

## The Potential of Color Doppler Ultrasound Efficiency in Monitoring Diabetic Nonulcerated Neuroarthropathic (Charcot) Foot

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### Clinical Images

A 30 year-old female having type 1 diabetes for 23 years, noticed progressively, for four months, inflammatory mild painful signs on her right foot. During the interview she recalled a post-traumatic fracture of her ipsilateral 5<sup>th</sup> toe. We documented an acute nonulcerated neuroarthropathic foot (Eichenholtz I, Brodski 1) but no occlusive arterial disease. The patient agreed offloading the foot only for three months (removable total contact cast). Before offloading, physical signs revealed midfoot are inflammatory swelling, ectatic veins and no plantar arches, still keeping after, a higher temperature without visible edema (Figure 1).



Figure 1: Inflammatory swelling in mid-foot without visible edema.

Plain radiographs (weight-bearing) detected: soft-tissue swelling, hardly delineate tarsal-metatarsals, cortical erosions, subchondral cysts, misalignment of tarsals, Lisfranc dislocation, collaps of the arches, some bony debris and vascular calcifications (Figure 2).

MRI showed: vascular pannus (periarticular soft tissue edema), tarsals mainly cuneiforms' cortical erosions, small fractures, diffuse and patchy bony marrow edema (Figure 3). Both radiographs and MRI recorded no notable regression after offloading. The Doppler Ultrasound (DU) initially confirmed clinical inflammation, by hyper vascularised periarticular soft tissues, small effusions, also revealing tarsals' periosteal discontinuities as naviculocuneiform area shows (Figure 4). After offloading, soft tissues spurious vascularity, notably

regressed despite the remaining bony vascularised erosions as some tarsals depicted (Figure 5).

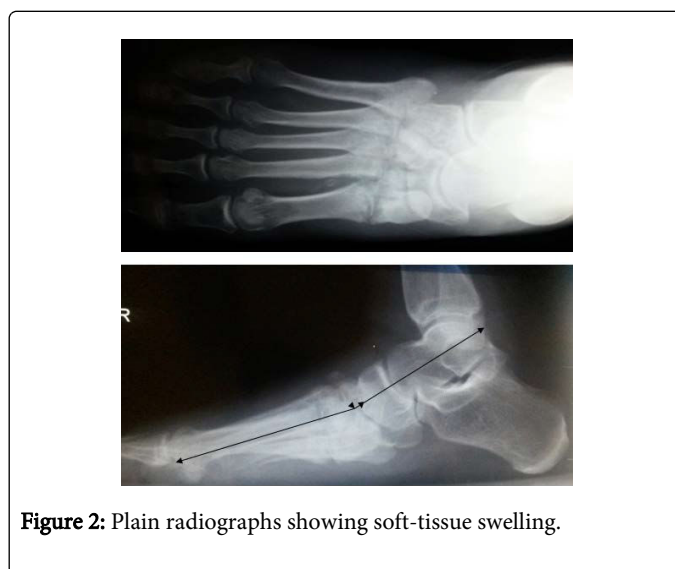


Figure 2: Plain radiographs showing soft-tissue swelling.

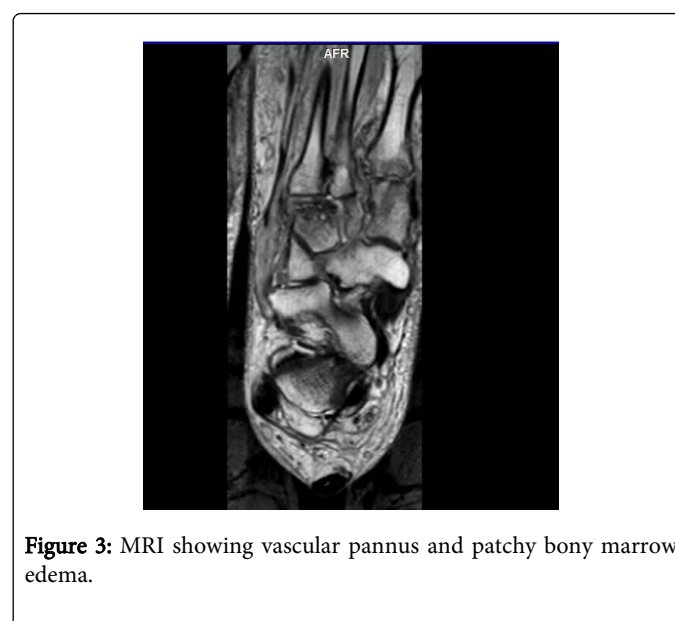


Figure 3: MRI showing vascular pannus and patchy bony marrow edema.

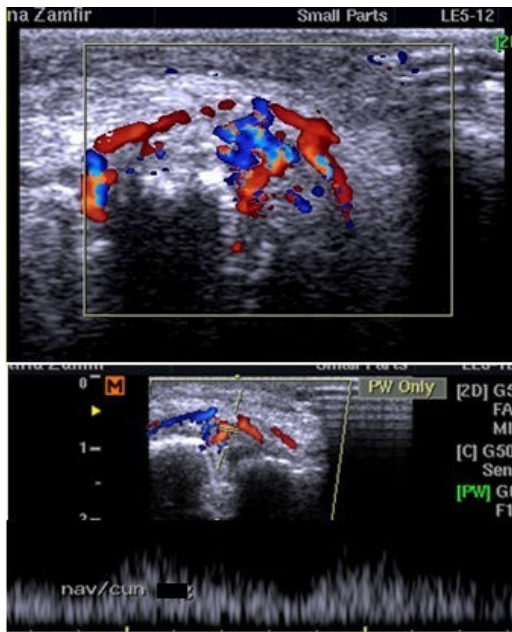


Figure 4: Doppler ultrasound showing clinical inflammation, by hyper vascularised periarticular soft tissues.

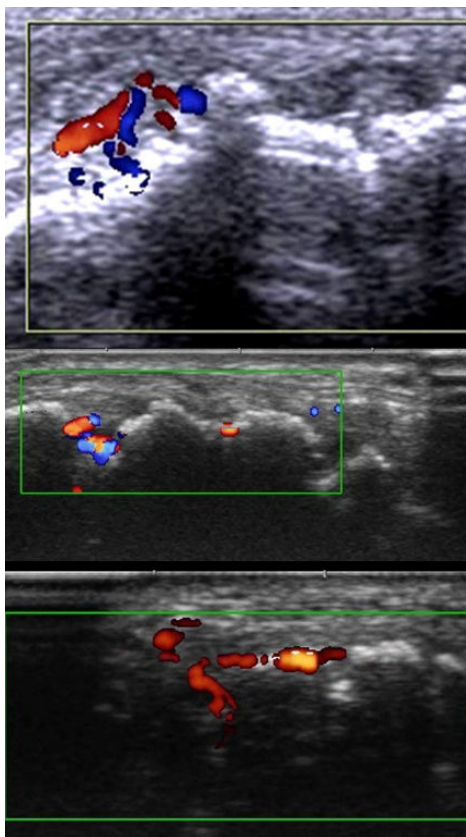


Figure 5: Soft tissues spurious vascularity are regressed.

The literature stipulates that clinical resolution of inflammation and MRI marrow edema regression are consistent with healing. Firstly achieved, clinical regression of inflammation does not totally match with contemporary more dynamic DU, even less with the MRI in this not fully treated case. DU could become a useful tool between clinic and MRI (which can't be performed out of charge or as frequently as needed in many countries). Finding a correspondence between clinic and each imaging tool, the therapeutic response would become measurable in anticipating the appropriate moment of weight-bearing for avoiding relapse [1-3].

## References

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