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Research Article

COMPARISON BETWEEN CORTICOSTEROID INJECTION AND AUTOLOGOUS PLATELET RICH PLASMA INJECTION FOR CHRONIC PLANTAR FASCIITIS –PROSPECTIVE STUDY

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ABSTRACT

The present study was a prospective study; 80 consecutive patients with chronic plantar fasciitis were enrolled and randomized in two groups: One receives the Platelet rich plasma (PRP) therapy and another receiving corticosteroid injection. The outcomes in both groups are then evaluate and compared using visual analogue scale (VAS) and American Orthopaedic foot and Ankle Society (AOFAS) scale at 1month, 3month and 6 month post injection. The level of significance was set at $p < 0.05$. Prospective data was collected of80patients . The average follow up duration was about 6 months. The score on VAS scale and AOFAS improved from base line for both group but the patients received PRP therapy had a statistically significant reduction in pain and improved AOFAS score at last follow up. The result of present study showed that the PRP therapy has potential to reduce pain and improve the functional outcome in cases of chronic planter fasciitis. It was found to be more effective and significantly better than corticosteroid injection.

INTRODUCTION

Plantar fasciitis (PF) is seriously affects the patient's daily activities and quality of life. Primarily it is a clinical diagnosis and a self-limited condition in majority of patients. It takes months and years to resolve; thus poses challenges to treating clinicians. Plantar fasciitis affects both sedentary and physically active individuals and are believed to arise from chronic overload. The etiology is poorly understood.. 1 While there are a plethora of treatment options, none of these are universally reliable or acceptable. Conservative therapies are usually the first line of treatment. Corticosteroid injection is a mainstay of early treatment.. Platelet rich plasma (PRP) therapy is a revolutionary novel modality.

METHOD

The study was designed as prospective research study.

Inclusion criteria

participants aged 40-70 years of either sex
Subject must understand the risk and benefit of the protocol.
Have heel pain for more than 6 months

Exclusion criteria

It includes following parameter

- Traumatic heel pain,
- Heel pain less than6 month,
- Inflammatory disorder
- Abnormal LFT and RFT,
- Hematological disorders or any history of coagulopathies,
- Diabetes,
- Cancer,
- Medically unfit patient,
- Hypersensitivity to NSAIDs,
- Compressive neuropathies,
- Skin disorders, Severe infection,
- Pregnant, breast feeding or planning to become pregnant

Our study included 35men and 45women. The mean age of the sample was 44 year. All patients with odd serial number were placed under group A (received PRP injection (single injection of 1.5ml of PRP)) and other patients with even serial number were gathered under group B (received corticosteroid injection (single injection of 40mg/mL of methylprednisolone). The patients treated received single injection either of PRP or corticosteroid during the course of study. The injection is combined with the peppering maneuver in both the group. Either group could request to shift to the NSAIDs therapy at any time during the course of the study. Follow-up was done at 1month, 3month, and 6month. All of the follow-up was done at the outpatient department. All data collection and critical evaluation using validated scoring instruments (VAS Score; AOFAS scale).

The present study utilized a REMI centrifuge C-854/6 System (Medico / Doctor Centrifuge); a dedicated Mini Centrifuge system, designed for routine centrifuging tests (Capacity: 6 x

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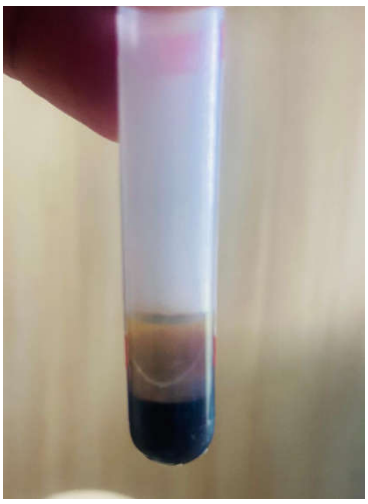
15; Type of Head: Swing Out; Max. Speed: 3500 rpm; Max. RCF: 1600g; W x D x M (mm): 310 x 310 x 295; Supply: 220-240 Volts 50Hz Single Phase).

Under aseptic precautions10 ml blood was withdrawn from antecubital vein in a 20ml sterile EDTA-coated disposable test tube. This sterile disposable test tube was centrifuged at 22-24degree room temperature at 1500rpm/min for 15 minutes in a REMI centrifuge C-854/6 System. Following centrifugation, the blood sample is separated in different blood fraction. Lowest or red cell and granulocytes; middle or whitish opaque layer of buffy coat which contains osteoprogenitor cells, mononuclear cells and some platelets and the top one is yellowish transparent layer and contains plasma and platelet. With the help of a long bore sterile micropipette and around 2ml of PRP was collected and is ready to use.



Under aseptic precautions 1% lidocaine (Xylocaine) 2- 3mL of local anesthesia (AST) was delivered to the point.of maximum tenderness. Gentle massage was done. Dry needling, also called peppering, is used to locally ‘‘injure’’ the soft tissue to excite the inflammatory response. After contacting the hard bony end, the needle was gently partially withdrawn then advanced in a fanlike wheal, peppering the area 5to6 times; simultaneously injecting 0.2-0.3 ml of either steroid or PRP.
The outcomes in both groups are then evaluate and compared using visual analogue scale (VAS) and American Orthopaedic foot and Ankle Society (AOFAS) scale at 1month, 3month and 6month post injection.5,6.

RESULT

VAS score in group A and group B.

	PRP Mean	SD	Steroid Mean	SD	P Value	Significance
Vas before inj	7	O.75	7.03	0.572	>0.05	NOT Significant
VAS 1month	4.60	0.77	2.78	0.742	<0.05	Significant
VAS 3month	3.09	0.85	6.87	0.91	<0.05	Significant
VAS 6month	1.54	0.49	6.89	0.67	<0.05	Significant

DISCUSSION

Plantar fasciitis is commonly diagnosed inferior heel pain in adults and have a dramatic impact on physical mobility.7 It continues to baffle doctors, since there are no definite combinations of clinical, biomechanical, or training variables, or causative factors in the development of CPF have been found. 8 Hence, optimal or preferred treatment is inadequate or even conflicting especially when conservative measures had been exhausted, and surgical intervention was not warranted. Though steroid injections are considered as one of the treatment modality but unfortunately it has short term results and is associated with complications. 9

Recently, regenerative medicine therapies (platelet-rich plasma (PRP)) have been used as an alternative therapy for CPF and were associated with improved pain and function scores. Primary objective of present study was to evaluate and compare the effectiveness of autologous platelet rich plasma

(PRP) and steroid injections in chronic cases of plantar fasciitis. Injection is the preferred method to administer PRP into the lesion and the authors had indicated that peppering technique is adequate for administration of PRP or steroid. They speculate that the multiple penetrations without withdrawing the needle allow dispersal of growth factors or corticosteroid to a larger area. Furthermore, peppering induce injury which may consequently stimulate bleeding and generate openings in the degenerative hypo-vascular tissue, allowing an improved healing response. 10The present study found that although both group showed improvement at the end of 1month and 3month, patients received PRP injections were found to have significantly improved pain scores at 6month compared with the control group (p0.05). The present study showed that at the end of the third month, pain score gradually increased after decreasing initially in control (Table 4). At this point the score was not statistically different with the baseline parameters. It could be concluded that the duration of pain relief effectiveness is less than 3months in patients received corticosteroid injections. Our result confirm the findings of Crawford F *et al*, who reported Statistically significant reduction in pain at 1month, but thereafter no differences could be detected. 11 Hence, it is concluded that steroid injections can provide short-term relief. On the contrary, the pain score remained significantly low at 3months and even at the end of 6month in group A. This is attributed to the fact that the PRP containing concentrated growth factors which initiates and accelerate the body's healing mechanisms into growing new connective tissue. 12 PRP contains several different growth factors (cytokines) that encourage healing of bone and soft tissue12. PRP serves as a growth factor agonist and has both mitogenic and chemotactic properties.

The critical analysis of current research showed that PRP injection appears to have slower onset of action than steroid but it is much safer and longer acting as also supported by literature. The present study clearly demonstrate PRP injection to be an effective and well tolerated alternative to corticosteroid injection in management of patient with chronic plantar fasciitis with an added advantage of its biological nature and better patient compliance. Furthermore, PRP also possesses antimicrobial property which contributes to prevention of infection.

It is advisable to standardize cost-effective individual preparation protocols, which can be reproduced in anyclinical setting. Further studies are required to optimize the number and spacing of injections for obtaining maximum desired functional outcome.

CONCLUSION

Autologous PRP therapy can often lead to a more rapid and sustained reduction in symptom complaints when compared to corticosteroid injections. PRP injection holds promise as a potential therapy to hasten the healing of chronic plantar fasciitis.

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