

EFFECTIVENESS OF AUTOLOGOUS BLOOD INJECTIONS IN PATIENTS WITH PLANTAR FASCIITIS

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ABSTRACT

Objective: To determine the effectiveness of autologous blood injection (ABI) in patients with plantar fasciitis in terms of improvement in at least one grade of pain on visual analogue scale at 6 weeks interval follow up.

Materials and Methods: This descriptive cross sectional study was conducted in Orthopedics Unit of Khyber Teaching Hospital, Peshawar from June 2011 to December, 2011. All patients between the ages of 20 years and 70 years with plantar fasciitis, not responding to oral medications, were included in the study.

Results: The total number of patients was 131. The mean age was 39.80 years \pm 10.04SD. Patients with moderate and severe grades of plantar fasciitis were 36(27.5%) and 95(72.5%) respectively according to visual analogue score before autologous blood injection. The effectiveness of autologous blood injections at 6 weeks follow up according to age was 100% in the age groups of 51-60 years and 61-70 years. According to gender, 52 (100%) males and 69 (87.34%) females showed movement. The overall effectiveness of autologous blood injections was in 121 (92.37%) patients with improvement of at least 1 baseline grade of pain on visual analogue scale.

Conclusion: Patients with plantar fasciitis can be successfully treated with autologous blood injection which is cheap and effective.

Key Words: Plantar fasciitis; Calcaneum; Autologous blood injections; Effectiveness.

INTRODUCTION

Plantar fasciitis (heel pain) is common (prevalence of 11-15%) with peak incidence occurring at 40-60 years of age¹. Plantar fasciitis typically presents as localized pain at the medial aspect of the heel^{1,2}. It is common in athletes and accounts for 8% of all sports related injuries². The exact cause of plantar fasciitis is unknown. The current consensus is that plantar fasciitis is initiated as micro tears in plantar fascia due to aging process and thus results in degeneration of plantar fascia which causes pain in the heel³.

There are various treatment modalities for plantar fasciitis including conservative and surgical. Conservative treatment includes Non Steroidal Antiinflammatory Drugs, stretching exercises, foot orthosis, local steroid injections, extra corporeal shock wave laser therapy, autologous blood and blood product injections⁴. Conservative treatment is the mainstay of management and is successful in 80-90% of cases. Steroid injections are considered as first line treatment for most patients with plantar fasciitis⁵.

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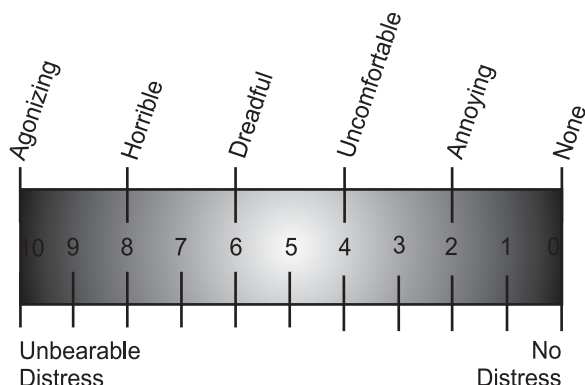
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An Autologous blood injections are more efficacious, safe and cheap as compared to local steroid injections⁶. It is thus a good alternative for refractory cases. It is least studied but is very effective in the long run as it provides platelets which have necessary cellular and humoral mediators like growth factors which induces healing of degenerated plantar fascia and thus provides relief to heel pain⁷. There is a considerable risk of complications with steroid injections like plantar fascia rupture, calcaneal osteomyelitis and foot pad atrophy⁸. Previous studies reported the effectiveness of autologous blood injections in plantar fasciitis 77.9%⁹, 68%¹⁰ and 80%¹¹. This study was carried out with the aim to find out the effectiveness of autologous blood injection as no data is available regarding autologous blood injections for plantar fasciitis in our set up.

MATERIAL AND METHODS

This descriptive cross sectional study was conducted in Orthopedics Unit of Khyber Teaching Hospital, Peshawar from June 2011 to December 2011. A total of 131 patients were included in the study comprising of 52 males and 79 females. All patients of either gender between 20 and 70 years of age with plantar fasciitis with moderate to severe pain according to Visual Analogue Score (VAS) were included in the study. The pain of plantar fasciitis was assessed by visual analogue score (VAS) using a 10cm

line labelled at “0” with “no pain” and “10” with “worst pain” as shown below.



According to visual analogue scale (VAS), the pain of plantar fasciitis was graded as follows: Grade 0: no pain (VAS 0), Grade 1: Mild pain (VAS 1-3), Grade 2: Moderate pain (VAS 4-7), Grade 3: Severe pain (VAS 8-10). All patients with mild pain according to VAS, prior surgery of foot, dislocation and fractures, prior use of steroid injections within 6 months, local skin infection or osteomyelitis and those with bilateral heel symptoms were excluded from the study. All patients meeting the inclusion criteria were included in the study through OPD of Orthopedic department. Diagnosis of plantar fasciitis was based upon pain on medial part of the heel with a point of maximum tenderness for a minimum period of 6 weeks and pain becoming worse by pressure on the heel.

The purpose and benefit of the study were explained to the patient. Detailed clinical history followed by detailed physical and systemic examination was carried out. Then 2ml of venous blood taken from the cubital vein of the arm was injected in the affected heel along with 1ml of 2% lignocaine using sterile techniques. After injection, the patient was kept for 30 minutes under observation in the OPD for hemodynamic stability and then the patient was allowed to leave. Patients were re-assessed at 6 weeks followup to determine intervention effectiveness. Autologous blood injection was labelled as effective in patients who showed improvement in terms of decrease in at least one base line grade of pain at 6 weeks follow up.

All the above mentioned information including name, age, sex, address was recorded in a predesigned proforma. Data was entered and analyzed by SPSS version 10.0. Descriptive statistics were applied for age, gender, severity of plantar fasciitis pain and effectiveness of injection therapy. Frequency and percentages were calculated for all categorical data.

RESULTS

The total number of patients was 131 including 52 (40%) males and 79 (60%) females with male to

female ratio of 1:1.5. The mean age was 39.80 years \pm 10.04SD with age range of 21 to 70 years. Right sided plantar fasciitis occurred in 102 (77.86%) patients while 29(22%) patients had left sided plantar fasciitis. The majority of patients (51.9%) had symptoms for 6-12 weeks. (Table 1)

Table 1: Duration of Symptoms in patients with Plantar Fasciitis

Duration of symptoms	Number of patients and percentage
6-12 Weeks	68 (51.90%)
13-19 Weeks	32 (24.43%)
20-26 Weeks	20 (15.27%)
27 Weeks and above	11 (8.40%)
Total	131 (100%)

The baseline grade of pain by VAS before autologous blood injection was moderate in 90 (68.70%) patients and severe in 41 (31.30%) patients. After ABI, the maximum number of patients showing improvement with no pain (Grade 0) were 101(77%) at 6 weeks follow up, while 10 (7.63%) patients had no improvement with severe pain (grade 3). (Table 2)

The maximum number of patients were in the age group of 31-40 years (57.2%) and the effectiveness of autologous blood injections at 6 weeks follow up was 64 (48.85%) in this age group. Maximum effectiveness was observed in the age groups of 51 to 60 years and 61 to 70 years. Only 1 (0.76%) patient each in these groups did not improve. According to gender, 52 (100%) males and 69 (87.34%) females showed improvement effectiveness. The overall effectiveness of autologous blood injections was in 121 (92.37%) patients with improvement of at least 1 baseline grade of pain on visual analogue scale. Age and gender wise effectiveness of autologous blood injection is shown in detail in Table 3.

DISCUSSION

Plantar fasciitis is a common foot problem. It affects approximately 2 million people annually and affects as much as 11-15% of the population over the course of a lifetime^{1,2}. Plantar fasciitis is characterized by a sharp, stabbing and burning pain in the posteromedial aspect of heel. It is a common observation that initial treatment of plantar fasciitis should be conservative because 90% of patients respond to it^{3,7}.

Plantar fasciitis is usually observed in the 40-60 year age group, but has been reported in people from 7 to 85 years and appears to be more common in females¹². In our study female predominance was

Table 2: Effectiveness of Autologous Blood Injection in terms of Improvement of pain on VAS at 6 weeks follow up

Before ABI	After ABI				Total
	No Pain	Mild Pain	Moderate Pain	Severe Pain	
Moderate Pain	78 (59.54%)	10 (7.63%)	2 (1.53%)	0 (%)	90 (68.70%)
Severe Pain	23 (17.56%)	2 (1.53%)	6 (4.58%)	10 (7.63%)	41 (31.30%)
Total	101 (77.10%)	12 (9.16%)	8 (6.11%)	10 (7.63%)	131 (100%)

ABI= Autologous Blood Injection, VAS = Visual Analogue Score

Table 3: Age and gender wise distribution of effectiveness of Autologous Blood Injection in patients with plantar fasciitis

Age	No Pain	Mild Pain	Moderate Pain	Severe Pain
20-30 years N = 19 (14.50%)	13 (9.92%)	3 (2.29%)	1 (0.76%)	2 (1.53%)
31-40 years N = 75 (57.25%)	64 (48.85%)	4 (3.05%)	3 (2.29%)	4 (3.05%)
41-50 years N = 17 (12.98%)	12 (9.16%)	2 (1.53%)	1 (0.76%)	2 (1.53%)
51-60 years N = 12 (9.16%)	7 (5.34%)	2 (1.53%)	2 (1.53%)	1 (0.76%)
61-70 years N = 8 (6.11%)	5 (3.82%)	1 (0.76%)	1 (0.76%)	1 (0.76%)
Total N = 131 (100%)	101 (77.10%)	12 (9.16%)	8 (6.11%)	10 (7.63%)
Gender				
Male N = 52 (39.69%)	43 (32.82%)	4 (3.05%)	3 (2.29%)	2 (1.53%)
Female N = 79 (60.31%)	58 (44.27%)	8 (6.11%)	5 (3.82%)	8 (6.11%)
Total	101 (77.10%)	12 (9.16%)	8 (6.11%)	10 (7.63%)

N= Total number of patients, n= Number of patients showing effectiveness to autologous blood injection.

observed. However, age wise distribution is different in our study. In our study it was more common in the age group of 31-40 years.

Conservative treatment has shown a wide range of acceptable outcomes with success rates ranging from 46% to 100%¹³. However, 20% to 30% of patients treated with traditional measures progress to a chronic condition¹⁴. In our study the effectiveness of autologous blood injections was determined by VAS at 6 weeks interval. Our results were that 77.10% had no pain (grade 0), 9.16% had mild pain (grade 1), 6.11% had moderate pain (grade 2) while 7.63% had no improvement with severe pain (grade 3). The Overall effectiveness of the procedure was 92.3%.

Lee et al⁶ compared autologous blood injections to corticosteroid injections for the treatment of chronic plantar fasciitis. At 6 weeks and 3 months, the corticosteroid group had significantly lower VAS than the autologous blood group, but the difference was not significant at 6 months. The conclusion of this study

was that autologous blood injection is more efficacious in lowering pain and tenderness in plantar fasciitis but corticosteroid is more superior in terms of speed and improvement. However this study was comparative in design and patients were assessed over a period of 6 months whereas in our study assessment was done at 6 weeks interval. In our study the overall effectiveness in both gender groups according to VAS at 6 weeks follow up was 92.37%. One of the studies has shown¹⁴ that the combination of two modalities that is conventional and local steroid application is effective in treating this painful condition and these results match with the study done by Nuefeld SK et al¹⁵. He showed that nonsurgical treatment of plantar fasciitis has a success rate of 90%. However, in another study it was noted that there is significant risk of plantar fascia rupture with corticosteroid injections⁸. In our study no such complication occurred. Thus autologous blood injections in plantar fasciitis is more safe, cheap and effective as compared to other modalities⁶. In another study by Frontera RW on

autologous blood injections in plantar fasciitis the effectiveness was 80%¹¹.

Most of the international studies have been carried out in literate communities with good compliance of the patients¹⁶ while we faced certain problems during this study. The limitations of this study were lack of regular physiotherapy, NSAIDS and short follow up period. Also many patients reporting to us had already taken multiple types of medication by themselves and most were from rural or some far flung areas and they were treated by the hakeems or by the traditional healers. Many of the patients had been taking oral steroids for a long time. Due to excessive use of so many drugs they were not responding to the treatment of plantar fasciitis. However the results of this study are very encouraging and further studies of longer duration and comparison may be needed to confirm our results.

CONCLUSION

Patients with plantar fasciitis can be successfully treated with autologous blood injections into the plantar fascia and its efficacy is good in terms of improvement in at least one grade of pain on visual analogue scale at 6 weeks follow up.

REFERENCES

1. Peerbooms CJ, Loar VW, Faber F, Schuller MH, Hoeven DVH, Gosens T. Use of platelet rich plasma to treat plantar fasciitis. *BMC musculoskeletal disorders* 2010; 11: 69-73.
2. MC-Millan MA, Landorf BK, Gilheany FM, Bird RA, Morrow DA, Menz BH. Ultrasound guided injection of dexamethasone vs placebo for treatment of plantar fasciitis: protocol for a RCT. *J foot ankle* 2010; 3: 15.
3. Canale TS, Beaty HJ, Murphy AG. Disorder of tendons and fascia. *Campbells Orthopedics*. 11th ed. Philadelphia USA; 2008. P. 4815.
4. Akhtar N, Rasheed P, Ahmad Z. Role of physical medicine and rehabilitation intervention for plantar fasciitis. *Pak Armed Forces Med J* 2008; 58(3): 239-43.
5. Foye MP, Sullivan JW, Panagos A, Zuhosky PJ, Sable WA, Irwia WR. Industrial medicine and acute musculoskeletal rehabilitation. *Arch Phys Med Rehabil* 2007; 88: 29-33.
6. Lee TG, Ahmad TS. Intralesional autologous blood injection compared to corticosteroid injection for treatment of chronic plantar fasciitis: a prospective RCT. *Foot Ankle international* 2007; 28: 984-90.
7. Anitua M, Sanchez E, Nurden A, Nurden P, Orive G, Andia I. New insights into and novel applications for platelet rich fibrin therapies trends. *Biotechnol* 2006; 24(5): 227-34.
8. Tatli ZY, Kapasi S. The real risks of steroid injection for plantar fasciitis, with a review of conservative therapies. *Curr Rev Musculosketel Med* 2009; 2: 3-9.
9. Sampson S, Gerhardt M, Mandelbaum B. Platelet rich plasma injection grafts for musculoskeletal injuries: a review. *Curr Rev Musculoskelet Med* 2008; 2178: 9032-5.
10. Kiter. Comparison of Injection Modalities in the Treatment of Plantar Heel Pain: a randomized controlled trial. *JAPMA* 2006; 96(4): 2983-96.
11. Frontera RW, Silver KJ, Rizzo DT. Autologous blood injection in plantar fasciitis. *Essential Phy Med Rehab* 2008; 472-73.
12. Rompe JD, Furia J, Weil L, Maffulli N. Shock wave therapy for chronic plantar fasciopathy. *Br Med Bull* 2007; 81-82: 183-208.
13. Pfeffer GB: The Conservative Management of Plantar Fasciitis: A Prospective Randomized Multicenter Outcome Study. Presented at the 27th Annual Meeting of the AOFAS, February 16, 1997, San Francisco, CA.
14. Sellman JR. Plantar fascia rupture associated with corticosteroid injection. *Foot Ankle Int* 1994; 15: 376-81.
15. Steven K. Neufeld, Cerrato R. Plantar Fasciitis: evaluation and treatment. *J Am Acad Orthop Surg* 2008; 6(16): 338-46.
16. Buccilli TJ, Hall HR, Solmen JD. Sterile abscess formation following a corticosteroid injection for the treatment of plantar fasciitis. *J Foot Ankle Surg* 2005; 44: 466-68.

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