

A STUDY TO EVALUATE THE EFFICACY OF PLATELET RICH PLASMA INJECTION IN PATIENTS OF CHRONIC LATERAL EPICONDYLITIS

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Abstract

Background: To study the platelet rich plasma injection in patients of chronic lateral epicondylitis

Methods: This study was carried out prospectively on patients age of 18-70 years of both male and female gender suffering from lateral epicondylitis.

Results: In this study we found that before injection almost patients had their VAS score were 8-10. None of the patients has been improved their VAS score to 0 at the 4th week 10.00% patients have been improved their VAS score 0 at the 4th month follow-up.

Conclusion: We conclude that PRP injection significantly decrease pain and increased elbow performance at 6 months follow-up

Keywords: PRP, Elbow, Modality

Introduction

Tennis elbow is a frequent cause of elbow pain and wrist dysfunction. The disorder develops insidiously and is usually related to repetitive and strenuous physical activity and stress, mostly applied to the origin of the extensor carpi radialis brevis¹. Sportspersons as well as those who used the same repetitive motion for many years, especially in their profession, suffer tennis elbow. Tennis elbow affects men and women equally, with a prevalence of 1%–3%² in general population.

Platelets, an important reservoir of growth factors in the body, play an important role in many processes such as coagulation, immune response, angiogenesis and the healing of damaged tissues. Numerous proteins are contained in the alpha-granules of platelets: platelet-derived growth factor, transforming growth factor, platelet factor interleukin, platelet-derived angiogenesis factor, vascular endothelial growth factor, epidermal growth factor, insulin-like growth factor and fibronectin.³Single or multiple injections of platelet-rich plasma (PRP) have been shown to be of significance in the management of tennis elbow.

Materials & Methods

Target Population-

Patients attending Out Patient Department with Chronic lateral epicondylitis between the age of 18-70 years of both male and female gender.

Sample Size

A Total number of 40 patients were selected on O.P.D. basis and followed up to 6 months.

Inclusion Criteria

➤ Patients with the age 18 years or older and consenting to study.

➤ Duration of symptoms for at least 3 months

➤ Pain over the common extensor origin increases with pressure over the lateral epicondyle and with resisted dorsiflexion of the wrist and or middle finger, for which no other cause could be identified.

Exclusion Criteria

➤ Patients with tendon rupture or post surgical tendon repairs.

➤ Patients with Active inflammatory disease.

➤ Patients with any recent febrile or infectious disease.

➤ Patients with history of any malignancy(including hematologic and non hematologic malignancies).

➤ Patients with history of autoimmune and platelet disorders, treatment with anticoagulant and anti platelet medications 10 days before injection.

➤ Patients with consistent use of NSAIDs within 48 hours before procedure, use of systemic steroids during past 3 months.

➤ Patients with haemoglobin measures of less than 10g/dl.

➤ Patients with platelet counts of less than 150,000 per micro litter.

➤ Diabetic Patients.

➤ Pregnant woman.

➤ Carpal tunnel syndrome, other peripheral nerve injury such as radial nerve injury.

➤ Any bony malformation, bony or articular lesion at elbow (diagnosed by radiographic imaging)

➤ Other causes of elbow pain such as osteochondritis dissecans of capitellum, lateral compartment arthrosis, varus instability, radial head arthritis, posterior interosseous nerve syndrome, cervical disc syndrome, cervical

radiculopathy, carpal tunnel syndrome, synovitis of radio humeral joint, fibromyalgia and osteoarthritis of elbow.

➤ Patients older than 70 years old.

Observations

A total number of 40 patients were selected on O.P.D. basis after PRP injection patient was followed up at the interval of 4th week, 8th week, 4th month and 6th month. Assessment have done using by three outcome measures: Visual Analogue Score, Nirschl Staging, Mayo elbow performance score.

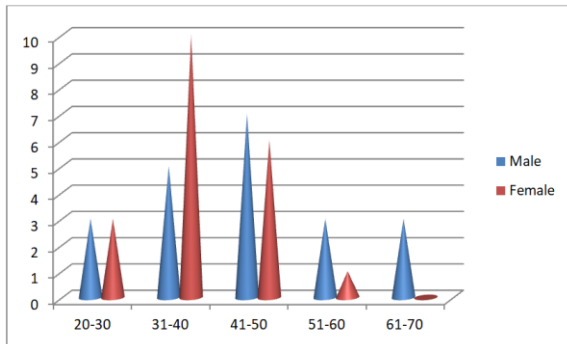


Figure 1: Distribution of cases according to age and sex

In our study we found that out of 40 patients of chronic lateral epicondylitis, 20 were males and 20 were females.

Table 1: Distribution of visual analogue scale(VAS) at various interval

VAS Scale	Pre injection	4 th week	8 th week	4 th month	6 th month
0	0	0	2	4	9
1-3	0	1	7	24	19
4-7	2	35	31	12	9
8-10	38	5	0	0	3
Total	40	40	40	40	40

In this study we found that before injection almost patients had their VAS score were 8-10. None of the patients has been improved their VAS score to 0 at the 4th week 10.00% patients have been improved their VAS score 0 at the 4th month follow-up.

Table 2: Distribution of mayo score at various interval

Mayo score	Pre Injection	4 th week	8 th week	4 th month	6 th month
<60	40	8	0	3	4
60-74	0	31	32	9	6
75-89	0	1	7	25	20
≥90	0	0	1	3	10
Total	40	40	40	40	40

In our current study 50% patients have been improved their Mayo score to 75-89 at the 6th month follow-up. After PRP injection, 10% patients had their Mayo score <60 at the 6th month follow-up.

Table 3: Distribution of Nirschl staging at various interval

Nirschl staging	Pre Injection	4 th Week	8 th Week	4 th Month	6 th Month
1-2	2	12	28	36	37
3-4	13	26	12	4	3

5-6	24	2	0	0	0
7	1	0	0	0	0
Total	40	40	40	40	40

Only one patient before PRP injection with NIRSCHL stage 7 was 1, None of the patients found with Nirschl stage 7 at the end of 4th week, 8th week, 4th month, 6th month. Before PRP injection 60% patients with NIRSCHL stage 5-6. At the 6th month 37% patients were found with Nirschl stage 1 to 2.

Discussion

An injection of platelet rich plasma (PRP) has been reported to be effective for the treatment of lateral epicondylitis. There was a significant decrease in pain^{3,4}. It is hypothesized that mitogen such-as platelet derived growth factor induce fibroblastic mitosis and chemotactic polypeptides such as transforming growth factor cause fibroblasts to migrate and specialize and have been found to cause angiogenesis. A specific humoral mediator may promote the healing cascade in the treatment of tendinosis as well. These growth factors trigger stem cell recruitment, increase local vascularity and directly stimulate the production of collagen by tendon sheath fibroblasts⁵. The mechanism of action of both autologous blood and platelet rich plasma is attributed to degranulation of a granules of platelets releasing growth factors which play a role in tissue healing and regeneration. Platelet derived growth factor, transforming growth factor, vascular derived endothelial growth factor, epithelial growth factor, hepatocyte growth factor and insulin like growth factor are some of the factors involved. Autologous biological blood that can be exogenously applied to various tissues where, after being injected, the platelet present in the blood releases high concentrations of platelet-derived growth factors that enhance tissue healing. No activation agent was used during our procedure. The activation of the platelets will occur through the exposure of platelets to the thrombin, which is released from the tendon tissue during injection. During the first 2 days of tendon healing, an inflammatory process is initiated by migration of neutrophils and, subsequently, macrophages to the degenerative tissue site. In turn, activated macrophages release multiple growth factors, including platelet-derived growth factor, transforming growth factors alpha and beta, interleukin-1 and fibroblast growth factor. Angiogenesis and fibroplasia start shortly after day 3, followed by collagen synthesis on days 3 to 5. This process leads to an early increase in tendon breaking strength, which is the most important tendon healing parameter, followed by epithelization and, ultimately, the remodeling process.

The mean duration of pain at the time of presentation in male patient was 10.95 weeks and in female was 11.89 weeks suffering from lateral epicondylitis in our study.

Conclusion

We conclude that PRP injection significantly decrease pain and increased elbow performance at 6 months follow-up.

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