Unusual Imaging Manifestations of Intraosseous Tophaceous Gout of the Patella

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Intraosseous tophaceous gout involving only the patella and no other sites of the body is extremely rare. Evaluation of the extent of urate deposition and soft tissue destruction in gouty arthritis is well described in the literature. Imaging findings of intraosseous tophi in other sites have been reported1-3, but reports of intraosseous patellar lesions are

Figure 1. (A) Coronal T1 weighted and (B) T2 weighted MR images reveal an expansive and polylobulated soft tissue lesion (arrow) on the superolateral surface of the patella. (C) An osteolytic lesion (arrow) with adjacent broken cortical erosions was seen on the radiograph. (D) Because of its aggressive appearance, the lesion (arrow) was biopsied by a CT guided Tru-Cut procedure.
very rare. Because this is an atypical clinical presentation of tophaceous gout, it can lead to a misdiagnosis of infectious or neoplastic process\(^4\), as occurred in these 2 cases.

The first case was a 53-year-old man who presented with acute attacks of gout affecting only the left knee. His hyperuricemia, diagnosed 5 years previously, had returned to normal levels (35 mg/dl) after treatment with allopurinol (300 mg/day). He had no symptoms of uric acid nephrolithiasis. Magnetic resonance imaging (MRI) performed for clinical suspicion of a medial meniscus tear (Figure 1A, 1B) coincidentally revealed a polylobulated soft tissue mass occupying the lateral part of the patella. The lesion’s signal intensity was similar to that of muscle: homogeneous on T1 weighted sequences and slightly heterogeneous with small hyperintense areas on T2 weighted images. Joint effusion and a medial meniscus tear also confirmed the clinical manifestations. We thought the mass was a neoplastic process. Radiographs (Figure 1C) revealed an expansive lytic lesion on the lateral border of the patella. No calcifications were seen within or adjacent to the mass. Computer tomography (CT) imaging (Figure 1D) showed adjacent broken cortical erosions of the lesion. Pathologic examination by CT-guided Tru-Cut biopsy (Figure 1D) revealed urate deposits surrounded by giant cells.

The second case was 49-year-old man who presented with monoarticular inflammation crisis of the left knee due to sporadic hyperuricemia over 23 years. MRI was performed to rule out clinical suspicion of a meniscal tear. The MRI (Figure 2A) showed an osteolytic lesion with a soft tissue mass within the patella, extending outward to the proximal patellar tendon without apparently involving it. Radiographs (Figure 2B) showed an osteolytic lesion with a sclerotic rim in the anterior border of the central portion of the patella. No calcifications were present. Arthroscopy revealed uric acid crystals covering almost all synovial and cartilage components. There was no meniscal pathology. The lytic lesion was biopsied; tophaceous gout was confirmed at histology.

Tophi do not usually appear on physical or radiographic examination until 10–12 years after onset of gout. Tophi may mimic neoplastic processes when presenting as a soft tissue mass associated with a large intraosseous lesion; when accompanied by acute inflammation they could be misdiagnosed as infection\(^3\).

The radiologic manifestations of gout are well known. Radiographs remain the examination method of choice in the diagnosis of gouty arthritis. CT has only recently been used extensively to investigate gouty arthritis. CT will also facilitate recognition of paraarticular calcifications when present\(^4\).

The MRI signal intensity of tophaceous gout in both cases described here was very similar to that of muscle on proton-density weighted sequences, while the signal on T2 weighted sequences was hypointense and more heterogeneous than that of muscle. In other series, tophaceous deposits show variable appearance on MRI. The deposits may have low to intermediate signal intensity on T1 and low signal intensity (if the tophi are calcified) or high signal intensity on T2 images, depending on the degree of hydration of the tophi and crystals. An inflamed joint usually has the appearance of arthritis, including joint effusion and paraarticular edema. Variable degrees of gadolinium enhancement of tophi, related to increased hypervascularity of the affected synovium and of granulated tissue surround-
ing it, have also been reported. Further, tophus signal intensity is not pathognomonic of gout\textsuperscript{1,5}.

In summary, an osteolytic patellar lesion, when associated with a peripatellar soft tissue mass, especially without calcification, may necessitate an invasive diagnostic procedure. Even if a history of gout is absent, tophaceous gout should be included in the differential diagnosis of intraosseous patellar lesions, as their MRI and CT manifestations are nonspecific.

REFERENCES