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Plantar fasciopathy—looking beyond the obvious? A case report

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Abstract

Background: The biggest challenge in treating this diagnosis is the lack of literature focusing on regional interdependence. The current literature suggests a narrow and localized approach targeting plantar fascia and ankle/foot complex. The literature available on conservative treatment focused on utilizing various inflammatory modalities such as injections and extracorporeal shockwave therapy. The surgical approach targets Baxter's nerve decompression techniques and releases techniques to the gastrocnemius and plantar fascia. The article focuses on utilizing manual therapy techniques to the lumbosacral spine and plantar fascia. In addition, the neurodynamic flossing targeted lateral plantar nerve mobility.

Case presentation: The patient is a 54-year-old African American female seen for right heel pain at Texas's outpatient orthopedic physical therapy clinic. The patient had the diagnosis of plantar fasciopathy with negative Windlass testing. The patient was provided manual therapy interventions to the lumbosacral spine and plantar fascia to improve weight-bearing patterns and overall functional outcomes.

Conclusion: The manual therapy interventions to the lumbosacral spine and plantar fascia and flossing techniques to the lateral plantar nerve improved symptoms of heel pain. The patient showed improved outcomes with this approach.

Keywords: Regional interdependence, Plantar fasciopathy, Lumbosacral spine, Lateral plantar nerve

Background

Plantar fasciopathy is a common diagnosis affecting millions of people worldwide. The conservative treatment could vary from using orthotics, injections, extracorporeal shockwave therapy, plasma-rich platelet, foot/hip stretching, and foot strengthening exercises [1–3]. The surgical approaches available include Baxter nerve decompression, fasciotomy, and gastrocnemius release [1–4]. The diagnosis involves more than 1 million physician visits in the USA and affects sedentary and athletic patient populations [4, 5]. The available literature reports that the term fasciitis has been changed to fasciopathy in the last two decades [6, 7]. The literature postulates that the condition to be more of a degenerative process affecting the plantar fascia rather than localized tissue inflammation. The treatment recommendation focuses on improving localized inflammatory and non-inflammatory modalities targeting the ankle-foot complex and plantar fascia [8].

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Case presentation

A 54-year-old female was evaluated for idiopathic right heel pain. She reported that her symptoms initiated almost 18 months ago without any history of trauma and gradually worsened (NPRS-6-8/10) [9, 10]. The patient has no other significant medical history but is currently taking beta blockers to manage hypertension. The patient had corticosteroid injections in the right heel with little success. The patient also reported some symptoms in the lower back, which have been milder and sporadic. The physical examination showed some lumbar range of motion restriction in extension and right side bending. The manual segmental mobility testing showed mild hypo-mobility in extension and right side bending of L4-L5 and L5-S1. The inter-tester and intra-tester reliability can be questionable [11].

The patient was tested for Laslett's cluster to determine possible sacroiliac involvement in the back pain. The dynamic palpation testing to the right SI joint assessed intra-pelvic mobility [11, 12]. The palpation to the right inferior lateral angle of the sacrum was extremely tender. The right sacral base position was deep on the right side than the left, sometimes referred to as unilateral sacral flexion in osteopathic nomenclature [13, 14]. The evidence available questions the reliability of palpatory methods use to assess intra-pelvic mobility [12]. Windlass testing for plantar fasciopathy was negative [15, 16]. The patient reported tenderness to palpation of the lateral plantar nerve. Straight leg testing with ankle dorsiflexion and eversion was positive at 40° [17]. Initial treatment was focused on improving pelvic mechanics by utilizing muscle energy techniques and pelvic manipulative techniques (Figs. 1 and 2). Soft tissue techniques to the plantar fascia and nerve flossing to the lateral plantar nerve were administered (Fig. 3). Progressive core and hip stability exercises were performed with manual therapy to target static and dynamic pelvic stability.

Outcomes

The patient showed significant improvement in pain levels after seven visits (NPRS-0-2/10). The tenderness on palpation of the sacral region and lateral plantar nerve (Baxter's nerve) improved with lower extremity functional score improvement to 64/80 from 42/80 [18]. The minimum clinically significant difference for LEFS is 9 points which means the patient showed remarkable improvement with intervention [18]. The physical examination of the lumbar spine showed a pain-free range of motion, especially with extension and right side bending. The dynamic palpation to the SI joint was negative as the patient showed improved intra-pelvic mobility. The straight leg raise with a bias to the tibial and lateral plantar nerve was negative during the re-examination.

Fig. 1 Long axis distraction. Sacroiliac joint (one person techniques). Hip in abduction, extension, and medial rotation. Pictures taken with verbal and written consent

Fig. 2 Muscle energy technique. Unilateral sacral flexion. Patient position prone. Resisted internal rotation of the hip. Manual force to the inferior lateral angle applied antero-superiorly by the therapist. Picture taken with verbal and written consent

Results

The patient responded positively to the interventions that targeted lumbosacral mobility, lateral plantar nerve tension (Baxter's nerve), and soft tissue restrictions in the plantar fascia. The interventions led to a pain-free lumbar range of motion, significantly improved lower extremity functional scale, better VAS score, and normal intra-pelvic mobility.

Discussion

Heel pain can have biomechanical and neurophysiological attributions. The weight-bearing on the rear foot can be affected by pelvic and sacral biomechanical dysfunction [19, 20]. The evidence on the reliability of assessing specific sacral dysfunctions is lacking. Clinicians can benefit from treating the biomechanical pelvic chain and neural mobility for better functional outcomes.

Conclusions

Improving the pelvic mechanics can be considered in patients with heel pain who test negative for plantar fasciopathy. Restoring the pelvic and sacral mechanics with improvement in neural mobility can improve functional outcomes.

Patient perspective informed consent

The patient gave verbal and written consent to participate in the study. The patient reported that addressing the lumbosacral mobility was the game-

Fig. 3 Soft tissue mobilizations to the plantar fascia and lateral plantar nerve. Pictures taken with written and verbal consent

changer in improving her symptoms. In addition, the patient said that she was surprised that manual therapy to the unrelated parts improved her symptoms with advanced activities like standing, walking, and squatting.

Abbreviations
NPRS: Numeric pain rating scale

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Authors' contributions
TS provided the interventions to the patient in the case study. Dr. TS and PK wrote the main manuscript. All authors have read and approved the manuscript.

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Availability of data and materials
Available.

Declarations

Ethics approval and consent to participate
Written consent to participate was provided, and all images were taken with both verbal and written consent.

Consent for publication
All patients included in this research gave written informed consent to publish the data contained within this study. If the patient was less than 16 years old, deceased, or unconscious when consent for publication was requested, written informed consent for the publication of this data was given by their parent or legal guardian.

Competing interests
The authors declare that they have no competing interests.

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