

EFFECTIVENESS OF PLATELETS RICH PLASMA VERSUS CORTICOSTEROIDS IN TENNIS ELBOW TREATMENT

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ABSTRACT

Background: Tennis elbow is a common condition causing discomfort and pain on the lateral aspect of the elbow especially during gripping activities. **Objective:** To compare the treatment with injection Platelets Rich Plasma and injection corticosteroid for tennis elbow in terms of symptoms relief. **Methodology:** This randomized controlled study was conducted in the Department of Orthopedics and Spine Unit, Hayatabad Medical Complex, Peshawar from 27th July 2016 to 26th July 2017. A total of 52 cases of tennis elbow were selected in OPD and randomly allocated in two groups to receive corticosteroids (Group A) and Platelets Rich Plasma (PRP) (Group B) and followed up to determine the effectiveness of either intervention. All information was recorded on a proforma. Pain intensity was recorded using VAS after three weeks postoperatively. Data analysis was done using SPSS 16 version. **Results:** A total of 52 patients with tennis elbow were selected and divided in two equal groups. There were 11 male and 15 females in steroid (group A) and 12 male and 14 female patients in PRP (group B). In group A, the mean baseline VAS was 6.5 ± 1.2 and in group B it was 6.7 ± 1.4 but the difference was statistically not significant with a p-value of 0.71. All patients were subjected to standard therapy as per their allocated groups and were again assessed on 3 weeks follow up. On follow up, the mean pain scores using Visual Analogue Scale in group A was 4.19 ± 2.6 and in group B was 3.42 ± 2.61 . We observed that of the overall sample of 52, the improvement was observed in 71 % of patients. Group A showed effectiveness in 54 % of patients and group B showed effectiveness in 88 % of patients. This difference was statistically significant having a p value of 0.001. **Conclusion:** Platelets Rich Plasma (PRP) is an effective alternative to corticosteroid in the treatment of tennis elbow.

Key Words: Tennis Elbow, Lateral Epicondylitis, Corticosteroid, Platelet rich Plasma, Pain, Visual Analogue scale

INTRODUCTION

Tennis elbow also known as lateral epicondylitis, is a common condition causing discomfort and pain on the lateral aspect of the elbow especially during gripping activities.¹ The term epicondylitis is misleading in that instead of being an acute inflammatory condition, it is more accurately described as a degenerative change involving abnormal micro vascular responses to the effects of mechanical overloading.² Tennis elbow derived its name from pain of lateral epicondylitis in tennis players and is usually associated with obesity and smoking.¹ Repetitive bending and straightening of the elbow is a major risk factor. It has caused work absenteeism of working class adults.³ Tennis elbow is quite common with a rate of 1-4/1000 per year in the general population.⁴ There are variety of treatment modalities like rest with a brace, activities of daily living modifications, local massage, NSAIDs and local steroid injections.¹ Multiple controlled studies support the use of platelets rich plasma (PRP) for chronic tennis elbow.⁵ Using ultrasound studies, the morphology of tendon improved quite dramatically after six months of PRP injection.⁶ Lasting clinical results in tennis elbow also depends on the method of injection like peppering technique is more effective than single site

injection.⁷

PRP is produced by fractional centrifugation of whole blood and contains about 5-10 times the concentration of platelets as compared to whole blood.⁸ Platelets produce more than 1,000 biologically active compounds.^{9,10,11} Some of these promote tissue healing like Platelet-Derived Growth Factor (PDGF), Transforming Growth Factor (TGF-r), Fibroblastic Growth Factor (FGF) and Insulin-Like Growth Factor 1 (IGF-1).⁹⁻¹¹ Tennis Elbow is not uncommon in our population. This study was designed to compare the effectiveness of Platelets Rich Plasma (PRP) and steroid injections in patients with tennis elbow.

METHODOLOGY

It was a randomized controlled trial, conducted in Department of Orthopedics and Spine Unit, Hayatabad Medical Complex, Peshawar. After getting prior permission from the Hospital Research and Ethical Committee, a total of 52 cases of tennis elbow were selected in a consecutive manner in OPD from July 27th 2016 to July 26th 2017. All patients with tennis elbow having moderate to severe pain on VAS, between 20-60 years of age and of either gender were included in the study. Patients having past elbow surgery, local skin infection and patients with metabolic diseases like Diabetes Mellitus,

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Rheumatoid Arthritis, Osteoarthritis, were not included in the study.

Tennis elbow (Lateral epicondylitis) was diagnosed if a patient came with localizing pain and discomfort over the origin of extensor Carpi Radialis Brevis (ECRB) and the pain exacerbated by resisted wrist extension and moderate to severe pain on visual analogue scale. The purpose of the study was explained to the patient and written informed consent was obtained. All patients were randomly allocated in two groups by lottery method. Patients in group A were subjected to steroid injection while the patients in group B received PRP injection in the lateral epicondyle region. Patient in group A were injected 2ml of Methyl-prednisolone acetate plus 1ml of 2% xylocaine around the lateral epicondyle of elbow and in group B 3ml of Platelets rich plasma (PRP) was injected. PRP was prepared by a Hematology colleague in Pathology Department by a process known as differential centrifugation. A 10 cc venous blood draw yielded 2-3ml of PRP. After PRP injection, patients were sent home and re-assessed after 3 weeks. All the information regarding the effectiveness were recorded in a pre-designed proforma in terms of improvement in at least one grade of pain on visual analogue scale. All the statistical analysis were done using SPSS 16 version.

RESULTS

A total of 52 patients with tennis elbow were included in the study. Patients in group A were subjected to Corticosteroids therapy and in group B patients were treated with Platelet Rich Plasma (PRP) therapy. Mean age of whole study population was 33.9 ± 9.5 years. The mean age of patients in group A was 34.2 ± 10.2 years and mean age of patients in group B was 33.6 ± 10.5 years. We found that the difference in mean age between both groups was statistically not significant having a p-value of 0.82.

There were 11 male and 15 females in steroid group and 12 male and 14 female patients in PRP group. The difference was insignificant with a p-value of 0.55. The mean baseline pain on visual analogue scale was also compared. Mean baseline VAS was 6.5 ± 1.2 in group A and in group B it was 6.7 ± 1.4 but the difference was statistically not significant with a p-value of 0.71. The baseline pain as noted on VAS was moderate in most of the patients. The difference was also not significant

with a p-value of 1.00.

All patients were subjected to standard therapy as per their allocated groups and were assessed on 3 weeks follow up. On follow up, the mean pain scores using visual analogue scale in group A was 4.19 ± 2.6 and in group B it was 3.42 ± 2.61 but the difference was insignificant statistically. (Table I) With regard to grade of pain on VAS, it was found that most of the patients had mild pain on VAS after treatment. The difference between the two groups was statistically insignificant p-value 0.9. (Figure I)

Table I: Findings in Steroid Group and Platelets Rich Plasma group.

Variable		Steroid (Group A)	PRP (Group B)	Mean total	P - value
Gender	Male	11	12	23	0.55
	Female	15	14	29	
Mean Age		34.2 ± 10.2	33.6 ± 10.5	33.98 ± 9.5	0.82
Mean pain base line		6.5 ± 1.2	6.7 ± 1.5	6.76 ± 2.2	0.71
Mean pain after treatment		4.19 ± 2.7	3.42 ± 2.6	3.7 ± 2.6	0.37

Figure I: Comparison of follow up pain with regards to Grade of Pain on VAS

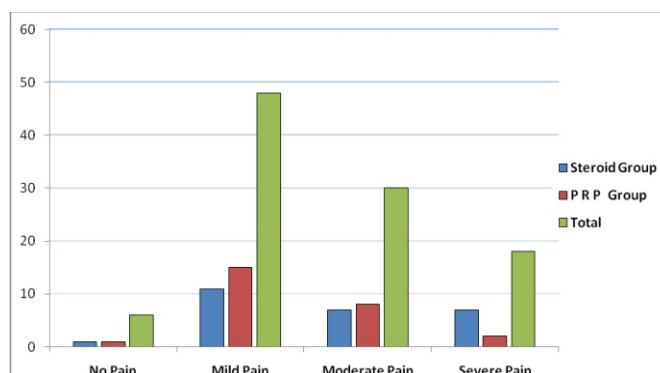
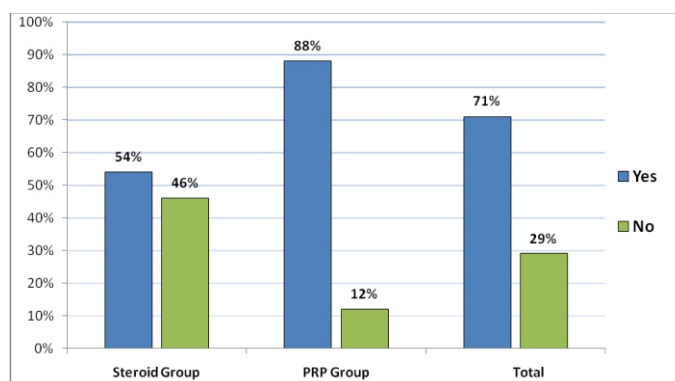


Figure II: Comparison of effectiveness in both groups



As per definition of effectiveness, improvement in at

least on grade of pain on VAS, we observed that of the overall sample of 52, the improvement was observed in 71% of patients. The group A showed effectiveness in 54 % of patients and group B showed effectiveness in 88 % of patients. The difference was statistically significant having a p-value of 0.001. (Figure II)

DISCUSSION

Tennis elbow or lateral epicondylitis (LE) is an disabling disorder of the upper limb and has a frequency of 4–7/1000 cases each year, having an ample bearing on workers as well as sports players.^{14,15} A fraction of these patients do not respond to conservative treatment like rest, physiotherapy and steroid injections. Unfortunately they have chronic pain and disability lasting up to two years regardless of mode of treatment.^{16,17} The Lateral epicondylitis pathology was poorly understood until recently, when degenerative changes followed by healing of disorganized collagen fibers and neovascularization was discovered.¹⁸⁻²² But the actual cause of this degeneration causing pain in patients with tendinitis is poorly understood; various etiological models have been proposed including healing failure due to repeated trauma, lack of vascularity, and neural hypersensitivity.²³ There are many treatment options available. Physiotherapy and resting with braces are the common treatment modalities. Almost 90% patients benefit from the combination of these treatment modalities.²⁴ Corticosteroid injection has become controversial was once the gold standard treatment. Recent studies have shown that steroids are useful only in short term treatment when compared to physiotherapy. But results are unsatisfactory after 12 weeks of followup. Similarly Smidt et al found that steroids are not better in long-term relief when compared to local anesthetic and placebo injection.²⁶ However, there was short term relief of symptoms with steroids. Many surgical treatment options are available. In a study there was improvement of 70 percent patients with surgery.²⁷ Recently, other studies have reported up to 90 percent success rate.²⁸ In a study, pain relief was present after 2 months with PRP in 65 % of patients versus 20% patients treatment with a local anesthetic.²⁹ The improvement in pain was almost in 80% patients after six months in PRP group. Although local

anesthetic is not a recommended treatment method and the numbers of patients were less i-e 15, still PRP results are comparable to our study.

Edwards and Calandruccio treated patients with tennis elbow with whole blood injection onto the lateral epicondyle.³⁰ Although 30% of patients needed multiple injections, 80 % of patients with this treatment was a success. There are some limitations of this study like multiple injections were given and previous steroid injections had failed in the study group. In our study, we had a single injection to the diseased site and use of multiple injections is doubtful in literature. However, our results are comparable with their study.³⁰ In another double blind RCT, injection PRP was compared to steroid in 100 patients. The PRP group showed greater improvement on DASH and VAS scores at six weeks follow-up as noted in our study as well.¹¹ The sample size was small in this study and also follow-up time was 3 weeks as compared to 6 months reported in literature. Also, new and old cases as well as treated and untreated patients were not taken into considerations, which could affect the results. These variables should be under considerations for much larger trials in future.

CONCLUSION

This study concludes that platelets Rich Plasma injection is an effective treatment alternative to corticosteroid in cases with tennis elbow.

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