Posterior Tibial Artery Contact with the Medial Plantar Nerve in a Patient with Tarsal Tunnel Symptoms: A Case Report

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Abstract

A 32-year-old woman presented with right ankle pain and intermittent electric shock-like sensations along the medial plantar aspect of the foot, aggravated by prolonged walking or standing. Tinel sign was positive along the medial plantar nerve. Ultrasound showed a tortuous posterior tibial artery in close contact with the medial plantar nerve, and color Doppler demonstrated arterial pulsatility at the contact site. No ganglion cyst or other space-occupying lesion was identified. After physiotherapy, stretching, use of compression stockings and discontinuation of tight footwear, the patient reported resolution of symptoms at three weeks. The ultrasound findings raised the possibility of a vascular contribution to the symptoms.

Keywords: Tarsal tunnel syndrome, posterior tibial artery, medial plantar nerve, ultrasound, color Doppler.

Introduction

Tarsal tunnel syndrome involves the tibial nerve or its branches beneath the flexor retinaculum. Symptoms may overlap with those of plantar fasciitis, peripheral neuropathy or lumbar radiculopathy. Ultrasound depicts the nerve and adjacent tendons and vessels, and color Doppler can help characterize vascular findings [1,2,3].

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Case Presentation

A 32-year-old woman reported approximately three months of right ankle pain with brief electric shock-like sensations radiating to the medial plantar foot several times per day. Prolonged walking and standing aggravated symptoms. She reported no recent trauma, systemic disease, prior ankle surgery, persistent numbness, continuous paresthesia or weakness. There were no symptoms suggestive of lumbar radiculopathy.

Examination showed tenderness along the medial hindfoot and midfoot and a positive Tinel sign along the medial plantar nerve. No edema, discoloration, deformity or signs of peripheral vascular insufficiency were observed. Range of motion and muscle strength were preserved.

Ultrasound

Ultrasound showed a tortuous posterior tibial artery closely apposed to the medial plantar nerve within the tarsal tunnel (Figure 1). Color Doppler demonstrated arterial pulsatility at the contact site. No tendon abnormality, ganglion cyst, mass or retinacular thickening was identified.

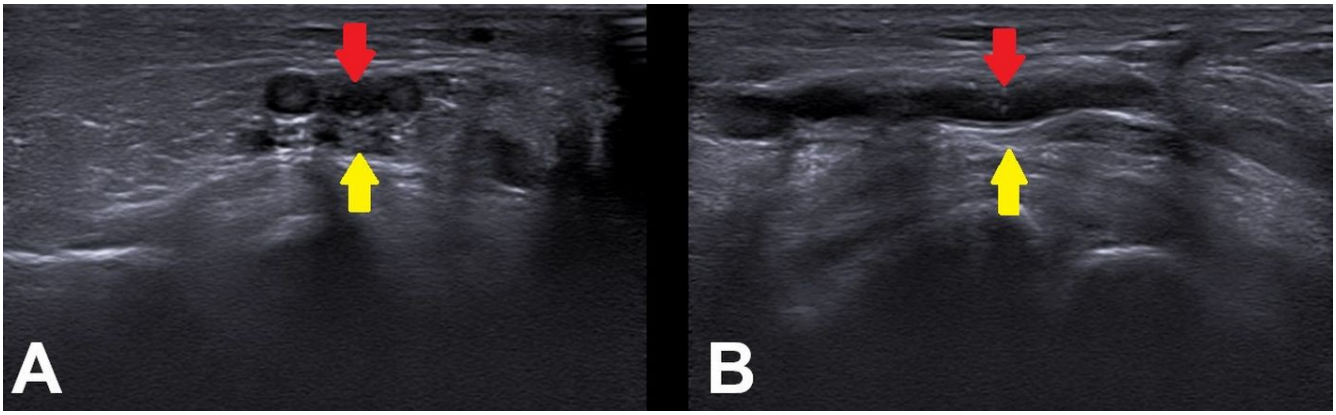


Figure 1. Axial (A) and longitudinal (B) ultrasound images show a tortuous posterior tibial artery (red arrow) in close contact with the medial plantar nerve (yellow arrow).

Management and Follow-up

Management comprised physiotherapy focused on intrinsic foot muscle strengthening, stretching exercises and compression stockings. She also stopped wearing tight-fitting shoes. At three weeks she reported complete symptom resolution, and reassessment showed no tenderness and a negative Tinel sign.

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Discussion

Ultrasound can depict the relationship between a tortuous artery and a nerve, and color Doppler identifies arterial flow and pulsatility [1,2,3]. A tibial artery schwannoma causing medial plantar nerve compression has been described as a distinct structural mechanism [4].

In this case, the ultrasound and clinical findings raised the possibility of a vascular contribution. Close contact and pulsatility at the contact site establish the anatomical relationship. The clinical improvement followed several concurrent conservative measures, so the effect of each measure and the contribution of the vascular contact cannot be determined from the observed course.

Conclusion

Ultrasound with color Doppler depicted close contact between the posterior tibial artery and the medial plantar nerve. Interpretation of this anatomical finding depends on the clinical presentation.

Declarations

The authors report written informed consent for publication and preservation of patient anonymity. The work was conducted in accordance with the Declaration of Helsinki and applicable standards. All authors contributed to conception and drafting or critical revision, approved the final version and agreed to be accountable for the work.

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