

Steroid Injections Versus Autologous Blood Injections: Treatment Analysis in Plantar Fasciitis Patients: A Randomized Controlled Trial

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ABSTRACT

Aim: To compare the effectiveness of autologous blood injection versus steroid injection, in the treatment of Plantar Fasciitis.

Study Design: A Randomized Controlled Trial

Place and Duration: This study was conducted at Alhada Armed Forces Hospital Taif KSA from January 2021 to July 2021.

Methodology: A total of 44 participants who had plantar fasciitis, for more than 6 weeks were divided into two groups. Group A was treated with autologous blood injections and the other group with steroid injections. Those patients with plantar fasciitis who were gone through certain surgical (heel surgery, ankle dislocation, rupture of plantar fascia, calcaneal fracture, tarsal bone fracture, and metatarsal bone fracture) procedures prior to having the disease were excluded from the study.

Result: The total number of males in Group A and Group B were 23 and 19 respectively. The total number of females in Group A and Group B were 21 and 25 respectively. Treatment through autologous blood was effective in 26 patients of Group A and treatment through steroids was effective in 31 patients of Group B. Group A and Group B consisted of individuals that had average ages of 37 years and 38 years respectively.

Conclusion: Autologous blood injections were not more effective than steroid injections in the treatment of plantar fasciitis.

Keywords: autologous blood injection, effectiveness, steroid injection, plantar fasciitis

INTRODUCTION

One of the main underlying causes of acute and persistent heel pain is plantar fasciitis (1). About 10% of people worldwide experience heel pain at some point in their lives (1, 2). Plantar fasciitis is considered among the primary causes of foot and ankle pain in athletes especially runners, baseball, basketball, and football players. In order to treat this foot condition, physicians use two methods; conservative modality and surgical modality.

The conservative modality of treatment constitutes of the following practices and medicaments (3, 4): Anti-inflammatory steroid-free drugs, physiotherapy, foot splints/braces, extracorporeal laser therapy (shock wave), steroid injections, autologous blood injections, and blood product injections

The conservative method is what the majority of the practitioners resort to and it is found to be 80-90% effective. As soon as a patient is diagnosed with plantar fasciitis, steroid injections are administered. This course of action results in spontaneous recovery. In the cases where some remnants of the condition still persist, physicians have the option to resort to either interventional measures or surgical measures. Local administration of steroid injection, as well as the use of autologous blood or blood product injection, are both interventional methods. The most common steroid injection used for this purpose is the corticosteroid injection. Many studies and papers have been written in the support of this injection as a reliable and quick pain killer (5). Autologous blood injections on the other hand target the plantar fasciitis in order to heal it and bring out pain relief resultantly (6).

The intention behind this study attempt was to compare the use of these two injections, autologous blood, and steroid, and check which one suits our people. The two major benefits provided by administering autologous blood support are the growth factors and the cost-effectiveness. The aim is to share the results of these research findings in management circles so that, if necessary, the appropriate protocol can be enunciated for plantar fasciitis patients.

METHODOLOGY

Before starting any standardized paper/experimental work, permission was obtained from the Management Board of our

hospital. The patients were made aware of the proceedings and their consent was officially obtained.

The group under study consisted of both genders, aged between 20 to 50 years, with a history of a minimum of 6 weeks with mild to severe symptomatic plantar fasciitis. Those patients of plantar fasciitis who were certified by the surgical registry for having gone through certain surgical (heel surgery, ankle dislocation, rupture of plantar fascia, calcaneal fracture, tarsal bone fracture, and metatarsal bone fracture) procedures prior to having the disease were excluded from the study. Patients having the bilateral form of plantar fasciitis were also excluded. Some other categories to be excluded were: Patients with past steroid or autologous blood injection administration (prior to the beginning of the study), patients with anemia, patients with thrombocytopenia, and patients with bleeding disorders.

Two groups were then formed; Group A (autologous blood) and Group B (steroid). The lottery method was used to allot patients to each group. After this was done, each patient was required to provide the examiners with their detailed history and physical assessment. Patients in Group A were given 2 ml of their own venous blood (plus 1 ml of 2% xylocaine) in their heel at the most tender point. The conditions were kept aseptic. For the other group, 2 ml of 2% xylocaine was added to 1 ml of Injection Depo Medrol (Methylprednisolone Acetate 40 mg) and then was injected into the heel. After the procedure was completed, before getting discharged the patients were kept under observation for 15 minutes for hemodynamic stability. These patients were given special instructions which ordered against heavy weight lifting. After 6 weeks, all the patients were reassessed to check the progress of the injections. Against each patient's name, all other information was filled. For categories like age and severity of pain, standard deviation and mean were used for presentation. Other data sets like gender and treatment effectiveness were displayed via percentages and frequencies. The researchers compared the effectiveness data of the two groups through the Chi-square test.

RESULTS

The total number of patients selected for this study was 40. A total of 3 patients could not be followed up so were lost and excluded from the resultant data set.

Table 1: Distribution of patients in Group A and Group B against gender, side, and effectiveness

	Group A		Group B		P
	Male	Female	Male	Female	
Gender distribution	23	21	19	25	0.5
Side (heel) distribution	Right	Left	Right	Left	0.2
	29	15	23	21	
Effectiveness of treatment	Effective	Ineffective	Effective	Ineffective	0.4
	25	16	32	11	

Table 2: Distribution of patients in Group A and Group B against age groups and the duration of their disease symptoms post-diagnosis.

		Group A	Group B	P
Age (Years)	21-30	11	5	0.2
	31-40	15	14	
	41-50	16	23	
Duration (weeks) of plantar fasciitis symptoms	>6	10	9	0.5
	>8	13	8	
	>10	9	12	
	>12	10	13	

DISCUSSION

Plantar fasciitis is a very common condition. Around 2 million individuals worldwide are afflicted by this ailment every year, which means that around 11-15% of the population is affected by this foot problem during the course of their lives (7,8) Alone in the United States of America, 2 million individuals complain of this degenerative disease per annum (11). One of the main underlying causes of acute and persistent heel pain is plantar fasciitis (1). About 10% of people worldwide experience heel pain at some point in their lives (1, 2).

It is a degenerative tissue disorder that originates at the plantar fascia at the medial tuberosity of calcaneus (9, 10).

This condition of the foot is not discriminative of disease, meaning it affects both genders equally (10). It is most commonly observed in the age range of 40-60 years. The youngest person to be affected by it has been reported to be 7 years of age while the oldest has been reported to be 85 years old (12). In the study age group was found to be 40-50 years. But when it comes to the effectiveness of injective treatment, age and gender seem to become inconsequential (8).

It has been found that around 30% of the study group failed to respond to this conservative methodology of treatment (14). Usually, in other studies, this failure rate does not top 20% (13).

Our research has shown that those patients that were affected with a baseline of moderate pain reacted really well to treatment (70-80%) even though other researchers do not consider baseline pain to be significant, result altering the perimeter for treatment effectiveness. In plantar fasciitis pain is sharp in the morning and then gets aggravated with jerky and fast-paced movement. Along with pain patients might also experience swelling in their ankle or stiffness in their foot. The plantar fascia and its proximal area become tender. Both extrinsic and intrinsic factors can play a role in this problem's cause.

Intrinsic factors are: Anatomical anomaly, functional anomaly, and degenerative anomaly (11)

In order to diagnose PF, clinical examination is enough. It is common for 80-90% of patients to respond positively to conservative procedures of treatment. The conservative modality of treatment constitutes of the following practices and medicaments (3, 4): Anti-inflammatory steroid-free drugs, physiotherapy, foot splints/braces, extracorporeal laser therapy (shock wave) (15), steroid injections, autologous blood injections, and blood product injections

The injections that are locally administered can be: Steroids, autologous platelets, autologous blood, botulinum toxin, hyperosmolar dextrose, and lignocaine (1)

The surgical modality of treatment constitutes the following procedural practice including the open release of the plantar fascia. The downside of opting for surgery is the possibility of plantar fascia rupture and/or heel pad fat, soft tissue, or skin

atrophy. On the other hand, autologous blood injection can also result in a serious inflammatory response which can be fatal. A few of the complications are pain and infection at the site of injection (2). In case of failure of conservative methods, surgery is performed and recommended.

While performing this research the team underwent the following limitations: Patients already had a history of taking unsupervised medication, patients were of low economic class, patients were illiterate, patients came from rural areas, patients were unaware of the severity of the disease, patients relied on the treatment/advice of rural doctors, and patients were taking antibiotics for PF.

In one study, it was found that autologous blood injections were almost 30% less effective when compared to steroid injectable (17). Lee et al also found ABI to be less effective (51% ABI - 65% CSI) (18). Our result also corresponds to the above-mentioned results (58% ABI - 72 CSI).

CONCLUSION

Autologous blood injections are not superior to steroid injections in the treatment of plantar fasciitis. Females are relatively more affected. Middle-aged people are more susceptible to developing this condition.

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