INTRODUCTION

Plantar fasciitis is among the most common cause of heel pain, making almost 11-15% of the foot complaints in adults. Plantar Fasciitis is actually a degenerative tissue condition among age group of 40-60 years irrespective of gender, that occur at medial tuberosity of calcaneus. Corticosteroid injection remain a popular drug of choice, but useful for short term relief of symptoms. Platelet rich plasma is now introduced for the relief of pain in plantar fasciitis which is actually a biological blood derived product which can be exogenously applied to the local tissue where high concentration of platelet derived growth factor causes wound and tendon healing. Experiments on animals showed increased tendon healing. It was demonstrated that a single injection of PRP improves pain and symptoms with no added complications in comparison to corticosteroid. In chronic plantar fasciitis which is non inflammatory process consists of infiltration of lymphocytes, macrophages, plasma cells,
MATERIALS AND METHODS

Patients who had failed conservative management of at least 4 weeks duration consisting of calf stretching, tibialis posterior and flexor hallucis longus strengthening, and the use of an off-the-shelf orthotic with heel cut-out and planter fascial grooves. Willingness to forgo any other concomitant conservative treatment modality; NSAIDS and orthotic devices during the study period were included in the study. Exclusion criteria included previous surgery for heel pain, patient with complex regional pain syndrome, nerve related symptoms (radiculopathy, tarsal tunnel syndrome, sinus tarsi syndrome), Achilles tendon pathology, patients who had received corticosteroid injection for plantar fasciitis within last six months, Rheumatoid Arthritis, Diabetes Mellitus, local or systemic infections, Peripheral vascular disease, metabolic diseases such as gout, clotting disorder, anticoagulation therapy, Patients that were pregnant or breast feeding and patients with metastatic cancer. Permission from the ethical committee of Pakistan Institute of Medical Sciences was taken before commencement of study. Informed consent was taken from all patients. Patients were randomly allocated to group A & B by lottery method. Group A was injected with 1ml of Platelet rich plasma mixed with 4ml of 2% lidocaine. Group B was injected with 1ml of corticosteroid mixed with 4ml of 2% lidocaine. The Platelet rich plasma and corticosteroid was injected by same consultant orthopedic surgeon for both groups. The outcome was assessed by visual analogue score at 03 weeks by researcher. Follow up was censured by taking contact number of patients. Hospital registration numbers, age, address clinical history of pain on visual analogue scale, side right or left were noted. Data was analyzed in SPSS version 20.0. Mean and standard deviation was calculated for quantitative variables like age of patient and pain score in both groups at 03 weeks. Frequency and percentage were calculated for gender, foot involved of patient. Independent sample t test was used to compare mean pain score at 03 weeks after treatment in both groups. P-value < 0.05 was considered significant. Stratification was done to controlled effect of age and gender to observe an outcome. Independent sample t test was applied.

RESULTS

70 patients were allocated in each group with unilateral planter heel pain. Age distribution of the patients with respect to groups is presented in figure 1. The mean age of the patients was 39.60±10.38 years. Minimum age was 16 and maximum was 60 years. Out of 140 patients from both groups 89 (63.6) were male and 51(36.4%) were females. In group A 42(60%) were males while in group B 47(67.1%) were males. The females in group A were 28(40%) and in group B 23(32.9%). 72(51.4%) right foot and 68(48.6%) left foot were involved. Site of involvement with respect to groups is presented in figure 3. Table 1 shows the comparison of pre and post treatment pain scores.

DISCUSSION

Plantar fasciitis is common among obese individuals and those who spend most of the time standing. Etiology is multifocal. It is an overuse injury from repetitive micro trauma that leads to inflammation and local tissue damage. Treatment options include non-surgical management, like non-steroidal anti-inflammatory drug (NSAID) prescription, physiotherapy, night splints and steroid injection, and surgical

destruction and repair of tissues including fibrosis and immature vascularization. PRP addresses the healing stages that reverse the degenerative process that is ongoing and considered as superior alternative to corticosteroid injection therapy.

Typical history and examination of tenderness over medial calcaneus is there in plantar fasciitis. Often it is a self-limiting disease in 80-90%of cases over 10 months’ time. On first visit patient is usually advised conservative treatment that includes non-steroidal anti-inflammatory (NSAIDs) therapy, tapping, daily activity changes, orthosis and local injection of corticosteroid if non responder to conservative management. Platelet rich plasma (PRP) is introduced as new modality that is being introduced with miraculous effects.

So far abundant data is available that is focusing on the effectiveness of PRP in treatment of plantar fasciitis, but results are inconsistent. In addition, relationship between pain relief and functional restoration are still unclear. PRP is safe and does not affect biochemical function of foot. PRP is now considered as an emerging modality for the treatment of ligamentous pathologies and plantar fasciitis. A study that was done in Korea for treatment of chronic PF suggested that PRP lead to initial functional improvement and relief of symptoms compared with dextrose prolotherapy. The aim of this study is to assess in intra-lesional Platelet rich plasma injections versus corticosteroid injections in plantar fasciitis in term of mean pain score. This would help Surgeons in selection of appropriate treatment for plantar fasciitis as this is a new treatment modality not in practice locally.

HYPOTHESIS

Intra-lesional Platelet rich plasma injection therapy is better than intra-lesional injectable corticosteroid therapy in terms of mean pain score at 03weeks.

MATERIALS AND METHODS

This randomized controlled trial was done at Orthopedics Department Pakistan Institute of Medical Sciences Islamabad for a period of six months from 21Dec 2013 to 20 June 2014. With the help of WHO sample size calculator sample was calculated keeping Level of significance = 5 %, Power of test =80 %, Pooled standard deviation= 1.87, Test value of the population mean = 5.6. Anticipated population mean = 4.4. Sample size (n) = 70 patients in each group were calculated. It includes non

![VAS Numeric Pain Distress Scale](image)

Also, all patients who on examination revealed maximal tenderness at the attachment of the plantar fascia on the medial tubercle of the calcaneus were included in the study. All patients who had failed conservative management of at least 4
The treatment of plantar fasciitis may require a combination of treatment modalities, rather than administering only one treatment at a time. There is no single treatment which has been proven as a gold standard for the treatment of chronic plantar fasciitis. Plantar fasciitis is a degenerative condition and is not an acute inflammation which occur due to small tear in fascia that does not heal, only collagen denaturation is seen in these lesions resulting in angiofibroblastic tissue is seen.

As the conservative treatment often have non satisfactory results and patients usually prefer only non-invasive treatments. After conservative treatment corticosteroid injection often produce satisfactory results but are short term as it only blocks inflammatory response by improving pain, edema, swelling and daily function, but it still remains a popular treatment with short term effects. Unfortunately, steroid injections have been reported to be related to abscesses, osteomyelitis, fat pad atrophy, and plantar fascia tears.

Patients often present with plantar fascia rupture, fat pad dystrophy, bone osteomyelitis and lateral plantar nerve injury following corticosteroid injection. It is also observed as patients gets instant relief, he overuses the foot and gets permanent degenerative changes and often causes rupture.

PRP is rich in growth factor, vascular endothelial growth factor and platelet derived growth factor and few cytokines as interleukins alpha, interleukins 4, 8, 13 and tumor necrosis factor. All this help in reversing the degenerative process and healing stages of plantar fasciitis. PRP when given locally has reinstate healing effects in chronic plantar fasciitis. Promising results have been found with PRP for wound healing, ligamentous and cartilage injury, muscle injuries and bone augmentation. As conservative treatment fail in chronic PF and patient often presents acute in chronic disease PRP does produce promising results. In our study we found that post PRP significantly improves pain symptoms p value < .0005.

In a meta-analysis from china done for epicondylitis and PF there was a significant reduction in the short term pain though evidence was low. In our study we have only watched for the pain relieve at 3 weeks, the results of which are consistent as reported in literature. While Tibrizi and etal described that for obese patients corticosteroids are better as compared to PRP (p < .001) in terms of pain reduction and improved function. In our study we did not recorded the weight of patients so irrespective of weight our results are contrary to this study.

In a recent study of Peer booms et al, encouraging effects has been seen when given for lateral epicondylitis, the comparison between PRP and corticosteroid injection was done when given for lateral epicondylitis in patients who had failed conservative treatment. It showed marked relief in pain and improvements were sustained over time with no reported complications. In case of refractory chronic tendinopathy data that is available for the treatment with PRP injection is limited to recommend it as modality for routine clinical use. However, results with autologous PRP are proven for neo-tendon properties, which improves tissue healing by increasing chemotaxis, proliferation and differentiation, angiogenesis, removing debris and making extracellular matrix.
Comparison of Pre and Post Treatment Pain Scores

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group and number of patients</th>
<th>Pre and post mean pain score</th>
<th>Post treatment at 3 weeks</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean pain score between groups with respect to time</td>
<td>Group A n=70</td>
<td>6.77±0.85</td>
<td>2.94±0.67</td>
<td>0.0005</td>
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<tr>
<td>Mean pain score between groups for the below and equal to 40 years of age patients</td>
<td>Group A n=49</td>
<td>6.65±0.77</td>
<td>2.94±0.68</td>
<td>0.0005</td>
</tr>
<tr>
<td>Mean pain score between groups for the above 40 years of Age patients</td>
<td>Group A n=21</td>
<td>7.05±0.97</td>
<td>2.95±0.66</td>
<td>0.0005</td>
</tr>
<tr>
<td>Comparison of mean pain score between groups for female patients</td>
<td>Group A n=28</td>
<td>6.71±0.71</td>
<td>3.04±0.63</td>
<td>0.0005</td>
</tr>
<tr>
<td>Comparison of mean pain score between groups for male patients</td>
<td>Group A n=37</td>
<td>6.84±0.83</td>
<td>4.27±0.65</td>
<td>0.0005</td>
</tr>
<tr>
<td>Comparison of mean pain score between groups for female patients</td>
<td>Group A n=23</td>
<td>6.91±0.99</td>
<td>4.22±0.60</td>
<td>0.0005</td>
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<tr>
<td>Comparison of mean pain score between groups for male patients</td>
<td>Group A n=42</td>
<td>6.81±0.94</td>
<td>2.88±0.71</td>
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<tr>
<td></td>
<td>Group B n=47</td>
<td>6.89±0.84</td>
<td>4.15±0.93</td>
<td>0.0005</td>
</tr>
</tbody>
</table>

References


