

# Diabetic leg associated with tibial nerve neuropathy: A rare ultrasound finding of diabetic deep infection

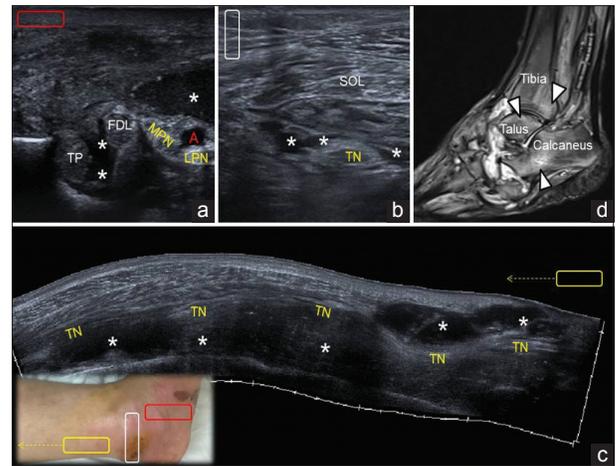
Sir,

A 43-year-old female with diabetes and previous right 4<sup>th</sup> and 5<sup>th</sup> toe amputations suffered right foot ulcer due to a thermal injury 6 months ago. Redness, swelling, and intermittent numbness were noted over her right medial ankle despite of antibiotic treatment. There was no fever and her white blood cell count was around 8000/ $\mu$ L. She also complained of shooting pain over her affected foot (7 over 10 on the visual analog pain scale), causing her walking difficulty and depending on a wheelchair for locomotion. She was referred for an ultrasound (US) examination for a likely diagnosis of cellulitis.

US imaging showed subcutaneous and peritendinous effusion at the hindfoot [Figure 1a]. Fluid was also seen under the whole soleus muscle [Figure 1b and c]. The muscles at the posterior deep leg compartment appeared edematous and disorganized [Figure 1c]. Further magnetic resonance imaging disclosed multiple marrow edema of the distal tibia, fibula, and tarsal bones with lobulated fluid collection [Figure 1d]. She later underwent debridement, excision of deep fascia and tendons, sequestrectomy and arthrotomy for her affected lower extremity. Eventually, she could walk with a cane 3 months after surgery.

In this case, skin erythematous changes were restricted to the foot and ankle, which might make physicians underestimate possible proximal involvement leading to significant functional disability. Herein, US is a convenient tool to scrutinize foot and ankle disorders.<sup>[1,2]</sup> Abundant effusion encircling the toe flexor tendons was a hint to consider proximal pathologies. The toe flexor tendons originate from the tibialis posterior, flexor digitorum and flexor hallucis longus muscles, which are situated at the deep posterior compartment of the leg and surface up posterior to the medial malleolus.<sup>[3]</sup>

Another clinical sign indicating deep muscle infection was intermittent numbness at the medial ankle, caused by tibial nerve compression due to effusion and swollen tendons inside the tarsal tunnel [Figure 1b] and between the soleus and deep toe flexor muscles [Figure 1c and d]. Magnetic resonance imaging should be arranged in case of deep muscle involvement because it might progress to



**Figure 1:** (a) Axial ultrasound images of the right hind foot (b) and distal calf, and panoramic view of the whole posterior leg (c). The colored rectangles on the patient's affected foot indicate the transducer positions. Magnetic resonance imaging (sagittal view) shows multiple bone marrow edema (arrowheads) indicating osteomyelitis (d). TP = Tibialis posterior tendon; FDL = Flexor digitorum longus tendon; MPN = Medial plantar branch of the tibial nerve; LPN = Lateral plantar branch of the tibial nerve; TN = Tibial nerve; SOL = Soleus muscle. A = Posterior tibial artery; \*Effusion

osteomyelitis like in our patient. This report highlighted the usefulness of the US in the evaluation of diabetic foot and the importance of extending the scanning view beyond the area of skin changes readily and promptly with US.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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