CASE REPORT

Peri-prosthetic tuberculous infection of the hip in a patient with no previous history of tuberculosis

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We report a case of peri-prosthetic tuberculous infection nine years after total hip arthroplasty in a patient with no history of tuberculosis before the procedure. Further investigation revealed active pulmonary tuberculosis which was thought to have spread haematogeneously to the arthroplasty. The infection did not respond to standard antituberculous drugs. Removal of the prosthesis and insertion of an antibiotic spacer were required.

Case report

In February 2003, a 72-year-old woman presented with diffuse swelling of the proximal left thigh and a serosanguinous drainage from a previous operation scar. In 1994, she had undergone total hip arthroplasty for osteoarthritis. Radiographs showed osteolysis in the region of the calcar and the greater trochanter (Fig. 1). A CT scan revealed a large mass around the hip suggesting an abscess (Fig. 2). Cultures of aspirated fluid were negative. The erythrocyte sedimentation rate was slightly elevated but the C-reactive protein level was normal. On exploration an abscess was found adjacent to the joint laterally and extending toward the greater sciatic notch. Irrigation and debridement were performed. Histological examination showed chronic inflammation with fibrosis, focal granulation tissue with acute inflammation, and numerous multinucleate giant cells compatible with a caseating tuberculous granuloma (Fig. 3). Culture for Mycobacterium tuberculosis was positive. A post-operative CT scan of the chest revealed multiple small nodules in both lobes, consistent with tuberculosis. A purified protein derivative tuberculin skin test was positive. She had no systemic disorder which may have compromised her immunity. Antituberculous therapy with ethambutol, isoniazid, and pyrazinamide was begun in April 2004. Discharge from the wound continued, however, and methicillin-resistant Staphylococcus aureus (MRSA) infection was diagnosed in August 2004. Extensive debridement with prosthetic removal and insertion of a spacer containing vancomycin was performed in September 2004. No symptoms or signs of residual infection were present at follow-up examination six months later. She is awaiting revision surgery.

Discussion

There are two clinical patterns of peri-prosthetic tuberculous infection. Local reactivation...
of a previously dormant focus of infection may lead to late-onset mycobacterial prosthetic infection or peri-prosthetic infection may arise from haematogenous spread after arthroplasty.\textsuperscript{1,2} In this case, chest radiographs and a CT scan before the initial arthroplasty were normal. In addition, radiographs of the hip and a CT scan showed changes characteristic of osteoarthritis. Operative findings at total hip arthroplasty showed no sign of tuberculous infection. Therefore, we concluded that this patient had contracted pulmonary tuberculosis after the initial arthroplasty which had spread haematogenously to the prosthesis.

Favourable outcomes without removal of the prosthesis have been reported with standard antituberculous therapy given when the infection is recognised at the time of joint arthroplasty.\textsuperscript{1} However, medical therapy often fails when the infection is discovered months or years after arthroplasty and removal of the prosthesis and antituberculous therapy is necessary for a cure. In this case, standard antituberculous therapy was used initially but discharge from the wound continued and MRSA infection developed. Removal of the prosthesis was then necessary.

Deep infection can be a devastating complication of total hip arthroplasty, occurring in between 1% and 2% of cases.\textsuperscript{3} Staphylococcus is the most common pathogen. Tuberculous infection is rare, with 20 cases reported in the literature.\textsuperscript{4} However, the prevalence of tuberculosis, including musculoskeletal involvement, is rising globally.\textsuperscript{5} Orthopaedic surgeons should be aware of tuberculous infection as a possible complication of total joint replacement.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

References