Osteochondroma

Patrick Graham

Introduction

An osteochondroma, also known as an osteocartilaginous exostosis, or simply as an exostosis, is a benign surface lesion of bone. Described as a painless mass, bony overgrowth, or prominence near a joint, it is the most commonly noted benign lesion, accounting for approximately 30% of all benign bone tumors. The knee is the most commonly affected site, followed by the ilium and scapula. There is a higher incidence in males. The etiology is thought to be a result of displaced cartilage onto the longitudinal surface of the affected bone that then enlarges as the patient grows. It will continue to enlarge until the patient reaches skeletal maturity. There is a low lifetime risk of malignant transformation. Most commonly occurring in adulthood, this is preceded by sudden growth, swelling, or increased pain about the osteochondroma. This risk is increased to 5% in those with a condition known as multiple hereditary exostosis, an autosomal dominance inheritance of a mutation in tumor suppressor genes *EXT1* or *EXT2* (Hakim, Pelly, Kulendran, & Caris, 2015; Modarresi & Jude, 2018; Steffner, 2014; Subhas, Bui, Subdaram, Ilaslan, & Recht, 2009; Tis, 2019).

Case Presentation

A 68-year old man presented with about 4 months of waxing/waning right knee pain. He denied any injury or incident. Symptoms started with a mild aching of the anterior knee, noted after a day of prolonged walking and standing while out site seeing with friends. Stiff and sore the next day, he noted that he was able to weight bear with mild discomfort that worsened with prolonged weight-bearing. There was no appreciable swelling or discoloration. He did take Advil (ibuprofen) with noted relief. Symptoms seemed to alleviate over the next few days but then had a return of symptoms after an hour-long car ride.

The knee was quite stiff upon arrival to his destination and noted recurrent, aching anterior pain with ambulation. These symptoms had basically persisted at a low level ever since. He had a few pain-free days in the mix, but the majority of days were noted with anterior knee discomfort and stiffness after periods of rest. He reported a sensation of "rubbing" but denied catching, locking, or feelings of instability. He also denied distal symptoms of numbness and tingling. There was no incoordination with regard to his gait. As we discussed things, he did note being diagnosed with a "bone overgrowth" when he was a teenager. Also, this was found to be stable over time and he had no intervention. He was easily able to localize this to the distal, lateral thigh and reported it was not the focus of his symptoms.

Upon presentation was an alert, oriented, affect-appropriate man in no apparent distress. He ambulated with a mildly antalgic gait without use of an assistive device. His knee was without gross deformity, abrasions, discoloration, or abnormal warmth. There was a trace effusion. He noted a mild tenderness about the medial joint line. There was a firm, immobile, nontender mass noted about the lateral aspect of the distal femur. There were no overlying skin changes. Knee range of motion was grossly equal, with moderate patellofemoral crepitus and anterior discomfort noted on end-range flexion. The knee was overall stable with ligamentous testing. Strength was found to be 5/5 bilaterally. He was distally neurovascularly intact. Pertinent special testing was a positive Clarke's sign as well as patellar grind with a negative bounce home and McMurray's test.

Radiographs obtained at the time of evaluation included anteroposterior, lateral, and sunrise views of the right knee (see Figure 1). Note the lateral and vertically oriented bone growth of the distal, lateral femur, extending away from the joint line, consistent with an osteochondroma. There is also mild tricompartmental joint space narrowing and enthesopathic changes of the patella.

Management

The patient's presenting symptoms, physical examination, and radiographic findings were most consistent with osteoarthritis of the knee. As the osteochondroma was known to him, there was a lack of any concerning findings of malignant transformation—pain/tenderness, absent growth, associated swelling, or skin changes—This was felt to be a benign finding, unrelated to his symptoms (Hakim et al., 2015; Modarresi & Jude, 2018; Steffner, 2014; Subhas et al., 2009; Tis, 2019).

If symptomatic, it is appropriate to proceed with magnetic resonance imaging (MRI), with and without contrast, to evaluate for an irregular or large (>2cm) cartilage cap, a hallmark of malignant transformation. Otherwise,

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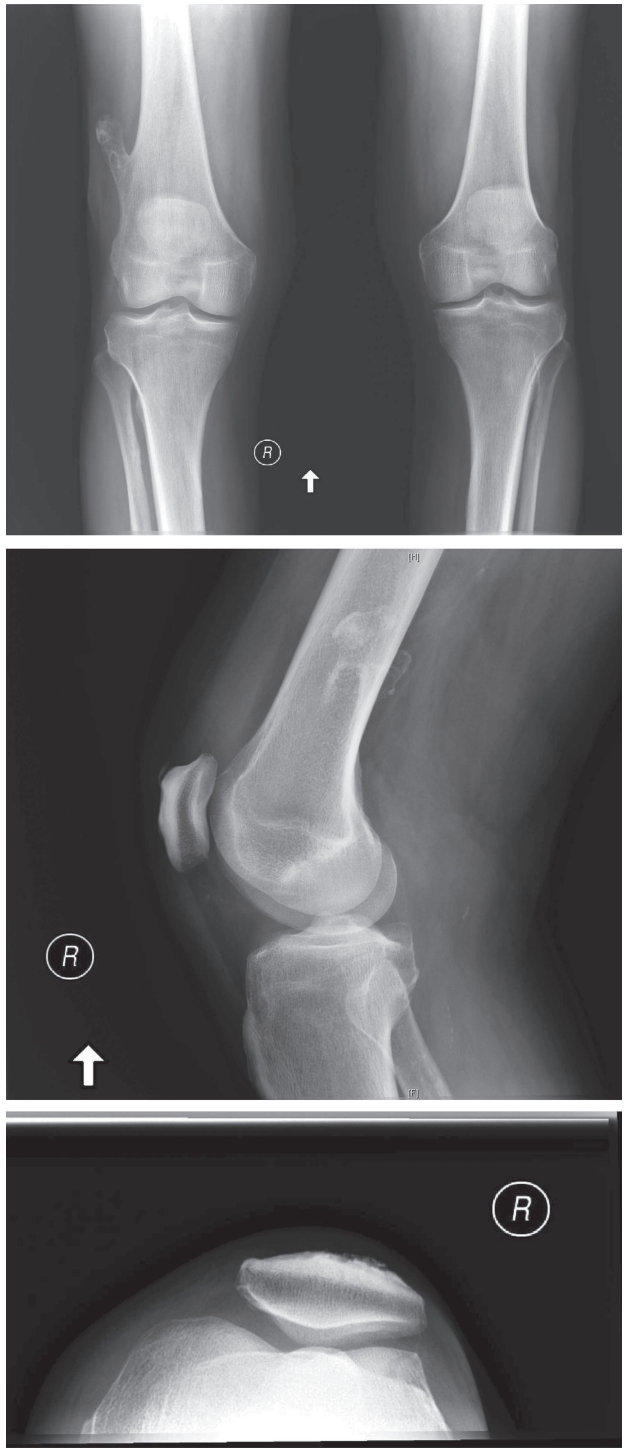

Figure 1. Anteroposterior radiograph of bilateral knees; lateral and sunrise radiographs of the right knee—no evident fracture or dislocation is noted. Mild tricompartmental joint space narrowing is seen. Enthesopathic changes of patella are noted. Osteochondroma arising from the distal, lateral femur is seen.

serial radiographs are appropriate for observation of a known benign osteochondroma. The surgical option remains excision, either marginal or wide, given benign or malignant presentation, respectively (Hakim et al., 2015; Modarresi & Jude, 2018; Steffner, 2014; Subhas et al., 2009; Tis, 2019).

With regard to his knee osteoarthritis, options discussed with the patient included a more diligent regimen of over-the-counter medications such as nonsteroidal anti-inflammatory drugs, referral to physical therapy, or, given the duration and persistent nature of his symptoms, proceeding with an intra-articular steroid injection. After discussion of the risks and anticipated benefits, he elected for the latter and an injection was administered. He tolerated the injection well and reported resolution of his knee symptoms upon follow-up a couple weeks later. He noted no return of symptoms 1 month following this evaluation and was subsequently referred to physical therapy for a stretching and strengthening program.

Discussion

This case highlights an important point in treating the patient and his presenting symptoms, not an incidental finding on radiographic study. A thorough history, coupled with pertinent physical examination and imaging findings, leads the provider to the appropriate and common diagnosis of knee osteoarthritis and treatment options accordingly.

In the primary orthopedic setting, or a situation in which the osteochondroma is a new finding, it is most appropriate to refer to an orthopaedic–oncologist for further workup. This is of upmost importance if the patient is presenting with any signs or symptoms concerning for malignant transformation. If noted, it is appropriate to get MRI of the affected extremity, with and without contrast, to further assess for concerning imaging characteristics prior to evaluation with the orthopaedic–oncologist (Hakim et al., 2015; Modarresi & Jude, 2018; Steffner, 2014; Subhas et al., 2009; Tis, 2019).

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