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ORIGINAL ARTICLE

Evaluation of the Treatment Efficacy of Corticosteroid Injection in Reducing the Pain Intensity in the Patients Diagnosed with the Plantar Fasciitis

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ABSTRACT

Background: Plantar fasciitis is an orthopedic ailment that affects athletes and non-athletes equally. The 10% of the general population attend the orthopedic surgeons with heel pain in their lifetime. The degenerative changes in plantar fasciitis worsen the conditions of patients.

Objective: The study aimed to evaluate the treatment efficacy of corticosteroid injection in reducing the pain intensity in the patients clinically diagnosed with the plantar fasciitis.

Study design: This descriptive study was conducted on 40 patients who attended the orthopedics department of Lady Reading Hospital Peshawar. The duration of study was one year from April 2021 to March 2022.

Material and Methods: The patients who were clinically diagnosed with the plantar fasciitis and met the inclusion criteria were selected for the study. The study was approved by the ethical and review board committee of the hospital. The selected patients were administrated with the Triamcinolone injection in the heel. The visual analog scale was used to assess the outcomes. The data was collected and SPSS was used for the statistical analysis.

Results: The total 40 patients were selected for the study. The mean calculated age was 42.83± 7.07. Out of 40 patients the (22) 55% were male and remaining (18) 45% were female. The mean pre injection VAS improved from 6.30±2.1 to 1.5±6 post injection. The p-value was 0.03.

Conclusion: It was concluded that the single injection of corticosteroid significantly reduce the pain intensity associated with plantar fasciitis.

Keywords: Triamcinolone injection and visual analog scale.

INTRODUCTION

Plantar fasciitis is an orthopedic ailment that affects athletes and non-athletes equally. The inflammation and degradation of the plantar fasciitis is characterized by the etiology of the pain. The plantar fasciitis thickness increased with aging and increasing body mass index (BMI)[1-2]. It was revealed that the patients of age 30 to 40 are at the higher risk of developing plantar fasciitis. The patients with plantar fasciitis history are more prone to develop the disease as compared to the others. Plantar fasciitis is a painful condition that affects the bottom of the foot. Its etiopathogenesis is not well known. Constant strain and tiny rips in the fasciitis cause a separation between the joint in the heel and the fasciitis surrounding it[3-4]. New reactive bone tissue can grow into this space, resulting in a heel spur. According to Johal and Milner the spur is not what's causing the pain. Plantar fasciitis is a very difficult condition to treat.

It may require the combination of physiotherapies and use of steroid injections. Alterations in the plantar fasciitis cause fibroblastic proliferation and chronic granulomatous tissue development, which may be followed by vascular hypoperfusion and connective tissue loss. It is a self-limiting illness. Within the mean duration of 16 to 18 months, patients suffer from significant pain and impairment that negatively impacts their quality of life. The diagnosis of plantar fasciitis is based on the patient's medical history and physical exam[5-6]. This painful disease has no definitive treatment choice, and physicians and patients will choose a routine therapy strategy based on their personal experience and interests. A small number of studies have evaluated CSI with ESWT as the major therapy for treating acute plantar fasciitis.

It is the leading cause of inferior heel pain. It is most prevalent cause of heel pain, which accounts for 11–15% of all foot problems requiring professional care. Its distribution is bimodal. It affect both sedentary and sports person[7-8]. It is self-limiting process but sometimes it become, worsen over-time. Current conservative treatments for plantar fasciitis include rest, non-steroidal anti-inflammatory medicines (NSAIDs), stretching of the plantar fasciitis, physical therapy. Most patients usually respond to conservative treatment strategies. Surgical treatment is suggested for the patients who do not respond to medical treatment. Though in a medial longitudinal incision, there is the complete removal of plantar fasciitis[9-10]. The removal of prominent heel spurs and deteriorated plantar fasciitis areas. The study aimed to evaluate the treatment efficacy of corticosteroid injection in reducing the pain intensity in the patients clinically diagnosed with the plantar fasciitis.

MATERIAL AND METHODS

This descriptive study was conducted on 40 patients who attended the orthopedics department of our institute, Lady Reading Hospital Peshawar. The duration of study was one year from April 2021 to March 2022. The patients who were clinically diagnosed with the plantar fasciitis and met the inclusion criteria were selected for the study. The patients who willingly signed the consent were included. Patients having clinical indications and symptoms of plantar fasciitis for at least six weeks, regardless of gender or age, were included. The inclusion criteria was applied on every participants and those who didn't fulfill the criteria were excluded from the study. Following patients were excluded from the study;

- Those who were previously administrated with steroid or platelet-derived plasma (PRP) injection
- Those who were diagnosed with gout
- Those who had undergone surgical intervention
- Those who had an infection, were morbidly obese
- Those who were diagnosed with bilateral plantar fasciitis.

The selected patients were administrated with the Triamcinolone injection in the heel. The included patients were followed up for the 2 weeks, 4 weeks and 12 weeks interval in the OPD. The visual analog scale was used to assess the outcomes. The history, physical and relevant examination of every participants were recorded. The pain intensity prior to the injection was assessed using VAS. Triamcinolone 1 ml mixed with 1ml of local anesthetic plain xylocaine 2% was given as a single injection to each patient under antiseptic conditions. Using the palpation technique, the injection was administered to the heel's tender

region. Day case procedure was used for the treatment. All patients received a prescription for one Paracetamol tablet daily for three days, and they were all observed in the OPD at intervals of two, four, and twelve weeks. At presentation and at follow-up visits, the mean VAS score and clinical assessment were calculated. The data was collected and tabulated in the excel sheets. The SPSS software was used for the statistical analysis. The standard deviation and mean were used to represent variable factors age, pain duration and VAS score. The proportion and percentage were used to represent the categorical factors such as foot side and gender. The data was stratified the t-test was performed and the result were evaluated.

RESULTS

The total 40 patients were selected for the study. The mean calculated age was 42.83± 7.07. Out of 40 patients the (22) 55% were male and remaining (18) 45% were female. The patients were well aware of the study and written consent was taken from them. The pain intensity was analyzed by measuring VAS score which is visual analog scale. The data is presented in the table. The values of VAS before injecting the patient and values after 2.4 and 12 weeks of injecting the injection were measured and compared. The follow-up of patients was studied and it was found that the pre injection VAS score was high and it started to reduce as the post injection duration was increased. After 12 weeks of corticosteroid injection the VAS score came out to be 1.35 ±7.1.

Table 1: Intensity of pain analyzed from VAS score measurement

VAS values before injection	VAS values after 2 weeks of injection	VAS values after 4 weeks of injection	VAS values after 12 weeks of injection
5.66 ± 3.3	4.76 ±3.2	2.23 ±4.23	1.35 ±7.1

Table 2: The comparison of FAAM score at different time intervals

Time duration	Average FAAM value	Standard error	P value
0 weeks	29.1	0.754	<0.002
4 weeks	52.8	0.675	<0.002
8 weeks	77.8	0.795	<0.002
12 weeks	83.2	0.745	<0.002

The foot and ankle ability measure was also analyzed and it was found that the average value was 29.1 at 0 weeks and it started to increase as the time interval was increased. By the end of 12 weeks, the average FAAM score was 83.2. The increase in value indicate that the foot and ankle movement has be restored, however only 3 patients reported about reoccurrence of pain among these patients.

DISCUSSION

The study was carried out to find the outcomes of corticosteroid injections among patients that are suffering from plantar fasciitis. As per studies it was revealed that the patients of age 30-to 40 are at risk of developing plantar fasciitis[11]. In our study the average age of patients was 42 years. And most of our patients were between 30-40 age ranges. There were 45% female with a clear male dominance of 55%. The families were inquired and their history revealed that they were more prone to develop the disease as compared to the others. And the condition of disease worsens with age. Though corticosteroid injections are used very commonly buts still no one can ignore its complications[12]. There is risk of rupturing of plantar fasciitis, in some cases atrophy of fat muscles was also observed in patients. Excessive use of steroid injections also causes medial plantar nerve damage[13-14]. As per studies now scientist have designed a safer and appropriate approach where they use other available options, and if the condition does not get better with time only then they use steroid injections. Practices like physiotherapy and certain exercises are used before doctors go for surgical procedures[15].

As per studies it was shown that one of the best procedures that could help relieve plantar fasciitis is physiotherapy along with corticosteroid injections. Another study advocated the use of stretching exercise and steroid injections to treat the condition. A study showed the use of ultrasound for enhancing the precision and targeted treatment of plantar fasciitis[16]. As compared to other non-invasive procedures, corticosteroid injections have efficacy to treat pain in three-month duration. According to the American college of foot and ankle, the use of stretching exercise, steroid injections and weight loss are some of the procedures that make it easy for patient to overcome the disease. As per another study it was found that the VAS score was reduced from 9.89 to 2.32 after using steroid injections[17-18]. In our study the pain VAS score was reduced from 5.1 to 1.35 after 12 weeks of injection. Another study reported that after 50 patients were given steroid injections the VAS score was reduced from 2.77 to 1.34. In this study there was no complication reported however another study reported that among all the patients that participated in the study, 13% suffered from rupture of plantar fasciitis[19]. In this study the reason for no complication can be the use of single injection and small size of the sample. Another study showed that after 4 weeks of corticosteroid injection usage the pain was relieved in patients. However as per another study it was reported that there was a high rate of recurrence and relapse in patients who were given steroid injections. The use of steroid injections made the tissues fragile and later on rupturing took place. Another study carried out on 700 patients, it was reported that among them 51 had faced rupture of plantar fasciitis. The kind of corticosteroid injection used for plantar fasciitis vary among different patients, mostly it depends upon the extent of damage and pain that the patient feels. As per studies it was found that the study of FAAM values is one of the most effective approach to study the outcomes related to corticosteroid injections on plantar fasciitis patients[20-21]. It is a very sensitive test that measure foot and ankle ability score. As per our studies it was observed that the FAAM values started to increase as the injection interval was increased and after 12 weeks it was 83.2 as compared to 0 weeks where it was 29.1. The short term follow- up that was carried out in this study was satisfactory with no case of adverse signs and symptoms reported in the patients. There were however 3 patients that reported about no relieve in pain after even 24 weeks of injection. May be it was because the condition of their disease was more critical and they needed more than 1 injection. One of the limitations of this study was that the sample size used was small and better results could be collected if longer duration was selected for follow-up. As longer duration could prove the adverse effects of steroid injections.

CONCLUSION

Plantar fasciitis is a very difficult condition to treat. It may require the combination of physiotherapies and use of steroid injections. The VAS score was decreased as the duration of injection was increased and FAAS score was decreased increasing the ability of foot and ankle after use of steroid injections. It was concluded that the single injection of corticosteroid significantly reduce the pain intensity associated with plantar fasciitis. There are certain complications that the patients face because of the prolonged use of steroid injections. However, in this study there was no complication faced by patients.

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