Outcome of Corticosteroid Injection in patients with plantar fasciitis.

Zeehan Naeem[1], Imamuddin[2], Anisuddin Bhatti[3]

[1,2]Resident, Department of Orthopedic Surgery, Jinnah postgraduate Medical Centre Karachi
[3]Professor Orthopedic Surgery, NCCI_NMI Hospital Sadder, Karachi

Authorship and contribution Declaration:
Each author of this article fulfilled ALL 4 Criteria of Authorship:
1. Conception and design or acquisition of data, or analysis & interpretation of data.
2. Drafting the manuscript or revising it critically for important intellectual content.
3. Final approval of the version for publication.
4. All authors agree to be responsible for all aspects of their research work.

Corresponding author:
Zeehan Naeem
E-mail: zeehanetal@hotmail.com

ABSTRACT

Objective: To determine the outcome corticosteroid injection in reducing the intensity of pain in patients with plantar fasciitis.

Methods: This was a descriptive study conducted in Department of Orthopaedics, Jinnah Post Graduate Medical Centre (JPMC), Karachi, Pakistan from 1st January 2018 to 1st January 2020.All patients with plantar fasciitis meeting the inclusion criteria were injected single injection of Triamcinolone in the heel and followed in the OPD at two weeks, four weeks and twelve weeks interval. Outcome was assessed in terms of pain reduction as measured with Visual analog scale (VAS).

Results: The total number of patients were 50. The mean age was 41.83 ± 14.07 years. Male patients were 27(54%) while female patients were 23(46%). The mean pre injection VAS improved from 5.41±3.1 to 1.3±7 post injection (P=0.03).

Conclusion: Plantar fasciitis treated with single injection of corticosteroid injection resulted in significant pain reduction.

Keywords: Corticosteroid, Plantar fasciitis, Visual analog scale.

This article may be cited as: Naeem Z, Imamuddin, Bhatti A. Outcome of Corticosteroid Injection in patients with plantar fasciitis.J Pak Orthop Assoc 2021;33(4): 141-144.

INTRODUCTION

Plantar fasciitis is a commonly encountered cause of heel pain presenting to the orthopedic clinics.[1] It is usually diagnosed clinically as the patient complains of a stabbing, non-radiating pain that is worse at the start of the day, resolving quickly as the activity increases. Moreover, tenderness is felt on palpating the medial calcaneal tubercle at the plantar surface.[2-4] An increased basal metabolic index, prolonged weight-bearing, flat foot deformity and ankle deformity are the possible causative factors. Plantar fasciitis usually starts with a strong tensile stretch in the fascia that is aggravated with repetitive activation and loading.[5] Some scientists consider "plantar fasciopathy" as a more suitable term for this condition because of the absence of classical inflammatory signs and the presence of degenerative changes noted on ultrasound and on histopathology.[3,4] Majority of patients are cured within a year with appropriate treatment.[4] There are several modalities for treating plantar fasciitis but no clinical evidence exists for a single particular treatment protocol.[6] Conservative techniques like nonsteroidal anti-inflammatory drugs, physiotherapy, stretching exercises, splints, calcaneal taping and sham taping are employed for the resolution of pain in plantar fasciitis but each has been observed to produce identical result in terms of pain reduction.[3,7] Small number of refractory cases may need surgical treatment.[8]

Corticosteroid injections are frequently used therapy for plantar fasciitis [9,10] prescribed by approximately 75% of Orthopedic surgeons.[11,12] Corticosteroid injections are low cost and result in rapid pain relief but the effects are short term and may have potential complications.[6,13] Some studies have shown that corticosteroid injections are more effective than autologous blood injections, platelet-rich plasma and foot orthoses in plantar fasciitis,[14] while others demonstrated better pain reduction with platelet-rich plasma injection than corticosteroid injection.[1,15]

The objective of our study was to determine the outcome corticosteroid injection in reducing the intensity of pain in patients with plantar fasciitis.

METHODS

We conducted this descriptive study in in Department of Orthopaedics, Jinnah Post Graduate Medical Centre (JPMC), Karachi, Pakistan from 1st January 2018 to 1st January 2020.Adults patients of both gender and all ages with clinical signs and symptoms of plantar fasciitis for at least 6 weeks duration were included. Patients with previous steroid injection or platelet derived plasma (PRP) injection, gout, surgery, infection, morbid obesity and bilateral plantar fasciitis were excluded. The study was approved by the ethical committee of our hospital and informed written consent was obtained from all participants. Complete history, physical examination and relevant investigations were done in all patients. The pre injection pain was measured with VAS.

All patients were administered a single injection of triamcinolone (®Kenacort) 1 ml 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 1 TDS for 3 days and were followed in the OPD at two weeks, four weeks, and twelve weeks interval. Clinical assessment and mean VAS score was determined at presentation and on follow-up visits.

Data were entered and analyzed in SPSS version 23. Continuous variableslike age, mean VAS, and duration of pain, were represented as means and standard deviations. Categorical variables like gender and the side of foot were represented as proportions and percentages.

Potential confounders and effect modifiers for pain were controlled after stratification of the data by age, gender, baseline pain scores, final pain score, side of foot, duration of pain and paired sample t-test was applied for calculation of P value. P value<0.05 were considered significant. Data was presented in table where necessary.

RESULTS

In our study 50 patients were included. The mean age was 41.83 ± 14.07 years. Male patients were 27 (54%) while female patients were 23(46%). Majority (62%, n=31) of our patients had right foot plantar fascitis while 19(38%) had left foot plantar fasciitis. The intensity of pain as measured with VAS scale is shown in table I.A statistically significant reduction of pain was noted at 12 weeks(P value<0.05). Stratification of data by age, gender, baseline pain scores, final pain score, side of foot and duration of pain was not found to have any significant association with pain reduction(P value>0.05).No complication was reported.

Table I: The intensity of pain in plantar fascitis as measured with VAS scale at follow up visits.

Pre injection VAS	Post injection VAS at 2 weeks	Post injection VAS at 4 weeks	Post injection VAS at 12 weeks
5.41±3.1	4.23±3	2.1±4.1	1.3±7

DISCUSSION

Literature revealed that the third and fourth decade is the most vulnerable age group for plantar fasciitis.[16] Similarly our results also showed that majority of our patients belong to this age group. Although a subtle male predominance (54%) was seen in our study, other authors reported that females were more prone to develop this condition with risk increasing as the age progresses.[8,16]

Corticosteroid injections although widely used had some potential complications.[17] Multiple injections pose a risk of rupture of the plantar fascia, atrophy of fat pad, and damage to the medial plantar nerve. Keeping these in mind, many surgeons have tried to find a more appropriate first-line management technique for plantar fascitis by working on available options and compared those with corticosteroid injections.[1,10,13-15,18]

It is generally recommended that physiotherapy and exercises should be employed before opting for any surgical intervention,[10] interestingly best therapeutic outcomes are achieved by combining Corticosteroid injection with the physiotherapy.[19] Tatli[20] also advocated a combine approach consisting of steroid injection and stretching exercises to treat plantar fasciitis. He also advocated use of ultrasound for increasing the accuracy of targeting the plantar fascia. Chen[21] had demonstrated that corticosteroid injection was more effective in pain reduction at three months than other non-invasive techniques. In 2010 American College of Foot and Ankle Surgeons recommended steroid injection as a first line therapy for plantar fasciitis along with stretching exercise, weight loss and orthoses.[22]

Ahmad and Kumar[23] treated 150 patients of plantar fasciitis with steroid injection and reported pain reduction from pre injection VAS of 9.48 to 2.52

at 12 weeks follow up. In a comparative study Shakir and colleagues[24] treated 50 patients of plantar fasciitis with Triamicinolone injection and 50 with autologous blood injection. At final follow up at 8 weeks VAS was 2.74±1.34 with steroid injection while autologous blood injection had VAS of 4.28±2.08(P <0.05).

In our study no complication was reported while Baloch[25] reported rupture of plantar fascia in 37(13.7%) patients in his 270 patients. Although our sample size was 50 but single injection and meticulous injection technique was the possible reason for our complication free outcome.

Our study had few limitations. Our sample size was small and our follow up was short. Further well designed studies with larger sample size and longer follow up are recommended to confirm the usefulness of corticosteroid injection in plantar fasciitis.

CONCLUSION

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.

Conflict of Interest: None

Grants/Funding: None

REFERENCES

1. Mahindra P, Yamin M, Selhi HS, Singla S, Soni A. Chronic Plantar Fasciitis: Effect of Platelet-Rich Plasma, Corticosteroid, and Placebo. Orthopedics 2016;39(2):285–289.
2. Buchanan B, Kushner D. Plantar Fasciitis. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020. Available from: https://www.ncbi.nlm.nih.gov/books/NBK431073/
3. Akhtar N, Rasheed P, Ahmad Z. Role of physical medicine and rehabilitation intervention for plantar fasciitis. Pak Armed Forces Med J. 2008;58(3):239-243.
4. Trojian T, Tucker AK. Plantar Fasciitis. Am Fam Physician. 2019;99(12):744-750.
5. Jan WM. Management of planter fasciitis. Rawal Med J. 2016;41(1):111-114.
6. Ang TWA. The effectiveness of corticosteroid injection in the treatment of plantar fasciitis. Singapore Med J. 2015;56(8):423-432.
7. Sarfraz K, Tanveer F, Shabbir M, Imran S, Munir S, Hashmi R. Effects of calcaneal taping, sham taping and stretching exercises in short term management of pain in plantar fasciitis. Isra Med J. 2017;9(5):309-313.
8. Neufeld SK, Cerrato R. Plantar fasciitis: evaluation and treatment. J Am Acad Orthop Surg. 2008;16(6):338-346.
9. Atkins D, Crawford F, Edwards J, Lambert M. A systematic review of treatments for the painful heel. Rheumatology (Oxford). 1999;38(10):968-973.
10. Eslamian F, Shakouri SK, Jahanjoo F, Hajialiloo M, Notghi F. Extra Corporeal Shock Wave Therapy Versus Local Corticosteroid Injection in the Treatment of Chronic Plantar Fasciitis, a Single Blinded Randomized Clinical Trial. Pain Med. 2016;17(9):1722-1731.
11. Pribut SM. Current approaches to the management of plantar heel pain syndrome, including the role of injectable corticosteroids. J Am Podiatr Med Assoc. 2007;97(1):68-74.
12. Hil J, Trapp R, Colliver J. Survey on the use of corticosteroid injections by orthopaedists. Contemp Orthop. 1989;18(1):39-45.
13. Crawford F, Atkins D, Young P, Edwards J. Steroid injection for heel pain: evidence of short-term effectiveness. A randomized controlled trial. Rheumatology (Oxford). 1999;38(10):974-977.
14. Whittaker GA, Munteanu SE, Menz HB, Bonanno DR, Gerrard JM, Landorf KB. Corticosteroid injection for plantar heel pain: a systematic review and meta-analysis. BMC Musculoskelet Disord. 2019;20(1):378-381.
15. Verma D, Kumar S, Dhammi IK, Kumar R, Kapoor R, Mittal A. Role of platelet-rich plasma versus corticosteroid injection in the treatment of plantar fasciitis: A comparative study. J Orthop Dis Traumatol. 2019;2(2):26-30.
16. Majeed F, Saddique M, Nasir AS, Ahmad A. Comparison of vas pain score after infiltration of autologous blood injection versus corticosteroid injection for the treatment of plantar fasciitis. Isra Med J. 2019;11(4):234-236.
17. Tatli YZ, Kapasi S. The real risks of steroid injection for plantar fasciitis, with a review of conservative therapies. Curr Rev Musculoskelet Med. 2009;2(1):3-9.

18. Liden B, Simmons M, Landsman AS. A retrospective analysis of 22 patients treated with percutaneous radiofrequency nerve ablation for prolonged moderate to severe heel pain associated with plantar fasciitis. J Foot Ankle Surg.2009;48(6):642-647.
19. Johannsen FE, Herzog RB, Malmgaard-Clausen NM, Hoegberget-Kalisz M, Magnusson SP, Kjaer M. Corticosteroid injection is the best treatment in plantar fasciitis if combined with controlled training. Knee Surg Sports Traumatol Arthrosc. 2019;27(1):5-12.
20. Tatli YZ, Kapasi S. The real risks of steroid injection for plantar fasciitis, with a review of conservative therapies.Curr Rev Musculoskelet Med. 2009; 2(1): 3–9.
21. Chen CM, Lee M, Lin CH,Chang CH,Lin CH.Comparative efficacy of corticosteroid injection and non-invasive treatments for plantar fasciitis: a systematic review and meta-analysis. Sci Rep.2018. Doi: https://doi.org/10.1038/s41598-018-22402-w
22. Thomas JL, Christensen JC, Kravitz SR, Kravitz SR, Mendicino RW, Schuberth JM,et al..The diagnosis and treatment of heel pain: A clinical practice guideline–revision 2010. J Foot Ankle Surg. 2010;49(3 suppl):S1–S19.
23. Ahmed M, Kumar M, Hamid R, Nida, Hussain G. Corticosteroid injection as a treatment modality in management of plantar fasciitis Rawal Med J.2020;45(1):120-122.
24. Shakir IA, Riaz S, Kashmiri MN, Anjum S, Rehman OU, Qayyum N.Mean Reduction in Pain Score in patients of Plantar Fasciitis after Triamcinolone Injection in Comparison to Autologous Blood Injection.J Rawal Med Uni. 2018;22(2):133-136.
25. Baloch NA, Baloch SR, Rafi MS, Shah MI, Siddiq F.Complication of corticosteroid injection: rupture of plantar fascia.Pak J Med Dentistry. 2018;7(4):30-36.