

Original Research Article

Results of autologous venous blood injections in plantar fasciitis: a prospective clinical study

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ABSTRACT

Background: Plantar fasciitis is a degenerative disease of plantar fascia and is one of the most common causes of heel pain. The response to any treatment modality is unpredictable. The autologous blood might induce healing in the areas of degeneration by providing cellular and humoral components. The aim of this study was therefore to evaluate the results of autologous blood injection in plantar fasciitis.

Methods: Thirty-two patients (average age of 42.4 years), 14 males (43.7%) and 18 females (56.2%) with history of chronic heel pain of more than 6 months duration were taken up for autologous blood injection. All the patients in this study were clinically evaluated and the visual analogous pain score was calculated from each patient pre-procedure and at 3 and 6 months after the procedure.

Results: There was a significant improvement in VAS pain score in this study. Pre-procedure VAS pain score of 6.9 (average 4-10) was reduced to a mean score of 4.28 (average 0-9) at 3 months and a mean score of 3 (average 0-9) at 6 months.

Conclusions: Autologous blood is an effective method of controlling pain in patients with plantar fasciitis.

Keywords: Autologous blood, Heel pain, Plantar fasciitis

INTRODUCTION

Chronic heel pain is one of the most common disorders of the foot, the exact cause of which is still not known.¹ Degenerative changes of the plantar fascia due to repetitive microtrauma at the origin of plantar fascia are the common findings in heel pain.^{2,3} Stiell in 1922 stated, that heel pain is a condition which is yet to be treated efficiently as the causation is not known exactly.⁴ Lapidus and Guidotti, stated that the name painful heel is used deliberately since the cause of this definitive clinical entity still remains unknown.⁵ This entity of painful heel still remains a delima for the treating doctor.

Woolnough called the entity “tennis heel”, and postulated that repeated traction with aging and repeated trauma

produces microscopic tears and cystic degeneration in the origin of the plantar fascia and the flexor digitorum brevis immediately beneath the plantar fascia.⁶ Schon and Baxter concluded that in a few patients a neurogenic cause, involving entrapment of first branch of the lateral plantar nerve to the abductor digiti minimi, is associated with painful heel syndrome.⁷

The diagnosis of plantar facitiis is mainly clinical as the etiology is often not clear. Most often the patients are between 40-70 years of age.⁸ Patients usually complain of pain beneath the heel that is more on rising in the morning or after sitting for a while. As the patient starts walking the pain diminishes, and the patient is comfortable during the day. The most common clinical finding is a localised tenderness at the inferomedial

aspect of the calcaneal tuberosity.^{1,9} Various treatment modalities are available for this condition like rest, rigid or non-rigid orthosis, plantar fasciitis stretching exercises, ultrasound, extra-corporeal shock wave therapy, anti-inflammatory medications, local steroids, local autologous blood or platelet rich plasma injections and surgery in selected patients.¹⁰⁻¹²

Use of local steroid injections are superior in onset of action; however, rupture of plantar fascia and atrophy of heel fat pad has been reported after corticosteroid injections.^{13,14} Autologous blood provides various humoral and cellular factors that helps in healing and pain relief in plantar fasciitis. Therefore, the aim of this study was to assess the efficacy of local autologous blood injections in plantar fasciitis.

METHODS

This study was conducted in the department of orthopedics, Government medical college Jammu, from September 2014 to December 2016. 32 patients of either sex, with symptoms of more than 6 months were included in this study. The informed written consent and institute ethical clearance was taken before starting the procedure. Patients with bilateral involvement, local soft tissue infections and patients with symptoms of less than 6 months of duration were excluded from this study. Before procedure a record of the patient's pain using a visual analogue scale (VAS) was obtained using a range of 0 to

10, with 0 representing no pain and 10 the worst pain ever experienced. The part was fully prepared and draped. 2 ml of autologous blood was taken from the cephalic vein in antecubital fossa. The surface was infiltrated with 1-2 ml of 2 % xylocaine and the autologous blood was injected over the area of maximum tenderness with the help of a 23 G needle. Patient was advised to follow up at 6 weeks, 3 months and a final follow up at 6 months. After the procedure, the VAS was recorded again at 3 and 6 months.

RESULTS

Between September 2014 and December 2016, 36 patients were included in this study. Among these 4 patients were lost in follow-up and rest of 32 patients were followed for a period of 6 months. There were 18 (56.25%) females and 14 males (43.75%) in this study. The average age of our patients was 42.46 years (range 27 to 61 years). Right side was involved in 17 (53.13%) patients while left side was involved in 15 (46.87%) of patients (Table 1). The mean period of symptoms was 11.21 months (range 6 to 20 months).

In this study, the pre-procedure mean VAS pain score was 6.9 (range 4 to 10) which reduced to mean score of 4.28 (0 to 9) at 3 months and a mean score of 3 (range 0 to 9) at 6 months (Table 2). Significant improvement was seen in 10 (31.25%) patients at 3 months and 24 (75%) patients at 6 months follow up.

Table 1: Distribution of patients on basis of gender, laterality and age.

Sex	Side	Age
Male	Right	<40
Female	Left	>40
Total		

Table 2: VAS pain score at pre-procedure, 3 months and at 6 months.

Visual analogue scale (VAS)	At the start of study	At 3 months	At 6 months
0-3	0	10 (31.25%)	24 (75%)
4-7	17 (53.13%)	17 (53.13%)	03 (9.37%)
8-10	15 (46.87%)	05 (15.62%)	05 (15.62%)
Total	32	32	32

Recurrence of symptoms was seen in 4 (12.5%) while 4 (12.5%) patients didn't respond to the treatment. Statistical analysis revealed a significant decrease in the score ($p < .001$) in rest of patients. Complication like fat pad atrophy, infections (superficial or deep) and damage to neurovascular structures were not seen in present study. However, 5 (15.62%) patients had an increase in local heel pain for 3-4 days after receiving the autologous blood injections which responded to short term use of local ice packs and anti-inflammatory medications.

DISCUSSION

PF is an inflammatory process of the foot plantar aponeurotic area and is reported as the most common reason of the heel pain.¹⁵ Etiology is still not fully known, however the degeneration and chronic inflammatory changes are present in the fascia of the plantar aponeurosis.¹⁶ Both conservative and surgical treatments are available for the treatment. Surgical treatment is used in patients who don't respond to the conservative

treatment. Complications like nerve injuries, infections, plantar fascia rupture and failure to improve pain have been reported.¹⁷ Local corticosteroid injections in plantar fasciitis decreases both the pain and the inflammation. Rupture of plantar fascia and heel pad atrophy and other complications have been associated with corticosteroid use.^{13,14}

Other modalities of treatment like extracorporeal shock wave therapy (ESWT) have been tried recently, however there is no conclusive data regarding its use. According to Saber et al, both local steroid injection and ESWT are proved to be effective in treatment of PF, but as steroid injection is more cost effective and has more reproducible results regardless of machine or operator, it is preferred.¹⁸ Yesiltas F et al in their comparative study of intra-lesional steroid injection and autologous blood injection in plantar fasciitis, concluded that although both are effective in relieving pain but autologous blood may be preferred when considering the possible complication of the steroid use.¹⁹

In a study of Vahdatpour B et al, significant improvement was seen in patients with chronic plantar fasciitis receiving autologous platelet-rich plasma or whole blood. However, compared to platelet-rich plasma, the injection of autologous whole blood does not require special equipment, the costs are relatively low, and the technique can be easily applied in various clinical settings.²⁰ Muzamil et al in a study of 50 patients with chronic heel pain obtained 82 % excellent results at final follow up of 6 months using autologous blood injection at the site of maximum tenderness.²¹

CONCLUSION

Autologous blood appears to be a safe and effective modality of treatment in plantar fasciitis, even in patients who have not responded to other methods of treatment with no or minimal complications.

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