Section Orthopaedics

Original Research Article

COMPARATIVE ANALYSIS OF TENNIS ELBOW TREATED WITH STEROID INJECTION VS PRP AT A TERTIARY CARE HOSPITAL

Punit Tank[1], Ravikumar Bhesaniya[2], Kalpesh A Tank[3], Nishant Suvagiya[3]

[1]Associate Professor, Department of Orthopaedics, GMERS Medical College and General Hospital, Rajpipla, Gujarat, India.
[2]Associate Professor, Department of Orthopaedics, Shantabaa Medical College & General Hospital, Amreli, Gujarat, India.
[3]Assistant Professor, Department of Orthopaedics, Shantabaa Medical College & General Hospital, Amreli, Gujarat, India.

Received : 02/09/2023
Received in revised form : 15/09/2023
Accepted : 07/10/2023

Keywords:
Steroid, Plasma rich protein, Tennis elbow.

Corresponding Author:
Dr. Nishant Suvagiya,
Email: nishantsuvagiya66@gmail.com

DOI: 10.47009/jamp.2023.5.6.148

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (6); 716-718

Abstract

Background: The present study was conducted for comparing the results of steroid injection versus PRP among patients with tennis elbow. **Materials and Methods:** 50 subjects with signs and symptoms of tennis elbow not responding to conservative management like oral medication, physiotherapy, local ultrasound sound therapy was enrolled in the present study. All the subjects were randomized in two study groups as follows: Group A: PRP group, and Group B: Steroid injection group. Patients were assessed using a 10-point visual analog score (VAS) for pain, and Disabilities of Arm, Shoulder and Hand scale (DASH) score before and after treatment at different time intervals. **Results:** In terms of VAS score, both the study groups showed a statistically significant reduction. However; improvement of VAS was faster among subjects of group A in comparison to subjects of group B at different follow-up time intervals. Both the study groups showed a statistically significant reduction of DASH at different time intervals. However; improvement of VAS was faster among subjects of group A in comparison to subjects of group B at different follow-up time intervals. **Conclusion:** For managing the patients with tennis elbow, platelet-rich plasma is the better therapeutic option.

INTRODUCTION

Lateral elbow pain is one of the most common sources of medical consultation for non-traumatic elbow disorders. The most frequent diagnosis is the tendinous disorder known as lateral epicondylitis (LE) or 'tennis elbow'.[1,2] Patients complain of an area of pain and tenderness over the bony prominence of the lateral epicondyle. There is a wide spectrum of severity ranging from slight tenderness to severe, continuous pain. Pain is characteristically exacerbated by resisted extension of the middle finger and also by extension of the wrist.[3,4] Tennis elbow primarily results from the repetitive strain caused by activities that involve loaded and repeated gripping and/or wrist extension. It is common in individuals who play tennis, squash, badminton, or any activity involving repetitive wrist extension, radial deviation, and/or forearm supination.[5]

In most cases, TE is a self-limiting condition; 80% resolve in six months and 90% resolve after one year with a wait-and-see policy and avoidance of aggravating activities. Despite this self-limiting character, effective treatment can be beneficial in order to shorten the duration of symptoms and to counter absenteeism from work.[6] Platelet-rich plasma (PRP) is a commonly used treatment for tendinopathies such as tennis elbow despite the questionable evidence of its efficacy. A recent Cochrane review suggests that it likely does not provide clinically meaningful benefits in people with tennis elbow.[7] Hence; the present study was conducted for comparing the results of steroid injection versus PRP among patients with tennis elbow.

MATERIALS AND METHODS

The present study was conducted in the Department of Orthopaedics, GMERS Medical College and General Hospital, Rajpipla, Gujarat (India) for comparing the results of steroid injection versus PRP among patients with tennis elbow. 50 subjects with signs and symptoms of tennis elbow not responding to conservative management like oral medication, physiotherapy, local ultrasound sound therapy was enrolled in the present study. All the subjects were randomized in two study groups as follows:

Group A: PRP group, and

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Group B: Steroid injection group

For the purpose of making PRP, 20 millilitres of blood were extracted, added to two acid citrate dextrose vacutainer tubes, and centrifuged. After separating the plasma and buffy coat into two sterile glass tubes, the centrifuge was run one again. PRP made from autologous blood was administered to the patients in the PRP group at the site of greatest tenderness over the lateral epicondyle. Patients were assessed using a 10-point visual analog score (VAS) for pain, and Disabilities of Arm, Shoulder and Hand scale (DASH) score before and after treatment at different time intervals. All the results were recorded and analysed using SPSS software.

RESULTS

Mean age of the patients of group A and group B was 34.3 years and 35.9 years respectively. Majority proportion of patients of both the study groups were males and were of urban residence. In terms of VAS score, both the study groups showed a statistically significant reduction. However; improvement of VAS was faster among subjects of group A in comparison to subjects of group B at different follow-up time intervals. Both the study groups showed a statistically significant reduction of DASH at different time intervals. However; improvement of VAS was faster among subjects of group A in comparison to subjects of group B at different follow-up time intervals.

Table 1: Comparison of VAS

Time interval	Group A	Group B	p-value
Baseline	4.7	4.9	0.012 (Significant)
2 weeks	1.2	3.4	0.037 (Significant)
8 weeks	0.8	2.3	0.041 (Significant)
4 months	0.5	1.4	0.048 (Significant)
8 months	1.6	0.3	0.812
p-value	0.003 (Significant)	0.001 (Significant)	-

Table 2: Comparison of DASH

Time interval	Group A	Group B	p-value
Baseline	58.4	56.2	0.027 (Significant)
2 weeks	31.9	49.3	0.023 (Significant)
8 weeks	28.7	35.8	0.039 (Significant)
4 months	25.7	30.7	0.031 (Significant)
8 months	32.2	27.9	0.287
p-value	0.000 (Significant)	0.000 (Significant)	-

DISCUSSION

Lateral epicondylitis, also commonly referred to as tennis elbow, describes an overuse injury secondary to an eccentric overload of the common extensor tendon at the origin of the extensor carpi radialis brevis (ECRB) tendon. Tennis elbow primarily results from the repetitive strain caused by activities that involve loaded and repeated gripping and/or wrist extension. It is common in individuals who play tennis, squash, badminton, or any activity involving repetitive wrist extension, radial deviation, and/or forearm supination. The etiology of TE is not completely understood. However, it is assumed that overuse leads to an increase in tenocyte proliferation and production of ground substance. Repetitive overuse results in tendon dysrepair with macroscopic abnormalities of the tendon collagen. The end stage of tendinopathy is characterized by degenerative features, including an abnormal tendon structure and neovascularization.[8-10] There are various surgical and non-surgical treatments for lateral epicondylitis. The usual injection therapies include corticosteroids (CSs), autologous blood (AB), botulinum toxin (BT), and platelet-rich plasma (PRP). The biological rationale for PRP injection is that platelets contain several growth factors and other potentially active proteins, so when delivered to sites of injury, it is hypothesised to promote the repair process.[11,12] Hence; the present study was conducted for comparing the results of steroid injection versus PRP among patients with tennis elbow.

Mean age of the patients of group A and group B was 34.3 years and 35.9 years respectively. Majority proportion of patients of both the study groups were males and were of urban residence. In terms of VAS score, both the study groups showed a statistically significant reduction. However; improvement of VAS was faster among subjects of group A in comparison to subjects of group B at different follow-up time intervals. Trials using various active controls (corticosteroid injection, shock wave therapy, laser, polidocanol injection, surgery) did not improve our understanding of the effects of PRP since the effect of comparators is unclear. Nevertheless, comparisons against corticosteroid injection and the pioneer studies convinced many, while some authors remained sceptical and with hindsight, rightfully so.[11-13] The latest systematic review manifested that PRP injection has no obvious effects on the treatment of chronic LE (De Vos R J et al),[11] whereas other studies reported better results with pain relief and function improvement (Mishra AK et al, Thanasas C et al).[11,14] In another previous study conducted by Hastie G et al, authors concluded that PRP injection,

ISSN (O): 2687-5365; ISSN (P): 2753-6556

for intractable lateral epicondylitis of the elbow is a safe and effective tool in reducing symptoms.[15]

Both the study groups showed a statistically significant reduction of DASH at different time intervals. However; improvement of VAS was faster among subjects of group A in comparison to subjects of group B at different follow-up time intervals. In another previous study conducted by Seetharamaiah VB et al, authors evaluated the efficacy of single injection of platelet-rich plasma (PRP) for tennis elbow as compared with single injections of triamcinolone and placebo (normal saline) over a short-term period. Both the PRP and triamcinolone groups had better pain relief at 3 and 6 months as compared to normal saline group ($P < 0.05$), but at 6 months follow-up, the PRP group had statistically significant better pain relief than triamcinolone group. In the triamcinolone group, 13 patients had injection site hypopigmentation and 3 patients had subdermal atrophy.[16] In a meta-analysis conducted by Li A et al, authors compared the effectiveness of platelet-rich plasma (PRP) vs corticosteroids for treatment of patients with lateral elbow epicondylitis. More effective treatments were achieved in the PRP-treated patients than in the patients treated with corticosteroids. Local corticosteroid injections demonstrated favourable outcomes compared with those of local PRP treatments for lateral elbow epicondylitis during the short-term follow-up period (4 weeks and 8 weeks post-treatment).[17]

CONCLUSION

For managing the patients with tennis elbow, platelet-rich plasma is the better therapeutic option.

REFERENCES

1. Antuña S, Barco R. Essentials in elbow surgery. A comprehensive approach to common elbow disorders. London: Springer Verlag, 2014.
2. Brignardello-Petersen R, Guyatt GH, Buchbinder R, et al. Knee arthroscopy versus conservative management in patients with degenerative knee disease: a systematic review. BMJ Open 2017;7:e016114.
3. Hardy R, Tori A, Fuchs H, et al. To improve pain and function, platelet-rich plasma injections may be an alternative to surgery for treating lateral epicondylitis: a systematic review. Arthroscopy 2021;37:3360–7.
4. Jacobson J. A., Kim S. M., Brigido M. K. Ultrasound-guided percutaneous tenotomy. Seminars in Musculoskeletal Radiology. 2016;20(5):414–421.
5. Seng C., Mohan P. C., Koh S. B. J., et al. Ultrasonic percutaneous tenotomy for recalcitrant lateral elbow tendinopathy. The American Journal of Sports Medicine. 2015;44(2):504–510.
6. Boden A. L., Scott M. T., Dalwadi P. P., et al. Platelet-rich plasma versus Tenex in the treatment of medial and lateral epicondylitis. Journal of Shoulder & Elbow Surgery. 2019;28(1):112–119.
7. Baker C. L., Jr., Baker C. L. Long-term follow-up of arthroscopic treatment of lateral epicondylitis. The American Journal of Sports Medicine. 2008;36(2):254–260.
8. Runge F. Zur Genese und Behandlung des schreibe Kranfes. Bed Klin Worchenschr 1873;10:245-248.
9. Smidt N, van der Windt DA. Tennis elbow in primary care. BMJ 2006;333:927-928
10. Karjalainen TV, Silagy M, O'Bryan E, O'Bryan E, et al. Autologous blood and platelet-rich plasma injection therapy for lateral elbow pain. Cochrane Database Syst Rev 2021;9:CD010951.
11. Mishra AK, Skrepnik NV, Edwards SG, et al. Efficacy of platelet-rich plasma for chronic tennis elbow: a double-blind, prospective, multicenter, randomized controlled trial of 230 patients. Am J Sports Med 2014;42:463–71.
12. Peerbooms JC, Sluimer J, Bruijn DJ, et al. Positive effect of an autologous platelet concentrate in lateral epicondylitis in a double-blind randomized controlled trial: platelet-rich plasma versus corticosteroid injection with a 1-year follow-up. Am J Sports Med 2010;38:255–62.
13. de Vos R-J, Windt J, Weir A. Strong evidence against platelet-rich plasma injections for chronic lateral epicondylar tendinopathy: a systematic review. Br J Sports Med 2014;48:952–6.
14. Thanasas C., Papadimitriou G., Charalambidis C., Paraskevopoulos L., Papanikolaou A. Platelet-rich plasma versus autologous whole blood for the treatment of chronic lateral elbow epicondylitis: a randomized controlled clinical trial. The American Journal of Sports Medicine. 2011;39(10):2130–2134
15. Hastie, G., Soufi, M., Wilson, J., & Roy, B. (2018). Platelet rich plasma injections for lateral epicondylitis of the elbow reduce the need for surgical intervention. Journal of orthopaedics, 15(1), 239–241.
16. Seetharamaiah, V. B., Gantaguru, A., & Basavarajanna, S. (2017). A comparative study to evaluate the efficacy of platelet-rich plasma and triamcinolone to treat tennis elbow. Indian journal of orthopaedics, 51(3), 304–311.
17. Li, A., Wang, H., Yu, Z., Zhang, G., Feng, S., Liu, L., & Gao, Y. (2019). Platelet-rich plasma vs corticosteroids for elbow epicondylitis: A systematic review and meta-analysis. Medicine, 98(51), e18358.

ISSN (O): 2687-5365; ISSN (P): 2753-6556