



Figure 1

A 55-year-old man presented for evaluation of acute pain in his right hallux.

A 55-year-old man presented with a 2-day history of acute first toe pain in his right foot after banging the affected toe on a door. Physical examination demonstrated a swollen first toe with marked tenderness to palpation. Radiographs were obtained (**Figures 1a and 1b**).

**What is the diagnosis?
What additional imaging tests may be useful to confirm the diagnosis?**

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■ Answer



Figure 1

The radiographs of the right foot excluded fracture as the underlying etiology of the patient's pain. The findings included soft tissue swelling and periarticular (ie, near but not involving the joint) erosions involving the first metatarsal head (**white asterisks, Figure 1c**). The erosion on the medial aspect of the metatarsal head had remodeling of bone at the periphery of the erosion, which created the appearance of "overhanging edges" (**white arrows, Figure 1c**). The radiographic appearance suggests the diagnosis of gouty arthritis.

Gouty arthritis, which is caused by the deposition of monosodium urate crystals in the soft tissues surrounding joints, continues to increase in prevalence—likely due to the growing aging population and risk factors such as obesity and diabetes. Gouty arthritis typically presents as painful episodes of arthritis affecting a single joint that can be extremely tender to touch. Acute attacks typically subside within 5 to 7 days. Acute gout may result in fever and elevated white blood cell counts, making it difficult to distinguish from septic arthritis.¹ While more common in males in the younger population, gout affects men and women equally in patients older than age 60 years.²

While patients with gouty arthritis have hyperuricemia, only approximately 10% develop gout. The Ameri-

can College of Rheumatology's preliminary criteria² for the diagnosis of gout include the presence of characteristic urate crystals in the joint fluid of the affected joint during the attack, the presence of a tophus (soft tissue mass containing urate crystals), or at least six of the following:

- More than one attack of acute arthritis
- Maximum joint inflammation developed within 1 day
- Monoarticular arthritis
- Redness of the joint
- First metatarsophalangeal (MTP) joint pain/swelling
- Unilateral first MTP joint attack
- Unilateral tarsal joint attack
- Suspected tophus
- Hyperuricemia
- Asymmetrical swelling of the joint on radiography
- Subcortical cysts without erosions on radiography
- Joint fluid culture negative during an attack.

As highlighted by the criteria, the first MTP joint is a common location for gouty arthritis, and is referred to as podagra. A meta-analysis published in 2016 reports that an estimated 73% of patients with gout will have involvement of the first MTP.³

Regarding imaging studies, radiography is often the first imaging test performed to evaluate for gout, and can reveal characteristic findings such as periarticular erosions with sclerotic margins, overhanging edges of remodeling bone, and adjacent soft tissue tophi. These findings, however, occur late in the disease. Ultrasound may be useful for earlier diagnosis with the "double contour sign," which is a specific finding representing the appearance of urate crystals deposited on the hyaline cartilage of the joint. Dual-energy computed tomography (CT) has been shown to not only demonstrate early erosions and soft tissue tophi, but also to characterize the crystals, making CT a highly sensitive and specific test for the detection of gouty arthritis.⁴

Treatment of acute episodes of gout includes nonsteroidal anti-inflammatory agents, colchicine, and corticosteroids. Early diagnosis and treatment can prevent progression to advanced arthritis and chronic impairment.

References

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