed on history, examination and X-ray elbow joint. Informed consent was taken; the demographic information like name, age, sex & address was recorded. Pain duration was also noted.

2ml mixture of Inj. Methyl Prednisolone, (40mg/1ml) & local anesthetic (Lignocaine 2%) was given at most tender point on Lateral Epicondyle.

All cases were treated on day care basis and were followed up for 1 month. At the end of 30 days, patients were called for assessment of pain relief (efficacy as per operative definition) by applying same examination technique (as stated in inclusion criteria), and using VAS assessed pain. No pain (VAS=0) was taken as efficacy of treatment.

The data was entered & analyzed in SPSS version 10.0 Mean and $\pm$ SD was calculated for

numerical variable like age. Frequency and percentages were calculated for sex & efficacy of treatment and were adjudged in terms of pain relief, only, by using VAS.

Results

Sixty patients were recruited for the study. The mean age of the patients was 45.8 + 11.36 years [range 33 – 60 years]. There were 17 (28.5%) patients of age range of 30 - 40 years, 23 (38.5%) patients of age range of 41 – 50 years and 20 (3.0 %) patient of age range of 51-60 years.

Table 1: Distribution of patients by age (n=60)

Age (years)	No. of patients	Percentage
30 – 40	17	28.5
41 – 50	23	38.5
51- 60	20	33
Mean ± SD	**45.8 ± 11.36**	
Range	**33 – 60**	

Figure 1: Distribution of patients by sex (n=60)

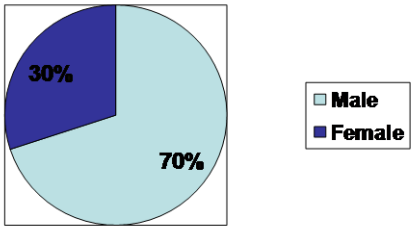

Table 2: Distribution of patients by intensity of pain (on visual analogue scale)

Intensity of pain (VAS score) (years) after 4 Weeks. n= 60	No. of patients	Percentage
No Pain (VAS 0)	54	90
Mild pain (VAS 1– 3)	3	5
Moderate (VAS 4–6)	3	5
Severe Pain (VAS 7 – 10)	0	0

Out of 60 patients included in the study, 18 (30%) patients were female and 42 (70 %) patients were male. The female to male ratio in this study was 1:2.3.

At the end of 30 days of the treatment, no pain (VAS=0) was observed among 54 (90.0%) patients. There were 3 (5.0%) patients had mild pain (VAS=1–3), 3 (5%) patients had moderate pain with (VAS=4–6) and none of the patients had severe pain (VAS= 7–10). (Table 2)

Out of sixty patients in the study, efficacy was found yes among 54 (90%) patients and no among 6 (10%) patients.

Discussion

In this current descriptive study, Sixty patients with lateral epichondylitis / tennis elbow who were given local injection of corticosteroid for treatment of their condition were studied. The results of this study were in favor of application of steroid injection resulting in achieving an efficacy (no pain) rate of 90%.

Many other studies have also been carried out in different setups across the globe. The results of these studies may be variable among different authors depending upon the outcome variables.

Toker S, et al. [14] did a comparative trial on the 21 subjects with tennis elbow in which, 11 patients with tennis elbow received treatment with steroid injection, while other 10 patients were treated with oral non steroidal anti-inflammatory drugs. At four week follow up, complete pain relief was observed among 90.9% patients receiving steroid injection, while among 50.0% patients receiving treatment with anti-inflammatory drugs. On physical examination, 20.0% patients in oral anti-inflammatory group while in corticosteroid group 72.7% patients were pain-free upon pressure on the lateral epicondyle or performing dorsiflexion of the wrist joint. The results of this study were comparable to that of ours favoring a high frequency of improvement. However, in their study efficacy of the steroid injection was higher as compared to ours. But both of the trials showed improvement and high efficacy on treatment with steroid injections. Haker [17] compared corticosteroid injection, oral anti-inflammatory drugs (naproxen) and placebo groups in their study. In first month, they reported 92% good results in injection group while the others were 57% and 50% respectively and results were statistically significant ($p< 0.001$). One year later, the results were 84%, 85%, and 82% respectively and there was no statistically significant difference between the two groups ($p>0.05$). The results were

encouraging, and like our study showed a higher efficacy of 90%.

Wolf JM, et al. [18] in which the efficacy of corticosteroid injection was assessed for treating tennis elbow, performed a study. The main outcome parameter was visual analogue score. They mean VAS before treatment was 5 + 1.4 which improved to 2.1 + 1.4 but was statistically non-significant; (P> 0.05). The results of the study showed measurable improvement in VAS with steroid injection, which have also been observed in our study.

Maharjan R, et al. [19] performed a study to compare the outcome of steroid injection with placebo (0.9% NaCl injection). They included 40 patients with tennis elbow that were divided in two equal groups. One group received treatment with placebo, while experimental group received treatment with corticosteroid. The visual analogue scores improved significantly in steroid group as compared to placebo group from sixth week onwards to eighteen week after treatment (P< 0.00), but VAS score increased to 3.80 at the end of sixth month but the results were statistically non significant for the two groups (P > 0.858). The visual analog score was significantly lower in the treatment group (corticosteroid) than in the control group (non- steroid) till 4 ½ months follow up after the injection (P < 0.000). The scores were similar in both groups before the injection (p =0.373) and at end of 6 month after the injection (0.858). So, they concluded benefit of steroid injection over placebo.

Conclusion

The efficacy of steroid injection for the management of pain among patients with lateral epichondylitis / tennis elbow is very high. So, corticosteroid injections are recommended treatment modality in patients with tennis elbow.

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