VOLUME - 10, ISSUE - 07, JULY- 2021 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Orthopaedics

"EFFICACY OF PLATELETS RICH PLASMA VERSUS TRIAMCINOLONE IN TREATING TENNIS ELBOW"

Dr. Yogesh Kumar Senior Resident, Department of Orthopaedics JLNMCH, Bhagalpur.

Dr. Rohit Amar* Senior Resident, Department of Orthopaedics AIIMS Patna. *Corresponding Author

ABSTRACT

BACKGROUND: Lateral epicondylitis is seen more commonly in non-athletes than athletes. Non-operative methods are the mainstay of treatment being effective in more than 95% of cases. Platelet rich plasma (PRP) has shown promising results in many studies as compared to steroid injection & other modes of conservative management. Hence, this study was done to evaluate PRP efficacy in our clinical setup and in the people of age group most commonly being affected.

MATERIAL AND METHODS: This randomized study was conducted at All india institute of medical science Patna Bihar. for a period of two years on total 60 consenting patients diagnosed as suffering from lateral epicondylitis. Using lottery method for randomization the patients were divided into two groups, based on which the treatment was received. Group –1 with 30 patients received 2 ml of PRP. Group –2 with 30 patients received 2 ml of Triamcinolone injection. The data collected and recorded in the appropriate proforma. Post therapy assessment was done using with Oxford elbow score.

CONCLUSION: Lateral epicondylitis/Tennis elbow is a painful debilitating condition of elbow, which creates disturbance in functional activities. A single injection of PRP at the site of the elbow pain resulted in relief of pain in patients with longer duration as compared to local steroids to other conservative treatments.

KEYWORDS : Tennis elbow, Platelet rich plasma, Steroid, Triamcinolone, Lateral epicondylitis

INTRODUCTION

Lateral epicondylitis commonly known as tennis elbow, remains one of the most perplexing disorders of musculoskeletal system. It is thought to result from overuse or repetitive micro-trauma resulting in a primary tendinosis of extensor carpi radialis brevis (ECRB) muscle with or without involvement of extensor digitorum communis (EDC) and extensor carpi radialis longus (ECRL). Repeated dorsiflexion or pronation and supination are the most common aetiological factor.[1]

Tennis elbow is a common cause of elbow pain in the general population, 50% of person who play tennis regularly will develop lateral elbow symptoms at some point during their careers. There is no consensus on its single effective and efficacy and consistent management. Wereport a prospective case series of sixty eight patients, where e evaluated

The efficacy of local corticosteroid injection and compared it with other standard conservative measures. Its etiology and management emains controversial, reflected by the fact that more often it runs a chronic, this study was designed to know the effectiveness of a local corticosteroid injection in its management Many treatment options are available like use of NSAIDS, steroid injections, physiotherapy but all these have short term relief.Now-a-days, injections of platelet rich plasma (PRP) was proved to be efficacious treatment. PRP is a good source of many growth factors & cytokines like PDGF, TGF-beta, IGF-1, IGF-2, FGF, VEGF, EGF, keratinocyte growth factors & connective tissue growth factors and found to be one of the new way of treating this painful & disabling condition.injectionof 1ml of triamcinolone acetonide (10mg) mixed with 1ml of 2% lidocaine were given at the elbow for a duration of more than six weeks were enrolled for the study.

PRP is a concentrate of platelets derived from the patient's own blood. The mechanism of action of PRP therapy in chronic tendinopathies is varied and hypothesized to include angiogenesis, increase in growth factor expression and cell proliferation, increase the recruitment of repair cells and tensile strength. PRP owing to its high content of various growth factors it is found to be more efficacious as a healing agent. However, studies on lateral epicondylitis with PRP treatment have yielded inconclusive results.

Hence, this study was conducted with an aim to explore the efficacy of PRP in patients of tennis elbow in our study place and in the age group most commonly being affected. The main objective of the study was to compare the efficacy of local injection of PRP versus corticosteroids in terms of pain relief assessed by Oxford elbow score.

MATERIALS AND METHODS

This single blind randomized study was conducted at JLNMCH, Bhagalpur Bihar. Total 60 consenting patients of being clinically diagnosed as suffering from tennis elbow/lateral epicondylitis who fulfilled a pre- determined the inclusion & exclusion criteria. The study was initiated after obtaining an ethical clearance from the institution's ethical clearance committee. A written informed consent was taken from the patient or a legal heir before recruiting the patients to the study. Patients more than 40 years or less than 20 years old, patients suffering from elbow pain due to other causes like rheumatoid arthritis, osteochondritis dissecans, crystal arthropathies like gout, radial tunnel syndrome, cervical lesions, shoulder pathology, patients already treated by steroid injection, patients already undergone surgical intervention and any local skin pathology at injection site were excluded from the study. Using lottery method patients were randomized into two groups consisting 30 patients in each based on which the treatment was received.

- Group 1: 30 patients received 2 ml of the extracted PRP into the affected area
- Group 2: 30 patients received 2 ml of Triamcinolone into the affected area.

Autologous PRP preparation:

Autologous PRP was prepared using the platelet separation system in accordance with the manufacturer guideline. With an 18 G needle, 10 ml of venous blood collected from the participant's cubital vein and transferred into a 50 ml syringe primed with 6 ml of anticoagulant citrate dextrose solution. The collected blood was transferred into the disposable separation tube and spun using a centrifuge at 3200 rpm at room temperature for 15 minutes.

Centrifugal force separates the blood components into three distinct layers based on their particular densities. The

heaviest particles, the red blood cells sunk at the bottom of the tube, the least dense constituents the platelet-poor plasma (PPP) move to the top of the tube, while the platelet-rich plasma (PRP) remained at the centre. The whole PPP was extracted into a 30 ml syringe and discarded. Following this, PRP was extracted into a 10 ml syringe.

Since an acidic anticoagulant (anticoagulant citrate dextrose solution – solution A [ACD-A]) was added during the collection of venous blood, collected PRP is buffered to increase the pH to normal physiological levels, just before injection.

After assessment of baseline parameters, the patients were given treatment according to their allotted group and they were evaluated with Oxford elbow score at the time of getting the injection, at the end of 6 weeks, 12 weeks and at the end of 24 weeks[8]

After the injection for pain relief paracetamol/paracetamol with tramadol was used in all the groups for the first day following which only paracetamol (500 mg) tablets were allowed as rescue medication for a maximum period of one week. Post treatment physiotherapy was also same in all the groups.

Post injection protocol:

Patients are instructed to limit extensive use of their upper limb for the next 24 hours and to use pain medication only if necessary.

The data was collected and recorded in an appropriate proforma and then transferred to a master chart and then analyzed for statistical significance.

Figure 1: Locating site of injection by eliciting tenderness at lateral epicondyle.

Fig;2 injecting technique

RESULTS

Average Age at Presentation:

Average age at presentation was 31.11 years. Range of age was from 20 to 40 years. Maximum incidence was in the age group of 35 to 40 years.

Table 1:

Age at presentation	No. of Cases	Percentage
20-24 Yrs.	10	16.66
25-29 Yrs.	13	21.66
30-34 Yrs.	16	26.66
35-40 Yrs.	21	35
Total	**60**	**100**

Graph

Status of Affected Arm:

The dominant elbow was predominantly involved i.e. in 41 cases (68.3%) while, the left elbow was involved in 19 cases (31.3%) out of 60.

The ratio is 2.1:1

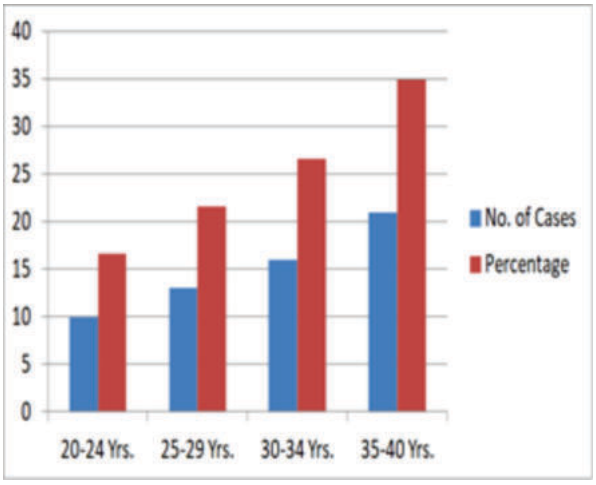

Table 2:

Sr. No.	Status of Arm	No. of Cases	Percentage (%)
1.	RIGHT	41	68.3
2.	LEFT	19	31.3

DISCUSSION

Lateral epicondylitis (LE) or Tennis elbow is an important condition of the upper extremity with an incidence of up to 4-7/1000 patients per year, having a substantial impact on athletes and workers.[9-12] Many treatment regimens are available. NSAIDS and corticosteroids are used in traditional medicine but found to be not effective in long term. Physiotherapy had shown some improvement though a sub-cohort of patients remain refractory.[1,3] But now-a days, Polidocanol, prolotherapy, autologous whole blood and PRP injection therapies have reported promising outcomes for LE and other sports related tendinopathies.[13]

PRP injections consists of activated platelets which discharge bioactive signaling molecules, including three adhesion molecules and seven growth factors.[14] Two large animal studies have recently reported improved healing of repaired dog and porcine cruciate ligaments following PRP therapy.

Chronic elbow pain is a frequent disability in patients and most commonly it is diagnosed as lateral epicondylitis or tennis elbow. Through majority of patients respond to non-surgical treatment, a small minority continues to persist with these symptoms and are labeled as resistant or refractory tennis elbow. In fact a small number of patients (1% to 2%) cannot be treated successfully by non- operative or even operative methods (christian et al)[17]. The average age of patients in this series was 31.45 years. With slight female predominance (F:M=1.06:1).

Age group ranged from 20 to 40 years, maximum number of cases occurred in the age group of 35-40 years 35% with peak at 36 years 10%. Edwards et al[18], reported mean age at presentation were 46 years in their study, 14 were male and 14 were male and 14 were female. Connell et a[19], reported a mean age of 41 years of presentation, 66% were male and 44% were female as per their study group of 35 patients.

Mishra et al[20]reported a mean age of 47 years at presentation sex not reported in their study .Verhaar et al[4], reported mean age 43 years, 59 were male and 47 were female in thei prospected randomized study of 106 patients. Ozturan et.al, reported mean age at presentation was 45 years. Female were 56%. In present series Dominant elbow was predominantly involved i.e. in 41 cases (68.3%) while the left elbow was involved in 19 cases (31.3%) out of 60 cases. Ozturan et al, reported dominant elbow affected in 77% cases. Edward et al[18] , reported dominant elbow involvement 78.57% cases. Gani et al , reported 22 patients involved the dominant elbow and four patient involved non dominant elbow in their 26 patient study. It is evident from this series that dominant side is more frequently involved. In present series average duration of symptoms was 7.69 months ranging from 3 to 12 months Connell et al[19],reported mean duration of symptoms was 13.8 months. Ozturanet al, reported mean duration of symptom 9.7 months. Gani et al,reported mean duration of symptoms was 2.1 years. Verhaar et al, reported mean duration of symptoms was 33 weeks. So present series has comparatively lesser duration of symptoms , it may be that patient con see orthopaedics consultants directly and in developed countries they have to seek appointment through referral system which takes time. The fact that there is more than one type of treatment options available in treating resistant cases suggests that no single procedure is effective in all patients. Extra corporeal shock wave, laser treatment, botulinum toxin injection, local steroid injection, Altay et al, and manipulation under anesthesia Christian et al[17],have been used by different authors with variable success. PRP injection for recalcitrant or refractory tennis elbow is based on the histopathological observation that, tennis elbow is not an inflammatory condition, but a fibroblastic and vascular response called angiofibroblastic degeneration more commonly known as tendinosis.

REFERENCES

1. Yadav R, Kothari SY, Borah D. Comparison of Local Injection of Platelet Rich Plasma and Corticosteroids in the Treatment of Lateral Epicondylitis of Humerus. J Clin Diagn Res. 2015;9(7):5-7.
2. Croisier JL, Foidart-Dessalle M, Tinant F, Crielaard JM, Forthomme B. An isokinetic eccentric programme for the management of chronic lateral epicondylar tendinopathy. Br J Sports Med. 2007;41:269-75.
3. Buchbinder R, Green SE, Youd JM, AssendelftWJ, Barnsley L, Smidt N. Shock wave therapy for lateral elbow pain. Cochrane Database Syst Rev. 2005;4:CD003524.
4. Borrione P, Gianfrancesco AD, Pereira MT, Pigozzi F. Platelet-rich plasma in muscle healing. Am J Phys Med Rehabil. 2010;89(10):854–61.
5. Mishra A, Pavelko T. Treatment of chronic elbow tendinosis with buffered platelet-rich plasma. Am J Sports Med. 2006;34(11):1774–8.
6. Mishra A, Collado H, Fredericson M. Platelet-rich plasma compared with corticosteroid injection for chronic lateral elbow tendinosis. 2009;1(4):366–70.
7. Raeissadat SA, Rayegani SM, Hassanabadi H, Rahimi R, Sedighipour L, Rostami K. Is Platelet- rich plasma superior to whole blood in the management of chronic tennis elbow: one year randomized clinical trial. BMC Sports Sci Med Rehabil. 2014;18(6):12.
8. Dawson J, Doll H, Boller I, Fitzpatrick R. The development and validation of a patient-reported questionnaire to assess outcomes of elbow surgery. J Bone Joint Surg Br. 2008;90:466-73.
9. Hamilton P. The prevalence of humeral epicondylitis: a survey ingeneral practice. J R Coll Gen Pract. 1986;36:464-5.
10. Kivi P. The etiology and conservative treatment of humeral epicondylitis. Scand J Rehabil Med. 1983;15:37-41.
11. Ono Y, Nakamura R, Shimaoka M, Hiruta S, Hattori Y, Ichihara G, et al. Epicondylitis among cooks in nursery schools. Occup Environ Med. 1998;55:172- 9.
12. Ritz BR. Humeral epicondylitis among gas and waterworks employees. Scand J Work Environ Health. 1995;21:478-86.
13. Struijs PA, Smidt N, Arola H, Dijk VC, Buchbinder R, Assendelft WJ. Orthotic devices for the treatment of tennis elbow. Cochrane Database Syst Rev. 2002;1:CD00182.
14. Everts PA, Knape JT, Weibrich G, Schönberger JP, Hoffmann J, Overdevest EP, et al. Platelet-rich plasma and platelet gel: a review. J Extra Corpor Technol. 2006;38:174-87.
15. Anitua E, Andía I, Sanchez M, Azofra J, del Mar Zalduendo M, de la Fuente M, et al. Autologous preparations rich in growth factors promote proliferation and induce VEGF and HGF production by human tendon cells in culture. J Orthop Res. 2005;23:281-6.
16. Murray MM, Spindler KP, Abreu E, Muller JA, Nedder A, Kelly M. Collagen-platelet rich plasma hydrogel enhances primary repair of the porcine anterior cruciate ligament. J Orthop Res. 2007;25:81-91.
17. Carroll, R. (1981). "Tennis elbow: incidence in local league players." Sr J Sports Med 15(4): 250-6.
18. Edwards SG, Calandruccio JH. "Autologous blood injections for refractory lateral epicondylitis". J Hand Surg Am. 2003; 28(2):272-278.
19. Connell, D. A., K. E. Ali, M. Ahmad, S, Lambert, S. Corbett and M. Curtis (2006) "Ultrasound-guided autologous blood injection for tennis elbow." Skeletal Radiol 35(6): 371-7.
20. Stahl, Shalom MD, Kaufman, Teddy MD.The efficacy of an injection of a steroid for medial epicondylitis. JBJS 1997:79(11)648-652.
21. Mishra A, Collado H, Fredericson M. Platelet-rich plasma compared with corticosteroid injection for chronic lateral elbow tendinosis. PM R. 2009 Apr;1(4):366-70.