

## Primary Sternal Tuberculosis: A Case Report

### Case Report

Najioullah D\*, Laachir G, El Aoud FZ and Chat L

Radiology Department, Cheikh Zaid Universitary Hospital, Rabat Morocco

\*Corresponding author: Najioullah D, Department of Radiology, Cheikh Zaid Universitary Hospital, Rabat Morocco, Email: doubikad@gmail.com

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### Introduction

Sternum is one of the least common bones of the body to get infected. Sternal osteomyelitis accounts for less than 2% of cases of osteomyelitis [1-4]. Sternal involvement is often caused by reactivation of a latent focus by lymphatic dissemination or hematogenous. In some cases, it is due to an extension direct from mediastinal lymphadenopathy [5].

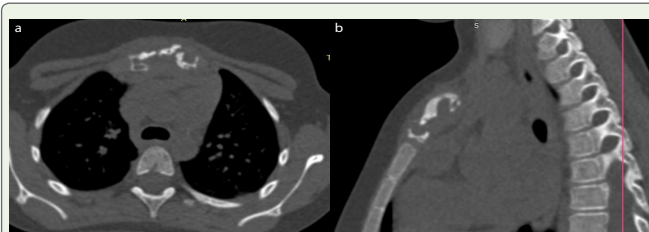
Tuberculous sternal osteitis is usually a chronic osteitis with a long diagnostic delay [1,6]. It manifests as pain and / or swelling slowly progressing to worsening [6]. Undiagnosed, it is complicated by abscess of the soft tissues and fistulization, sometimes complicated by pathological fracture [6,7]. SV is often increased. The tuberculin skin test is neither sensitive nor specific [1,2]. Standard x-ray may be normal in the early stages, or show uncharacteristic images such as osteolysis, periosteal reaction, soft tissue opacity or pathological fracture [2]. Computed tomography is an excellent test for delineating sternal involvement and extension of the abscess in the soft parts [4,5]. MRI probably has sensitivity upper to detect early edema of the marrowbone and soft tissue involvement [5,6]. Diagnosis of sternal tuberculosis remains difficult in the absence of other pulmonary or extrapulmonary lesions suggestive of tuberculosis, especially since other conditions may have the same clinical appearance and radiological such as a malignant tumor, a localization secondary or malignant hemopathy [7,8]. Therefore, the ultrasound guided or surgical biopsy is found indicated in the majority of cases to establish a histological and / or bacteriological diagnosis [2,3]. However, the positive microbiological diagnosis is often difficult because of the alcohol-resistant bacillus from direct examination and after culture is random [2,3].

### Observation

7 year-old child, vaccinated against tuberculosis, who has had sternal pain for 1 month with small swelling, no other symptoms were (no fever, no weight loss, no cough) and no tuberculosis contagion in the family.

The AP chest x-ray of the sternum revealed sternal lysis. The Ct shows the presence of an expansive intraosseous process of the sternal manubrium, hypodense, blowing the cortices which are interrupted in some places behind and posteriorly, with associated condensing bone changes and a discrete infiltration of the soft parts, extended to sternoclavicular joint (Figure 1). Fine needle aspiration cytology and a biopsy of the bone were performed. The anatomopathological study showed an epithelioid and gigantocellular appearance, with caseous necrosis, reminiscent of active sternal tuberculosis.

No other tuberculous pulmonary focus or node has been found. The diagnosis of primary sternal tuberculosis has been retained.



**Figure 1:** The Ct scan ( a:axial, b: sagittal) shows the presence of an expansive intra-osseous process of the sternal manubrium, hypodense, blowing the cortices which are interrupted in some places behind and posteriorly, with associated condensing bone changes and a discrete infiltration of the soft parts.

## Discussion

Osteoarticular tuberculosis accounts for 1 to 3% of tuberculosis cases, all locations combined, and involvement of the sternum represents less than 1% of cases [3,4]. Sternal involvement is often caused by reactivation of a latent focus by lymphatic or hematogenous dissemination. In some cases, it is due to direct extension from mediastinal lymphadenopathy [5]. Tuberculous sternal osteitis is usually chronic osteitis with a long diagnostic delay [1,6]. It manifests as pain and / or swelling that slowly progresses to worsening [6]. Undiagnosed, it is complicated by soft tissue abscess and fistula, sometimes complicated by pathological fracture [6,7]. The tuberculin skin reaction is neither sensitive nor specific [1,2]. Standard radiography may be normal in the early stages, or show uncharacteristic images such as osteolysis, periosteal reaction, soft tissue opacity, or pathologic fracture [2].

The computed tomography (CT) scan is an excellent test for delineating sternal involvement more sensitive for anatomical localization and in detecting osseous destruction and soft-tissue abnormalities [4,5]. MRI is probably more sensitive in detecting early bone marrow edema and soft tissue involvement [5,6]. The diagnosis of sternal tuberculosis remains difficult in the absence of other pulmonary or extra-pulmonary lesions suggestive of tuberculosis, especially since other conditions can have the same clinical and radiological appearance such as a malignant tumor, a secondary localization or a blood disease [7,8]. Therefore, ultrasound guided or surgical biopsy is indicated in the majority of cases to establish a histological and / or bacteriological diagnosis [2,3]. However, a positive microbiological diagnosis is often difficult because the isolation of the alcohol-resistant bacillus on direct examination and after culture is uncertain [2,3].

Treatment of sternal tuberculosis is medico-surgical. Medical treatment is started as soon as the diagnosis is made [9]. Surgical treatment may be indicated to drain a cold abscess developed in the soft tissue [2,4,9]. The prognosis is generally good after treatment. Sternal TB is predominantly seen in middle aged adults although no age is immune and it has also been reported in an infant [6]. It can arise primarily due to hematogenous route or direct extension from the hilar lymph nodes and/or could be due to lymphatic dissemination. Tubercular multiple cutaneous sinuses over the anterior chest wall may be a manifestation of TB of the internal mammary lymph nodes spreading along perforators or an extension of tubercular sternal osteo-myelitis [7,8].

The computed tomography (CT) scan is more sensitive for anatomical localization and in detecting osseous destruction and soft-tissue abnormalities. The role of magnetic resonance imaging (MRI) for detecting early marrow and soft-tissue involvement due to high contrast resolution [9]. TB osteo-myelitis is characterized by low signal replacement of the normal marrow fat signal on T1-weighted images, with high signal intensities on T2-weighted images and enhancement on T1-weighted images [10].

Possible complications of sternal TB osteomyelitis include secondary infection, fistula formation, spontaneous fractures of

the sternum, compression or erosion of the large blood vessels, compression of the trachea and migration of TB abscess into the mediastinum, pleural cavity or subcutaneous tissues [11-13]. Diagnosis rests largely with the histological and microbiological examination of sternal tissue. Needle aspiration, as compared to surgical exploration, is less invasive and may represent the diagnostic procedure of first choice.

The differential diagnosis of chest wall masses includes pyogenic infections (Staphylococcus or Streptococcus), malignancy (lymphoma or metastatic lesions), Brodie's abscess and granulomatous lesions or fungal infections (Coccidioides, Histoplasma, Blastomyces or Cryptococcus).

## Conclusion

Tuberculosis of the sternum is a rare form of flat bone tuberculosis. It is usually a part of disseminated tuberculosis.

The possibility of sternal TB should be kept in mind in the differential diagnosis of a mass involving the chest wall, particularly in endemic areas.

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