

Tubercular arthritis presenting as osteonecrosis of the femoral head: A case report

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Abstract

A tuberculosis hip that presents as osteonecrosis of the femoral head is an extremely rare condition. There are no previous reports of this condition, and there is no consensus on the method of total hip arthroplasty for this group of patients. We present a case of a 72-year-old man who had clinical gradual hip pain in both hips for 1 year. He was diagnosed with post-collapsed osteonecrosis of the femoral head in both hips and was scheduled for total hip arthroplasty of the left hip. During his clinical follow-up, he suddenly experienced excruciating acute pain. Investigation to rule out infection was positive for only C-reactive proteins, but his synovial fluid work-up was negative. An intraoperative finding revealed that there was collapse of the femoral head with eroded acetabular cartilage and rice body-like synovitis. Total hip arthroplasty was performed, and the tissue was sent for diagnosis. Tissue acid-fast bacilli were positive, so the patient received anti-tuberculosis drugs for 9 months, with no recurrent infection. Tuberculosis arthritis presenting as osteonecrosis of the femoral head is a complex condition that is difficult to diagnose due to the radiographic pictures of femoral head collapse and arthritic change being similar in both diseases. Acute pain onset with rapid collapse of the femoral head should be a consideration or suspect for this infectious condition. Hence, investigation to rule out infection is important. Anti-tuberculosis drugs are the standard treatment for early or advanced arthritis, and one-stage or two-stage total hip arthroplasty is the choice of treatment for advanced arthritis.

Keywords

Orthopedics, rehabilitation, occupational therapy

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Introduction

Osteonecrosis of the femoral head is a common disease of adult hip joints. The incidence is 1.4–3.0 per 100,000 in the United Kingdom, and estimates of new cases are about 20,000–30,000 each year in the United States.^{1,2} The nature of the disease begins with conditions that do not include hip pain and no or minimal abnormalities from X-rays. So, it may not be diagnosed until hip pain occurs or there is reduction in hip mobility, X-rays show collapse of the femoral head, and there is degeneration of the hip joint. Total hip arthroplasty (THA) is indicated after the femoral head has collapsed or after there is arthritis change (Ficat–Arlet stages III and IV).³

Tuberculosis (TB) of the musculoskeletal system is 1%–3% of the total TB cases.⁴ TB of the hip is 15%–20% of the musculoskeletal system.⁵ Osteonecrosis following tuberculous arthritis of the hip has been reported.⁶ However, TB

arthritis of the hip on top of patients who had osteonecrosis of the femoral head is an extremely rare condition and difficult to diagnose due to clinical manifestation of osteonecrosis, which might conceal clinical TB arthritis. The author reports the clinical presentation and results of treatment for a patient who had TB arthritis of the hip, presenting as osteonecrosis of the femoral head. This report was conducted according to the SCARE (The SCARE 2018 Statement: Updating Consensus Surgical CAse REport) criteria.⁷

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Figure 1. Initial plain radiograph at first visit.



Figure 2. Plain radiograph at onset of progressive pain.

Presentation of case

A 72-year-old man had clinical gradual hip pain in both hips for 1 year. He was diagnosed with osteonecrosis of the femoral head in both hips by X-ray. His X-ray presented Ficat–Arlet classification⁸ stage III for the left hip and stage II for the right hip (Figure 1). Seven months later, there was a sudden and progressive increase in pain in the left hip. X-ray showed marked, progressive collapse of the left femoral head and arthritis change of the acetabulum (Figure 2). He had no fever or any symptoms of infection; however, an investigation for infection was performed, due to acute-onset and rapid progressive radiographic changes. The results of his serum work-up were a white blood cell count of 10,370/ μ L, hematocrit of 37.9%, hemoglobin of 13 g/dL,



Figure 3. Immediate post-operative plain radiograph after total hip arthroplasty.

polymorphonuclear neutrophils (PMN) of 70.7%, lymphocyte of 19.6%, eosinophil of 3.5%, monocyte of 5.7% and platelets of 500,000/ μ L. The erythrocyte sedimentation rate (ESR) was 66 mm/h (normal value, 0–15 mm/h), and the C-reactive protein (CRP) was 9.6 mg/dL (normal value, <0.6 mg/dL). Ultrasound of the left hip revealed minimal fluid in the hip joint. Hip joint fluid aspiration under ultrasound guidance was performed only on the left side for microbiology study and yielded negative results. The patient was scheduled for THA in the next 3 months due to tight surgical queue. Preoperative laboratory ESR and CRP decreased to nearly a normal value.

At the scheduled admission for THA, the patient was afebrile and had no sign of inflammation, with normal skin condition at the left hip joint. Cloxacillin (1 g) was used for prophylaxis against surgical site infection 30 min before starting the operation and continued for 3 days after the operation. Intraoperatively, there was collapse of the femoral head, with erosion of acetabular cartilage in addition to rice body synovitis. Soft tissue and bone samples were sent for microbiology and pathology assessment due to a suspicion of infection. Cementless THA was successfully performed using the standard technique (Figure 3).

The laboratory results were positive for acid-fast bacilli (AFB), negative for gram stain, negative for aerobic bacterial culture and negative for tuberculous culture. A pathological tissue diagnosis reported chronic inflammation, with an area of granulomatous inflammation.

Post-operatively, the patient received anti-TB drugs for 9 months: isoniazid, rifampicin, pyrazinamide and etambutol for the first 2 months and then isoniazid and rifampicin for 7 months (2IRZE/7IR regimen). Other TB work-ups, such as chest X-ray and 3 days of morning sputum for AFB, were negative.

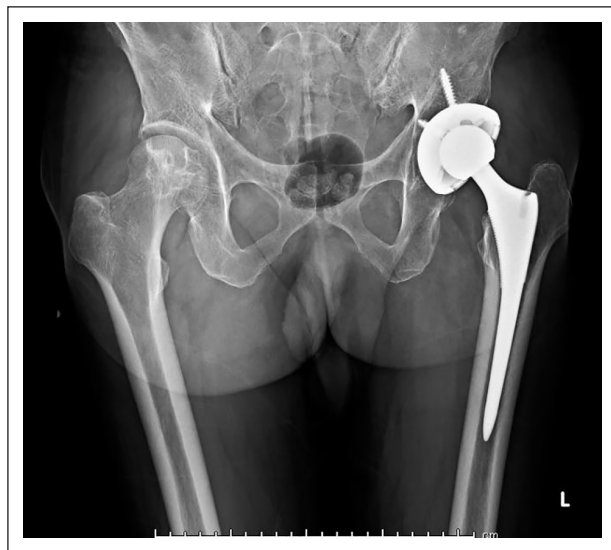


Figure 4. Plain radiograph 2 years after total hip arthroplasty.

After surgery, he was able to walk with full weight-bearing without gait support and able to do daily life activities as normal. At his latest follow-up visit, at 2 years, his clinical condition was good and his Harris hip score⁹ was 97. X-ray of his hips is shown in Figure 4.

Discussion

Osteonecrosis of the femoral head is a common adult hip disease. In the late stage, patients' pain increases and they have decreased hip function. THA is the gold standard treatment for patients during this late stage, with the goal of treatment being to decrease pain and improve hip function.³

TB arthritis presenting as osteonecrosis of the femoral head is a rare condition. TB arthritis of the hip joint is 10%–15% of osteoarticular TB.⁵ Osteoarticular TB is caused by hematogenous spreads from a primary source like lungs or lymph nodes; another route is by contiguous spread from adjacent tissue or direct inoculation. The symptoms of TB arthritis start as synovitis, then progress to periarticular osteopenia and marginal erosion, and end up with joint destruction. Patients usually have mild, local and constitutional symptoms.¹⁰ Our patient had acute progressive hip pain in a few weeks, without any constitutional symptoms. X-rays show rapid collapse of the femoral head, but was still likely characteristic of those of osteonecrosis X-rays.

The first hypothesis was that TB hip arthritis occurred, which presented like osteonecrosis. The clues for a suspicious hip infection in this case were the increase in ESR and CRP, with the last X-ray before his surgery showing periarticular osteoporosis, marginal erosion and gradual joint space narrowing similar to Pheister triad. Another hypothesis was that TB hip arthritis occurred after osteonecrosis of the femoral head, with the reason being that osteonecrosis occurred first, with X-rays showing abnormalities on both

hips, on which there are few reports of occurrences. However, for this patient, a pathological examination of the contralateral hip was performed.

The standard treatment for TB arthritis of the hip joint is starting anti-TB drugs as soon as possible, with the length of course being 6–12 months.⁴ And for patient with joint destruction, the options for surgical treatment are excision arthroplasty, arthrodesis and THA. Excision arthroplasty and arthrodesis have inferior functional outcomes, and therefore are not favored. THA is an excellent treatment modality for pain management and improved function, having the same goal as osteonecrosis treatment.

There are two options between one-stage and two-stage THA that are still a controversial point. One-stage THA requires complete curettage and debridement of the infected tissue. Neogi et al.¹¹ reported no reactivation of TB in 11 of 12 patients who were treated with one-stage THA, after starting anti-TB drugs for at least 4 weeks. If unable to perform adequate curettage and debridement, or sinus tract occurs, two-stage THA is recommended by most authors.^{10,12–14} Intraoperatively, our case revealed rice body-like synovitis. The synovial fluid was debrided and sent for microbiology study, including samples of the femoral head. Laboratory results were positive for AFB, but TB culture and the pathological report were negative. The patient received anti-TB drugs and completed course in 9 months, as set by the infectious specialist.

Conclusion

TB arthritis, presenting as osteonecrosis of the femoral head, is a complex condition that is difficult to diagnose due to radiographic pictures of femoral head collapse and arthritic change being similar in both diseases. Acute pain onset with rapid collapse of the femoral head should be taken into consideration or be a suspect of an infectious condition; hence, an investigation to rule out infection is important. Anti-TB drugs are the standard treatment for early or advanced arthritis, and one-stage or two-stage THA is the choice of treatment for advanced arthritis.

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Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Ethics approval

This study was approved by the Prince of Songkla University Institutional Review Board, Faculty of Medicine, Songklanagarind Hospital, Prince of Songkla University (IRB number REC.63-119-11-1).

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Guarantor

The author has read and approved the manuscript, and accepts full responsibility for the work.

Informed consent

Written informed consent was obtained from the patient for publication of this case report and the accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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References

- Cooper Steinbuch M, Stevenson R, Miday R, et al. The epidemiology of osteonecrosis: findings from the GPRD and THIN Databases in the UK. *Osteoporos Int* 2010; 21(4): 569–577.
- Lieberman Berry DJ, Mont MA, Aaron RK, et al. Osteonecrosis of the hip: management in the 21st century. *Instr Course Lect* 2003; 52: 337–355.
- Petek D, Hannouche D and Suva D. Osteonecrosis of the femoral head: pathophysiology and current concepts of treatment. *EFORT Open Rev* 2019; 4(3): 85–97.
- Saraf SK and Tuli SM. Tuberculosis of hip: a current concept review. *Indian J Orthop* 2015; 49(1): 1–9.
- World Health Organization (WHO). *Global tuberculosis report 2013*. Geneva: WHO, 2013.
- Tseng C-C, Huang RM and Chen K-T. Tuberculosis arthritis: epidemiology, diagnosis, treatment. *Clin Res Foot Ankle* 2014; 2: 131.
- Agha RA, Borrelli MR, Farwana R, et al. The SCARE 2018 statement: updating consensus surgical case report (SCARE) guidelines. *Int J Surg* 2018; 60: 132–136.
- Arlet J and Ficat C. Ischemic necrosis of the femoral head. Treatment by core decompression. *J Bone Joint Surg Am* 1990; 72(1): 151–152.
- Nilsson A and Bremander A. Measures of hip function and symptoms: Harris hip score (HHS), hip disability and osteoarthritis outcome score (HOOS), Oxford hip score (OHS), Lequesne index of severity for osteoarthritis of the hip (LISOH), and American Academy of orthopedic surgeons (AAOS) hip and knee questionnaire. *Arthritis Care Res* 2011; 63(Suppl. 11): S200–S227.
- Varango G, Bamba I, Kodo M, et al. Osteonecrosis of the hip in sickle-cell disease associated with tuberculous arthritis. *Int Orthop* 1998; 22(6): 384–389.
- Neogi DS, Yadav CS, Ashok Kumar, et al. Total hip arthroplasty in patients with active tuberculosis of the hip with advanced arthritis. *Clin Orthop Relat Res* 2010; 468(2): 605–612.
- Tiwari A, Karkhur Y and Maini L. Total hip replacement in tuberculosis of hip: a systematic review. *J Clin Orthop Trauma* 2018; 9(1): 54–57.
- Kim SJ, Postigo R, Koo S, et al. Total hip replacement for patients with active tuberculosis of the hip: a systematic review and pooled analysis. *Bone Joint J* 2013; 95(5): 578–582.
- Sultan AA, Dalton SE, Umpierrez E, et al. Total hip arthroplasty in the setting of tuberculosis infection of the hip: a systematic analysis of the current evidence. *Expert Rev Med Devices* 2019; 16(5): 363–371.