Scholars Journal of Medical Case Reports **ISSN 2347-6559 (Online)**
Sch J Med Case Rep 2015; 3(3):222-224 **ISSN 2347-9507 (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjmcr.2015.v03i03.013

Sternal Tuberculosis with Pleuroparenchymal Tuberculosis in an Immunocompetent Adult: A Rare Case Report

Kalyan Kumar K*, Sathya Prasad A, Venkateswarlu S
Department of Pulmonary Medicine, Mamata Medical College, Khammam, Telangana-507001, India

***Corresponding Author:**
Name: Kalyan Kumar K
Email: kalyankambampati@gmail.com

Abstract: Tuberculosis of Sternum is a rare presentation in immunocompetent people. We herein report a rare case of sternal involvement with tuberculosis in a 40yr old immunocompetent male who at initial presentation had a pleuroparenchymal tuberculosis but later manifested with tuberculous sternal osteomyelitis associated with a cold abscess. Diagnosis was confirmed by demonstration of epithelioid granulomas and acid-fast bacilli and a positive tubercle bacilli culture from the aspirate taken from the sternal swelling. The patient was successfully managed with abscess drainage and with aggressive anti-tubercular therapy (ATT). As tuberculosis of flat bones like sternum are very rare especially in immunocompetent people, a high index of suspicion is required for timely diagnosis and an appropriate treatment can result in better outcomes.
Keywords: Sternal tuberculosis, Skeletal, Osteomyelitis, Pleuroparenchymal, Immunocompetent.

INTRODUCTION

Extra-pulmonary tuberculosis (TB) constitutes 15-20% of total tuberculosis case load in immuno-competent patients and among them skeletal TB accounts for approximately 6% to 10% of cases [1, 2]. Tubercular involvement of the sternum is even rarer accounting for about 1% of cases of skeletal tuberculosis even in endemic countries [3-5]. It is predominantly seen in middle aged adults in the 4th and 5th decade. But no age is immune and it has also been reported in infant of 9 months old [6].

CASE REPORT

A 40 year old male with no known co-morbidities presented with the complaints of persistent cough with mucoid sputum, low grade fever on and off with night sweats, weakness, loss of appetite and significant weight loss of 6 months duration. On examination, patient was moderately built with no pallor, icterus, cyanosis, clubbing, pedal edema and lymphadenopathy. Routine blood investigations like complete blood counts, kidney function tests, liver function tests, random blood sugar and serum electrolytes were within normal limits. He had no other co-infections and his viral serology was negative. His clinical findings were suggestive of right hydropneumothorax which was confirmed radiologically. His sputum was positive for acid fast bacilli. Tube thoracostomy was done and he was started on category I antitubercular treatment with four drugs: isoniazid, rifampicin, ethambutol and pyrazinamide.

During the course of treatment, patient developed pyopneumothorax with persistent broncho-pleural fistula. He also had a pus draining sinus near the lower part of sternum. On evaluation he had a retrosternal abscess with pus discharging sinus. Chest X-ray showed right hydropneumothorax with intercostal drainage tube in situ. However lateral film revealed irregularity of the posterior part of lower end of sternum with lytic lesion. Contrast-enhanced computed tomography (CECT) of the chest demonstrated bony irregularity with adjacent soft tissue density and fat stranding involving the lower end of presternal and retrosternal regions extending upto the cutaneous plane. FNAC from the lesion was done which showed the evidence of a granulomatous inflammation with numerous epitheloid cell granulomas, mononuclear infiltrate and scattered giant cells with caseation; suggestive of tuberculosis. Pus aspirate was positive for tubercle bacilli on Ziehl-Neelsen staining. Sputum was persistently positive for acid fast bacilli. HIV ELISA was negative.

Pus was drained from sternal abscess and patient was switched immediately to category II anti-tubercular treatment (ATT) with isoniazid, rifampin, ethambutol, pyrazinamide and streptomycin along with broad spectrum antibiotics after sending the aspirate from the sternal swelling and the sputum for mycobacterial culture and drug susceptibility testing. Growth of *Mycobacterium tuberculosis* was

noted in cultures by the fifth week. The isolates were susceptible to all the first-line anti-tuberculous drugs. Continuation phase was extended by 3 months in view of skeletal tuberculosis. After 11 months of treatment, the patient responded well with complete resolution of sternal and pleuropulmonary disease. At 1 year follow up, patient had no recurrence.

Fig. 1: Chest X-ray Lateral view; revealed irregularity of the xiphisternum along with a lytic lesion

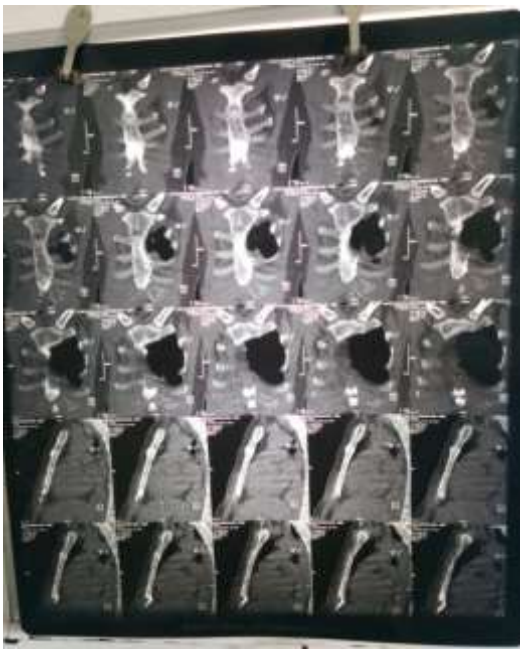

Fig. 2: CT scan showedbony irregularity with adjacent soft tissue density and fat stranding involving the lower end of presternal and retrosternal regions extending upto the cutaneous plane

DISCUSSION

This patient had a primary pleuroparenchymal tuberculosis with secondary sternal tuberculous osteomyelitis with a cold abscess that had eroded through the chest wall.

Tuberculous involvement of the sternum is very uncommon [7]. Diagnosis is based on histologic examination of infected tissues and mycobacterial cultures [8] but the diagnosis is often delayed because osseous tuberculosis is a paucibacillary lesion and smears are often negative [9]. It is reported that approximately 10% patients with extrapulmonary tuberculous have skeletal involvement, spine being the most common site of involvement [10, 11].

Sternal TB usually occurs as a late complication of pulmonary tuberculosis or as reactivation of latent foci formed during haematogenous or lymphatic dissemination of primary tuberculosis. Direct extension from mediastinal lymph nodes has also been described [12, 13]. In our case the sternal involvement is likely due to adjacent pleuro pulmonary disease.

Sternal cold abscess commonly presents with swelling without inflammatory signs [11]. It can also present with secondary infection, discharging sinus, erosion and spontaneous fracture of sternum [14]. Constitutional symptoms like malaise, fever, night sweats or weight loss are relatively uncommon [13].

A proper history with physical examination, CT Chest, Ziehl-Neelsen staining of aspirate, and histopathology of biopsy are required for confirmation of diagnosis [15, 16]. CT chest is useful to determine the extent of bony lesion and degree of soft tissue involvement. MRI is helpful in differentiating between abscess and granulation tissue and for detecting early marrow involvement [17]. Destruction of the sternum, clavicle and cartilage, soft tissue changes representing granulation tissue/abscess, displacement of the adjacent structures (vessels, trachea, etc.) and inflammatory changes in the adjacent structures in the form of cellulitis and myositis are common imaging features [18]. Common differential diagnosis for discharging sinuses of chest wall includes pyogenic infections, malignancy, sarcoidosis, actinomycosis, and fungal diseases [19, 20].

Treatment is based on anti-tubercular treatment in combination with drainage and debridement of necrotic material with or without antibiotics [12, 21].

Possible complications of untreated 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 spread of TB abscess into the mediastinum, pleural cavity or subcutaneous tissues [4]. Surgical treatment may be required in doubtful diagnosis, a non responsive case or for removal of a large sequestrum [22, 23].

CONCLUSION

Sternal tuberculosis can occur in various clinical settings and involving any age group. A high element of suspicion is needed for early diagnosis. CT scan and/or MRI of chest are an integral part of the diagnosis [24]. Complete clinical recovery can be achieved with timely appropriate treatment with early drainage and complete debridement of necrotic tissue along with anti-tubercular therapy.

REFERENCES

1. Tuli SM; Tuberculosis of rare sites, girdle and flat bones. In Tuberculosis of the Skeletal System.Bursal Sheaths. 2nd edition, Jaypee Brothers Medical Publishers, Delhi, 2000: 159-160.
2. Nicholson RA; Twenty years of bone and joint tuberculosis in Bradford. J Bone & Jt Surg Br., 1974; 56-B: 760-765.
3. Davies PD, Humphries MJ, Byfield SP, Nunn AJ, Darbyshire JH, Citron KM *et al.*; Bone and joint tuberculosis. A survey of notifications in England and Wales. JBone Joint Surg (Br) 1984; 66(3): 326-330.
4. Sharma S, Juneja M, Garg A; Primary tubercular osteomyelitis of the sternum. Indian J Pediatr., 2005; 72(8): 709–710.
5. Jain V, Singh Y, Shukla A, Mittal D; Tuberculous osteomyelitis of sternum: A case report. Journal of Clinical and Diagnostic Research, 2007; 1(3): 163-167.
6. Kato Y, Horikawa Y, Nishimura Y, Shimoda H, Shigeto E, Ueda K.; Sternal tuberculosis in a 9-month-old infant after BCG vaccination. ActaPaediatr., 2000; 89(12):1495–1497.
7. Kelly CA, Chetty MN; Primary sternal osteomyelitis. Thorax, 1985; 40: 872-873.
8. McLellan DG, Philips KB, Corbett CE, Bronze MS; Sternal osteomyelitis caused by mycobacterium tuberculosis: case report and review of the literature. Am J Med Sci., 2000; 319(4): 250-254.
9. Agarwal S, Caplivski D, Bottone EJ; Disseminated tuberculosis presenting with finger swelling in a patient with tuberculous osteomyelitis: a case report. Ann Clin Microbiol Antimicrob., 2005; 4: 18.
10. Gautam MP, Karki P, Rijal S, Singh R; Pott's spine and Pott's paraplegia. J Nep Med Assoc., 2005; 44(159): 106–115.
11. Garg RK, Somvanshi DS; Spinal tuberculosis: A review. J Spinal Cord Med., 2011; 34(5): 440–454.
12. Khan SA, Varshney MK, Hasan AS, Kumar A, Trikha V; Tuberculosis of the sternum: A clinical study. J Bone Joint Surg Br., 2007; 89(6): 817–820.
13. Vasa M, Ohikhuare C, Brickner L; Primary sternal tuberculosis osteomyelitis: A case report and discussion. Can J Infect Dis Med Microbiol., 2009 Winter; 20(4): e181–e184.
14. Goyal S, Ahsan MM, Kaur S, Goyal S; Uncommon site of primary tuberculosis: Sternum. Arch Clin Exp Surg., 2014; 3(4): 257-261.
15. Glassroth J; Diagnosis of tuberculosis. In Reichman LB, Hershfield ES editors; Tuberculosis A Comprehensive International Approach. New York, 1993: 149–165.
16. Singal R, Singh P, Mittal A, Gupta S, Singla S, Kenwara DB; Primary sternal tuberculous ulcer with dissemination to the bone marrow: a clinical rarity. Ann Saudi Med., 2011; 31(5): 542–545.
17. Atasoy C, Oztekin PS, Ozdemir N, Sak SD, Erden I, Akyar S; CT and MRI in tuberculous sternal osteomyelitis: A case report. Clin Imaging, 2002; 26(2): 112–115.
18. Shah J, Patkar D, Parikh B, Parmar H, Varma R, Patankar T, Prasad S; Tuberculosis of the sternum and clavicle: imaging findings in 15 patients. Skeletal Radiol., 2000; 29(8): 447-453.
19. Bohl JM, Janner D; Mycobacterium tuberculosis sternal osteomyelitis presenting as anterior chest wall mass. Pediatr Infect Dis J., 1999; 18(11): 1028-1029.
20. Bajracharya S; Primary tubercular osteomyelitis of the sternum: Report of two cases. The Internet Journal of Orthopedic Surgery, 2006; 4(2). Available from https://ispub.com/IJOS/4/2/12272
21. Boorugu HK, Chrispal A, Thomas EM; Sternal tuberculous osteomyelitis presenting as a pulsatile swelling. Indian J Tuberc., 2009; 56(3):154-156.
22. Tuli SM, Sinha GP; Skeletal tuberculosis-"Unsual" lesions. Ind J Orthop., 1969; 3: 5-18.
23. Mathlouthi A, Ben M' Rad S, Merai S, Friaa T, Mestiri I, Ben Miled K *et al.*; Tuberculosis of the thoracic wall. Presentation of 4personal cases and review of the literature. Rev Pneumol Clin., 1998; 54(4): 182-186.
24. Khaira A, Khaira DD, Gupta A, Bhowmik D, Kalra OP, Tiwari SC; Tuberculosis of sternum: Three cases with different presentations. JAPI, 2009; 57: 595-596.