RADIOLOGY ROUNDS
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*Department Editor*

# What was causing this woman's intensifying knee pain?

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A 63-year-old woman came in with a fever of 38˚C (100.5˚F) and knee pain that she said gradually increased in intensity and lasted several hours. She had a similar attack 3 months before but no history of trauma. Her medical history included type 2 diabetes mellitus, which was diagnosed within the last 15 years and treated with dietary modifications.

## Radiographic findings

The anteroposterior radiograph of this woman's right knee (Figure 1) displays chondral and meniscal calcifications. Those of the articular cartilage are displayed in the center, following the contour of the tibia. The wedge-shaped meniscal calcifications are on the outer portions of the joint.

## Diagnosis

This patient's clinical presentation suggests a differential diagnosis of rheumatoid arthritis, gout, pseudogout, trauma, neoplasm, or infection. Based on the radiographic findings, hemochromatosis, degenerative joint disease, hyperparathyroidism, trauma, acromegaly, Wilson's disease, ochronosis, infection, malnutrition, and ischemia also become part of the differential. The diagnosis was chondrocalcinosis secondary to hemochromatosis.

## Discussion

Chondrocalcinosis—or intra-articular calcifications—is often associated with calcium pyrophosphate dihydrate (CPPD) deposition disease (pseudogout). Chondrocalcinosis is also one of the musculoskeletal signs of hemochromatosis, which is characterized by increased intestinal absorption of iron and excess iron deposition in the liver, pancreas, and other organs. Chondrocalcinosis may be an incidental finding in asymptomatic elderly persons, or it may present with acute symptoms as in this patient. Prevalence in those 65-75 years of age is 10%-15%, which increases to more than 40% after the age

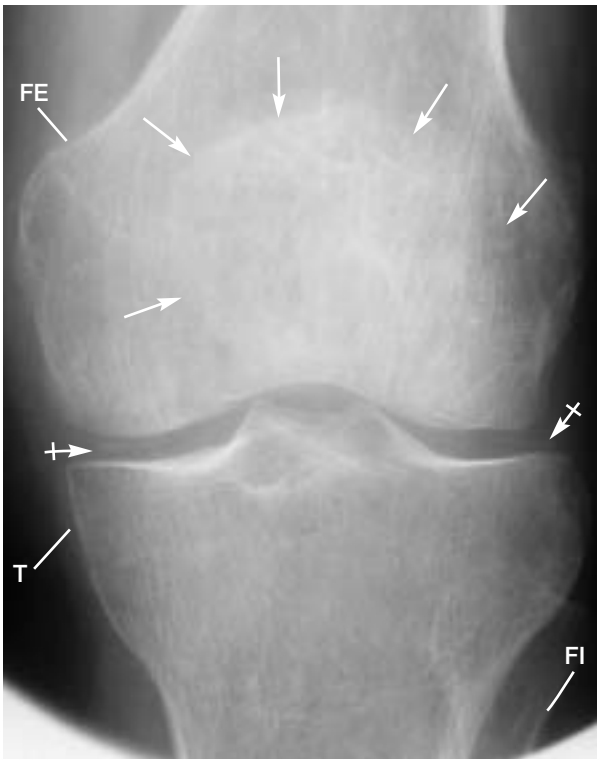


**Figure 1** This anteroposterior radiograph of the right knee includes the femur (FE), patella (small arrows), tibia (T), and fibula (FI) and displays both chondral and meniscal calcifications. Those of the articular cartilage are displayed in the center, following the contour of the tibia. The meniscal calcifications are wedge shaped in the outer portions of the joint (bar arrows).

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of 80.[1] As in this patient, persons with diabetes and other endocrine and metabolic conditions are predisposed to the development of chondrocalcinosis.[2]

In older patients, gout, rheumatoid arthritis, primary or secondary hyperparathyroidism, and hemochromatosis are important considerations in the differential diagnosis. The latter two can be ruled in or out by laboratory tests. Serum calcium, albumin, phosphate, and alkaline phosphatase measurements assess for hyperparathyroidism. Serum iron and ferritin levels, total iron binding capacity, and liver biopsy are used to evaluate for hemochromatosis. Most recently, testing for the *HFE* gene has assumed an important role in confirming the diagnosis.[3,4]

Differentiating pseudogout from gout is the major consideration in a patient with chondrocalcinosis. The pain of gout is usually more severe and more likely to affect joints of the distal extremities; the knee is the most likely site of pseudogout. The diagnostic procedure for pseudogout is joint aspiration, followed by examination of the synovial fluid by compensated polarized light microscopy (or radiographic diffraction studies) to look for deposition of crystals of CPPD (pseudogout) or monosodium urate (gout). Aspiration is also therapeutic.

Rheumatoid arthritis, which can occur concurrently with pseudogout, can be even more difficult to exclude although rheumatoid arthritis usually has a more insidious onset, with initial involvement of the metacarpophalangeal and proximal interphalangeal joints. Only later are larger joints involved. The radiographic appearance of chondrocalcinosis is not characteristic of rheumatoid arthritis.

Treatment may include corticosteroid injections, oral phenylbutazone, nonsteroidal anti-inflammatory drugs, or aspirin. Scheduled phlebotomies (and sometimes dialysis) are the standard treatment for hemochromatosis. ■

**REFERENCES**


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