

Detection of calcium pyrophosphate dihydrate crystal deposition disease by dual-energy computed tomography

Hae-Rim Kim¹, Jung-Hwa Lee¹, Na Ra Kim², and Sang-Heon Lee¹

¹Division of Rheumatology, Department of Internal Medicine, ²Department of Radiology, Konkuk University School of Medicine, Seoul, Korea

A 52-year-old woman presented with painful swelling in both knees for 7 days. Physical examination identified marked swelling and tenderness in both knee joints that she reported to have recurred for the past 6 years. Laboratory tests determined the erythrocyte sedimentation rate to be 107 mm/hr, C-reactive protein as 25.55 mg/dL, and serum uric acid levels as 4.1 mg/dL. Calcium pyrophosphate dihydrate (CPPD) crystals were found on polarized light microscopy examination of knee joint synovial fluid. Cultures identified no microorganisms. Plain radiography of the right knee revealed multiple calcifications in the medial

and lateral menisci and the femoral condylar cartilage (Fig. 1). Dual-energy computed tomography (DECT), which differentiates monosodium urate (color-coded in green) from calcium (color-coded in blue), revealed multiple calcium depositions in the anterior and posterior cruciate ligaments, as well as in both menisci and the femoral condylar cartilage (Fig. 2). The patient was diagnosed as having CPPD crystal deposition disease of both knee joints. Intra-articular injection of triamcinolone effectively relieved her pain.

In gouty arthritis, DECT is a useful noninvasive and inexpensive imaging

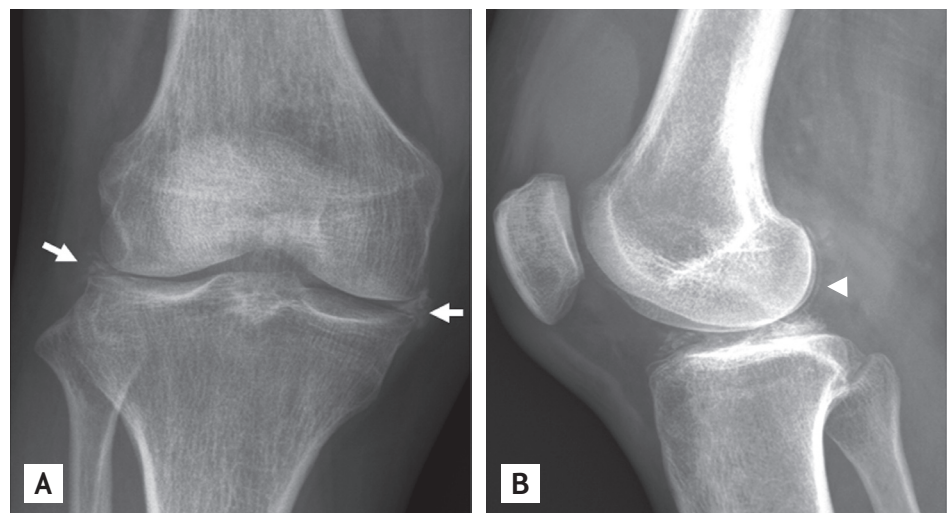


Figure 1. Plain radiographs show multiple calcifications in both (A) medial and lateral menisci (arrows), and (B) femoral condylar cartilage (arrowhead).

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Correspondence to
Sang-Heon Lee, M.D.
Tel: +82-2-2030-7541
Fax: +82-2-2030-7748
E-mail: shlee@kuh.ac.kr

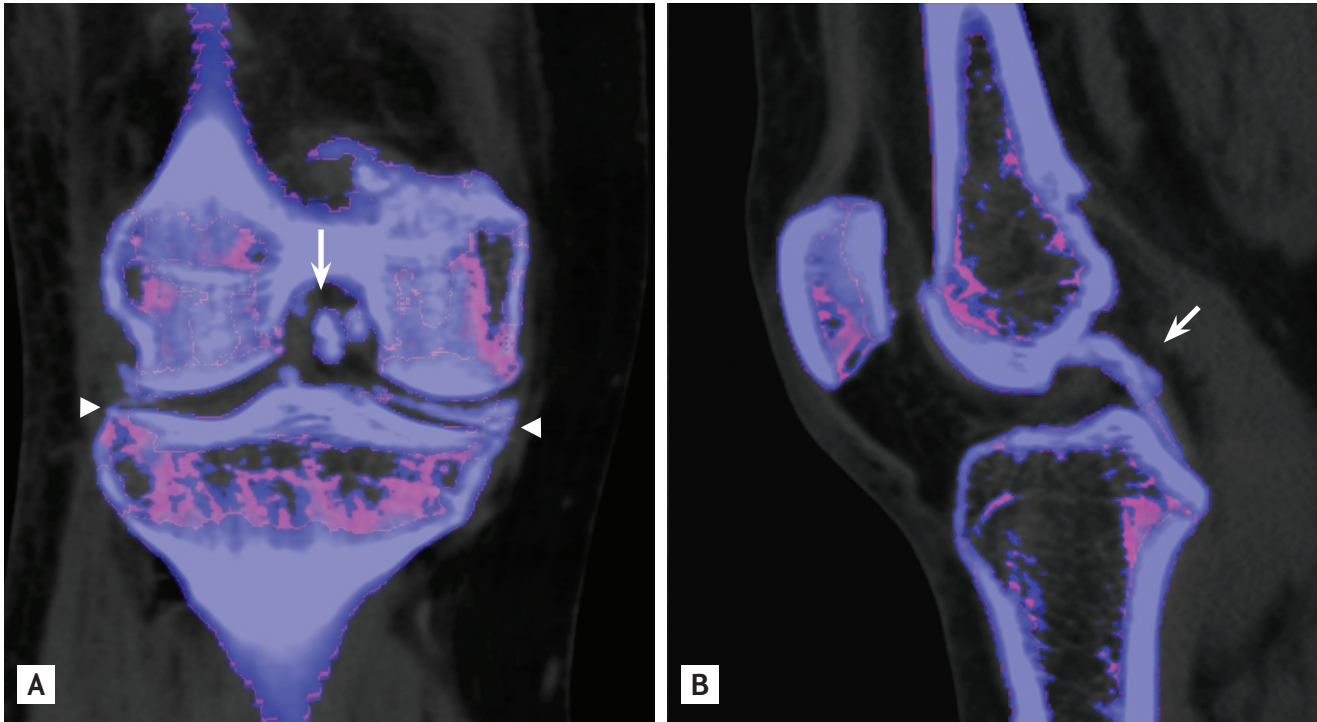


Figure 2. Dual energy computed tomography shows multiple calcium depositions in (A) both menisci, femoral condylar cartilage (arrowheads) and posterior cruciate ligament (arrow) and (B) anterior cruciate ligament (arrow).

modality for detecting urate deposits, especially when the acquisition of synovial fluid tophi is not possible and both septic arthritis and CPPD crystal deposition disease are possible diagnoses. DECT is also useful for detecting coronary calcium deposition and urinary calculi. Although calcification is often easily recognized on plain radiographs, DECT is a useful tool when

crystal examination is not available or radiography is not easily interpretable.

Conflict of interest

No potential conflict of interest relevant to this article was reported.