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Original Research Article

ASSESSMENT OF THE EFFECT OF CORTICOSTEROID VS PLATELET RICH PLASMA FOR THE TREATMENT OF LATERAL EPICONDYLITIS

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ABSTRACT

Background: Lateral epicondylitis, commonly referred to as tennis elbow, is a common degenerative musculoskeletal condition involving the tendinous origin of the common extensor muscles at the lateral epicondyle of the humerus. Although corticosteroid injections have traditionally been the primary treatment, evolving insights into the underlying pathophysiology have led to the exploration of alternative therapies. Among these, platelet-rich plasma (PRP) has gained attention as a potentially more effective option. This study aims to evaluate and compare the efficacy of PRP and corticosteroid injections in the management of lateral epicondylitis.

Materials and Methods: In this analytical cross-sectional study, a total of 30 patients were included fulfilling the inclusion and exclusion criteria**.** The patients were randomly allocated into two equal groups comprising 15 individuals each. One group received an injection of 3 to 4 ml of autologous platelet-rich plasma (PRP), while the other group was treated with 2 ml (80 mg) of triamcinolone acetonide. All procedures were performed under aseptic conditions. The clinical outcomes were assessed using the Patient-Rated Tennis Elbow Evaluation (PRTEE) score and the Visual Analog Scale (VAS) for pain at 6 weeks, 3 months, and 6 months follow-up.

Results: A total of 30 patients were equally divided into corticosteroid and PRP groups. The majority were aged 31–50 years, with mean ages of 42.1 ± 8.0 (corticosteroid) and 39.4 ± 9.7 years (PRP). Males slightly outnumbered females in both groups. At baseline, the corticosteroid group had lower VAS and PRTEE scores. However, by 3 and 6 months, the PRP group demonstrated significantly greater improvements in both pain and function, while the corticosteroid group showed worsening scores. All intergroup differences in VAS and PRTEE scores at each follow-up were statistically significant ($p < 0.0001$), indicating superior long-term efficacy of PRP treatment.

Conclusion: The administration of platelet-rich plasma (PRP) injections in the treatment of lateral epicondylitis is associated with more favorable long-term clinical outcomes compared to corticosteroid injections.

Keywords: Lateral epicondylitis, steroid injections, platelet-rich plasma injection, tennis elbow.

INTRODUCTION

Lateral epicondylitis (LE), commonly referred to as tennis elbow, is one of the most prevalent and painful musculoskeletal conditions encountered in clinical practice.[1,2] It significantly affects individuals' quality of life and imposes a considerable burden on the healthcare system and society at large. LE typically presents with pain and tenderness over the lateral aspect of the elbow,

specifically at the origin of the extensor muscles of the wrist and fingers, most notably the extensor carpi radialis brevis (ECRB) tendon.[3,4]

The condition affects approximately 1% to 3% of the adult population annually, with a slightly higher incidence among females.[5] It is most commonly observed in individuals between 35 and 50 years of age, particularly those involved in repetitive upper limb activities.[6] While traditionally considered an inflammatory condition, emerging histopathological evidence suggests that LE is primarily a degenerative tendinopathy characterized by microtrauma, failed tendon healing, and angiofibroblastic hyperplasia, rather than acute inflammation.[7,8]

Clinically, patients with LE typically report lateral elbow pain, discomfort during wrist extension, and reduced grip strength. A variety of conservative treatments have been employed for its management, including physical therapy, bracing, non-steroidal anti-inflammatory drugs (NSAIDs), and various injection therapies.[9] Among injectable options, corticosteroids have been widely used since the 1950s due to their anti-inflammatory properties and ability to provide rapid pain relief. Triamcinolone acetonide, a potent glucocorticoid, is commonly administered and has shown success rates of up to 92–95% in short-term pain relief.[10] However, repeated corticosteroid injections may be associated with adverse effects such as subcutaneous fat atrophy, local skin depigmentation, and tendon weakening.[11]

Recent advancements in the understanding of tendon pathology have prompted interest in regenerative therapies, particularly the use of biologics such as platelet-rich plasma (PRP). PRP is an autologous concentration of platelets in a small volume of plasma, containing a high level of growth factors that promote tissue repair, including platelet-derived growth factor (PDGF), vascular endothelial growth factor (VEGF), and transforming growth factor-beta (TGF-β). These factors are believed to stimulate tenocyte proliferation and extracellular matrix production, thereby enhancing tendon healing.[12]

Although PRP has demonstrated potential benefits in preclinical and clinical studies, its use in LE remains a subject of debate. While it may offer longer-term relief by addressing the underlying pathology, the onset of clinical improvement is often delayed compared to corticosteroids, and the overall evidence supporting its efficacy is still evolving.[13]

In light of these considerations, the present study aims to compare the therapeutic efficacy of corticosteroid injections with that of platelet-rich plasma in the treatment of lateral epicondylitis, thereby contributing to the growing body of evidence in support of evidence-based management strategies for this condition.

MATERIALS AND METHODS

This analytical cross-sectional study was conducted at a tertiary health care including 30 patient's fullfiling the inclusion and exclusion criteria. Institutional Ethical committee approval was obtained. Written informed consent was obtained from all the participants before their inclusion in the study.

Inclusion Criteria: Patients with lateral epicondyle pain persisting for >3 months were enrolled in the study. Additionally, patients willing to provide informed consent were included in the study.

Exclusion Criteria: Patients with chronic inflammatory conditions, pain in the same limb unrelated to lateral epicondylitis, uncontrolled diabetes mellitus, systemic hypertension, ongoing anticoagulant therapy and presence of ulcers over the elbow were excluded from the study. Furthermore, a history of corticosteroid injection within the preceding three months, patients those who are less than 18 years or tumors involving the upper limb were not include.

Methodology

A total of 30 patients diagnosed with lateral epicondylitis were randomly assigned into two equal groups of 15 each. One group received an injection of 3–4 ml of autologous platelet-rich plasma (PRP), while the other group was treated with a combination of 2 ml (80 mg) of triamcinolone acetonide. Clinical outcomes were assessed using the Patient-Rated Tennis Elbow Evaluation (PRTEE) score and the Visual Analog Scale (VAS) at 6 weeks, 3 months, and 6 months of follow-up.

Statistical Analysis

Data were analyzed using SPSS software. The independent t-test and Chi-square test were applied as appropriate to compare outcomes between the two groups. A p-value of <0.05 was considered statistically significant.

RESULTS

Table 1: Demographic data of Study participants

Parameter	Corticosteroid Group (n = 15)		PRP Group (n = 15)	
	N	%	n	%
Age group				
≤ 30 years	1	6.67%	3	20.01%
31-40 years	5	33.33%	5	33.33%
41-50 years	7	46.67%	5	33.33%
51-60 years	2	13.33%	2	13.33%

Mean ± SD	42.1 ± 8.0		39.40 ± 9.72	
Gender				
Male	9	60%	8	53.33%
Female	6	40%	7	46.67%

The study involved 30 patients evenly divided between the corticosteroid and PRP groups. Most participants were aged 31–50 years, with mean ages of 42.1 ± 8.0 and 39.4 ± 9.7 years in the corticosteroid and PRP groups respectively. Males slightly outnumbered females in both groups (60% vs. 53.33%). Age and gender distributions are detailed in Table 1.

Table 2: Comparison of VAS and PRTEE scores in two groups

Time point	Corticosteroid Group (n = 15)	PRP Group (n = 15)	t-test	P Value
	Mean ± SD	Mean ± SD		
VAS				
Baseline	2.20 ± 0.4	6.1 ± 0.34	28.77	<0.0001
6 weeks	1.03 ± 0.29	4.09 ± 0.12	37.76	<0.0001
3 months	3.42 ± 0.05	1.28 ± 0.68	-12.16	<0.0001
6 months	5.07 ± 1.65	0.12 ± 0.09	-11.60	<0.0001
PRTEE				
Baseline	43.01 ± 10.13	60.3 ± 15.8	3.67	0.0010
6 weeks	27.2 ± 7.45	45.20 ± 11.35	5.12	<0.0001
3 months	62.7 ± 12.3	12.21 ± 5.66	-14.44	<0.0001
6 months	73.73 ± 16.34	6.32 ± 1.22	-16.08	<0.0001

The study compared corticosteroid and PRP treatments for lateral epicondylitis by assessing VAS and PRTEE scores at baseline, 6 weeks, 3 months and 6 months. Initially, the corticosteroid group had lower pain and disability scores than the PRP group. Over time, pain and disability increased in the corticosteroid group but significantly decreased in the PRP group. All differences between groups were statistically significant ($p < 0.05$), showing PRP was more effective in reducing pain and improving function over six months. [Table 2].

DISCUSSION

The present study found that while corticosteroid injections provided quicker short-term relief in pain and function, platelet-rich plasma (PRP) therapy demonstrated significantly better long-term outcomes in patients with lateral epicondylitis. By six months, the PRP group showed marked improvement in both VAS and PRTEE scores, whereas the corticosteroid group experienced a relapse of symptoms. These findings suggest that PRP is more effective than corticosteroids in providing sustained pain relief and functional recovery.

In this study a total of 30 patients were equally allocated to the corticosteroid and PRP groups. The majority of participants were between 31 and 50 years of age, with mean ages of 42.1 ± 8.0 years in the corticosteroid group and 39.4 ± 9.7 years in the PRP group.

Similar findings were reported by Chowdry et al. (2017),[14] where median ages were comparable between PRP (38.1 years) and corticosteroid (40.1 years) groups, with no significant difference ($p = 0.38$).

The present study observed a slight male predominance, with males representing 60% of the corticosteroid group and 53.33% of the PRP group, while females accounted for 40% and 46.67%, respectively.

This result contrasts with the study by Ono et al. (1998),[15] and Viikari-Juntura et al. (1991),[16] who reported a higher prevalence of lateral epicondylitis among females. Additionally, Shiri et al. (2006),[17] reported a 1.3% overall prevalence of lateral epicondylitis without any significant gender differences. These variations in gender distribution across studies may be influenced by differences in population demographics, occupational exposures, or diagnostic criteria.

This study evaluated the effectiveness of corticosteroid and PRP treatments for lateral epicondylitis by measuring VAS and PRTEE scores at baseline, 6 weeks, 3 months, and 6 months. Initially, the corticosteroid group exhibited lower pain and disability scores compared to the PRP group. However, over time, the corticosteroid group experienced a recurrence of symptoms, while the PRP group showed significant and sustained improvements in both pain and functional outcomes. The intergroup differences were statistically significant ($p < 0.05$), highlighting the superior long-term efficacy of PRP.

Similarly, Nafa et al. (2018),[18] found that PRP provided better, albeit delayed, therapeutic benefits compared to corticosteroids, with sustained clinical improvements lasting up to two years and minimal adverse effects, primarily limited to mild local discomfort at the injection site. Furthermore, a meta-analysis by Qiaolong Xu et al. (2019),[19] indicated that PRP injections were statistically superior to corticosteroids in reducing pain and enhancing elbow joint function at six months post-treatment.

These findings also align with previous research by Mishra et al. (2006),[20] and Gosens et al. (2011),[21] who reported significant short-term improvements in pain and function with both leukocyte-enriched PRP and corticosteroid treatments.

Although the effectiveness of PRP remains a topic of debate, our current study found that both corticosteroid and PRP injections are effective treatments for lateral epicondylitis, with PRP showing long lasting benefits.

CONCLUSION

The present study demonstrates that while corticosteroid treatment initially provides greater pain relief and functional improvement in patients with lateral epicondylitis, these effects diminish over time. In contrast, platelet-rich plasma (PRP) therapy shows a progressive and sustained improvement in both pain (VAS) and functional scores (PRTEE) over a 6-months follow-up period. Overall, these findings suggest that PRP is more effective than corticosteroids in achieving long-term pain relief and functional recovery in lateral epicondylitis.

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