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Case report

Rapidly destructive osteoarthritis can mimic infection

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ABSTRACT

The intraoperative appearance of rapidly destructive osteoarthritis and septic arthritis can be similar. Three patients at our institution demonstrated preoperative or intraoperative findings potentially consistent with infection during primary total hip arthroplasty; however, none of these patients were found to have an actual infection. One of these patients underwent an unnecessary 2-stage total hip arthroplasty secondary to the intraoperative appearance of their joint fluid. We advocate performing an infection workup preoperatively when patients present with rapid degenerative changes of their hip joint to diminish the uncertainty of proceeding with arthroplasty.

Introduction

Rapidly destructive osteoarthritis (RDO) was first described in the European literature in 1957 [1]. Subsequently, it has been given several different names including rapid destructive coxarthrosis, rapidly destructive arthrosis of the hip, Postel's osteoarthrosis, and destructive osteoarthritis [2-5]. It is a rare syndrome of unknown etiology and appears to be distinct from osteonecrosis as it tends to involve both the acetabulum and the femoral head [6]. The rapid bone loss seen in patients with RDO can mimic septic arthritis, inflammatory arthritis, or neuropathic osteoarthropathy; however, the histologic changes seen in hips of patients with RDO are consistent with osteoarthritis [7]. Clinically, the intra-articular fluid and debris associated with femoral and acetabular bone loss can resemble septic arthritis. When this purulent fluid is encountered at the time of hip arthroplasty, a clinical dilemma arises as active infection would be a contraindication for primary total hip arthroplasty (THA). Without additional information, the appearance of such fluid could lead the surgeon to perform an unnecessary 2-stage procedure.

In this case series, we report a group of patients who had rapid joint destruction and an intraoperative appearance of joint sepsis during primary hip arthroplasty. A strategy to preoperatively evaluate these patients to differentiate between RDO and septic arthritis is necessary to avoid a 2-stage procedure.

Case histories

Case 1

A 65-year-old Caucasian woman who was seen for routine follow-up of her left THA (Fig. 1a). Three months later, she presented with a 6-week history of insidious onset of pain that worsened with prolonged ambulation. She had been taking nonsteroidal anti-inflammatory information with only partial relief of her pain. The patient did not have any pertinent medical history. On physical examination, she had pain with range of motion and diminished internal and external rotation in comparison to the contralateral side. She had full strength and sensation in her bilateral lower extremities. Radiographs of the pelvis at that time demonstrated degenerative joint disease of the right hip with significant bony destruction of the femoral head and acetabulum. Plans were made to proceed with arthroplasty (Fig. 1b). Preoperative blood work demonstrated a white blood cell count of 10.1 $\times$ $10^3/\mu L$ (normal: 3.8-10.8 $\times$ $10^3/\mu L$). During the THA, a capsulotomy was performed and the joint was noted to be filled with cloudy,

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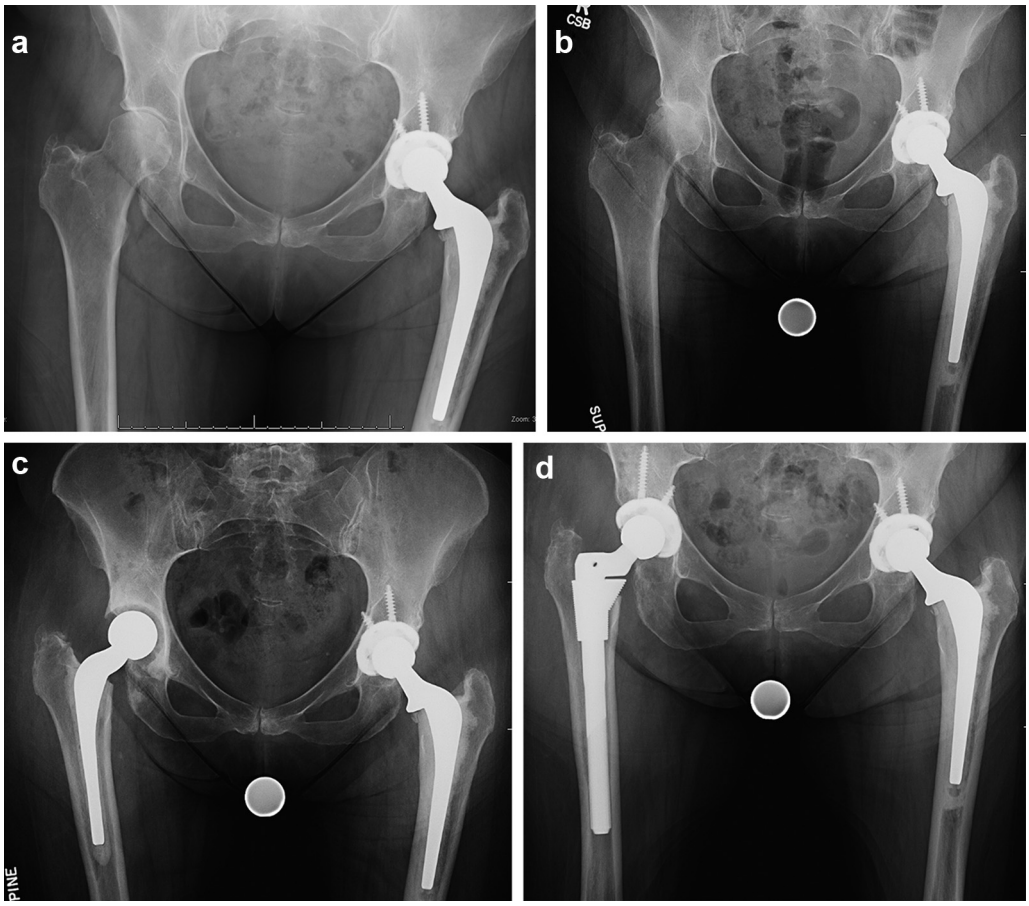

Figure 1. Patient 1 at follow-up for left hip (a), 3 months later with right hip pain (b), initial postoperative radiograph (c), and post-operatively 9 months after THA (d).

purulent fluid. The decision was made intraoperatively to obtain cultures and place an antibiotic spacer (Fig. 1c). The patient underwent insertion of a peripherally inserted central catheter and received 6 weeks of vancomycin. All surgical cultures from this procedure failed to grow any organisms. At conclusion of these antibiotics, repeat laboratory studies were obtained: white blood cell count of 7.7 $\times$ $10^3/\mu L$ (normal: 3.8-10.8 $\times$ $10^3/\mu L$), C-reactive protein (CRP) of <4 mg/L (0-5 mg/L), and erythrocyte sedimentation rate (ESR) of 10 mm/h (0-20 mm/h). An aspirate obtained at 3 months postoperatively returned with 60 nucleated cells and no growth on culture. After this aspiration, the patient underwent reimplantation of her THA components without complication. At 2-year follow-up, the patient is pain free and ambulating without a limp. Her incision was well healed and she exhibited no clinical signs of infection. Her radiographs demonstrated well-ingrown components without any radiographic lucencies (Fig. 1d).

Case 2

A 64-year-old African American male presented with a 4-month history of right hip pain and a 2-month history of left hip pain. This pain worsened to the point that the patient required a cane for ambulation. At his initial visit, the patient reported recent low-grade fevers without any other systemic symptoms. Pertinent medical history included hypertension, deep vein thrombosis, depression, and gout. On physical examination, the patient demonstrated significant pain with hip range of motion and pain with a resisted straight leg raise test. The patient did not have pain with knee range of motion or with a passive straight leg raise test. His initial radiographs showed bone loss of both the femoral head and acetabulum on the right side and the appearance of avascular necrosis on the left (Fig. 2a). As a result of this imaging, the patient was sent for serology. His laboratory studies returned with an elevated ESR of 85 mm/h (0-20 mm/h) and CRP of 2.0 mg/L (0-0.8 mg/L), and the patient was sent for bilateral hip aspirations. The aspirate for the right hip demonstrated cloudy fluid with a cell count of 240 nucleated cells and a negative culture, with the aspirate of the left hip negative as well. The patient underwent right THA 6 months after initial presentation. Intraoperatively, the hip was found to be filled with fibrinous debris and multiple femoral head fragments. At 3 months postoperatively, his right hip pain had dramatically improved, whereas his left hip pain had increased and further degenerative changes were present on radiographs. Plans were made to proceed with left THA. At 2 years follow-up, the patient had pain-free hips. Follow-up radiographs demonstrated that the patient's components were well fixed without evidence of lucency (Fig. 2c).

Case 3

A 69-year-old Caucasian woman presented with worsening bilateral hip pain of 6-week duration. Although she did have pain bilaterally, she reported that her right hip was more painful than her left. The patient had been diagnosed with avascular necrosis several months before initial presentation to our office but had not had any treatment. Her medical history was significant for asthma,