

The Sonographic Appearance of Podagra in Gout

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A 49-year-old man was admitted to our clinic with pain, acute-onset swelling, and local erythema in his right big toe. He was under valsartan hydrochlorothiazide treatment for hypertension. The medical history was non-specific. He did have no constitutional symptoms such as morning stiffness, fatigue and fever. Physical examination revealed swelling, local erythema (Figure 1a) and pain on palpation of the right big toe. Serum C-reactive protein level was 14.6 mg/L (normal range: <10), and uric acid level was 10.1 mg/dl (normal range: 3.5-7.2). Complete blood count, erythrocyte sedimentation rate, blood urea nitrogen and creatinine levels were within normal limits. While foot radiograph was unremarkable (Figure 1b), ultrasonography showed sugar cluster appearance and effusion with increased power Doppler activity (Figure 1c, d). Monosodium urate crystals were detected in synovial fluid aspiration, and the patient was diagnosed with gout. Oral colchicine 1 mg/d and diclofenac sodium 150 mg/d were commenced. Valsartan hydrochlorothiazide was changed to valsartan, and amlodipine was added for hypertension treatment. Uric acid poor diet and hydration were also recommended. Uric acid levels were 9.1 and 7.1 mg/dl at the first and sixth month controls, respectively. A significant improvement in the swelling was

detected on physical examination (Figure 2a). On the other hand, ultrasonography showed erosion of the proximal phalanx (Figure 2b).

Gout is one of the most common forms of inflammatory arthritis characterized by the crystallization of uric acid (monosodium urate crystal deposition) within the joints.¹ The first metatarsophalangeal joint is distinctive, and 50 to 90% of the attacks involve the first metatarsophalangeal joint.^{1,2} However, midfoot joints and ankle can also be involved.^{1,2} Urate crystals are mainly deposited in the superficial portions of the articular cartilage.³ Imaging modalities in gout can provide diagnostic clues. Although X-rays can show erosions, which are among the chronic stage characteristics in gout, detection of early soft tissue changes, erosions, hypervascularity, and small tophi by X-rays can be challenging. Magnetic resonance images are also quite useful to detect early erosions, synovial hypertrophy, and joint effusion. However, magnetic resonance imaging can be expensive and poorly accessible. On the other hand, ultrasound can be a convenient imaging modality for gout to show joint effusion, early erosions, crystals, hypervascularity, and disease activity with several advantages such as the ease of application, lack of ionizing radiation, low cost, and repeatability. Ultrasound provides

Received: January 09, 2014 **Accepted:** February 12, 2014

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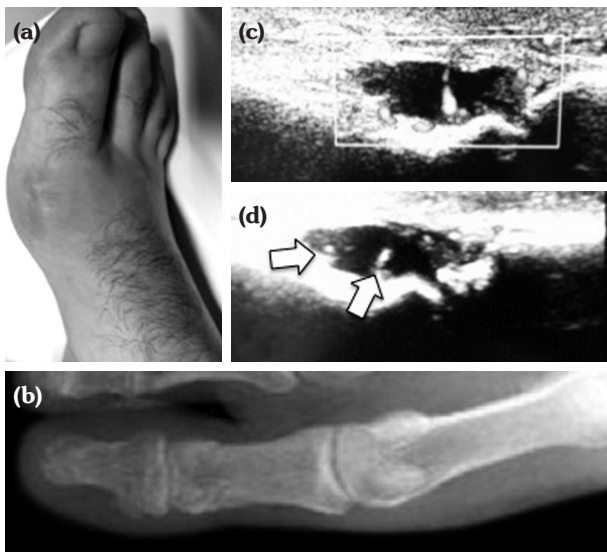


Figure 1. (a) Swelling and erythema of the right first metatarsophalangeal joint (podagra) before treatment, and (b) radiograph of the normal first metatarsophalangeal joint. (c) Ultrasound of distended joint capsule, effusion and increased power Doppler activity of the first metatarsophalangeal joint, and (d) monosodium urate crystals presenting like sugar clusters at dorsal aspect of the proximal phalanx (arrows).

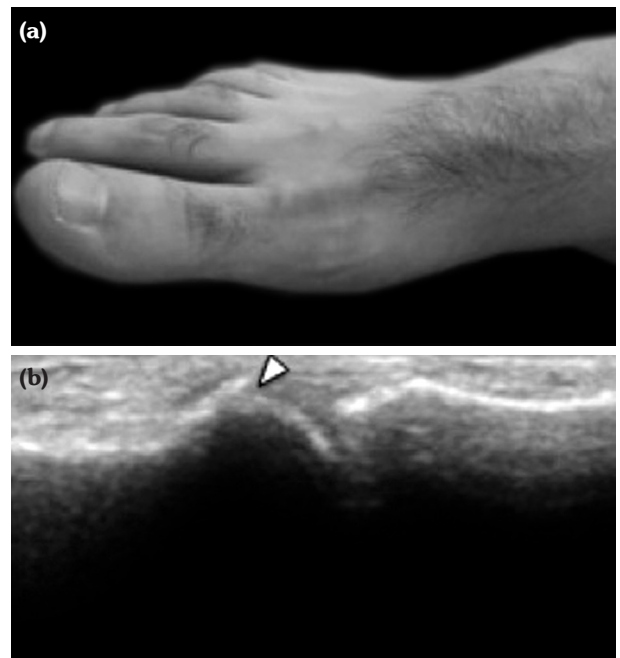


Figure 2. (a) First phalanx without edema or swelling, and (b) sonographic image of erosion of proximal phalanx at sixth month of treatment (arrow head). Neither Doppler signal activity nor effusion were observed.

dynamic imaging as well.⁴ Ultrasound can be used not only for the first-time diagnosis but also for clinical follow-up since irregular hyperechoic bands (double contour sign) may be seen in the late periods of gout.⁵ Herein we once again emphasize the role of ultrasound in the diagnosis and clinical follow-up of gout.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

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