

SUCCESSFUL TREATMENT OF PLANTAR FASCIITIS WITH EXTRACORPOREAL SHOCKWAVE THERAPY IN A 65-YEAR-OLD MAN

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ABSTRACT

Objective: To describe the management of a patient with plantar fasciitis using shockwave therapy.

Clinical Features: A 65-year-old male sought care for left foot pain that was subsequently diagnosed as plantar fasciitis. Treatment consisted of a total of 14 visits over a 9-week period.

Intervention and Outcome: An initial trial of care of 11 treatments included a combination of spinal manipulative therapy, low-level laser therapy, therapeutic ultrasound, electrical muscle stimulation, and soft tissue mobilization with no success. Treatment then transitioned to the use of extracorporeal shockwave for 3 additional treatments, and the pain resolved.

Conclusion: This report describes the course of care for a patient with plantar fasciitis who did not appear to respond to a combination of conservative chiropractic therapies; however, following treatment with extracorporeal shockwave treatment his symptoms resolved. (*J Contemporary Chiropr* 2022;5:218-221)

Key Indexing Terms: Plantar Fasciitis; Foot Pain; Shockwave Therapy; Chiropractic

INTRODUCTION

Plantar fasciitis is the most common condition causing painful feet in clinical practice, and it impacts about one million people.⁽¹⁻²⁾ It is a condition that 1 in 10 people will experience at some point in their lifetime. ^(1,3) It is a non-inflammatory condition. ⁽⁴⁾ Plantar fasciitis is most often seen midlife and is 2 times more common among females. ^(1,5) In younger patients, male athletes are commonly affected, especially runners. ^(5,6)

The diagnosis of plantar fasciitis is normally made from the clinical history and the results of the physical

examination. ⁽⁷⁾ Imaging is generally not indicated or required to establish this diagnosis. If the clinician is concerned that another condition may be present, such as tarsal tunnel, exostosis, enthesopathy or talocalcaneal synostosis, then x-rays may be taken. ⁽⁴⁾ The x-ray results may show the presence of a calcaneal spur, which is present in about 50% of cases. ⁽⁴⁾ This condition is degenerative and "accounts for about 10% of runner-related injuries and 11% to 15% of all foot pain requiring professional medical care." ⁽⁴⁾ Ultrasound of the region will show thickening and tears in the fascia along with calcific deposits into the plantar fascia, and even though the name of the condition, ending in "-itis", suggests an inflammatory component, there is a lack of traditional inflammation in this condition. ⁽⁴⁾

Presenting factors for plantar fasciitis do not vary greatly. The most common presentation is pain on the heel and the sole of the foot. ⁽⁷⁾ The pain is often worse with initial steps in the morning or after long bouts of inactivity. The symptoms worsen with weight-bearing activities and is worse by the end of the day. ⁽⁵⁾ Risk factors for developing plantar fasciitis include weight gain, obesity, weight-bearing occupations, limited ankle dorsiflexion, excessive pronation, and excessive running. ^(2,3,7) This condition can be related to diabetes mellitus, which can cause peripheral neuropathies that causes in alteration of foot movement and results in plantar fasciitis. ⁽⁷⁾

Treatment of plantar fasciitis varies greatly. Management of this condition depends first on how early the condition is identified. ⁽⁷⁾ It is self-limiting; therefore, the average resolution time without any intervention is about 6-12 months. For the chiropractic physician, recognition of red flags, a thorough history, abnormal physical examination results, ultrasound, and imaging studies can assist in the diagnosis of plantar fasciitis. ^(5,7) The first step of treatment is often rest and a reduction in aggravating activities. ⁽⁷⁾ This especially applies to runners; it is important to reduce the frequency or intensity of this repetitive impact activity. ⁽⁸⁾ At-home treatment includes regular stretching of the plantar fascia, gastrocnemius,

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and soleus musculature. (7,8) Dorsiflexion night splints and orthotics are another treatment option. (4,7,8) Joint mobilization and manipulation of the ankle mortise joint, instrument-assisted soft-tissue mobilization (IASTM) of the ankle region, and transverse friction massage of the ankle musculature are manual forms of treatment that are used in the management of plantar fasciitis. (9) If these conservative management strategies fail, more invasive techniques can be considered if escalation of care is warranted and desired by the patient. Steroid or plasma injections are a more invasive treatment. (4,8) Surgery, involving detaching the plantar fascia from the calcaneus, is a last resort and is employed if all other conservative treatment has failed.

Extracorporeal shockwave therapy (ESWT) is a non-invasive treatment for plantar fasciitis; it uses high-pressure sound waves to treat musculoskeletal pain (10) and has been shown to be successful in treating tendon pathologies. (11,12) The purpose of this case report is to describe chiropractic management of a patient with plantar fasciitis using extracorporeal shockwave therapy.

CASE REPORT

A 65-year-old male sought care for his left-sided foot pain after repetitive motion injury. The pain was a constant sharp ache that was worse in the morning. The condition worsened with standing and walking and had been present for 6 weeks. Palpation of the region revealed tender points along the plantar fascia. Segmental joint restriction was observed at the left foot. A course of 14 visits of conservative care, 2 times a week for 3 weeks, followed by 1 time a week for 8 weeks, was initiated to treat his present problem of left foot pain using chiropractic manipulative therapy, myofascial release, and at-home plantar fascia stretches. The chiropractic manipulative therapy consisted of manipulation of the metatarsals. The patient was placed in a supine position with a high-velocity, low-amplitude force directed posterior to anterior on the metatarsal heads. Trigger-point therapy was performed on plantar fascia as well as the fibularis brevis and fibularis longus musculature. The patient was educated how to perform stretches of the plantar fascia and instructed to perform these stretches 3 times per day while holding 30 seconds and repeating 3 repetitions. Towel toe grabs were also recommended. These involve having the barefoot patient attempt to scrunch an unfolded hand towel with his toes, for 3 sets of 15 repetitions, one repetition being scrunching the towel fully, 3 times a day. The patient responded well to treatment and felt immediate relief while in the office. However, the pain would return by the next treatment.

On the next visit, he reported that his foot pain remained a 3 out of 10 on the numerical rating scale. Chiropractic manipulative therapy was performed on

the left metatarsals with a high-velocity low-amplitude force, with thumbs contacting the plantar aspect of the metatarsal heads and thrusting anterior and superior. Myofascial release was also performed on the plantar fascia, fibularis brevis, and fibularis longus musculature. The chiropractic manipulative therapy and myofascial release were continued for 2 more consecutive visits; the patient reported feeling better post treatment, but the pain again returned.

Following 4 weeks of conservative treatments, he had no reduction in pain. A left foot radiograph was ordered by the treating chiropractor look for a calcaneal spur consistent with chronic plantar fasciitis or talocalcaneal coalition, due to failure to respond to conservative care. Imaging showed enthesopathy at the origin (Figure 1) of the plantar fascia consistent with chronic plantar fasciitis. Based off the history, exam findings, and x-ray results, the differential diagnosis of plantar fasciitis was confirmed.

On the fifth week of treatment, the patient reported that his left foot pain had returned. Shockwave therapy was recommended by the treating chiropractor. The shockwave therapy was performed on the plantar aspect of the medial calcaneus and at the base of the first proximal phalangeal joint for 3,000 impulses each at 10 Hz. Following treatment, the patient felt immediate relief and could walk better.

On the follow-up visit, the patient stated that his left foot felt a lot better after the shockwave therapy. Only myofascial release was performed on this visit.

On his 10th visit, his foot pain had worsened. Shockwave therapy was performed on the posteromedial side of the calcaneus for 3,000 pulses at 1.1 bar, at 10 Hz. It was also performed on the base of the first proximal phalangeal joint at 1.0 bar, 3,000 impulses, at 7Hz. He stated that he felt immediate relief and could walk better.

On his next visit, his foot pain had again worsened due to prolonged driving the previous day. Before the



Figure 1. Radiograph of the left foot.

exacerbating drive, he stated that his foot pain remained the same. Shockwave therapy was again performed on the posterior medial calcaneus at 1.1 bar, 2,000 pulses, 10 Hz and on the base of the first proximal phalangeal joint at 1.0 bar, 1,000 impulses, and 7Hz. Following treatment, he had immediate relief and could walk better.

At the re-evaluation, he noted a reduction in foot pain and stated that the condition was improving. The examination showed tenderness at the base of the 5th metatarsal, Achilles' tendon, and plantar surface of the calcaneus. Tender points were also present at the fibularis brevis and fibularis longus musculature. A continuation of shockwave therapy was recommended as positive results were seen in prior visits. It was performed on the posterior medial side of calcaneus at 1.1 bar, 2,000 pulses, and 10Hz and at the base of the first proximal phalangeal joint at 1.0 bar, 1,800 impulses, and 7 Hz. There was improvement with continued care and felt less pain.

The patient was treated for left foot pain for 8 weeks. Treatments consisted of chiropractic manipulative therapy and myofascial release, and the patient had immediate but no long-term relief. Following 4 shockwave therapy treatments, he no longer experienced the symptoms of his plantar fasciitis complaint and experienced long-term relief. The patient provided consent for this case report.

DISCUSSION

The presentation of mild left foot pain, which is worse in the morning and follows a repetitive motion injury is a common finding in chiropractic practice. A differential diagnosis was developed based on the patient's history, age, and initial presentation. The differentials included calcaneus injury, bone contusion, neuropathic pain, osteoporosis, and Achilles tendinopathy. (4,13) The exam findings of overpronation, tenderness in the plantar fascia, and tender points present in the plantar fascia, fibularis longus, and fibularis brevis muscles coupled with x-ray findings of enthesopathy at the calcaneus led us to the diagnosis of plantar fasciitis. Shockwave therapy has been shown to be useful in relieving pain associated with chronic plantar fasciitis. (8-10)

Plantar fasciitis often responds well to conservative treatments. The most common conservative treatments include rest, stretching, splints, NSAIDs, supportive shoes, and orthotics. (4,7-9,16) In fact, several case reports have identified chiropractic care in conjunction with stretching as an effective treatment of plantar fasciitis. (13-15) Myofascial release is another technique that was employed to treat plantar fasciitis. A controlled research study showed that myofascial released offered a 72% reduction in plantar fasciitis pain and a 7.4% reduction disability when compared to a control group receiving

sham therapeutic ultrasound therapy. (18) Similarly, a systematic review reported that myofascial release is an effective treatment choice for plantar fasciitis. (18) About 90% of patients respond positively to conservative care and do not require surgical intervention. (17)

The fact that this patient did not improve following conservative treatments of chiropractic manipulative therapy and myofascial release within a reasonable amount of time led us to recommend the use of extracorporeal shock wave therapy. Failure to respond to a reasonable trail of care was the deciding factor in making the recommendation of shockwave therapy in this case. The use of extracorporeal shockwave therapy is supported for tendon pathologies, and it has positive success rate of about 60-80% on epicondylitis, plantar fasciitis, cuff tendinitis, trochanteric bursitis, Achilles tendinitis or patellar tendonitis (i.e., jumper's knee). (12)

The mechanism of shockwave therapy is not totally understood. However, the proposed mechanism explanations include neovascularization, gate-control and increase the number of vessels at the tendon-bone junction. (12) The mechanism may not be fully defined; however, its positive effects on plantar fasciitis are noted. Treatment for chronic plantar fasciitis is confined to conservative treatments most of the time.

Limitations

The presentation of this patient may be different from other presentations of plantar fasciitis. Some of the signs and symptoms of plantar fasciitis could be seen in other lower extremity conditions. Due to the prevalence of plantar fasciitis in the community, it is necessary to determine the effectiveness of shockwave therapy in the treatment of this condition.

CONCLUSION

This case describes a common presentation of a patient with left foot pain that was diagnosed as plantar fasciitis. After attempting the therapies of chiropractic manipulative therapy, therapeutic laser, therapeutic ultrasound, electrical muscle stimulation, and soft tissue mobilization, the only effective treatment in reducing the patient's pain was shockwave therapy.

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