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Case Report

Paediatrics Section

Extra Pulmonary Tuberculosis Presenting as Midline Sternal Swelling in Infancy: A Case Report

RITIKA SINGH[1], KAPIL BHALLA[2], NAMAN JAIN[3]

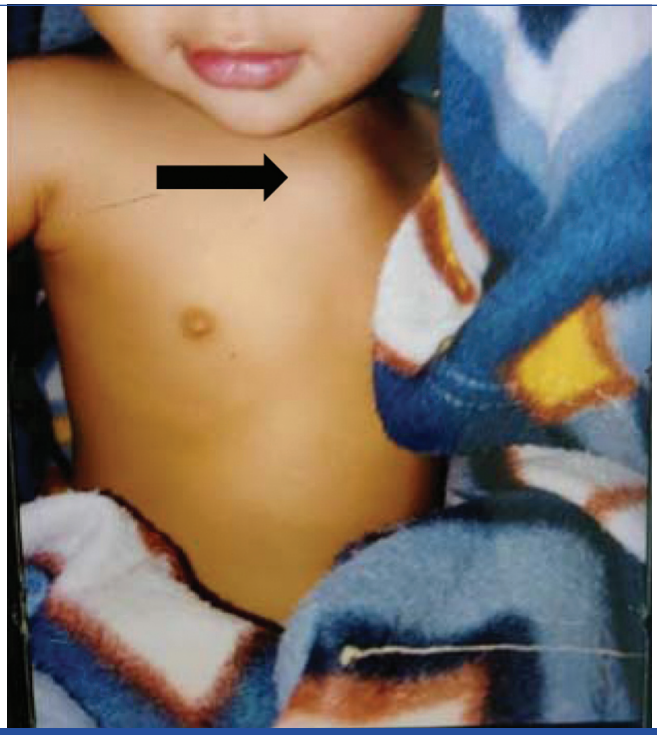
ABSTRACT

Sternal tuberculosis is an extremely rare form of Extrapulmonary Tuberculosis (EPTB) in infancy, often posing diagnostic challenges due to its nonspecific presentation. A 10-month-old infant presented with a 20-day history of a progressively enlarging, tender anterior chest wall swelling. The child was otherwise asymptomatic and haemodynamically stable. Examination revealed a firm, tender, 2×2 cm swelling over the manubriosternal junction without erythema or fluctuation. Laboratory findings showed lymphocytic leukocytosis and elevated Erythrocyte Sedimentation Rate (ESR); the Mantoux test was negative, and the chest X-ray was unremarkable. Ultrasonography demonstrated a hypoechoic lesion with internal echoes. Contrast-enhanced Computed Tomography (CT) revealed a well-defined, peripherally enhancing hypodense collection adjacent to the sternum, consistent with a cold abscess. Fine-Needle Aspiration Cytology (FNAC) revealed granulomatous inflammation with necrosis, and Ziehl-Neelsen staining confirmed acid-fast bacilli, establishing the diagnosis of sternal tuberculosis. The child completed a course of eight months of Anti-Tubercular Therapy (ATT), and on eight-month follow-up, the lesion completely resolved. Anterior mediastinal swellings encompass a diverse group of neoplastic and non-neoplastic lesions, presenting a diagnostic challenge due to their varied aetiologies and potential for serious complications. Early recognition of sternal tuberculosis in infants requires high clinical suspicion and comprehensive evaluation. Prompt initiation of therapy ensures favourable outcomes.

Keywords: Acid-fast bacilli, Anterior chest wall, Cold abscess, Granulomatous

CASE REPORT

A 10-month-old female infant was brought to the paediatric Outpatient Department (OPD) with a complaint of a midline swelling over the anterior chest wall [Table/Fig-1], which the mother noticed 20 days back. The swelling was tender and progressively increasing in size. The child was otherwise asymptomatic, afebrile, and had slight pain on touching the swelling. There was no history of any contact with an active Tuberculosis (TB) case. There was no history of fever, cough, or failure to thrive in the child.

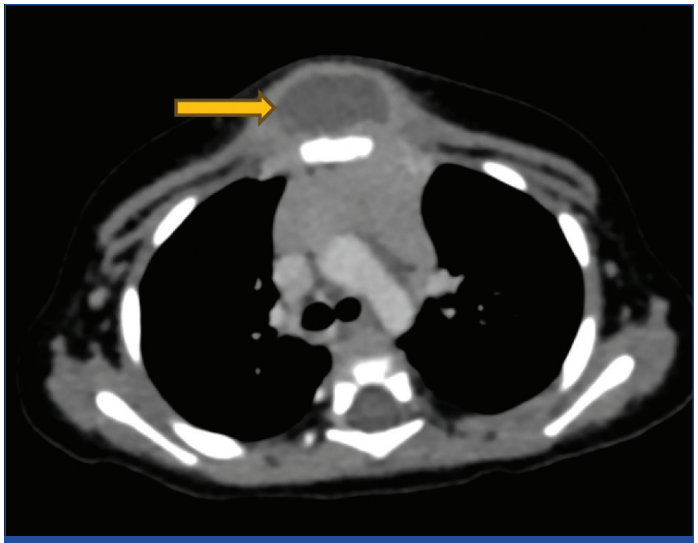


[Table/Fig-1]: Midline anterior chest wall swelling at the time of presentation (black arrow).

On general physical examination, vitals were stable with heart rate 134 per minute, respiratory rate 32 per minute, saturation on room air 98%, and afebrile to the touch. Examination revealed a midline swelling at the junction of the manubrium and body of sternum, measuring 2×2 cm, firm and tender, non-mobile. There was no erythema, and the swelling was not fluctuant. Respiratory system, cardiovascular system, central nervous system, and abdominal examination revealed no abnormality. The child was fully immunised for age and had a BCG scar. The child's parents were asymptomatic. There was no history of any contact with an active TB case.

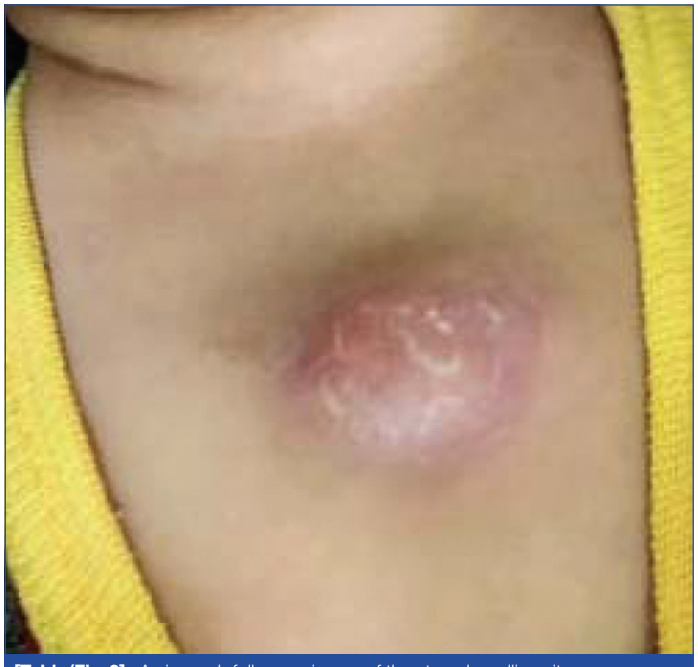
Salient laboratory reports revealed leucocytosis {Total Leukocyte Count (TLC) 13000/cumm}, predominantly lymphocytic (70%), and ESR was raised to 32 mm/hr. Tests for renal and liver function were within normal ranges. The Human Immunodeficiency Virus (HIV) status of the mother as well as the baby was negative. The Mantoux test was negative. Chest X-ray revealed no abnormalities. Ultrasonography suggested a well-defined hypoechoic mass measuring 2.1×2.2 cm, with internal echoes in the subcutaneous plane over the anterior chest wall. Contrast Enhanced Computed Tomography (CECT) scan [Table/Fig-2] showed a well-defined thick-walled peripherally enhancing hypodense collection measuring 19 mm (CC)×31 mm (TR)×16 mm (AP) in the anterior chest wall in midline abutting lower manubriosternum and upper sternal body with mild scalloping of sternum with no bony erosion suggestive of a cold abscess. There was no lymphadenopathy, and the pericardium, lungs, or underlying pleura had not been invaded. There was no mediastinal lymph node enlargement. A possibility of lipoma, Brodie's abscess, lymphoma, infective osteomyelitis, including tubercular osteomyelitis, was considered as a differential. Fine Needle Aspiration Cytology (FNAC) of the lesion was planned to confirm the diagnosis.

FNAC of the lesion revealed granulomatous inflammation with degenerated cells in a necrotic background. Ziehl-Neelsen staining has been positive for the acid-fast bacilli, suggestive of tuberculous infection. The child was started on ATT as per National Tuberculosis



[Table/Fig-2]: Contrast Enhanced Computed Tomography (CECT) scan showing a well-defined thick walled peripherally enhancing hypodense collection measuring 19 mm (CC)×31 mm (TR)×16 mm (AP) in the anterior chest wall in midline abutting lower manubriosternum and upper sternal body with mild scalloping of sternum with no bony erosion suggestive of a cold abscess (yellow arrow).

Elimination Programme (NTEP) guidelines, rifampicin @15 mg/kg/day, isoniazid @10 mg/kg/day, pyrazinamide @35 mg/kg/day, ethambutol @20 mg/kg/day, and pyridoxine (10 mg/day) was also added. The six-week follow-up image of the site is shown in [Table/Fig-3]. The child completed a course of eight months of ATT, and on eight-month follow-up, the lesion completely resolved with mild scarring. The child completed the course of ATT with no adverse events and is gaining weight.



[Table/Fig-3]: A six-week follow-up image of the sternal swelling site.

DISCUSSION

Tuberculosis is a highly contagious and infectious disease caused by the mycobacterium TB and has been among the primary causes of morbidity and mortality in developing nations. The annual risk of childhood TB infection in developing countries is approximately 2-5% which contributes to a significant proportion (31%) of the global TB burden. Skeletal TB constitutes approximately 1-2% of every reported TB case and about 10% of the extrapulmonary TB cases, making it the third most common type of EPTB (Lymph Node > Pleural > Skeletal) [1].

Most of the cases mentioned were primary (67.3%), then secondary (20.8%), and postoperative (11.9%) in the sources [2]. Pulmonary TB is the most common form in children, as compared to the incidence of EPTB, which is found to be between 28-32%. The usual sites of the EPTB are the lymph node, pleural, abdomen, spine, meninges, bone, and genitourinary tract at 26.3%, 23.3%, 17.4%, 4.8%, 2.8%, excluding spine, 2.7%, and 1.6%, respectively. Isolated primary sternal TB is a standard form of flat-bone TB, accounting for nearly one percent of the skeletal TB prevalence [3]. In the index case, the child was asymptomatic and presented with a midline anterior chest wall swelling, mimicking lesions like lipoma, Brodie's abscess, malignancy, or infective osteomyelitis. High-level suspicion is, however, necessary to overcome a diagnostic concern, particularly if there are no related constitutional signs and symptoms of TB, including fever, malaise, night sweats, or weight loss [4].

The youngest ever reported case of a child with sternal TB is of a 10-month-old child who presented with complaints of progressively increasing swelling at the anterior chest wall. Radiological, histological, and microbiological investigations helped establish a diagnosis of infantile sternal TB [5]. Drainage of the lesion and excision of affected necrotic tissue were done. Culture and histopathological examination were suggestive of tubercular osteomyelitis of the sternum. The differentials for an anterior chest wall swelling in an infant include pyogenic infections, Brodie's abscess, metastasis, and granulomatous lesions [6].

Moreover, chest wall TB can mimic bone lymphoma considering the slow growth; however, the history of night sweats, itching, and weight loss is generally reported, with the increase in ESR [4]. TB of the sternum could occur as a painless swelling, indolent in the absence of constitutional symptoms, as observed here in the index case [7]. Any sternal TB may cause bone deformation, fracture, draining abscess, or sinus development if a timely diagnosis is not made. Sternal osteomyelitis typically results from the reactivation of latent mycobacteria or from dissemination of TB or from haematogenous or lymphatic spread of illness from alternative sites [8]. Another process may involve the infection of retrosternal lymph nodes, which gradually erode into the sternum or direct extension from the hilar lymph nodes [9]. The diagnosis of the sternal osteomyelitis requires histological examination, as radiological evidence cannot distinguish the origin of osteomyelitis, and the lesions may resemble a tumour or pyogenic abscess [10].

CONCLUSION(S)

Sternal TB in infancy constitutes an exceptionally rare manifestation of EPTB, often posing significant diagnostic challenges due to its nonspecific clinical presentation. Given its rarity and the absence of pathognomonic features in early stages, a high index of clinical suspicion is of paramount importance for accurate and timely diagnosis. Failure to recognise this entity early may lead to delayed treatment, increasing the risk of complications.

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PARTICULARS OF CONTRIBUTORS:
1. Postgraduate Student, Department of Paediatrics, Pt. BD Sharma, PGIMS, Rohtak, Haryana, India.
2. Professor, Department of Paediatrics, Pt. BD Sharma, PGIMS, Rohtak, Haryana, India.
3. Postgraduate Student, Department of Paediatrics, Pt. BD Sharma, PGIMS, Rohtak, Haryana, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Ritika Singh,
Postgraduate Student, Department of Paediatrics, Pt. BD Sharma,
PGIMS, Rohtak-124001, Haryana, India.
E-mail: ritika16singh@gmail.com

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