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CASE IMAGE

Like a shot-through manubrium: A rare presentation of skeletal tuberculosis

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Abstract

A 22-year-old Vietnamese woman presented with anterior chest swelling. Computed tomography revealed an osteolytic lesion in the manubrium, whereas MRI showed an extra-osseous expansion. A needle biopsy showed granuloma formation, whereas a 3-week mycobacterial culture indicated *Mycobacterium tuberculosis* infection. Manubrium/sternum involvement in tuberculosis is extremely rare but should be considered.

KEYWORDS

manubrium, sternal infection, tuberculosis

1 | CASE PRESENTATION

A 22-year-old Vietnamese woman presented with a 2-month history of anterior chest swelling and no underlying disease. Physical examination revealed swelling and tenderness around the anterior manubrium that worsened with deep breathing. Computed tomography (CT) revealed an osteolytic lesion in the manubrium, whereas magnetic resonance imaging showed an extra-osseous expansion (Figure 1). A CT-guided needle biopsy revealed granuloma formation (Figure 2), suggesting sarcoidosis, brucellosis, autoimmune vasculitis, or mycobacterial infection. A 3-week mycobacterial culture indicated a *Mycobacterium tuberculosis* infection. The final diagnosis was manubrium tuberculosis.

Skeletal tuberculosis accounts for approximately 6%–10% of all extra-pulmonary tuberculosis, equivalent to 1% of all cases.[1] African and East Asian immigrants are

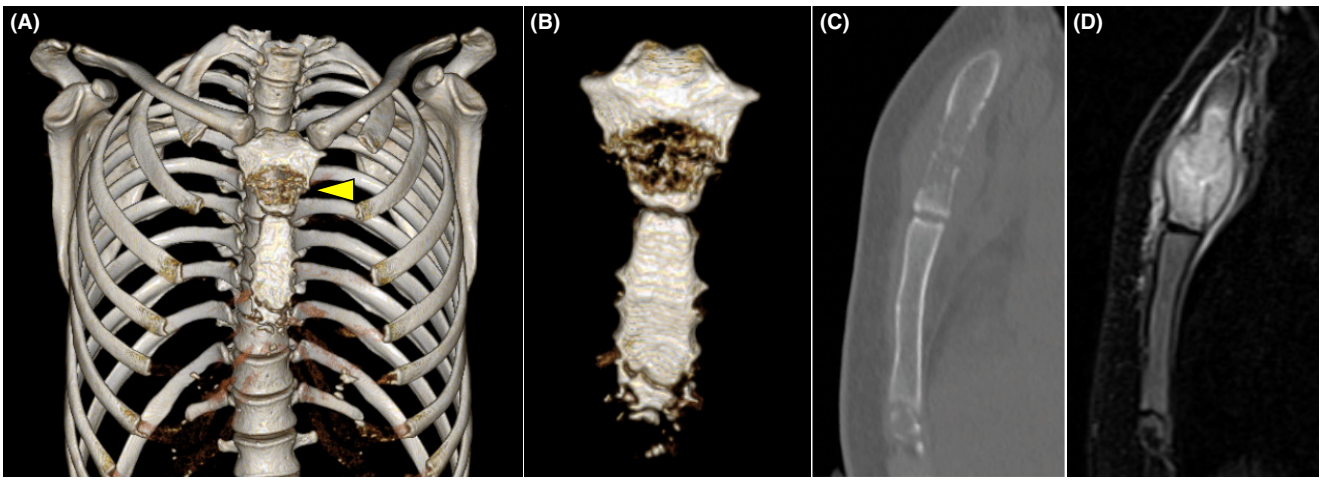

FIGURE 1 Computed tomography (CT) and magnetic resonance (MR) images of the diseased manubrium/sternum. (A, B) Three-dimensional reconstruction of the CT image; arrowheads indicate osteolysis of the manubrium. (C) Sagittal CT image; arrowheads indicate osteolysis of the manubrium. (D) Sagittal T2-weighted MR image; arrowheads indicate the high-signal intensity in the bone marrow of the manubrium and the extra-osseous expansion.

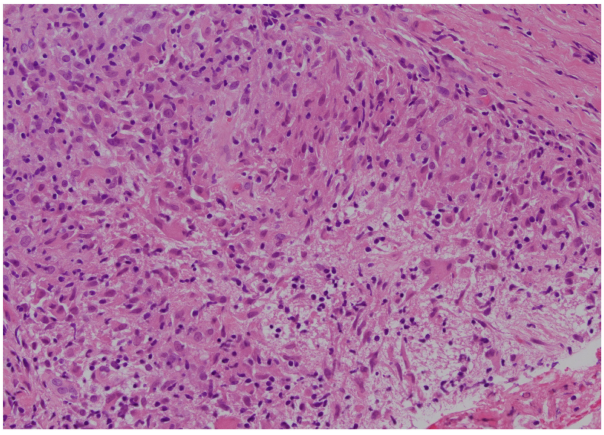

FIGURE 2 Histopathology of the biopsy specimen showing a granuloma formation.

at highest risk of skeletal tuberculosis.[1,2] However, manubrium/sternum involvement of tuberculosis is extremely rare, accounting for 1% of all skeletal tuberculosis cases.[1,3,4] Risk factors for manubrium/sternal tuberculosis include residing in an endemic area, poor access to health care, immune suppression, previous sternotomy, diabetes mellitus, alcoholism, advanced age, and nosocomial exposure.[1] As the great predecessors say, the present case reminds us that tuberculosis is a ubiquitous disease that can affect any part of the body. In this case, manubrium/sternal tuberculosis was cured after 9 months of antituberculosis treatment.

AUTHOR CONTRIBUTIONS

Tomohiro Fujiwara: Conceptualization; writing – original draft. **Hiroyuki Yanai:** Investigation; writing – review and editing. **Hideharu Hagiya:** Conceptualization; writing – original draft.

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None.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no datasets were generated or analyzed.

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CONSENT

Informed consent for publication was obtained from the patient.

ETHICAL APPROVAL

The manuscript was written following the COPE guidelines.

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REFERENCES

1. Patel P, Gray RR. Tuberculous osteomyelitis/arthritis of the first costo-clavicular joint and sternum. *World J Radiol*. 2014;6(12):928-931. doi:10.4329/wjr.v6.i12.928

2. Gardam M, Lim S. Mycobacterial osteomyelitis and arthritis. *Infect Dis Clin North Am*. 2005;19(4):819-830. doi:10.1016/j.idc.2005.07.008
3. Bains L, Lal P, Chand T, Gautam KK, Beg MY, Kumar P. Isolated primary cold abscess of the sternum: a case report. *J Med Case Rep*. 2019;13(1):267. doi:10.1186/s13256-019-2210-9
4. Rajan J, Bizanti K. Sternal swelling presenting as tuberculosis: a case report. *J Med Case Rep*. 2021;15(1):1-4. doi:10.1186/s13256-021-03008-9

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