Acta Orthop. Scand. *58*, 296–298, 1987

Arthroplasty in tuberculosis of the knee

Two cases of missed diagnosis

Active tuberculosis arthritis was diagnosed in two patients after they had undergone total knee replacement. Antituberculous therapy was successful.

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Introduction

The rarity of tuberculous arthritis is a two-edged sword in that the index of suspicion remains low with unfortunate delays as a result (Messner 1979). Two cases of tuberculosis of the knee joint are presented. The true pathology was realized only after total knee arthroplasty had been performed. Antituberculous therapy was successful.

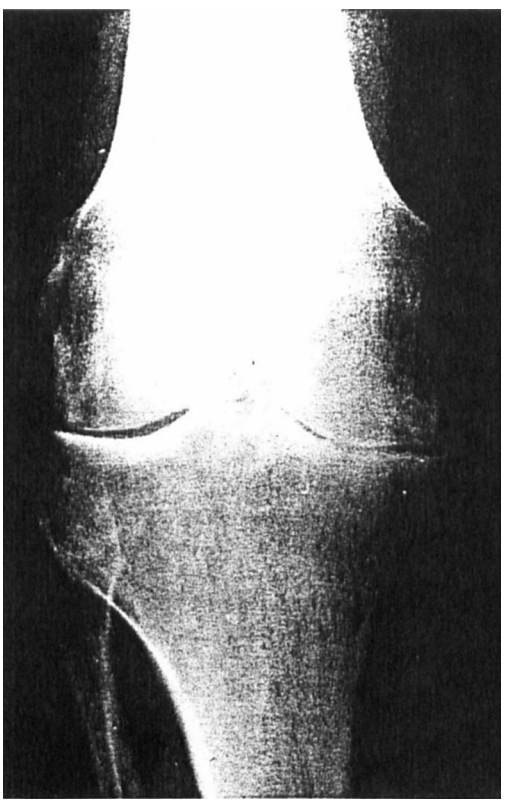

Figure 1. A 62-year-old man with tuberculous arthritis in his right knee. The preoperative diagnosis was rheumatoid arthritis.

Case reports

Case 1. A 62-year-old white male presented with the features of generalized rheumatoid arthritis. His ESR was 81 mm/h; he was latex and rheumatoid factor positive; and the radiography of the elbows, hands, and right knee was typical of rheumatoid arthritis with secondary arthrosis. Chest radiography was normal. He was treated with antiinflammatory agents and Synacthen®, 1 mg twice weekly intramuscularly over a 3-month period. His symptoms settled until he returned, after 2 years, complaining of increasing pain in his right knee (Figure 1). The knee was aspirated, but no organisms were seen by microscopy, and culture was negative. An intraarticular steroid injection was given, and he was started on prednisolone, 5 mg twice daily. He continued to have considerable pain, and a Cintor knee replacement was performed. There was mild pyrexia during the postoperative period.

The histology report on the synovial tissue concluded the appearance of tuberculosis, with a single acid-fast microorganism being seen. Three separate sputum samples and subsequent culture isolated *M. tuberculosis*. He was treated once daily with 600 mg Rifampicin/Isoniazid, 1200 mg Ethambutol, and 10 mg pyridoxine. The wound healed uneventfully, and he mobilized satisfactorily. Antituberculous chemotherapy was discontinued after 1 year. Clinically and radiographically, the knee was satisfactory 5 years after the operation.

Case 2. A 63-year-old white male presented with a 3-month history of a painful swollen left knee. He had a tense effusion of the knee, and radiography showed moderate arthrosis, notably of the medial compartment. Chest radiography was normal; latex and rheumatoid factor were negative; plasma viscosity was at the upper limit of normal, at 1.73; and microscopy and culture of the knee aspirate were negative. Arthroscopy revealed a florid synovium with gross degeneration of the medial compartment with eburnation of both condyles (Figure 2). Multiple synovial biopsies were reported as showing

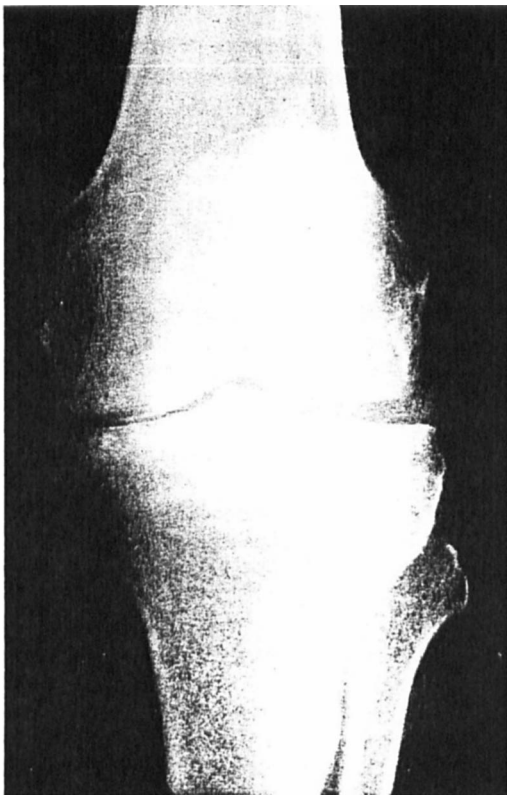

Figure 2. A 63-year-old man with tuberculous arthritis in his left knee. The preoperative diagnosis was arthrosis.

nonspecific inflammatory changes. A diagnosis of arthrosis was made; and because antiinflammatory agents failed to help, a stabilized Kinematic total knee replacement was performed. Postoperatively, the patient developed pyrexia, and his knee was painful and the wound was inflamed. The histology was highly suspect of tuberculous arthritis, although acid-fast bacteria were not seen. Based on histology, he was treated once daily with 600 mg Rifampicin/Isoniazid. The wound settled and the patient was mobilized. After 4 weeks' culture of the sputum, *M. tuberculosis* was identified. Therapy was discontinued after 1 year, and clinically and radiographically the knee was satisfactory 18 months after the operation.

Discussion

The difficulties and delays in diagnosing skeletal tuberculosis are well recognized (Hunt 1964). Walker (1968) reported that in half of his cases there was a delay in diagnosis of 19 months. There are many reasons for this diagnostic delay. The onset of tuberculous arthritis is often subtle (Reefe 1962), and the history may stretch back many years. Patients may give a confusing history of trauma (Davidson & Horowitz 1970); moreover, active pulmonary involvement need not be present (Berney et al. 1972). The condition is very rare in white males in the industrialized world.

Our 2 cases emphasize how elusive the diagnosis can be. When the diagnosis is considered, synovial biopsy and culture should confirm 90 per cent of the cases (Berney et al. 1972, Wallace & Cohen 1976).

There have been several reports in the literature concerning tuberculosis and hip arthroplasty. Replacement surgery for quiescent tuberculous arthritis is well established. Some authors advise the use of concomitant antituberculous therapy (Kim et al. 1979, Hunt & Larson 1966), but Hardinge et al. (1979) reported 21 successfully treated cases without recourse to antibiotics.

Reactivation of tuberculosis following hip arthroplasty is well documented. Johnson et al. (1979) reported 2 cases where infection flared up 12 months after surgery; one of the prostheses had to be removed because treatment was unsuccessful due to an allergic reaction to the antituberculous drugs, whereas the other patient was continuing therapy at the time of the report. McCullough (1977) documented a case where a tuberculous sinus developed 7 years after total hip replacement, which was presumed to have followed bacteremia associated with activation of a latent tuberculous focus in the mesenteric lymph nodes; healing occurred with antituberculous therapy without the prothesis having to be removed. Hecht et al. (1983) reported a case where it was thought that the patient had a tuberculous infection prior to insertion of the total hip prosthesis, which had to be removed.

Little has been written about knee replacement and tuberculosis. Besser (1980) documented a case like ours where joint replacement was performed in unsuspected tuberculosis of the knee; antituberculous treatment was started and 1 year after operation the knee joint was painless and showed no evidence of inflammation.

Both of our cases were diagnosed on histologic grounds, but in 1 case AAFB were seen in the synovium and in both, *M. tuberculosis* was cultu-

red from the sputum. Active infection had probably been present for a considerable time, and both displayed skeletal and synovial involvement as manifested by the clinical and radiographic appearance. Despite this, it seems that joint replacement in the presence of undiagnosed tuberculosis can be managed successfully with antituberculous therapy.

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