Comparison of vas pain score after infiltration of autologous blood injection versus corticosteroid injection for the treatment of plantar fasciitis

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ABSTRACT

Objective: To Compare VAS pain score after infiltration of Autologous Blood Injection versus Corticosteroid Injection for the treatment of Plantar Fasciitis.

Study Design: A prospective, randomized, controlled, observer-blinded study

Place and Duration: Department of Orthopaedic Surgery, Services Hospital, Lahore over a duration of 6 months from 1st July to 31st December 2018.

Methodology: Patients fulfilling the inclusion criteria were divided in two equal groups and were allocated to Autologous blood (Group A) and Corticosteroid (group B). VAS pain score after administrations was recorded before the treatment (baseline VAS) and at 3 months after treatment. A *p* value of 0.05 was considered significant.

Results: A total number of 100 patients included in the study had pain more than 6 months duration. The mean baseline VAS score was 8.00 ± 0.88 with minimum and maximum of 5 and 9 respectively, at 3rd month it was 3.61 ± 1.27 (Ranging from 2 to 6). So, decrease was 4.39 ± 1.55 (in Autologous blood injection group 3.72 ± 1.34 and in Corticosteroid 5.63 ± 1.20).

Conclusion: There is a significantly greater pain reduction in plantar Fasciitis with corticosteroid than Autologous Blood Injection.

Keywords: Plantar fasciitis, Pain, Treatment, Corticosteroid, Autologous blood injection, Visual analogue scale

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INTRODUCTION

Plantar fasciitis is widely described in the literature as having a multifactorial and widely disputed aetiology. The term "Plantar fasciitis" is almost always used to describe a painful heel with inflammation of the plantar fascia at its origin, as opposed to pain originating along the course of the fascia. The underlying pathology is a degenerative cell problem which happens at the medial tuberosity of the calcaneus near the site of origin of the planter fascia[1]. Initially signs of inflammation are pain, swelling and loss of function. In long standing one, histology has shown different picture that is incorporation of lymphocytes, macrophages, plasma cells with destruction and repair involving immature vascularisation and fibrosis. The fascia is replaced by a hyperplastic angiofibroblastic tissue, creating a self-perpetuating cycle of degeneration[2].

Management of plantar fasciitis is mostly conservative as up to 80% of the patients recover spontaneously. But where the symptoms persist various treatment options are available such as interventional and surgical options. Conservative measures include Foot orthosis, extra corporeal shockwave laser therapy stretching exercises analgesic[3]. Interventional measures used are local steroid injection, autologous blood and blood product injections. The most common interventional treatment of Plantar fasciitis used is the corticosteroid injection. This treatment has been supported by various studies showing its efficacy in immediate pain relief[4,5]. Autologous blood injection contains bioactive growth factors which can result in tissue regeneration and healing of the plantar fascia and pain relief, has also showed promising results in management of chronic tendon disorders[6].

Various studies are available comparing the efficacy of autologous blood injection with Corticosteroid injection but limited data is available in our country and needs further study to improve the management of plantar fasciitis. Furthermore, the most effective treatment is currently uncertain, hence our

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study will assist doctors in making a more informed choice. The objective of our study is to compare the VAS pain score after infiltration of Autologous Blood Injection and Corticosteroid Injection for the treatment of Plantar Fasciitis

METHODOLOGY

This prospective, randomized, controlled, observer-blinded study was conducted in the Department of Orthopaedic Surgery, Services Hospital Lahore from the 1st of July to 31st of December. A total sample size of 100 cases (50 in each group) was calculated[16]. Sample size was collected based on non-probability, consecutive and convenient sampling technique.

Patients between 16 to 60 years having heel pain (VAS 4 or more) that failed conservative measures, included. Those with previous surgery of heel pain, diagnosed case of rheumatoid arthritis, gout, clotting disorder, diabetes, current pregnancy, deranged Liver function tests and Renal Function Tests or calcaneal fractures were excluded.

An informed written consent was taken by the researcher from the participants willing to participate. Demographic data, name, age, address, BMI and duration of symptoms recorded; baseline investigations done. Detailed history and examination were carried out. Patients were explained regarding the Visual Analogue Scale and how to score the pain. Pretreatment assessments about severity of pain were done using visual analogue scale and initial score recorded. Then these were randomly divided in to Group A (ABI) and Group B (Corticosteroid) by using computer-generated randomisation table. Blood was drawn from both groups and the syringe to be used to inject was covered with a paper wrapping to keep the patients un aware of the contents of the syringe. Group A will receive 1 ml of Autologous blood injection and group B Corticosteroid injection of kenacort 1ml (40mg/ml) triamcinolone actinide. Injections given over the most tender points. All injections were given by the same operator. Adhesive dressing was applied at the site of injection and the patients were then advised to rest the affected limb for 1 day. Assessment done again at 3-month interval. Findings were carefully taken and recorded on a predesigned self-structured Performa.

Data Analysis: Data was analysed in computer software SPSS version 20. Quantitative variables like age, BMI, duration of symptoms, pre and post treatment as well as change in pain score was presented in from of frequency and percentages. Independent sample t-test was used to compare the change in VAS pain score in both. P-value <=0.05 was considered as significant.

RESULTS

A total of 100 patients were included in the study. Most of the patients were between 50 to 60 years of age and 22% of the subjects were male and 78% female. The mean Weight (kg) in group A was 86.14 ± 14.71 kg, in group B 88.26 ± 15.79 while BMI kg/m^2 in group A was 31.43 ± 5.46 and in B 33.16 ± 7.32.

The VAS pain score at initial presentation and then at 3 months duration were evaluated. The change in ABI patients were 3.38 ± 1.21 and in corticosteroids was 5.40 ± 1.16 (Table-I), more significant in steroids than ABI (p-value less than 0.0001).

Table-I: Distribution of Visual Analogue Score among the groups over 3-month period since treatment (N=100)

Groups	Baseline VAS (Mean ± SD)	VAS after 3 months of injection (Mean ± SD)	Difference in VAS at 0 and 3 months (Mean ± SD)	p-Value
Group A (N=50)	7.82 ± 0.94	4.44 ± 0.092	3.38 ± 1.21	0.003
Group B (N=50)	8.18 ± 0.80	2.70 ± 0.99	5.40 ± 1.16	0.001

In our study the mean duration of Pain (months) in group A was 8.02 ± 1.67 and in group B 8.06 ± 1.67 (Table-II). The mean decrease in VAS in the patients with duration of pain less than 6 months in Group A was 3.53 ± 1.12 in contrast to mean decrease in VAS of 5.46 ± 1.05 in group B. In the patients with pain persisting beyond 6 months, the mean decrease in VAS among Group A was 3.32 ± 1.24, whereas in group B the mean decrease in VAS was 5.37 ± 1.20. There was no complication in any patient among both groups.

Table-II: Mean Decrease in Visual Analogue Scale among the Duration of Pain (N=100)

Duration of Pain	Groups	Mean Decrease in VAS	T-test (p-Value)
<6 months	Group A (N=50)	3.53 ± 1.12	0.015
	Group B (N=50)	5.46 ± 1.05	
>6 months	Group A (N=50)	3.32 ± 1.24	0.001
	Group B (N=50)	5.37 ± 1.20	

DISCUSSION

The exact incidence and prevalence of plantar fasciitis by age and sex is unknown but it is observed in adults of all ages. Women aged between fourth to sixth decade may show peak incidence, almost twice as much as in men[7]. This was also seen in our study as 78% of the participants were female between the ages of 50 to 60. Weight also has some contribution to the disease process[8] but we found no difference. Except with those having weight greater than 30 kg/m^2, corticosteroid showed more significant reduction in pain.

Before starting the treatment, VAS was measured in both groups taking this value as a baseline VAS. Following the treatment, VAS was measured again in both groups after 6 months, where both groups showed a significant reduction in VAS as shown by the P-value. This has also been shown by Afsar et. al in 2015 who conducted a comparison study between autologous blood vs corticosteroid and concluded compatible short-term results of both for short term management[9], finding which is in line with our study.

Omar et al conducted a study on Local injection of autologous platelet rich plasma and corticosteroid in treatment of lateral

epicondylitis and plantar fasciitis and noted difference in VAS before and 6 weeks post treatment ($p < 0.001$)[10]. This is in agreement to our result where both showed desirable improvements, which is more in case of steroid injections. However, Omar stated that the comparisons was insignificant ($p > 0.05$), but not in our case where it is significant (p=0.0001). Three months' time is major drawback in our study. Gaujox and colleagues showed pain relief was gained with corticosteroid injection after 4 weeks but not after 8 to 12 weeks[8]. The short-term effect has been previously confirmed, and was in accordance with the present results; however long term follow ups are required to further evaluate the effectiveness of these two therapeutic options.

Corticosteroid injection for plantar Fasciitis can significantly improve the heel pain, particularly in the shorter duration; however, it can also cause serious complications, including plantar fascia rupture and calcification, fat pad atrophy, nerve injury, sterile abscess, calcaneal osteomyelitis and even impaired vision[11-15]. However, we did not encounter any complication. This was inconsistent with previous observations that showed similarly no adverse event[13,14]. Larger scale multi centre evaluation is required to further know the impact of various remedies for this condition

CONCLUSION

Corticosteroid injections are superior over Autologous Blood in reduction of pain in plantar fasciitis in short term management. However large scale, long term therapy is required for evaluation of this result.

CONTRIBUTION OF AUTHORS

Majeed F: Conceived idea, Design research methodology, Data analysis
Saddique M: Manuscript writing, Data compilation, Data analysis
Nasir AS: Manuscript writing, Final critical review of manuscript
Ahmad A: Data collection and compilation, Literature review

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