Latent Foreign Body Synovitis

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The differential diagnosis for monoarticular arthritis is extensive. Patient omissions from the history can compound this broad diagnostic dilemma. A case report is presented of a 32-year-old female with an eight-month history of isolated right first metatarsophalangeal joint (MTPJ) pain, after exhaustive, non-specific diagnostic evaluation. An open biopsy was performed, and a 3.5 cm wooden foreign body, believed to be the result of an injury 18 years prior, was excised from the 1st MTP. Open biopsy may be required as an important part of the workup for definitive diagnosis of a foreign body synovitis. A discussion regarding the presentation, clinical and diagnostic findings follows. (The Journal of Foot & Ankle Surgery 46(4):291–296, 2007)

Key words: wooden foreign body, first metatarsophalangeal (MTP), synovial biopsy, monoarticular arthritis, synovitis

Nearly any joint disorder may present as monoarticular arthritis, thus yielding a challenge in terms of accurately narrowing the differential diagnosis. Initial evaluation of monoarticular arthritis is acutely focused on identifying entities associated with rapid disease progression and high degree of morbidity and mortality, such as septic arthritis. With acute critical diagnoses eliminated, the remainder of the work-up should proceed in a systematic manner.

When confronted with patient complaints of pain and swelling in the vicinity of a joint, the pathology must be localized to bone, joint, periarticular capsuloligamentous structures, or the surrounding soft tissues. Once a joint-centered process is identified, the patient should initially be evaluated for the involvement of additional joints; this is pertinent in the absence of trauma. The differential diagnosis for monoarticular arthritis includes common entities such as trauma, crystalline disease, osteoarthritis, septic arthritis, osteomyelitis, and systemic seronegative arthropathies. Determining the condition's acuity and mechanical versus inflammatory etiology is a principle point of patient history. A nontraumatic, acute onset is suggestive of infection or an inflammatory process such as a crystalline or rheumatoid arthritis flare, whereas longstanding symptoms suggest degenerative processes. Waxing and waning symptoms unrelated to patterns of use are indicative of inflammatory processes, whereas pain occurring only after use and improving with rest suggests a mechanical etiology.

Physical examination significantly narrows the differential diagnosis in the majority of cases. Plain radiographs are useful to identify occult fractures, osteomyelitis, chronic inflammation, or degenerative processes. Additional diagnostic tests include arthrocentesis, peripheral blood analysis, magnetic resonance imaging (MRI), and percutaneous versus open biopsy. We present an unusual case report of a first metatarsophalangeal joint (MTPJ) foreign body synovitis caused by an injury 18 years before presentation.

Case Report

A 32-year-old woman was referred to the rheumatology service from primary care with a 3-month history of isolated right first MTPJ and hallux pain. Her symptoms were initiated by an acute onset of constant, nonradiating, sharp pain. Pain was present both at rest and activity and was accompanied by fluctuating focal edema. She denied antecedent trauma, change in physical activity, history of arthritis, signs or symptoms of infection, or additional joint pain. Her past medical and surgical history and review of systems were unremarkable. Physical examination of the right foot revealed minimal edema and warmth of the first MTPJ without integument pathology. There was moderate (7/10) pain during axial loading and active and passive range of motion. There was full, symmetric range of motion of the first MTPJ without crepitus. Plain radiographs of the foot were unremarkable (Figs 1 and 2).

The rheumatology service prescribed indomethacin, with a presumptive diagnosis of flexor hallucis tendonitis

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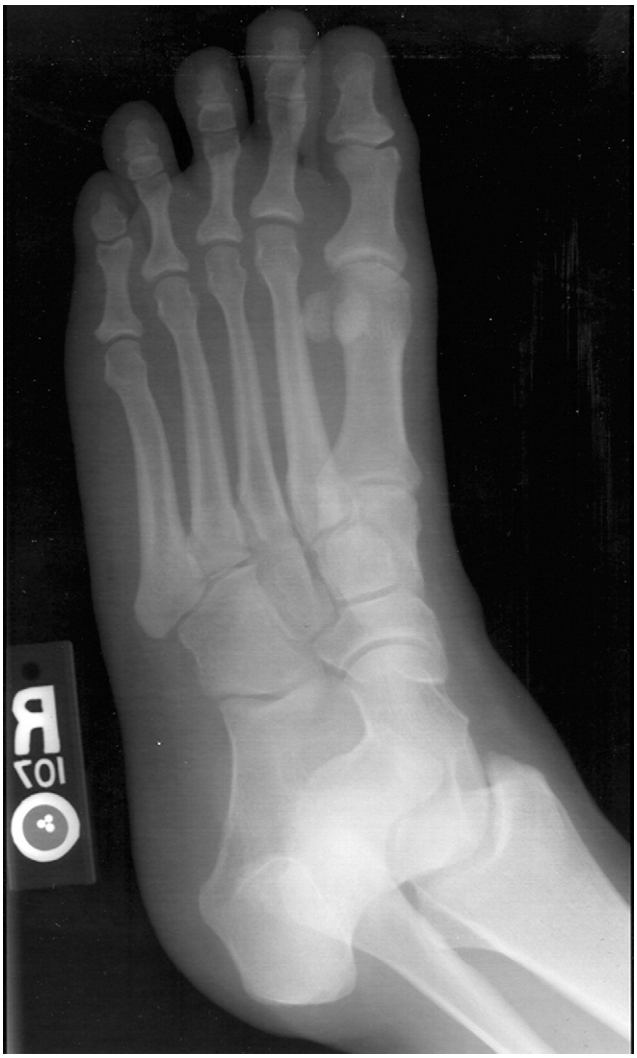

FIGURE 1 Oblique plain radiograph of the foot without abnormality.

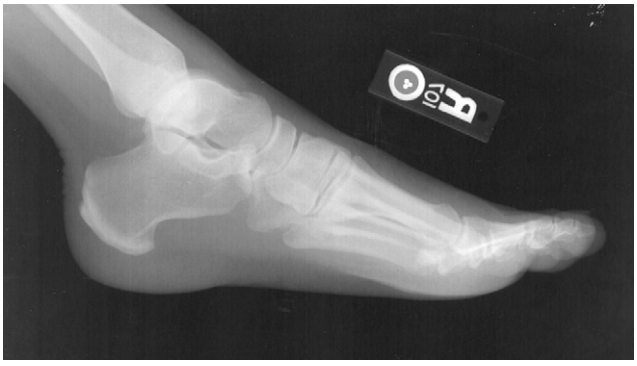

FIGURE 2 Lateral plain radiograph of the foot without abnormality.

versus crystalline arthropathy. Because of persistent symptoms, subsequent MRI of the right foot was ordered by rheumatology for localization. This revealed right first MTPJ synovitis with erosions, nonspecific marrow edema of the first metatarsal head and proximal phalanx, and signal intensity consistent with a tenosynovitis of the flexor hallucis brevis (Figs 3–6).

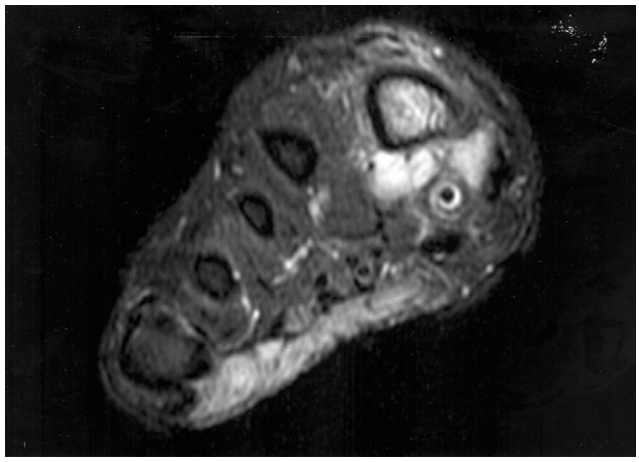

FIGURE 3 T2-weighted axial foot MRI depicting foreign body as a target appearance similar to flexor tendon.

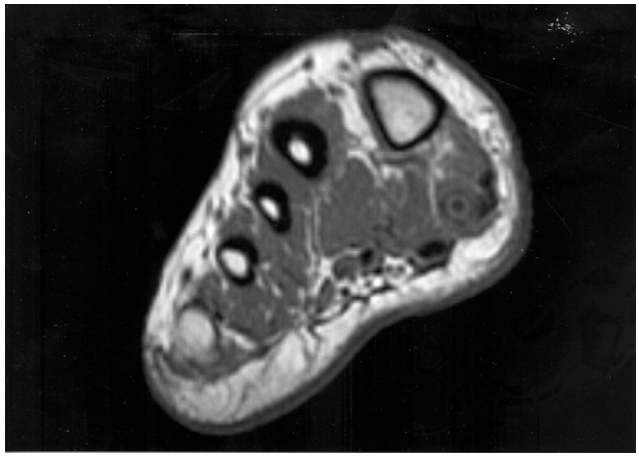

FIGURE 4 T1-weighted axial foot MRI depicting foreign body as a target appearance similar to flexor hallucis brevis tendon.

These findings were deemed most consistent with an inflammatory arthropathy. The patient received an intra-articular injection of dexamethasone and bupivicane, resulting in 50% pain relief for a 3-week period. When the pain recurred, a whole-body bone scan was obtained, which demonstrated uptake centered at the first MTPJ (Fig 7).

The patient then underwent a fluoroscopically guided, synovial biopsy with synovial fluid aspirate. The biopsy was nondiagnostic, and the fluid analysis was negative for crystals, white blood cells, and fungal or bacterial organisms.

The patient was then referred to the orthopaedic surgery service for further evaluation, and she was subse-