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A Prospective Study to Evaluate the Efficacy of Local Infiltration of Autologus PRP in Chronic Tennis Elbow: A Hospital Based Study

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Abstract
Background: *The lateral epicondylitis affects up to 3% of the population, particularly adults between 30 and 50 years of age. The aim of this study to evaluated the efficacy of local infiltration of autologus Platelet Rich Plasma in chronic Tennis elbow.*
Material & Methods: *A prospective study done on 40 patients with complaint of pain in elbow, coming to RBM Hospitals, Bharatpur, Rajasthan. All patients who came to outpatient department of Orthopaedics with tennis elbow were included in the study. The procedure was done under the guidance of physician and an assistant to aid in preparation of a PRP, maintenance of aseptic technique and a radiologist for identifying the site of pathology by ultrsound. Immediately after the injection, the patient was kept in a supine position without moving the arm for 15 minutes. A 100-mm visual analog pain score (0, no pain; 100, worst pain possible) were used as outcome measures. A final follow-up overall evaluation was also done at 12th week.*
Results: *Our study showed that maximum incidence was in 2nd (25%) & 3rd decade (30%) with the mean age of 31.5 years. Male preponderance (60%) was occurred in the current study. The majority of tennis elbow occurred in farmers (25%), sportsman (25%) followed by factory workers (20%) & housewife (15%). The mean vas score of all patients at the time of PRP injection was 6.98, which decreases to 2.73 at the 12th week follow up, it was statistically significant (P<0.0001***).*
Conclusion: *We concluded that autologus PRP injection may be an effective and safe treatment option for patients presenting with tennis elbow.*
Keywords: *Platelet rich plasma, Tennis elbow, VAS score, Pain.*

Introduction

Tennis elbow is a common injury that will usually heal with minor treatment, but you have to give it time and rest. The complaint is denoted by pain over the lateral epicondyle of the humerus, which is provoked with resisted dorsiflexion movement of the wrist. The prevalence of tennis elbow approximately 4 to 7 per 1000 patients per year with yearly. The tennis elbow affects up to 3% of the population, particularly adults between 30 and 50 years of age. But less than 5% of cases are linked to tennis.[1]

Lateral epicondylitis occurs commonly in working populations[2,3]. An association between gender and epicondylitis is still controversial. A higher risk has been reported in women than in men by some studies[2,4], but not by all[3,5]. One study reported an association between obesity and upper extremity

tendonitis[6], yet the role of other individual or lifestyle factors and systemic diseases is largely unknown.

Tennis elbow usually develops over time. Repetitive motions -- like gripping a racket during a swing -- can strain the muscles and put too much stress on the tendons. That constant tugging can eventually cause microscopic tears in the tissue.

PRP is produced from an autologous whole blood sample through a platelet segregation method, which results in an increased concentration of platelets.[7] It is theorized that when PRP is injected into an area of tendinopathy, the platelets release a swarm of growth factors and prompt a healing reaction.[8]

A newer treatment, autologous platelet-rich plasma (PRP), represents a greater similarity to the natural healing process as a composite of multiple growth factors, is safe due to its autologous nature, and is produced as needed from patient blood. Gel chromatographic analysis revealed the highest mitogenic activity of basic fibroblast growth factor (bFGF) and platelet-derived growth factor (PDGF) factors that released from activated platelets. The aim of this study to evaluated the efficacy of local infiltration of autologus Platelet Rich Plasma in chronic Tennis elbow.

Material & Methods

A prospective study done on 40 patients with complaint of pain in elbow, coming to RBM Hospitals, Bharatpur, Rajasthan. All patients who came to outpatient department of Orthopaedics with tennis elbow were included in the study.

The procedure was done under the guidance of physician and an assistant to aid in preparation of a PRP, maintenance of aseptic technique and a radiologist for identifying the site of pathology by ultrsound. 20ml of venous blood is obtained from mid cubital vein in mid cubital fossa. Up to six tubes are collected for each patient. The first centrifugation is for 10 minutes at 1,300 rpm and again the centrifuge for a 10-minute rotation at 2,000 rpm.

Immediately after the injection, the patient was kept in a supine position without moving the arm for 15 minutes. A 100-mm visual analog pain score (0, no pain; 100, worst pain possible) were used as outcome measures. A final follow-up overall evaluation was also done at 12th week.

Results

Our study showed that maximum incidence was in 2nd (25%) & 3rd decade (30%) with the mean age of 31.5 years (table 1). Male preponderance (60%) was occurred in the current study.

Our study showed that the majority of tennis elbow occurred in farmers (25%), sportsman (25%) followed by factory workers (20%) & housewife (15%) (table 2). Distribution of the cases according to side of pathology 70% of the patient has right sided as compared to left sided (30%). Correlation of duration of complain with diagnosis shows that majority of patient (40%) has complain since 7-9 months (table 3). The mean vas score of all patients at the time of PRP injection was 6.98, which decreases to 2.73 at the 12th week follow up, it was statistically significant (table 4).

Table 1: Age Incidence

Age (in years)	Number of patients	Percentage
10-20 yrs	01	2.5%
21-30 yrs	10	25%
31-40 yrs	12	30%
41-50 yrs	8	20%
51-60 yrs	06	15%
Above & more than 60 yrs	03	7.5%
Total	40	100%

Table 2: Occupation wise distribution

Occupation	Number of patients	Percentage
Farmer	10	25%
Housewife	6	15%
Factory workers	8	20%
Driver	3	7.5%
Labourer	1	2.5%
Sportsman	10	25%
Others	2	5%
Total	40	100%

Table 3: Duration of complain

Duration (months)	Number of patients	Percentage
3-6 months	12	30%
7-9 months	16	40%
10-12 months	6	15%
13-15 months	4	10%
16-18 months	2	5%
Total	40	100%

Table 4: Comparison of VAS score at baseline and after 12 week

VAS score	Mean±SD	P-value
At baseline	6.98±1.03	<0.0001***
After 12 week	2.73±1.067	

Discussion

Our study showed that maximum incidence was in 2nd (25%) & 3rd decade (30%) with the mean age of 31.5 years. This is due to may be changes in the tendons which predispose this group to injury. It could be postulated that in mid-life there is some collapse in elasticity of the tendons at a time when levels of activity suitable to the younger age groups are maintained. Gruchow and Pelletier[9] observed that the incidence of tennis elbow was 2 to 3.5 times higher in the over-40 age group than in those under 40. Another study done by Ciccotti MG and Lombardo SJ[10] found that the cause of lateral epicondylitis is excessive, monotonous use of the wrist extensors and forearm supinators.

Our study showed that the majority of tennis elbow occurred in farmers (25%), sportsman (25%) followed by factory workers (20%) & housewife (15%). Because of who were mostly involved with repetitive overhead abduction activities and rather less common in shopkeeper, carpenter and students. In the general population, the incidence is equal among men and women, and in tennis players, male players are more often affected than female players.

The mean vas score of all patients at the time of PRP injection was 6.98, which decreases to 2.73 at the 12th week follow up, it was statistically significant. A study done by Mishra A and Pavelko T[11] found that eight weeks post injection the PRP patients reported 60% improvement in visual analogue scale (VAS) pain score. Another study done by Jonathan T. Finnoff et al.[12] stated the mean pain improvements of 58%. Ragab EM and Othman AM[13] found that the VAS to improve from 9.1 to 1.6. Kenneth Mautner et al.[14] patients perceived decline in visual analogue scale score was 75%.

Conclusion

We concluded that autologus PRP injection may be an effective and safe treatment option for patients presenting with tennis elbow.

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