

Research Article

Plantar fasciitis: corticosteroid injection versus chiropractic therapy

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ABSTRACT

The diagnosis of plantar fasciitis is usually clinical and rarely needs to be investigated further. The patient complains of pain in the medial side of the heel, most noticeable with initial steps after a period of inactivity and usually lessens with increasing level of activity during the day, but will tend to worsen toward the end of the day. Symptoms may become worse following prolonged weight bearing, and often precipitated by increase in weight bearing activities. Paresthesia is uncommon. It is usually unilateral, but up to 30% of cases have a bilateral presentation. In our study patients who received chiropractic therapy were treated by rest, heat, ice pack, non-steroidal anti-inflammatory drugs (NSAIDs), heel pads, magnetic insole, night splints, walking cast, taping, ultrasound, plantar and Achilles stretching for a period of 6 weeks scheduled accordingly. Patients receiving corticosteroid injection were administered 80mg methyl prednisolone locally at the heel. Each patient received 3 doses of methyl prednisolone injections on 1st day, 2nd week, and 4th week. The results with corticosteroid injection were better when analyzed with numeric rating scale over a period of 6 weeks.

Keywords: Plantar fasciitis, Heel pain, Ankle pain

INTRODUCTION

Plantar fasciitis or heel pain is a commonly seen condition and can occur among all age groups, sex, ethnicity, or activity levels. Heel pain is a common presenting complaint in the foot and ankle practice, and plantar fasciitis is the most common cause of chronic pain beneath the heel in adults, making up 11-15% of the foot symptoms. Although plantar fasciitis occurs most commonly in the adult population, a study of 1000 consecutive pediatric musculoskeletal cases presented this condition as having a prevalence of 8%. Plantar fasciitis is considered to be an overuse syndrome. It develops over time, and repeated stress likely plays a role in the etiology. As this stress compounds, it will exceed the body's inherent capacity to repair and adapt, which eventually leads to the failure of ligaments, bones, and muscles. Symptoms of plantar fasciitis most often occur during weight bearing and may be exacerbated by

climbing stairs or weight bearing on dorsiflexed toes. Morning foot pain and stiffness are an additional common complaint. Inflammation is usually secondary to repetitive stretching of the plantar fascia between its origin at the anterior plantar rim of the calcaneus and its insertion into the metatarsal heads. Tenderness is most commonly palpated along the medial edge of the fascia or at its origin on the anterior edge of the calcaneus. Activities such as jumping, hill running, or speed work may predispose to a higher risk of developing plantar fasciitis. Tightness of Achilles tendon is found in almost 80% of cases.

Imaging studies

Imaging studies are typically not necessary for diagnosis. In the clinical management of chronic heel pain, diagnostic imaging can provide objective information. This information can be particularly useful in cases that

do not respond to first-line interventions, or when considering more invasive treatments.

Lateral radiograph of the ankle should be the first imaging study. It is a good modality for assessment of heel spur, thickness of plantar fascia, and the quality of fat pad. Stress fractures, unicameral bone cysts, and giant cell tumors are usually identified with plain radiography. Ultrasound examination is operator-dependent, but it proves to be significant when the diagnosis is unclear. In the literature, normal thickness of the plantar fascia when measured in ultrasound varies in range (mean 2-3 mm). People with chronic heel pain are likely to have a thickened plantar fascia with associated fluid collection, and that thickness values >4.0 mm are diagnostic of plantar fasciitis. Plantar fascia thickness values have also been used to measure the effect of treatments and there is a significant correlation between decreased plantar fascia thickness and improvement in symptoms. MRI can be used in questionable cases, which fail conservative management or are suspected of other causes of heel pain, such as tarsal tunnel syndrome, soft tissue and bone tumors, osteomyelitis, subtalar arthritis, and stress fracture.

Treatment

An early or 'reactive' plantar fasciitis may settle with relative rest and conservative measures, however, patients with chronic symptoms may require a more intensive rehabilitation regime. Management involves stretching and strengthening of the plantar fascia, while attempting to reduce or correct any precipitants, such as excessive heel impact and poorly supportive shoes. Stretching of the plantar fascia is achieved by placing the toes against a wall, with the heel on the floor, pushing downwards so that the arch of the foot lengthens. Calf stretches with a slightly flexed (soleus) and fully extended (gastrocnemius) knee may also prove beneficial. Night splints or 'Strasbourg socks' may provide some relief by holding the foot in dorsiflexion, passively stretching the plantar fascia. Strengthening of the intrinsic foot muscles can be performed by pulling a towel towards the heel using the toes. Self-massage may help alleviate symptoms and can be performed by rolling a golf ball or frozen bottle beneath the painful arch. Gel-based inserts may reduce the impact forces upon the heel during activity, while orthoses and footwear with well-supported arches may help to correct the effects of any biomechanical errors. Weight loss in overweight individuals helps to reduce the impact forces on heel strike, leading to symptomatic improvement. Runners may be advised to reduce load by cross-training, using swimming or cycling to replace part of their normal running regime.

Injection of corticosteroid into the proximal plantar fascia often results in short-term pain relief but may increase the risk of rupture and can lead to atrophy of the heel fat pad, causing prolonged pain. Localised injection of autologous

blood or platelet-rich plasma has recently gained favour among musculoskeletal specialists as a potential treatment for plantar fasciitis with promising early results, however long-term evidence is currently lacking and it is not currently utilised in primary care. Extracorporeal Shockwave Therapy (ESWT) for the treatment of intractable plantar fasciitis with encouraging results has been shown by many studies. Intractable plantar fasciitis may require onward referral to a sport and exercise medicine physician, enabling further investigation and specialist management as mentioned above. Surgery may be offered in recalcitrant cases, when conservative measures have failed (6-12 months). Surgery tends to offer good functional outcomes in the majority of cases.

METHODS

In our study we had included 50 patients between the age group of 25 and 50 years. 25 patients were treated by corticosteroid injections and another 25 by chiropractic therapy. Patients who had already undergone treatment for the same were excluded from the study. Patients were evaluated at 4 intervals including the initial assessment before the start of treatment. The patients were then evaluated at 2nd, 4th, and 6th week. The total duration of the treatment was 6 weeks.



Figure 1: X-ray of patient with plantar fasciitis with calcaneal spur.



Figure 2: Home based chiropractic.

Patients receiving chiropractic therapy were treated by rest, heat, ice pack, non-steroidal anti-inflammatory drugs (NSAIDs), heel pads, magnetic insole, night splints, walking cast, taping, ultrasound, plantar and Achilles stretching for a period of 6 weeks scheduled accordingly. Patients receiving corticosteroid injection were injected with 80 mg methyl prednisolone mixed with 1 ml 2% plain lignocaine locally at the heel throughout the distribution of plantar fascia. Following injection gentle massage is applied to the heel for 1 minute. Each patient received 3 doses of methyl prednisolone injections on 1st day, 2nd week, and 4th week respectively.

Final assessment was done at the end of 6 weeks and the results were analysed. The Numeric Rating Scale (NRS-11) is an 11-point scale for patient self-reporting of pain was used in our study for evaluation.



Figure 3: Local steroid injection to heel.

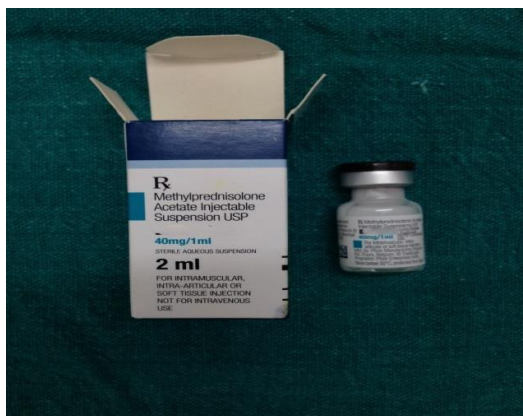


Figure 4: Corticosteroid used for injection.

RESULTS

The average pain score in both the groups prior to the treatment was found to be 8 (7 to 9). The average scores during 2nd, 4th, 6th week were 6 (5 to 8), 4 (3 to 5), and 3 (2 to 5) in chiropractic group while they were 4 (3 to 6), 2 (1 to 4) and 1 (0 to 2) in corticosteroid group respectively.

The final scores are tabulated in Table and Bar for better understanding.

Table 1: Numeric rating scale for assessment of pain.

Rating	Pain level
0	No pain
1 - 3	Mild pain (nagging, annoying, interfering little with ADLs)
4 - 6	Moderate pain (interferes significantly with ADLs)
7 - 10	Severe pain (disabling; unable to perform ADLs)

Table 2: Numeric rating scale scores.

	Initial score	2 nd week	4 th week	6 th week
Chiropractic	8	6	4	3
Corticosteroid	8	4	2	1

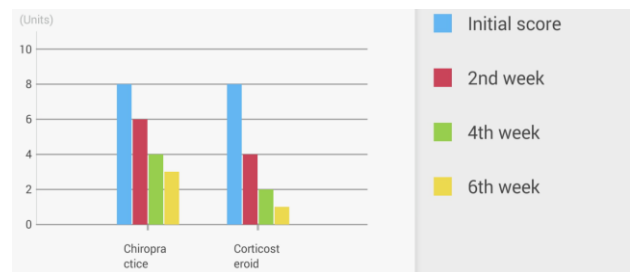


Figure 5: Numeric Rating Scale (in bar diagram).

DISCUSSION

As the aetiology behind plantar fasciitis is poorly understood (Meyer et al. 2002; Thomas et al. 2010; Young et al., 2004) it is more difficult to determine what has led to this patient’s symptoms. Mechanical overload is the most commonly accepted theory for the development of plantar fasciitis (Thomas et al., 2010). But most often this history is difficult to elicit. In our study we compared two different treatment modalities so as to observe their outcome. We did get good results with the use of corticosteroid injection as compared to conventional chiropractic therapy.

The NRS scores were better with corticosteroids. Although many potential complications like rupture, infections were reported in other studies, we did not encounter any complications with our patients. We also conclude by saying that corticosteroids when used for short term under proper aseptic precautions give better results in treating plantar fasciitis although the long term complications of steroids must be kept in mind before initiating treatment.

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Ethical approval: The study was approved by the institutional ethics committee

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