

Successful Conservative Management of Primary Sternal Osteomyelitis in a Resource-Limited Setting: A Case Report from Rural Nepal

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Key Clinical Message

Primary sternal osteomyelitis, though rare, can be effectively diagnosed and managed in resource-limited settings with strong clinical suspicion, basic imaging tools, and a conservative approach. Early detection and targeted antibiotic therapy often prevent complications, eliminating the need for surgical intervention.

Introduction

Osteomyelitis is an inflammatory bone condition caused by infection, which can be acute or chronic. Acute osteomyelitis typically presents with pain, fever, and localized swelling within days to weeks of infection. It most commonly affects long bones.¹

Sternal osteomyelitis is rare, usually associated with thoracic surgery, and predominantly caused by *Staphylococcus aureus*. Other organisms like *Pseudomonas aeruginosa*, *Mycobacterium tuberculosis*, and *Candida albicans* are implicated in specific populations.^{2>3} Management often involves antibiotics and, occasionally, surgical debridement.¹

Here, we report a case of primary sternal osteomyelitis in a 14-year-old boy, successfully managed with a conservative approach in a rural hospital in Nepal.

Case report

Case History/Examination

A 14-year-old boy presented to the outpatient department with a three-day history of intermittent fever and sternal pain, accompanied by chills and rigors. There was no history of tuberculosis exposure, trauma, prior

illnesses, or surgeries.

On physical examination, a 1.5 cm × 1.5 cm tender swelling was noted over the sternum at the level of the 4th costal cartilage.

Methods

Differential Diagnosis

- Sternal osteomyelitis
- Soft tissue abscess
- Costochondritis

Investigations

- Laboratory findings:
 - Total leukocyte count: 12,000/mm³
 - Erythrocyte sedimentation rate: 44 mm/hr
 - Reactive C-reactive protein (++)

Imaging:

- X-ray (lateral view): Normal on initial evaluation (Figure 1).
- Ultrasonography: Hypoechoic fluid collection adjacent to the sternum (Figure 3).

-Procedures:

- Ultrasonography-guided aspiration yielded blood-tinged purulent fluid.
- Culture identified *Staphylococcus aureus*, sensitive to clindamycin.

Treatment

- Intravenous flucloxacillin and clindamycin during the first week.
- Transitioned to oral clindamycin for five additional weeks.

Outcome and Follow-Up

The patient became afebrile by the third day of hospitalization. Follow-up evaluation at 1 week showed no complaints, reduced inflammatory markers (CRP negative, ESR 7 mm/hr), however X-ray sternum lateral showed periosteal reaction (figure 2). Thereafter antibiotics were continued until 6 weeks and repeat X-ray at the same time was normal (figure 4).

Discussion:

Sternal osteomyelitis is rare and usually occurs after sternotomy following cardiac surgery. Primary sternal osteomyelitis has rarely been described in individuals without a history of cardiac surgery. Patients often present with fever, localized pain, tenderness, and swelling over the affected sternal area. While complete blood counts may be normal in two-thirds of cases, inflammatory markers are often elevated. Our patient presented with fever, chest pain, and tender swelling, suggesting osteomyelitis as the provisional diagnosis. A lack of proper clinical observation and imaging led to a delayed diagnosis. Ultrasound is a valuable tool in identifying soft tissue collections and periosteal involvement. In our resource-limited setting, ultrasonography revealed a hypoechoic fluid collection adjacent to the sternum. Treatment involves empirical antibiotics targeting *Staphylococcus aureus*, followed by targeted therapy based on culture and sensitivity results. Early surgical intervention is reserved for cases with abscesses or when conservative treatment fails. It involves drainage and debridement, performed under aseptic conditions. In conclusion, sternal osteomyelitis is rare. Strong clinical suspicion, along with basic imaging modalities like ultrasonography, can facilitate early diagnosis and treatment.

Authors contributions:

Dr. Shivaji Kraki had taken history and performed physical examinations. Dr. Sushil Pokhrel and Dr. Nawin Ghimire were involved in the management of the patient. Dr. Shivaji Karki, Ms. Karuna Khadka, and Dr. Sushil Pokhrel were involved in writing, editing and revision of the manuscript. All authors have read and approved the final version of the manuscript.

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Conflict of interests:

None.

Consent:

A written, informed consent was obtained from patient to publish this report in accordance with the journal's patient consent policy.

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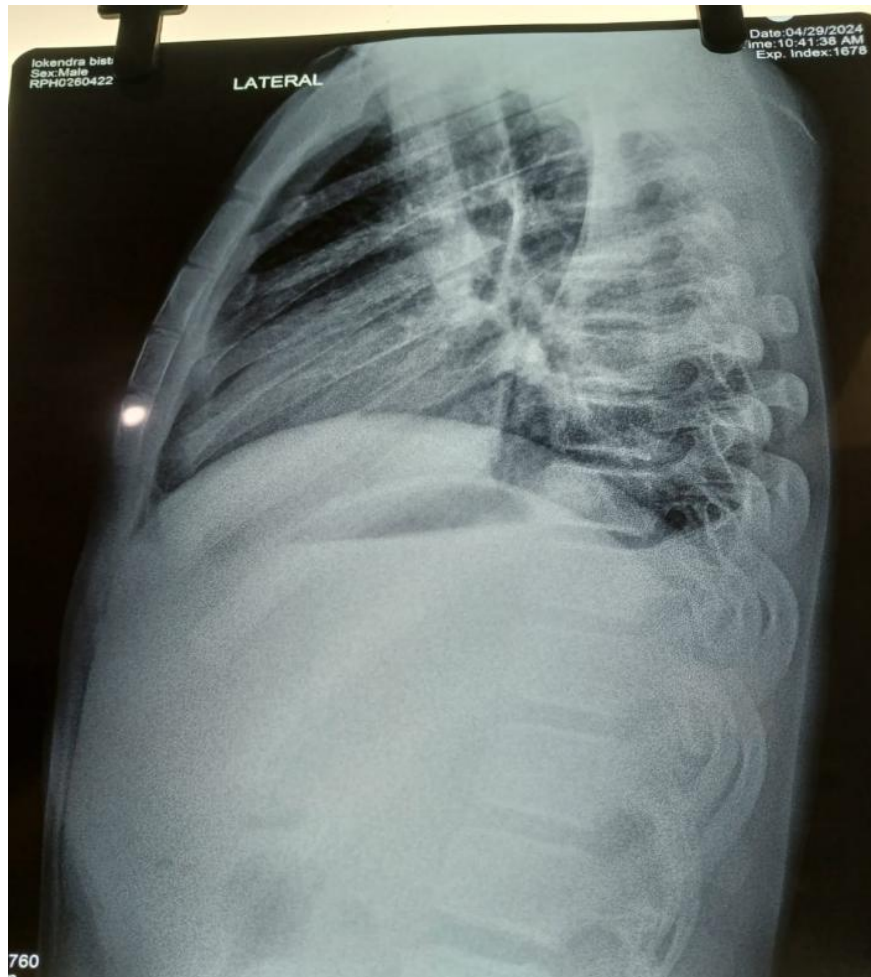


Figure 1: x ray sternum lateral image at 3rd day (apparently normal ,absence of any periosteal reaction)

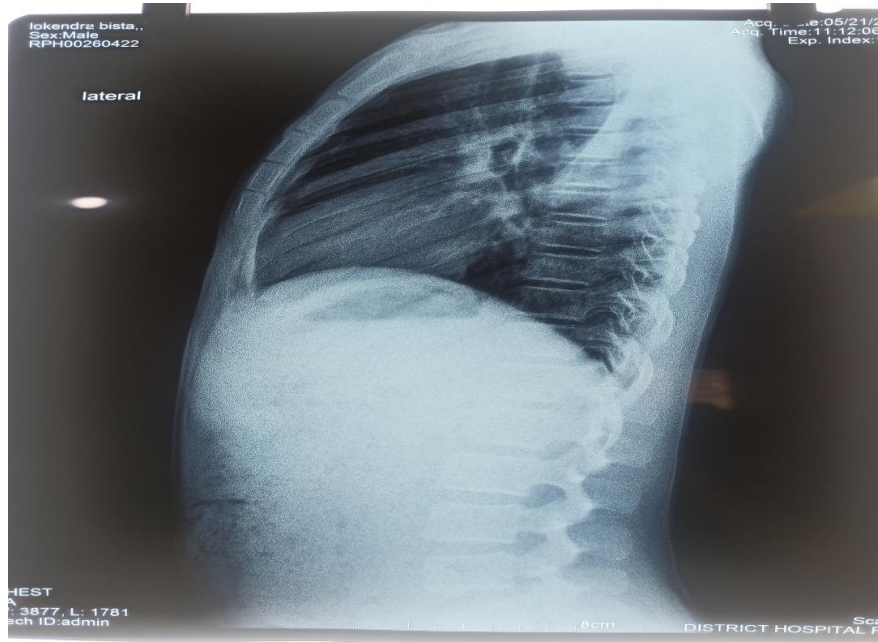


Figure 3: X ray sternum lateral at 2 weeks (periosteal reaction is present)

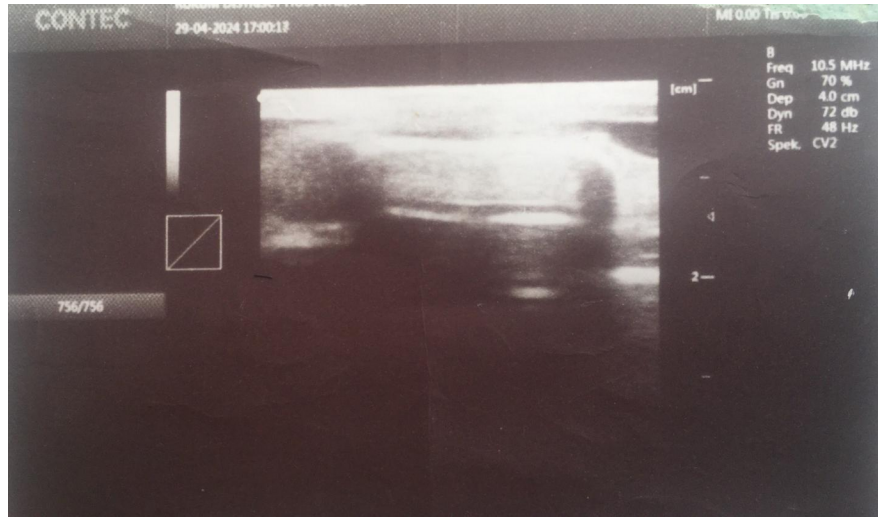


Figure 2: USG image of anterior chest wall showing hypoechoic collection adjacent to sternum bone

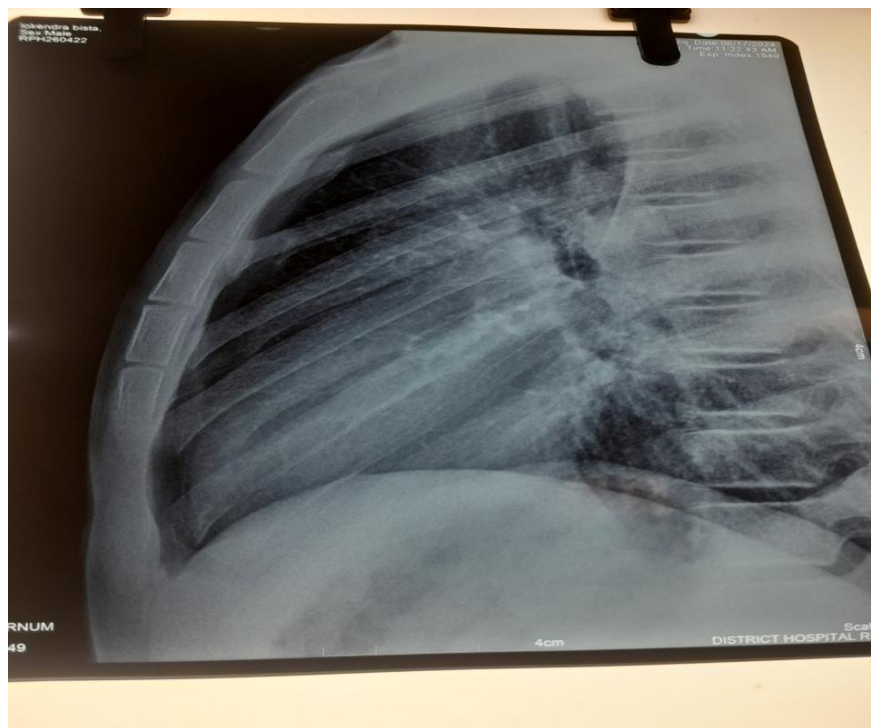


Figure 4: Xray sternum lateral at 5 weeks (absence of periosteal reaction)

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