Active tuberculosis of the hip treated with early total hip replacement—a report of 3 cases

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Case 1

A 51-year-old woman was admitted because of pain and limited motion (flexion 30°–70°) of the left hip for about 6 months. Laboratory tests were: WBC 3600, ESR 100 mm/hour and C-reactive protein 3.6 mg/dL. Urinanalysis and routine radiograph of the chest were normal. A radiograph showed bony destruction of the joint with narrowing of the joint space. Yellowish pus was aspirated and the culture was positive for Mycobacterium tuberculosis.

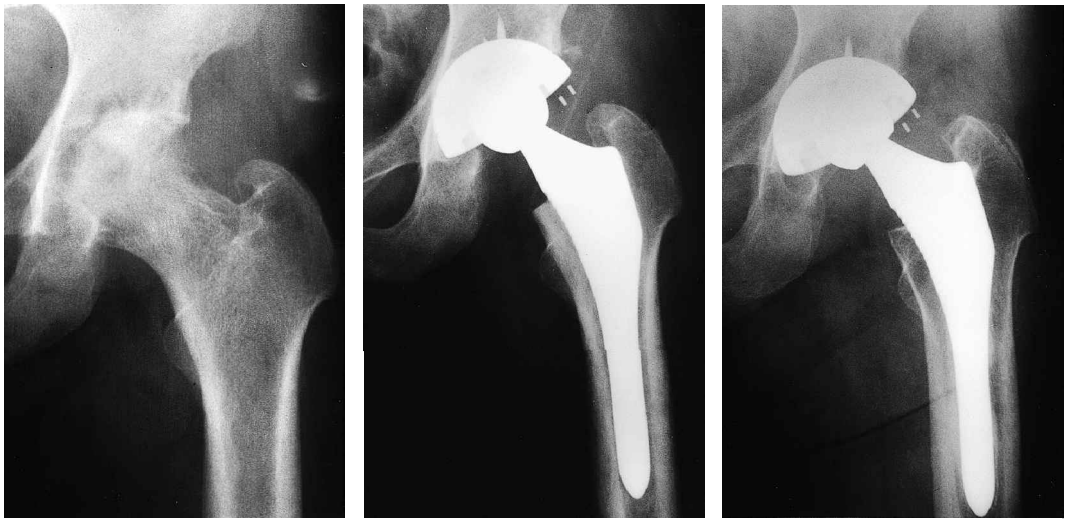
The patient was treated daily with isoniazid 5 mg/kg, rifampicin 10 mg/kg, ethambutol 15 mg/kg and pyrazinamide 20 mg/kg for 2 weeks, whereafter she was operated on. We found an abscess and inflammatory tissue on the acetabular side. Complete curettage was possible because the lesion was confined to the hip joint. No sinus tract was seen leaving the hip joint.

We performed a one-stage total hip arthroplasty, using the ABG total hip system. The antituberculous medication was continued for 1 year after the operation. 3 months after surgery, her ESR and C-reactive protein were normal. On final follow-up 6 years later, we found no reactivation of the infection and her Harris Hip Score was 95 (Figure).

Case 2

A 23-year-old woman was admitted because of right hip pain for 3 months. Physical examination revealed tenderness of the right hip joint and some limitation (flexion 20°–90°) of motion.

Radiographs of a 51-year-old woman with tuberculosis of the hip.



A. Preoperatively. Bony destruction with joint space narrowing.

B. 1 week after operation.

C. 7 years after operation. Spot welding suggests bone ingrowth into the stem and osteoporosis, denoting stress shielding in Gruen zones 1 and 7.

A routine radiograph of the chest revealed active pulmonary tuberculosis. Radiograph of the right hip joint showed bone destruction, with joint space narrowing. Laboratory tests were: WBC 6800, ESR 89 mm/hour and C-reactive protein 3.8 mg/dL. Urinanalysis was normal. Since there was an active pulmonary lesion, we did not aspirate the hip joint.

She was treated with antituberculous medication for 2 weeks, and then she was operated on. The type and dose of antituberculous medication were the same as in case 1 and they were continued for 1 year after operation. We found caseous material in the joint and bony fragments from the femoral head and acetabulum. Inflammatory tissue was completely curetted out and one-stage cementless total hip arthroplasty was performed, using the Wagner cone prosthesis.

The histological examination showed tuberculous granulomatous lesions 2 months after the operation, she had normal levels of ESR and C-reactive protein. At the final follow-up 2 years after surgery, she had no pain, and her Harris Hip Score was 98.

Case 3

A 36-year-old woman was seen in our clinic because of severe pain in her left hip for more than 6 months. Hip motion was limited, flexion 30°–100°.

Laboratory tests were: WBC 9600, ESR 89 mm/hour and C-reactive protein 4.5 mg/dL. Urinanalysis and routine chest radiograph were normal. Radiograph of the hip showed joint-space narrowing, with a large cystic lesion in the acetabulum. Needle biopsy of this cyst revealed a granulomatous lesion with Langerhan's giant cells typical of tuberculosis.

Primary one-stage cementless total hip arthroplasty was performed after 2 weeks of antituberculous medication using the CLS total hip system. The types and doses were the same as in case 1 and they were continued for 1 year after operation.

Laboratory tests at 3 months after operation showed normal ESR and C-reactive protein levels. 1 year and 6 months later, the patient had no pain or radiographic reactivation of the lesion. The Harris Hip Score was 98.

In all 3 cases, we used cyclosporin pre- and postoperatively for 3 days.

Discussion

Eftekhar (1978) reported a successful hip replacements in a patient with tuberculosis; then Hardinge et al. (1979) reported 21 cases who were treated with a low-friction total hip arthroplasty because of tuberculosis of the hip. The quiescent period between active infection and the time of arthroplasty ranged from 1 to 20 years.

Kim et al. (1987) reported 38 total hip arthroplasties in patients who had tuberculous hip arthritis. The interval between active disease and total hip arthroplasty ranged from 3 months to 45 years. The duration of follow-up averaged 4 years. The culture taken intraoperatively were positive in 4 hips. They did not comment on reactivation in these 4 hips. The mean functional rating of the hip, using the Harris Hip Score, was 85 at the final follow-up.

Eskola et al. (1988) reported cementless total hip arthroplasty in 18 patients with old tuberculosis of the hip, performed, on average, 34 years after onset of infection. The mean follow-up was 3.5 years. Only 7 of the patients had antituberculosis medication during the operation which was continued for 6–12 months. On the basis of the Mayo Hip Score, 15 patients had excellent or good results, 2 a fair rating and 1 poor rating.

Kim et al. (1988) treated 60 cases with tuberculosis of the hip by total hip arthroplasty, 4 of whom had active tuberculosis. They were treated successfully by one-stage total hip arthroplasty, without reactivation later.

On review of previous reports, cemented or cementless total hip replacement seems to be a safe treatment of tuberculosis of the hip. Hardinge et al. (1979) and Kim et al. (1987) used a cemented type of prosthesis, Eskola et al. (1988) and Caparros et al. (1999) used a cementless type while Kim et al. (1989) used both. No data have yet been published on the value of antituberculous medicine mixed with bone cement.

In our patients, the infection was successfully treated with one-stage total hip arthroplasty and antituberculous chemotherapy. Although we continued medication for 1 year, the duration of chemotherapy can be reduced to 9 months or 6 months if the laboratory tests become normal within 3 months. Kim et al. (1988) recommended antituberculous medicine consisting of rifampicin, iso-

niazid and ethambutol for 3 weeks preoperatively and for 6–9 months postoperatively and Caparros et al. (1999) gave isoniazid, rifampicin and Pyrazinamide for 2 months and continued isoniazid and rifampicin for an additional 7 months.

We found no sign of reactivation after 3 years of follow-up. We believe complete curettage of infected tissue and careful postoperative chemotherapy are very important in preventing reactivation. Therefore only cases with a limited infection and no sinus tracts into the pelvis or deep into the thigh should be selected for one-stage total hip arthroplasty because reactivation may occur if the infected tissues are not debrided completely. Although some authors believe that total hip arthroplasty for tuberculosis of the hip is a controversial matter due to the risk of reactivation of infection (McCullough 1977, Hardinge et al. 1979, Johnson et al. 1979), we believe that the important issue is whether the infected tissue can be debrided completely.

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