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PLANTAR FASCIITIS;
INTRA-LESIONAL STEROID INJECTIONS VERSUS INTRA-LESIONAL AUTOLOGOUS BLOOD INJECTIONS.

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ABSTRACT… Objectives: To compare Intra-lesional corticosteroid injection with autologous blood injection therapy in plantar fasciitis in terms of mean pain score. **Study Design:** Randomized Controlled Trial (RCT). **Place and Duration:** At the Department of Orthopaedics, Benazir Bhutto Hospital, Rawalpindi, for a duration of 01 year i.e. from 7th May 2016 to 6th May 2017. **Patients and Methods:** Patients with unilateral plantar heel pain fulfilling the inclusion criteria were included in the study. Patients were randomly allocated into two groups; A and B. Group A were injected 2 mL corticosteroid injection in heel. Those in Group B were injected with 2 mL of autologous blood mixed with 1 mL of 2% lidocaine. Outcome was assessed using Visual Analog Score (VAS) at 3 months. **Results:** A total of 180 patients with unilateral plantar heel pain were included. Mean age of patients was 49.98±11.26 years. 91 (50.6%) were male and 89 (49.4%) females. At 12-weeks post-treatment, mean pain score was significantly high in group A than group B (3.24±1.05 vs. 2.54±1.01; p=0.0005). **Conclusion:** Autologous blood was more effective than corticosteroid injection in patients with plantar fasciitis as was seen at 3 months follow-up.

Key words: Autologous Blood, Corticosteroid, Plantar Fasciitis, Visual Analog Score (VAS).

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INTRODUCTION

Plantar fascia is the deep fascia or aponeurosis sole of the foot. It arises from the calcaneum posteriorly dividing into bands which further divides to enclose tendons.[1] Plantar fasciitis is an inflammatory condition that causes degeneration close to the site of origin of the plantar fascia at the medial tuberosity of the calcaneous.[2] The exact mechanism is unknown and thought to be multifactorial.[3] Micro tears occur due to repetitive trauma and overuse along with cycles of tearing and healing which results in the release of various chemical mediators and thus leading to myxoid degeneration and weakness of the fascia as well as pain.[4]

11 to 15 % of adult symptomatic foot are due to plantar fasciitis.[5] Peak incidence is between 40-60 year age group with no gender bias.[6] Clinical assessment is the best diagnostic modality of plantar fasciitis.[7] This disease responds well with conservative management.[8] Various treatment modalities have been proposed over the years which include bed-rest, medications like NSAIDs, night-splintage, foot orthotics, stretching exercises and extracorporeal shock-wave management.[9] According to an American survey, an estimated 75% of people recommended corticosteroid injection for management of this condition.[10] Steroids injections though useful in managing plantar fasciitis only provide with short-term benefit.[11]

The response of chronic plantar fasciitis is usually unpredictable to any treatment. Cellular and humoral mediators provided by autologous blood induce healing in degenerative areas, the pathology of this condition. According to studies, Autologous blood injection has been found to be effective in reducing pain in patients with plantar fasciitis.[12]

The aim of this study was to assess outcome of Intra-lesional corticosteroid injection with autologous blood in plantar fasciitis in term of pain score. This would help Surgeons in selection of appropriate treatment for plantar fasciitis.

MATERIALS AND METHODS

This Randomized Controlled Trial (RCT) was conducted for a duration of 01 year, i.e. from 7th May 2016 to 6th May 2017. Inclusion criteria were patients with unilateral plantar heel pain, worse with rising in morning or after prolonged sitting having a duration of more than 4 weeks and aged above 18 years, Visual Analog Pain Score (VAS) score > 5. Exclusion criteria were previous history heel surgery, neuronal disorders like tarsal tunnel syndrome etc., Complex regional pain syndrome, Achilles tendinopathy, Diabetes Mellitus (DM), Peripheral vascular disease, coagulation disorder, pregnancy and metastatic carcinoma.

After taking approval from the Ethical Review Board (ERB) of the hospital, all patients presenting in Out Patient Department (OPD) and fulfilling the inclusion criteria were included. After taking an informed consent, all patients were radiographed pre-operatively to rule-out any bony abnormality Patients were randomly placed into group A and B using Microsoft excel randomization method.

- Group A – Infiltrated with 2 mL corticosteroid
- Group B - injected with 2 mL autologous blood mixed with 1 mL of 2 % lidocaine.

All procedures were done under aseptic conditions by the same consultant Orthopaedic surgeon. Post-procedure precautions included avoiding physical exertion activities and the high impact exercises for a minimum of two weeks. Patients were advised daily stretching exercises thrice daily for a duration of 8 weeks. Outcome was measured using VAS at 3 months post-treatment.

All information was recorded on pre-formed questionnaires. Data analysis done using SPSS version 23. Descriptive statistics calculated as mean and standard deviation for age and pain. Frequency and percentages were calculated for age and sex of the patients. Students t-test was used to compare pain score at 12 weeks post-treatment in both groups. P value < 0.05 taken as significant.

RESULTS

A total of 180 patients with unilateral plantar heel pain were included in this study. 90 were placed in each group. The average age of the patients was 49.98±11.26 years (age distribution represented in Figure-1).

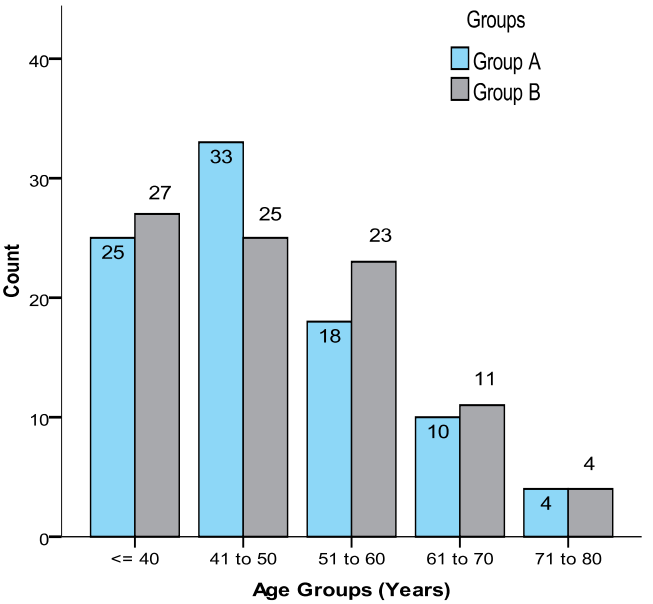

Figure-1. Age distribution with respect to groups

50.6% (91/180) were male and 49.4% (89/180) female. Regarding site of involvement, in 82 (45.6%) right foot while in 98 (54.4%) left foot was involved.

Pre-treatment mean pain score was high in both groups but significant difference was not observed while at 12 week post treatment mean pain score was significantly high in group A than group B (3.24±1.05 vs. 2.54±1.01; p=0.0005), as presented in Table-I.

Similarly, significant difference was observed after stratified data by age groups, as shown in Table-II and III.

Mean Pain Score	Group A (n=90)	Group B (n=90)	P-Value
Pre treatment	6.93±0.88	6.89±0.86	0.73
Post treatment at 12 weeks	3.24±1.05	2.54±1.01	0.0005*

Table-I. Comparison of mean pain score between groups with respect to time
Results presented as mean± SD and analyzed by t test.
*significant difference observed between groups

Mean Pain Scores	Group A (n=58)	Group B (n=51)	P-Value
Pre treatment	6.98±0.93	7.00±0.85	0.92
Post treatment at 12 weeks	3.28±1.07	2.53±0.98	0.0005*

Table-II. Comparison of mean pain score between groups for the below and equal to 50 years of age patients
Results presented as mean± SD and analyzed by t test.
*significant difference observed between groups

Mean Pain Score	Group A (n=32)	Group B (n=39)	P-Value
Pre treatment	6.84±0.81	6.74±0.88	0.62
Post treatment at 12 weeks	3.19±1.03	2.56±1.14	0.02*

Table-III. Comparison of mean pain score between groups for the above 50 years of age patients
Results presented as mean± SD and analyzed by t test.
*significant difference observed between groups

DISCUSSION

Pain in medial tuberosity of heel which is associated with increased pain with physical exertion is at times related to a spur of the os calcis, this has been described for decades.[13] Plantar fasciitis not an uncommon condition and is described as a sharp, stabbing or burning pain in the postero-medial part of the heel. It is a common observation that initial treatment of plantar fasciitis should be conservative because 90% of patients respond to it.[14] 40-60 year is the commonest age group, but has also reported in people from 7 to 85 years and is more common in females.[7] In our study male female ratio was almost same with a mean age was 49.98±11.26 years in our study. Mean age was comparable to a study done by Wazir et al in Peshawar, Pakistan where it was 44.11±9.76 years.[15]

Conservative treatment has shown a wide range of acceptable outcomes with success rates ranging from 46% to 100%.[5] In our study the effectiveness of autologous blood injections was determined by Visual Analog Score at 12 weeks interval. Pre-treatment mean pain scores were high in both groups. At 12 weeks post-treatment, mean pain score was significantly high in group A than B. Similarly, significant difference was observed after stratified data by age groups. Post-treatment mean pain score was significantly high in group A than group B in females while significant difference was not observed in males. Lee et al compared autologous blood injections to corticosteroid injections for the treatment of chronic plantar fasciitis.[16] At 6 weeks and 3 months, the steroid group had significantly lower pain score than the autologous blood group, but the difference was not significant at 6 months. Hence, according to this study autologous blood infiltration had more efficacy in reducing pain in plantar fasciitis but steroid was found superior in terms of time taken to reduce the symptoms. 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 12 weeks interval. Another study showed that the combination of two treatment modalities that is conventional and local steroid application was effective in treating this condition and these results were in accordance with the study undertaken by Nuefeld et al.[6,17] He showed that conservative management of plantar fasciitis had a success rate of 90%. In our study no complication occurred. Thus autologous blood injections in plantar fasciitis is more safe, cheap and effective as compared to other modalities. In another study by Frontera et al, on autologous blood injections in plantar fasciitis, the effectiveness was 80%.[18]

The above mentioned studies have been undertaken in literate communities with good patient compliance while we faced certain

problems during this study.[5] The limitations of this study were lack of regular physiotherapy, NSAIDS and short follow up period. Many patients included in the our study had already taken several types of medications either by themselves or from local practitioners, Hakeems or traditional bone-setters. However, the results of this study are very encouraging and we recommend that patients with plantar fasciitis can be successfully treated with autologous blood injections into the plantar fascia, however, further studies of longer duration and comparison are needed to explore better modalities of treatment.

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 analog scale at 12 weeks follow up.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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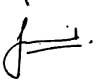
1	Raja Umar Liaqat	Conceiptualization of study design, literature search and critical revision of the article.	
2	Junaid Khan	Data analysis and interepretation and data collection.	
3	Fareeha Chaudhry	Data collection and literature search.	
4	Muhammad Imran Aftab	Data analysis.	
5	Riaz Ahmed	Final approval of the version to be published.