Case Report

Sternal osteomyelitis caused by infection with *Mycobacterium tuberculosis*

Osteomielite esternal por *Mycobacterium tuberculosis*

Diego Michelon De Carli, Mateus Dornelles Severo, Carlos Jesus Pereira Haygert, Marcelo Guollo, Alex Omairi, Vinicius Dallagasperina Pedro, Eduardo Pedrolo Silva, Arnaldo Teixeira Rodrigues

Abstract

We report the case of a 74-year-old male patient with a one-year history of chest pain in the suprasternal notch associated with erythema, edema and drainage of purulent material from a fistulous lesion. The patient was HIV-negative with no history of TB. A CT scan of the chest showed an osteolytic lesion in the sternum, and a biopsy revealed caseous granuloma, which, in the microbiological evaluation, was negative for fungi and acid-fast bacilli. The diagnosis of sternal osteomyelitis caused by *Mycobacterium tuberculosis* was confirmed using PCR.

Keywords: Thorax; Mycobacterium infections; Tuberculosis, osteoarticular; Sternum; Diagnosis.

Case report

A 74-year-old white male who was a retired farmer, a nonsmoker and a former drinker presented with a one-year history of chest pain in the suprasternal notch, accompanied by edema and local erythema. His condition had worsened two weeks prior, aggravated by drainage of purulent material from a fistulous lesion. In addition, he reported evening fever, night sweats and weight loss (25 kg) in the last 12 months. The patient was under outpatient follow-up treatment in various sectors of the Santa Maria University Hospital, due to multiple comorbidities: systemic arterial hypertension; heart failure; mitral valve disease; pulmonary arterial hypertension; hypothyroidism; chronic renal failure; nonspecific colitis; and benign prostatic hyperplasia. He was being treated with furosemide, simvastatin, omeprazole, levothyroid...

* Study carried out at the Santa Maria University Hospital, Federal University of Santa Maria, Santa Maria, Brazil.
Correspondence to: Arnaldo Teixeira Rodrigues. Universidade Federal de Santa Maria, Av. Roraima, s/n, Camobi, CEP 98100-000, Santa Maria, RS, Brasil.
Tel 55 55 3025-7661. E-mail: incubob@hotmail.com
Financial support: None.
Discussion

Brazil ranks 14th among the 23 countries that, together, account for 80% of all TB cases worldwide, with a prevalence of 58 cases/100,000 population and an incidence of 47.2 cases/100,000 population. Bone and joint involvement accounts for 1-3% of TB cases, and involvement of the sternum accounts for less than 1%. Sternal TB predominantly
Sternal osteomyelitis caused by infection with *Mycobacterium tuberculosis*

J Bras Pneumol. 2009;35(7):709-712

X-ray in the evaluation of bone involvement, it is significantly superior in the evaluation of periarticular soft tissues, mediastinal involvement and pulmonary involvement.\(^5\) Magnetic resonance imaging is a good option for the evaluation of soft tissues and bone lesions, revealing early alterations in the bone marrow, especially at early stages with normal X-ray findings.\(^4\) Technetium triphasic scintigraphy has high sensitivity and specificity for the diagnosis of osteomyelitis.\(^2\) In the case presented here, there was no increased radiotracer uptake in the sternum or photopenia in the osteolytic lesion, nor were there any other findings consistent with osteomyelitis.

In the present case, microbiological evaluation and cultures were negative, and the diagnosis was confirmed using PCR.\(^1\) The histopathological finding of caseous granuloma was the principal evidence on which the working diagnosis was based. In one study, microbiological evaluation was positive for acid-fast bacilli in 38% of the cases, cultures were positive for *M. tuberculosis* in 85% of the cases, and typical granulomas were found in 67% of the cases.\(^1\) According to the literature, the definitive diagnosis of sternal TB is based on microbiological evaluation together with histopathological confirmation.\(^6\) Two groups of authors evaluating methods applied in the diagnosis of TB found that the sensitivity and specificity of PCR (90% and 80%, respectively) were similar to those of culture.\(^1\) Both groups of authors stated that the quality of the sample and the standardization of the DNA extraction technique are critical factors in the applicability of PCR in the diagnosis of TB in Brazil. In the case reported here, it is likely that microbiological evaluation and culture were negative for acid-fast bacilli due to the bactericidal effect that ciprofloxacin has on *M. tuberculosis*.\(^1\)

The principal differential diagnoses are malignancy, sarcoidosis, actinomycosis and fungal infections.\(^6\) In the literature, there is no consensus regarding treatment modality, treatment duration or the best treatment regimen. Although early drainage and complete debridement improve cicatrization and prevent recurrence, some authors suggest that conservative treatment with antituberculous drugs be performed and surgical debridement be reserved for chronic cases with structural complications or for cases of treatment failure.\(^2\) The use of

---

**Figure 3** - Axial CT slice of the chest showing an osteolytic lesion in the sternum, without mediastinal invasion (white arrow), together with bilateral pleural effusion.
prophylaxis in open heart surgery candidates with a history of TB or contact with TB is not indicated due to the rarity of the infection.\(^{(9)}\) In our patient, treatment with regimen I resulted in clinical improvement and better cicatrization of the sternal lesion. At this writing, the patient was still under treatment. Surgical debridement was not considered due to the multiple comorbidities presented by the patient.

References