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Knee pain and a limp after a fall

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CASE

A 39-year-old woman presented in the emergency department (ED) with complaints of a fall and consequent knee pain. She stated that she had landed on her right knee and had only mild discomfort. She had no previous history of trauma or surgery. She walked into the ED with a limp but was able to bear weight.

On physical examination, there was no gross deformity of the right knee. Tenderness was noted anteriorly at the knee joint, inferior to the patella. Range of motion was normal. There was no laxity, clicking, or locking. No effusion was observed.

What does the radiograph of the right knee show (see Figure 1)?

DISCUSSION

The radiograph shows cortical irregularity of the medial aspect of the lateral femoral condyle with a semilunar lucency surrounding a bony fragment. This fragment is on the articular surface and does not appear displaced. Also note the sclerosis of the femoral condyles, favoring a chronic process. No joint effusion, dislocation, or acute fracture is apparent. The interosseous joint spaces appear well preserved; therefore, arthritis is not a consideration.

The patient has osteochondritis dissecans (OCD), a condition involving fragmentation of the articular surface, which usually causes pain. The etiology of OCD is unclear, but the proposed theories include trauma (usually repetitive), ischemia (avascular necrosis), an ossification defect, or a genetic predisposition. OCD most commonly affects the knee but can also be seen in the talar dome (see Figure 2), capitellum, or almost any other joint. The knee is affected in approximately 75% of cases.

The incidence of OCD is approximately 15 to 30 per 100,000, and there is a 2:1 male to female predominance. OCD is rarely seen in patients younger than 10 years or older than 50 years. An estimated 5% to 30% of cases are bilateral, so radiographs of the other extremity may be warranted if OCD is encountered. *Continued on page 77*

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FIGURE 1

Radiograph of the patient's right knee

FIGURE 2



This radiograph shows osteochondritis dissecans of the talar dome in another patient.

OCD of the knee is seen in the medial femoral condyle, adjacent to the insertion of the posterior cruciate ligament, in approximately 75% of cases. About 10% of cases involve the weight-bearing portion of the medial or lateral femoral condyle, followed by the intercondylar groove of the patella in 5% of cases. Within the talar dome, about 57% of cases occur medially and 43% laterally.

Patients usually present with vague symptoms including pain, swelling, and stiffness. Over time, the subchondral bony fragment can become necrotic and may eventually separate, causing an intra-articular loose body (see Figure 3). If this occurs, the patient may have more mechanical complaints, such as locking, a sensation of the knee “giving way,” or symptoms that worsen with increased activity. Radiography is usually the first imaging procedure to be performed.

Staging Several classifications have been proposed for staging an osteochondral lesion. These have been based on bone scan, MRI, or arthroscopy. MRI is the best imaging modality once OCD is discovered because it can determine lesion size and stability, as well as iden-

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tify other causes of the patient’s symptoms. MRI is also useful for assessing the progress of healing and revascularization.

On MRI, there are four T2-weighted imaging findings that indicate an unstable lesion: high signal intensity between the fragment and the bone, articular fracture, focal osteochondral defect filled with joint fluid, and 5-mm or larger fluid-filled cyst deep to the lesion. The four MRI stages of an OCD lesion of the knee are as follows:

- Stage I: thickening of the articular cartilage and low signal changes
- Stage II: articular cartilage is breached with low signal rim behind the fragment indicating fibrous attachment
- Stage III: articular cartilage is breached with high signal changes behind the fragment and underlying subchondral bone
- Stage IV: loose body.

Stages I and II are stable, whereas Stages III and IV are unstable.

Treatment Several factors—including the severity of the symptoms, the patient’s age, and the size, location, displacement, and stage of the lesion—determine the optimal treatment. Conservative therapy is non-surgical, relies heavily on the avoidance of aggravating activities, and tends to be most effective in younger patients. Indeed, children with open physes have a higher rate of spontaneous resolution than do adults, and age is the most important factor affecting the outcome. Once symptoms have subsided, it is usually possible for the patient to gradually resume activities. Surgery is ordinarily considered if conservative therapies fail after 8 to 12 weeks of trying. Surgical therapies may include excision and debridement, drilling, fixation, grafting, osteochondral autograft transfer, autologous chondrocyte implantation, or allograft.

The goal of treatment for OCD should be to decrease pain, restore continuity of the articular surface, and decrease the likelihood that any degenerative joint disease will develop later in the patient’s life. Lesions of the lateral femoral condyle are known to have the poorest prognosis. Referral to an orthopedist is often necessary for patients with OCD. □

FIGURE 3



A third patient has long-standing OCD with prior detachment of the fragment and loose body formation. The patella is dislocated, an incidental finding.