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Research Paper

Functional Outcome And Results of Platelet Rich Plasma (PRP) in Medial Epicondylitis "Golpher's Elbow

Medical Science

KEYWORDS : PRP, Epicondylitis , VAS,VEGF

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ABSTRACT

Objective: *To assess functional outcome & results of injection of platelet rich plasma (PRP) in Medial epicondylitis.*

Design: *Prospective clinical study with 3 months of follow-up.*

Methods: *Clinically proven fifteen patients of rotator cuff tendinopathy (RCT) participating in study included in study according to inclusion and exclusion criteria on OPD basis after getting written and informed consent , treated by 3 mL of autologous PRP intra lesionally by single author* , evaluation of functional outcome and results done by visual analog scale (VAS) 0-10 points (at baseline, 1 month and 3 months interval).*

Results: *Fifteen patients participated in study and reported improvement in VAS score from 7.1±0.8 points pretreatment level to 0.7±0.4 points at three months post PRP injection follow up, improvement in functional outcome was also clinically as well as statistically significant. Mean analgesic use declined from 6.3±2.1 units/week pretreatment level to 0.6±0.2 units/week at three month post PRP injection follow up.*

Conclusions: *A single injection of autologous PRP is safe and effective mean of treatment of refractory Medial epicondylitis .*

INTRODUCTION

Medial epicondylitis is commonly referred to as "golfer's elbow" but can be found in athletes and in workers in occupations that demand repetitive wrist flexion activities. Medial epicondylitis is less common than lateral epicondylitis, with a reported prevalence less than 1% in the general population[1,2] but as high as 6% in some professions[3]. Persons at risk[4-7] of developing Golpher's elbow include ages mostly ranging between 30 to 50 years, laborers, those performing repetitive tasks demanding wrist flexion, smokers, and patients with obesity. In throwing athletes, particularly baseball players, the elbow's medial structures endure the most stress and account for up to 97% of all elbow injuries[8]. Medial epicondylitis and apophysitis (in the skeletally immature thrower) may result from repetitive stress to the flexor pronator mass during the Valgus loading acceleration phase of throwing[9].

The terms medial epicondylitis and tendinitis are misleading because they suggest an inflammatory process, rather the pathophysiology of this process is degenerative in nature[10].The pathogenesis of medial epicondylitis begins with repetitive micro trauma to the wrist flexors originating at their insertion on the medial epicondyle[10]. Four stages of medial epicondylitis have been described, beginning with early inflammatory reaction, followed by angiofibroblastic degeneration, structural failure, and ultimately, fibrosis or calcification[11]. Persistent micro trauma resulting in failed attempts at healing produces tendinosis. Histologic studies demonstrate patterns of angiofibroblastic degeneration[12]. The muscles most commonly involved include the pronator teres and flexor carpi radialis but can include any of the other flexors[12].

Van Rijn and colleagues performed a systematic review of the literature and reported that handling objects greater than 5 kg for 2 hours per day, objects greater than 10 kg more than 10 times per day, and repetitive movements and vibrating tools for greater than 2 hours per day were associated with medial epicondylitis[13]. A history of medial elbow pain in the setting of repetitive wrist flexion and forearm pronation activities is suspicious for the diagnosis, though a subset of patients will describe a more diffuse nature of their symptoms[14]. This may, in part, be related to a relatively high rate of concomitant ulnar neuritis[15]. Examination should focus on tenderness over the origin of the flexor pronator mass. Resisted pronation and/or wrist flexion will reproduce symptoms in most affected patients. Grip strength is decreased in patients with medial epicondylitis compared with control subjects[16], although the magnitude of impairment is less than that seen in patients with lateral epicondylitis[17]. The examiner should assess the competency of the medial collateral ligament with a valgus stress test, which should be painless in the absence of medial collateral ligament insufficiency. A careful neurologic examination should be performed to look for evidence of ulnar neuritis, including Tinel sign (radiating pain with percussion at the cubital tunnel), cubital tunnel compression testing, 2point discrimination testing of the fifth digit, and assessment of hypothenar atrophy in advanced cases. Imaging studies, such as plain radiographs, may show calcifications or traction osteophytes at the flexorpronator origin. Kijowski et al on MRI findings suggests that there is thickening and increased signal intensity within the common flexor tendon and surrounding soft tissue edema seen in both T1and T2weighted images in medial epicondilytis[18]. MRI may be more useful when used to rule out other pathologies, such as osteochondritis dissecans lesions, medial collateral ligament insufficiency, or loose bodies.

Nonoperative management is the mainstay of treatment[19]. Conservative measures include rest, activity modification, nonsteroidal anti-inflammatory medications, physiotherapy, corticosteroid injections and PRP injections. When a patient is injected for medial epicondylitis, particular caution must be taken to protect the ulnar nerve because of its proximity[20]. Surgery is reserved for those who fail 6 to 12 months of conservative management. Unlike lateral epicondylitis, an arthroscopic technique is not used. But still no satisfactory treatment available which can improve degenerative pathology of tendinopathy clinically, functionally, histologically[21]. Autologous Platelet Rich Plasma (PRP) injection contains high concentration of platelets with various growth factors and bio active substances[22,23] like VEGF,TGF-b, IGF1, alfa granules etc which stimulates natural healing cascade and halts or even revert degenerative process of medial epicondylitis[24-28]. PRP has established its role in musculoskeletal pathologies[29].

MATIRIALS AND METHODS-

After approval from institutional ethical committee (IEC), clinically diagnosed fifteen adult patients of both sexes of medial epicondylitis symptomatic for more than 1 months or more and refractory to 3 weeks of conservative treatment in form of physiotherapy included in study and patients with any history of lo-

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cal steroid injection in past 3 months, Patient having significant cardiovascular disease anemia, renal or hepatic disease, pregnancy, any local infection or malignancy, diabetes, hypothyroid, neuropathy or any vascular insufficiency , bleeding or platelet disorder, Patient who had previous surgery around elbow, joint instability and significant co morbidity of upper limb excluded from study. All the patients were explained about the study and an informed consent was obtained. Only those providing consent to participate in the study were enrolled in the study. Paticipents were treated with 3 ml of autologous injection PRP intra lesionally and in surrounding tendons by single author*. Patients were followed up for 3 months post injection PRP. No analgesic was prescribed during follow up except tab paracetamol (650 mg) SOS.

At baseline, the demographic information and medical history of the patients was obtained. Assessment of results was done on the basis of VAS score and requirement of analgesics at pretreatment, 3 months interval.

The PRP was prepared by withdrawing 20 cc of whole blood under aseptic precautions atraumatically from antecubital vein , mixed with 2.8 ml of Acid Citrate Dextrose solution (ACD solution)[30] in sterile vials, centrifuged in centrifuge machine @ 1500 rpm for 15 minutes[31], PRP was made and collected in fresh vial by pipette. After waiting for one hour at 20-22° (air condition room) so that platelets come in resting phase[32]PRP was injected intralesionally and surrounding tendons by aseptic technique without prior activation by mean of pharmacological agents[33]. In PRP, concentration of platelets should increase 3-5 times than that in whole blood for proper effect.

STATISTICAL ANALYSIS-

The statistical analysis was done using SPSS (Statistical Package for Social Sciences) Version 15.0 statistical Analysis Software. The values were represented in Number (%) and Mean±SD.

RESULTS-

1 Baseline data-

Demography Male/Female	9/6 Total 15
Age of patients Mean±SD	43.4±10.4 yrs, Range 23-58 yrs
Duration of pain	Mean 1.6±0.8 months (Range 1.1- 4.6 months)
Prior physioptherapy	100%
Corticosteroid injection in past 3 months	0
Surgery on or around shoulder	0

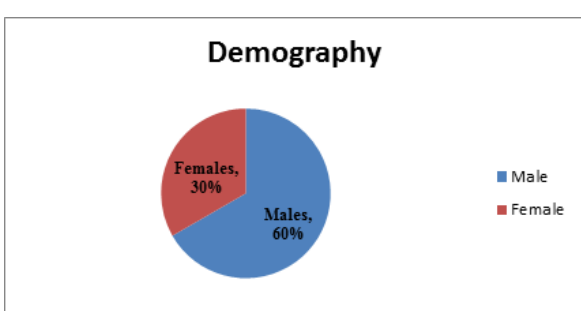

Figure-1 Demography

Out of 20 enrolled patients 9 were male (60%) and 6 were females (30%) and mean age of participants was 43.4± 10.4 years, age of participants ranged from 23 to 58 years. Mean duration of shoulder pain was 1.6±0.8 months ranged between 1.1 to 4.6 months. All the participants received prior physiotherapy and none of them received corticosteroid injection in past 3 months and had undergone any surgery around elbow joint.

Table-2 VAS & Functional outcome-

S.No	Tests	Pretreatment Mean/SD	At 1 month Mean/SD	At 3 month Mean/SD
1	VAS (0-10)	7.1±0.8	2.7±0.6	0.7±0.4
2	Analgesic use (units/ week)	6.3±2.1	2.1±0.9	0.6±0.2

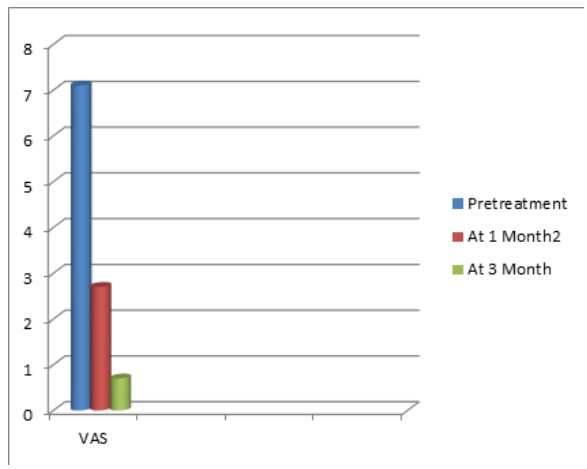

Figure-2 VAS

Mean VAS score improved from severe category 7.1±0.8 points pretreatment to mild 2.7±0.6 points at one month to none 0.7±0.4 points at three months post PRP injection which is a meaningful change.

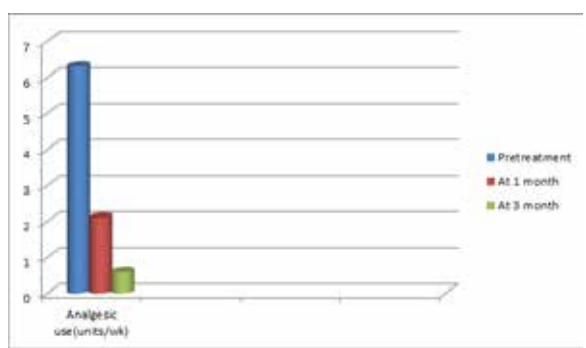

Figure-3 Mean analgesic use

Mean analgesic use declined from 6.3±2.1units/week pretreatment to 2.1±0.9 units/week at one month which further declined to 0.6±0.2 units/week at three month post PRP injection, it means that after PRP injection patients needed significantly less analgesic and overall improvement in quality of life.

No side effect during treatment with injection PRP was noticed except pain at injection site in one patient which lasted for ten minutes and relived spontaneously.

DISCUSSION-

Mishra A et al[34] in a Cohort study evaluated 140 patients of elbow epicondylar pain who were unresponsive to initial standardized physical therapy protocol with a variety of other nonoperative treatments and these patients were considering surgery. This cohort of patients who had failed nonoperative treatment was then given either a single percutaneous injection of platelet-rich plasma (active group) or bupivacaine (control group). Eight weeks after the treatment, the plateletrich plasma patients noted 60% improvement in their visual analog pain scores versus 16% improvement in control patients (P =.001). Sixty percent (3 of 5) of the control subjects withdrew or sought other treat-

ments after the 8week period, preventing further direct analysis. Therefore, only the patients treated with platelet rich plasma were available for continued evaluation. At 6 months, the patients treated with platelet rich plasma noted 81% improvement in their visual analog pain scores (P =.0001). At final follow up (mean, 25.6 months; range, 1238 months), the platelet rich plasma patients reported 93% reduction in pain compared with before the treatment (P <.0001).Treatment of patients with chronic elbow tendinosis with buffered platelet rich plasma reduced pain significantly in this pilot investigation. According to a study done by Stahl et al[35] corticosteroid injections improved symptoms at 6 weeks but showed no difference when compared with controls at 3 and 12 months while studies shows that patients treated with PRP had better pain relief and rates of success at 1 year[36] and 2 years[37] post treatment follow up. Other studies with lower levels of evidence and short term follow up have reported similar positive effects of PRP[38,39].

In our study there was more than 90% reduction in pain and analgesic use and significant improvement was also seen in functional outcome & endurance of patient after treatment with single injection of PRP. This is consistent with studies which state that a single injection of autologous PRP is an effective mean of treatment of Medial Epicondylitis as it improves pain score and functional outcomes. In our study no side effect of PRP injection noted except pain in injection site which lasted for ten minutes is consistent with studies which states that autologous PRP is devoid of potential side effects[40]. In vivo studies also suggest that PRP helps in healing of musculoskeletal system and even promotes regeneration[41].

In our study sample size and follow-up duration is less so we suggests further study should be carried out with larger sample size and longer follow up for making autologous injection PRP as a definitive treatment option for medial epicondylitis " Golpher's elbow".

CONCLUSION-

A single intralesional injection of PRP significantly decreases pain (improves VAS score) , functional outcome and reduces the need of analgesics. Autologous PRP is safe deprived of side effects and effective mean of treatment in refractory cases of medial epicondylitis " Golpher's elbow not responding to conventional treatment.

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