

• CASE PRESENTATION •

Primary tuberculosis of sternum; a rare presentation of extra-pulmonary tuberculosis

Mohammad Yahya Abdulrazaq¹, Rasha Thameen Fakhri²

ABSTRACT

Tuberculosis (TB) is an infectious disease that is a major cause of ill health, Worldwide TB is the 13th leading cause of death and the second leading infectious killer after COVID-19 (above HIV/AIDS). The disease typically affects the lungs but can also affect other parts of the human body, but involvement of sternum is very rare, here we presented a primary tuberculosis of sternum recorded in the National Tuberculosis institute as a rare presentation of extra-pulmonary tuberculosis .

Key words: tuberculosis, sternum, caseated granulomas.

INTRODUCTION

The sternum or breast bone is a long flat bone located in the central part of the chest. It connects to the ribs via cartilage and forms the front of the rib cage, thus helping to protect the heart, lungs, and major blood vessels from injury, it is one of the largest and longest flat bones of the body. Its three regions are the manubrium, the body, and the xiphoid process.¹

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.²

Osteoarticular tuberculosis (TB) accounts for approximately 10 % of extrapulmonary TB. (3) Mainly involves the spine or weight-bearing joints.⁴

The sternum is very rare among extrapulmonary sites, accounting for less than 1% of all cases of tuberculous osteomyelitis, even in endemic countries, and falls under the differential diagnosis for chest wall masses.⁵ Primary sternal TB without pulmonary involvement is even more uncommon.⁴

CASE PRESENTATION

One-year-old female presented to pediatric hospital with slightly elevated temperature of 3 weeks duration. Patient had no previous medical or surgical history, with complete vaccination history including BCG vaccine. The family reported no history of contact to patients with tuberculosis.

On physical examination there was a fluctuating bulge in the chest wall in front of upper part of sternum with slight tenderness of about 3 cm in diameter. It was diagnosed as abscess involving chest wall. Complete blood count showed elevated total white blood cell count 14100/ mm³ and lymphocytes counts of 9400/ mm³. C-reactive protein and rheumatoid factor were within normal limits. Her chest X ray did not show any parenchymal or hilar shadows. CT scan showed erosion of the sternum and a subcutaneous collection of 2 x 2 cm suggestive of abscess. Under cover with antibiotics the abscess was drained and sternal mass biopsy was taken for histopathological examination. Grossly the pieces of tissue were brown in colour and

¹ CABM, FIBMS, FRCP; Consultant pulmonologist & Consultant Internist at the National Tuberculosis Institute. Baghdad, Iraq.

² CABM radiology. Radiologist at the National Tuberculosis Institute. Baghdad, Iraq.

Corresponding Author: Mohammad Yahya Abdulrazaq, the National Tuberculosis Institute. Baghdad, Iraq., Baghdad, Iraq. E mail: ntp.mohammad@gmail.com.



firm in consistency. Microscopical examination has shown multiple caseating epithelioid cell granuloma with frequent Langerhans, multinucleated giant cells with central caseating necrosis associated with mixed acute and chronic inflammation and fibrosis.

Diagnosed as a Chronic granulomatous inflammatory lesion in favor of TB, complicated by abscess formation, no malignant changes were seen. GeneXpert examination of the drained fluid was positive.

Patient recorded at the National Tuberculosis Institute in Baghdad as extrapulmonary TB (sternal TB, osteoarticular TB). According to national TB management guideline.⁶ The patient was treated with anti-tuberculous medications for 12 months. The first 2 months (intensive phase) consist of 2 dispersible tablet (rifampicin 75 mg, isoniazid 50 mg and pyrazinamide 150 mg) and 2 tablets ethambutol 100 mg. the last 10 months (continuation phase) consist of 2 dispersible tablet (rifampicin 75 mg and isoniazid 50 mg).

DISCUSSION

Globally in 2020, an estimated 10 million people fell ill with tuberculosis (TB); 5.6 million men, 3.3 million women and 1.1 million children. Child and adolescent TB is often overlooked by health providers and can be difficult to diagnose and treat.⁷

TB can disseminate to almost every organ after a primary infection or reactivation of latent foci.⁴ Bones can be infected with tuberculosis; however sternum is rarely infected. Here we presented an infant with a TB in the sternum as a rare case of osteoarticular TB, in Lovenish Bains et al study stated that out of all cases of EPTB, 10–25% have musculoskeletal TB with the most common affected site being the spine (50–69%), followed by the hip, knee, and ankle/foot (10–13% each).⁴

In our patient, Tuberculosis has infected the manubrium sterni. It has been reported that the commonest bones in the thorax affected by TB are the shaft of the ribs and the costovertebral or costochondral junctions. if the sternum gets

infected, the manubrium is the site of infection in 70 %.⁴ Khan et al have reported a case of TB involving the whole sternum.⁸

Primary tubercular osteomyelitis of the sternum is a very rare manifestation of tuberculosis and it occurs either due to direct extension from hilar lymph nodes or via hematogenous or lymphatic dissemination of the disease from other sites.⁹ it is predominantly affecting middle aged adults, although no age is immune and cases have been reported in infant.² Here we reporting an infant at about age of 12 months infected with sternal primary tuberculosis.

Sternal TB osteomyelitis presents with clinical manifestations similar to other forms of osteoarticular TB disease, including soft tissue swelling, which is the most common symptom, seen in 81% of patients with sternal TB; bone pain and swelling; erythema, warmth and tenderness; enlarged regional lymph nodes; bone deformity or fracture; or a draining abscess or sinus. Constitutional symptoms are less commonly seen, but include malaise, fever, night sweats or weight loss.³ in our patient the presenting symptoms were mainly local, anterior chest wall swelling with slight tenderness and fluctuation suggestive of cold abscess, in addition to minimal constitutional symptoms.

Interestingly, receipt of the BCG vaccine within the previous year has been associated with sternal osteomyelitis as a rare complication of the vaccine, presenting similarly to primary sternal TB osteomyelitis, our case is one-year-old when get infected which means within one year of BCG vaccine.³

Our patient has been vaccinated with BCG when she was a neonate. Sternal tuberculosis has been reported after BCG vaccination in the pediatric age group. Osteomyelitis secondary to the BCG vaccination is usually seen in the epiphysis of the long bones.⁹

CONCLUSION

Although it is a very rare TB presentation, it is possible to encounter a patient with tuberculosis involving sternum, for whom a 12 months

regimen of anti TB medication is indicated instead of the usual 6 months regimen.

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Abbreviations list: Bacillus Calmette–Guérin (BCG), Cubic millimetre (mm³) , Computed tomography (CT), Milligram (mg), tuberculosis (TB)

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