

ORIGINAL ARTICLE

Outcome of Corticosteroid Injection in Reducing the Intensity of Pain in Patients with Plantar FasciitisWAQAS ALI¹, ARIF KALEEM², AQEEL MOAZZAM³, ZOHAIB NADEEM⁴, NISAR AHMAD⁵, IMRAN AHMAD⁶, ABDUL AZIZ⁷¹Assistant Professor Orthopaedic Surgery CMH Kharian²Farooq hospital Akhtar Saeed Medical College Behria Gulf City Islamabad³Assistant Professor Rashid Latif Medical College Lahore⁴PGR Orthopaedic Surgery Allied Hospital Faisalabad⁵Associate professor Orthopaedic Surgery CMH Kharian⁶Consultant Orthopedic surgeon, Gov Gen hospital 224Rb⁷Medical officer Social security hospital Faisalabad

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ABSTRACT**Introduction:** Plantar fasciitis is one of the most common causes of heel pain, accounting for about one million patient visits per year in the United States.**Objectives:** The main objective of the study is to find the outcome of corticosteroid injection in reducing the intensity of pain in patients with plantar fasciitis.**Material and methods:** This descriptive study was conducted in CMH Kharian during March 2022 to September 2022. Data was collected with the permission of ethical committee of hospital. All the data related to physical examination, BMI, age, history of diseases and socioeconomic status were collected. The injections were applied to all patients who included unilateral foot symptoms and didn't respond to conservative treatment for at least six months.**Results:** Data was collected from 100 patients. Most of the cases were males 63 (63.3%) and rest 36 (36.7%) were females. Age with mean standard deviation was 38.15±10.26 years and had body mass index 23.11±13.51 kg/m².**Practical implication:** This study will help us to treat the plantar fasciitis treated with single injection of corticosteroid injection resulted in significant pain reduction.**Conclusion:** It is concluded that plantar fasciitis treated with single injection of corticosteroid injection resulted in significant pain reduction in our patients. We recommend steroid injection in patients who are refractory to 6 weeks anti-inflammatory drugs and physiotherapy treatment.**Keywords:** Pain, Reduction, Injection, Corticosteroid, Significant, Treated**INTRODUCTION**

Plantar fasciitis is one of the most common causes of heel pain, accounting for about one million patient visits per year in the United States. Although it is usually a self-limiting condition with a majority of cases resolving within ten months, about 10% of patients develop chronic plantar fasciitis¹. Many patients seek help from their family physicians and foot specialists when the pain becomes severe enough to cause significant distress and disruption to their daily activities and work².

Chronic heel pain associated with plantar fasciitis (PF) is one of the most common clinical entities encountered by foot and ankle specialists and affects adults of all ages with either an active or sedentary lifestyle. Within their lifetime, 10% of the general population is expected to present to orthopedic surgeons with heel pain due to degenerative changes in the plantar fascia³. PF results from the cumulative effect of recurrent microinjuries and chronic damage in the plantar aponeurosis at the insertion of the plantar fascia on the medial process of the calcaneal tuberosity. Severe pain in the medial tubercle of the calcaneus during weightbearing in the morning that decreases in intensity during standing is the main symptom of PF⁴. The main predisposing risk factors include an older age; certain anatomic risk factors, such as leg length discrepancy, high body mass index (BMI), thick plantar fascia, and pes planus (excessive pronation of the foot); and certain extrinsic factors, such as previous injury to the heel, improper shoe fit, and improper running pattern⁵.

Corticosteroid injection therapy is the most widely used method of plantar fasciitis. However, corticosteroid injection has a risk of fat pad atrophy and plantar fascia rupture. Prolotherapy is known as regenerative injection treatment based on the injection of generating materials via high-density dextrose into ligaments and tendons⁶. Dextrose solution provides fibroblast proliferation and collagen synthesis in response to the departure of various growth factors. All of these stimuli improve functional outcomes by reducing chronic musculoskeletal pain⁷.

Corticosteroid injections have been used to treat plantar heel pain since the 1950s. Both orthopaedic surgeons and rheumatologists have been known to use them frequently. The

advantages of corticosteroid injections include low cost, low complexity and rapid pain relief (i.e. it can be administered by most family physicians in an outpatient setting)⁸. However, many are concerned about the potential complications associated with this treatment modality, which may offset its benefits. Thus, the recommendation of corticosteroid injections as an initial or tier 1 treatment option by the American College of Foot and Ankle Surgeons (ACFAS) was met with much scepticism and raised certain controversial issues. To further complicate matters, in recent years, the advent of other injectable options (e.g. platelet-rich plasma, autologous blood and botulinum toxin) have also made it more difficult for family physicians to decide on the most appropriate course of action for their patients⁹.

Many studies have been done to evaluate the efficacy of corticosteroid injections for the treatment of plantar fasciitis. Most compare its efficacy with that of other treatment modalities. However, these modalities contain inherent differences, even within the corticosteroid injection arm, such as the method of injection, type of steroid used, concurrent use of local anaesthetic and physical therapy, and use of ultrasonography (US) guidance and nerve blocks¹⁰.

Objectives: The main objective of the study is to find the outcome of corticosteroid injection in reducing the intensity of pain in patients with plantar fasciitis.

MATERIAL AND METHODS

This descriptive study was conducted in CMH Kharian during March 2022 to September 2022. Data was collected with the permission of ethical committee of hospital.

Inclusion criteria: Adult patients of both gender and all ages with clinical signs and symptoms of plantar fasciitis for at least 6 weeks duration were included.

Exclusion criteria: Patients with previous steroid injection or platelet derived plasma (PRP) injection, gout, surgery, infection, morbid obesity and bilateral plantar fasciitis were excluded.

Data collection: All the data related to physical examination, BMI, age, history of diseases and socioeconomics status were collected. The injections were applied to all patients who included

unilateral foot symptoms and didn't respond to conservative treatment for at least six months. Medial calcaneal tuberosity and the origin of the plantar fascia, which was the most painful point before injection, were marked with palpation. The area to be injected was cleaned with an antiseptic povidone-iodine solution. All patients were administered a single injection of triamcinolone 1ml mixed with local anesthetic (plain xylocaine 2%) 1 ml under aseptic measures. The injection was given at the maximum tender area of the heel using the palpation method. The procedure was performed as day case. All patients were prescribed tablet Paracetamol 1TDS for 3days and were followed in the OPD at two weeks, four weeks, and twelve weeks interval. Clinical assessment and mean VAS score were determined at presentation and on follow-up visits.

Statistical analysis: Data were entered and analyzed in SPSS version 23. Continuous variables like age, mean VAS, and duration of pain, were represented as means and standard deviations.

RESULTS

Data was collected from 100 patients. Most of the cases were males 63 (63.3%) and rest 36(36.7%) were females. Age with mean standard deviation was 38.15±10.26 years and had body mass index 23.11±13.51 kg/m².

Table 1: Characteristics of enrolled cases

Variables	Frequency	Percentage
Mean Age (years)	38.15±10.26	
Mean BMI (kg/m ²)	23.11±13.51	
Gender		
Female	36	36.7
Male	63	63.3

Pre injection mean pain score was 6.81±5.7 reduced to 2.01±3.9 after nine weeks of follow up. Recurrence of pain was found among 10 (10.3%) cases.

Table 2: Reduction in pain score and recurrence rate among enrolled cases

Mean Pain Score (VAS)	Frequency	Percentage
At start	6.81±5.7	-
After 3 weeks	4.07±2.11	-
After 6 weeks	3.01±5.44	-
After 9 weeks	2.01±3.9	-
Recurrence of pain		
Yes	10	10.3
No	90	90.7

DISCUSSION

Local injections relieve heel pain by reducing inflammation. It is reported that injectionbased invasive methods can be used in patients with plantar fasciitis if symptoms are present for more than six months¹¹. Similarly, we included patients with symptoms lasting longer than six months in our study. Prolotherapy is an injection procedure in which a solution of proliferant is administered to the ligament and muscle injuries¹². There are no formal practice guidelines about the procedure of the prolotherapy method, the density of the solution, the frequency, and the number of sessions in the clinical practice. Usually, prolotherapy injection can often be administered through a few injections' sessions every two or more weeks¹³.

The studies by Celik et al. and Ryan et al. were compared the efficacy of CSI and PT for the treatment of plantar fasciitis in our present study. The PT interventions in the 2 studies were stretching exercises, and participants were individually instructed by a trained therapist initially and the therapist provided follow-ups and patient guidance in sessions thereafter¹⁴. Celik et al.'s article illustrated that patients with plantar fasciitis received 11

times of stretching exercises and joint mobilization for 3 weeks, and significant improvement in pain reduction was detected not only at 3 months but also at 1 year after treatment¹⁵. We considered the possibility that the effect could last up to 1 year because these patients were advised to repeat the same stretching exercises on their own; however, completion these self-stretching exercises was not documented. Given the lack of sufficient evidence of the therapeutic effectiveness of PT for plantar fasciitis, more studies focusing on the outcomes, times and types of PT for plantar fasciitis should be conducted in the future¹⁶.

CONCLUSION

It is concluded that plantar fasciitis treated with single injection of corticosteroid injection resulted in significant pain reduction in our patients. We recommend steroid injection in patients who are refractory to 6 weeks anti-inflammatory drugs and physiotherapy treatment.

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