ORIGINAL ARTICLE

Comparison of Intralesional Autologous Blood Injection to Corticosteroid Injection for Treatment of Chronic Plantar Fascitis

Umar Farooq Dar, Muhammad Rashid, Kamran Saeed, Umar Imtiaz, Muhammad Nasir, Atif Ayuob

ABSTRACT

Background: Intralesional methylprednisolone and autologous blood injections are used in chronic plantar fasciitis but the results are different in different populations.

Objective: To compare early decrease in pain score after autologous blood injection and corticosteroid injection in patients with plantar fasciitis.

Material & Methods: After taking an informed consent, 60 patients of either sex with clinical diagnosis of plantar fasciitis were included in this randomized control trial. The effectiveness of intervention was defined in terms of mean reduction in VAS score before and after procedure.

Results: Sixty patients with mean age of 35.3 ± 13.2 years were included, 31 patients were male. There was non-significant difference in mean VAS score before treatment in both groups. Both treatments were found effective in reducing mean VAS score after intervention. Reduction in mean VAS score immediately and 6th week after intervention was non-significant (P value = 0.487) between two groups.

Conclusion: It was concluded at the present sample size, although both treatments are effective, we accept the null hypothesis and conclude that there is no difference in efficacy in reducing the pain score on visual analogue scale score between intralesional autologous blood verses corticosteroid injection in patients with chronic plantar fasciitis

Keywords: Plantar fasciitis, Intralesional Methylprednisolone Injection, Intralesional autologous blood Injection**,** Visual Analogue Scale

INTRODUCTION

Chronic plantar fasciitis (PF) is the most common cause of foot complaints by patients.[1-5] Incidence of plantar fasciitis peaks in people between the ages of 40 to 60 years. Usually, diagnosis can be made entirely based on history and physical examination.[2,6,11] In acute cases, PF is characterized by classical signs of inflammation including pain, swelling and loss of function. For more chronic conditions, however, inflammation is not the underlying tissue disruption. In fact, histology of chronic cases has shown no signs of inflammatory cell invasion into the affected area.[12-15]

Numerous methods have been advocated for treating plantar fasciitis, including rest, NSAIDs, night splints, corticosteroids, foot orthotics, stretching protocols and extracorporeal shock wave therapy.[3-7] Steroid injections are a popular method of treating the condition but only seem to be useful in the short term and only to a small degree.[3] Autologous blood might provide cellular and humoral mediators to induce healing in areas of degeneration, the underlying pathology in plantar fasciitis. [4-7]

Because of lack of consensus among our consultants about better technique and different results of different studies[5-7] current study aims to compare effectiveness in terms of mean early decrease in pain on VAS with plantar fasciitis between intralesional corticosteroid and autologous whole blood injection for our population. Autologous blood injection is safe in terms of adverse reaction and preferable to corticosteroids because corticosteroid injection gives temporarily pain reduction, but no healing. Blood and its products may initiate the natural healing rate.

MATERIAL & METHODS

After an informed consent, 60 subjects coming to out patient department of Jinnah Hospital Lahore and fulfilling the inclusion criteria were included in the study. Included patients were diagnosed cases of

Department of Orthopaedics Surgery, Continental Medical College, Lahore
Corresponding author: Dr. Kamran Saeed
Email: kamranortho@yahoo.com

plantar fasciitis by history and examination. Plantar fasciitis was defined as pain at the point of the fascia plantaris origin at direct palpation. All affected patients were screened with X-ray of the calcaneus for bony abnormalities and to differentiate for subtalar arthritis. Subjective pain was scored on visual analogue scale from 0 to 10 cm before and after procedure. Each heel was randomly allocated into two groups (A & B) using computer-generated random numbers. Efficacy was assessed by mean decrease in pain score immediately and on 6 weeks after intra articular injection of methyl prednisolone acetate and autologous whole blood subjectively.

Group A received autologous blood injection and Group B received corticosteroid injection. For autologous blood injection, 1.5 ml of autologous blood was taken from the ante cubital vein, and after mixing with 1 ml of Lignocaine HCL 2% was used. For corticosteroid injection, a combination of 20 mg (0.5 ml of a 40 mg/ml solution) of Triamcinolone Acetonide with 2 ml of Lignocaine HCL 1% was used. Thus, for both groups, there was an equal volume of injection solution as well as an equal amount of Lignocaine HCL used.

All patients were assessed before treatment and at 6 weeks after treatment. A doctor who was blinded to the type of injection performed the assessment that each of these patients would have received. On each occasion, patients were asked to rate the pain that they experience on rising in the morning or after periods of sitting or inactivity (whichever is worse). The pain was rated on a visual analogue scale (VAS), with 0 indicating no pain and 10 the worst imaginable pain. Questionnaire (attached as appendix I) containing background information i.e. age, sex, BMI and pain score on visual analogue scale was used. Time of start of symptoms, gender and body mass index > $30kg/m^2$was recorded as effect modifiers and dealt with stratification

Data collected was entered and analyzed in the SPSS version 17. Results were projected using descriptive statistics e.g. mean with standard deviation in case of continuous variables like age and pain score and frequency and percentage in case of categorical variables like gender. Data was stratified for duration of start of symptoms, gender and body mass index > $30kg/m^2$, gender, and mean distribution of age and delay in weeks since diagnosis. Chi square test or Fischer exact test was used for categorical variables post stratification while independent sample t test was used mean age and mean delay in patients with effective treatment. Independent sample t test was used for comparison of mean decrease in pain score of both treatments. A p value $\leq$ .05 was labeled significant.

RESULTS

Sixty patients of plantar fasciitis were included in the study of which 31 were male and 29 female. Thirty were randomly allocated to receive Intralesional autologous blood injection and 30 were randomized to receive Intralesional corticosteroid injection at the site of maximum pain. Mean age was 35.3 years ± 13.2 ranging from 18 to 60 years. Baseline pain score on visual analogue scale before treatment ranged from 5 to 9 with mean of 7.08 ± 8.85 SD while after intervention score ranged from 2-4 with mean of 2.88 ± 0.715 and after six weeks this visual analogue score decreased to mean ± SD of 1.80 ± .91 ranging from 1 to 4, showing efficacy of both treatments in reducing pain associated with plantar fasciitis. Mean delay in treatment since diagnosis lied in range from 4 to 35 weeks with mean (± SD) of 17.35 ± 8.32 weeks.

Table I: Descriptive Statistics of sampled population presenting with plantar fasciitis (n=60)

Characteristics		Count (Percentage)
Gender distribution	Male	31(51.7%)
	Female	29 (48.3%)
Age in years	Mean	35.33
	Standard Deviation	13.2
	Range	18- 60
Body mass index	< $30kg/m^2$	17 (28.3%)
	$\geq$ $30kg/m^2$	43 (71.7%)
Mean Duration of disease in weeks	Mean	17.35 weeks
	Standard Deviation	± 8.32
	Range	4 to 35

Table II: Age, Gender & VAS score distribution among corticosteroid and autologous blood injection groups in sampled population (n=60)

Characteristics (Mean ± Standard Deviation)		Corticosteroid group	Autologous blood group	P value using independent sample t test
VAS score	Baseline	7.23±0.858	6.93±0.828	0.2
	Immediately after intervention	4.3±1.17	4.1±1.02	0.487
	6 weeks after intervention	5.4 ± 1.1	5.2 ±1.2	0.459
Age	In years	37.20±13.047	33.47±13.454	0.280
Duration of disease	In weeks	19.00±8.578	15.70±7.862	0.126

When data was cross-tabulated for gender group more male benefited from either treatment than female. Gender was not equally distributed across both groups the difference was significant (P value = 0.03). Obesity was equally distributed across both groups as (P value = 0.15). Patients in both groups have equal mean delay in since diagnosis in both groups. Similarly age distribution was almost equal in both groups when we applied independent t-test (p value = 0.28).

There was non-significant difference in visual analogue scale score before treatment in both groups (P value = 0.2). Immediate reduction in both group's i.e. autologous blood injection and corticosteroid injection group was non-significantly different (P value = 0.487). Similarly at six weeks the reduction in VAS score was equal in both intervention groups (P value = 0.4598).

DISCUSSION

Autologous blood injection for chronic plantar fasciitis is the new modality for treatment. As this is a new treatment, it has not been studied in our local population. We performed a randomized control to determine the effectiveness against the standard treatment i.e. by corticosteroid injection. 60 patients there was almost equal distribution of gender in groups in the end we didn't found although difference in main score and on visual scale was reduced in both groups i.e. both treatments found effective but to our surprise there was not a significant difference between the effectiveness of autologous intralesional blood injection verse intralesional corticosteroid injection. Reduction in VAS score immediately and after 6 week was significantly different from baseline VAS score showing effectiveness of both treatments. But there was no difference in outcome for both groups at 6 weeks.

When we carried out literature review, there was a difference in results of reported trials. For example in a randomized control trial 64 patients were randomly allocated to either the autologous blood or corticosteroid treatment group. Sixty-one patients were assessed for the worst pain daily on visual analogue scale (VAS). The reduction in VAS from baseline to 6 weeks was 7.3 ± 1.8 to 4.6 ± 2.3 (2.7±1.5) for intralesional blood group and for steroid group 6.9 ± 1.7 to 2.9 ± 2.8 (3.8±1.1). At 6 weeks, the corticosteroid group had significantly lower VAS than the autologous blood group ($p < 0.011$ and $p < 0.005$, respectively).[5]

But in another trial, mean decrease in VAS score was from 7.6 ± 1.3 to 2.4 ± 1.8 ($P < .001$) for autologous blood injection and from 7.28 ± 1.2 to 2.57 ± 2.9 ($P < .001$) for corticosteroid injection. [6] In another trial, 100 patients were divided into four equal groups and treated using four different methods of local injection and it was concluded that in the treatment of plantar fasciitis, corticosteroid injections (VAS at start 6.96 ± 2.71, at three months 3.04 + 2.32, difference 3.92± 0.39) is not effective and autologous blood injection (VAS at start 6.84 ± 2.27, at three months 4.32 ± 2.93) is effective and produces better clinical results but other two groups.[7]

Gender distribution was found unequal in both the groups because of random chances and small sample size. More patients presenting with chronic plantar fasciitis were obese. Obesity is growing problem in the developing country like ours. So, there should be some preventing measures to reduce this emerging epidemic of non-communicable disease. The important issue regarding chronic plantar fasciitis is the health seeking behavior of the patients. Patient usually presented to our departments with a delay of 4 to 5 months. This

shows the non-serious attitude toward the chronic problem by our population.

Immediate reduction in mean score after the treatment was 4.1 ± 1.02 on visual analogue scale in autologous blood group while 4.3 ± 1.17 in corticosteroid injection group (p value > 0.05). Similarly, at 6 weeks mean reduction was the base line 5.16 ± 1.23 in autologous blood injection group while 5.4 ± 1.19 in corticosteroid injection. Similarly the results were equally non-significant i.e. the efficacy of the both corticosteroid injection and autologous blood injection same in both groups.

CONCLUSION

It is concluded at the present sample size, although both treatment modalities have shown efficacy in reducing pain associated with plantar fasciitis, we accept the null hypothesis and conclude that there is no difference in efficacy in reducing the plain score on visual analogue score between intralesional autologous blood verses corticosteroid injection in patients with chronic plantar fasciitis.

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