We presented three patients with trochanteric tuberculosis and described the clinical and imaging findings of the infection. Histology revealed a necrotizing granulomatous bursitis and microbiology confirmed tuberculosis. All cases were successfully treated with bursectomy and curettage of the trochanteric lesion and antituberculous chemotherapy including isoniazid, pyrazinamide, rifampicin, and ethambutol.

Keywords: Tuberculosis, Bursitis, Trochanter

Tuberculosis of the bone and joint occurs in approximately 1%–3% of patients with tuberculosis. Tuberculous trochanteric bursitis is an exceptional form of musculoskeletal tuberculosis that occurs in people who are not at risk for developing tuberculosis, a disease with increasing incidence. The misleading clinical aspect and the insidious course of the symptoms can delay diagnosis when the illness has not been suspected. Knowledge of the condition is essential for prompt treatment. The purpose of this report was to draw attention to the occurrence of trochanteric tuberculosis and discuss its diagnosis and treatment.

CASE REPORTS

From 2002 to the present, three female patients with an average age of 67 years were treated for trochanteric bursitis tuberculosis. Epidemiological and clinical data were summarized in Table 1.

In all cases, the suspicion began with a lytic image in the greater trochanter with cystic magnetic resonance imaging corresponding to the trochanteric bursa (Figs. 1 and 2). Serum inflammation parameters were moderately increased in all cases. Other initial laboratory studies results were within the normal range. All patients were operated with bursectomy and curettage of the trochanteric lesion. Histology revealed a necrotizing granulomatous bursitis (Fig. 3). Microbiology confirmed tuberculosis. Antituberculous chemotherapy, including isoniazid, pyrazinamide, rifampicin, and ethambutol was continued for 9 to 18 months (Table 1).

In case 3, a new surgical debridement was necessary 1 month later. The patient was kept non-weight-bearing for 3 months to prevent fracture and the clinical course has remained uneventful 3 years after starting treatment. Case 1 was lost for follow-up at the sixth year without infection recurrence and with a good functional outcome. Case 2 died 27 months later from heart failure with cured infection and a good functional result. The Ethics Committee waived approval for this study.

DISCUSSION

Tuberculous bursitis of the greater trochanter (TBGT), usually reactivation of an unnoticed primary infection, accounts for < 2% of the musculoskeletal tuberculosis. The germ, most often Mycobacterium tuberculosis, usually reaches the trochanteric bursa or the greater trochanter...
bone by bloodstream from an active or cured tuberculous focus. Occasionally it arrives by direct contamination, usually from the spine or hip infection, in 50% and 15% of cases, respectively. Once in the trochanteric region, the possibility of the spread of infection from bursa to bone appears more likely, although both are often affected. Among other predisposing factors, corticosteroid injections could facilitate the spread of the disease.

2) Our three patients were previously treated with steroid infiltrations.

Diagnosis of TBGT is usually late, due to lack of differentiation from a local abscess or fistula, especially in cases with history of tuberculosis infection. TBGT should also be included in the differential diagnosis on observing cortical erosion on the greater trochanter of the femur associated with a soft tissue swelling and calcifications. Although identification of the mycobacterium is necessary for specific therapy, in some cases, due to the difficulty involved with musculoskeletal tissues samples and sensitivity of most M. tuberculosis to common antibiotics, chemotherapy is warranted with compatible epidemiological, clinical and histological data.

The treatment of TBGT involves mainly antituberculous drugs (isoniazid, rifampicin, and ethambutol), which are maintained for 6 to 18 months; and surgical debridement, though some authors have reported cures without surgery relegating it to resistant cases or bulky

| Variable                  | Case 1                    | Case 2                      | Case 3                      |
|---------------------------|---------------------------|-----------------------------|-----------------------------|
| Age (yr)                  | 57                        | 86                          | 59                          |
| Sex                       | Female                    | Female                      | Female                      |
| Medical history           | Hypertension, meningitis, nephrolithiasis | Atrial fibrillation, uterus detachment | Osteoporosis |
| Medical history of tuberculosis | Hip surgery 20 years ago (unknown cause) | No                          | No                          |
| Side                      | Left                      | Right                       | Left                        |
| Symptoms                  | Discomfort                | Pain and swelling, fistula scars | Pain and swelling |
| Evolution time (yr)       | 20                        | Several (unspecific)         | 5                           |
| Standard X-rays           | Osteolysis in greater trochanter | Osteolysis in greater trochanter | Osteolysis in greater trochanter |
| CT                        | Cortical breakage and calcifications | Not performed              | Not performed              |
| Magnetic resonance imaging| Abscess                   | Abscess                     | Abscess                     |
| Scintigraphy              | Uptake in greater trochanter and surrounding soft tissues | Uptake in greater trochanter and surrounding soft tissues | Uptake in greater trochanter and surrounding soft tissues |
| Laboratory                | CRP, N; ESR, 38 mm        | CRP, 5.5 (0–5 U/L); ESR, 33 mm | CRP, 19.8 (0–5 U/L); ESR, 60 mm |
| Plain chest radiograph    | Pleuritis and calcified granulomas | N (CT not performed)         | N (CT not performed)         |
| and CT scan of the thorax |                           |                             |                             |
| Tuberculin test           | Negative                  | Positive (28 mm)            | Negative                    |
| Closed biopsy             | Not performed             | Yes (no diagnostic)         | Yes (no diagnostic)         |
| Surgery date              | February 2003             | March 2010                  | October 2010                |
| Histopathology            | Granulomatous bursitis    | Granulomatous bursitis       | Granulomatous bursitis       |
| Microbiology              | Mycobacterium tuberculosis | Mycobacterium tuberculosis  | Mycobacterium tuberculosis  |
| Chemotherapy              | RP + INZ + FZ + ETB (8 mo) | RP + INZ + FZ (2 wk)         | RP + INZ + FZ (13 mo)        |
| Drugg tolerance           | Good                      | RP and INZ hepatotoxicity   | Good                        |

CT: computed tomography, CRP: C-reactive protein, N: normal, ESR: erythrocyte sedimentation rate, RP: rifampicin, INZ: isoniazid, PZ: pyrazinamide, ETB: ethambutol.
We and Crespo et al. consider surgery as essential, although it may be delayed a few weeks after starting specific medical treatment in cases of extended trochanteric involvement to reduce the risk of local spread of infection. The procedure includes bursectomy and curettage with sequestrectomy of bone lesion to reduce the risk of local recurrence, which can be late. Kalbermatten et al. reported that reconstruction of the bone defect in the greater trochanter or trochanterectomy is not necessary.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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