

# Isolated Tuberculosis of the Rib in a 12-year-old Adolescent Boy: A Case Report from Iraq

Wasnaa Hadi Abdullah<sup>1</sup>, Rihab Faisal Alabedi<sup>2</sup>

<sup>1</sup>Department of Pediatrics, College of Medicine, Mustansiriya University, Baghdad, Iraq, <sup>2</sup>Department of Pediatrics, Faculty of Medicine, University of Babylon, Hillah, Iraq

## Abstract

One of the major global health issues that still exist is tuberculosis (TB); primary tubercular osteomyelitis of the rib is an extremely rare entity. We present a case of isolated TB of the anterior fourth rib as the initial presentation, without any lung lesions. A high index of suspicion is necessary for the diagnosis of tubercular rib osteomyelitis. Usually, there is no significant morbidity and full remission following surgical removal of the affected rib in conjunction with the proper antitubercular therapy.

**Keywords:** Case report, extrapulmonary, osteomyelitis, rib, tuberculosis

## INTRODUCTION

One of the major global health issues that still exist is tuberculosis (TB). 10.4 million cases of TB were reported in 2016, with 10% of those cases involving children under the age of 18.<sup>[1]</sup> Similar to other countries in the area, TB has been a significant public health concern in Iraq. According to the WHO, Iraq is one of the seven countries in the Eastern Mediterranean region with a high prevalence of TB. About 8268 new and relapsed cases of TB were recorded in Iraq in 2014.<sup>[2]</sup> A study done in 2011 estimated the yearly incidence rate of TB to be 45 per 100,000 people.<sup>[3]</sup> The Specialized Chest and Respiratory Disease Center for TB in Baghdad received 744 patients in 2021, with the lowest age group being under 15 years old.<sup>[4]</sup>

Musculoskeletal TB constitutes 15% of all extrapulmonary cases. TB affecting the ribs is a rare form of osteoarticular TB. Patients may present with a solitary lesion without any primary involvement in the lung tissue.<sup>[5]</sup> Hereby, we present a case of isolated TB of the anterior fourth rib as the initial presentation, without any lung lesions. To our knowledge, this is the first reported case of rib TB in an Iraqi child.

## CASE REPORT

A 12-year-old boy presented with a tender swelling on the right anterolateral side of his chest wall that had been persistent for

2 months. During this time, he had occasional evening fevers but denied cough, shortness of breath, chest pain, weight loss, loss of appetite, or swellings elsewhere on his body. There were no skin lesions or history of trauma. He was vaccinated. His grandmother, with whom he lived, had a chronic cough history. The family sought medical advice from multiple doctors, and antibiotics were administered without observable reduction in the swelling's size.

Laboratory investigations showed hemoglobin 11 g%, white blood cell 8600/mm<sup>3</sup>, erythrocyte sedimentation rate 45 mm, blood culture negative, normal renal and liver function tests, and normal bone profile. The chest radiograph showed a lytic lesion over the right anterior fourth rib and the rest of the lung parenchyma was normal. Contrast-enhanced computed tomography of the chest showed a lytic lesion involving the fourth rib on the right side with cortical erosion and destruction of the same rib with a small percutaneous lymph node, no enlarged intrathoracic lymph nodes were seen. Surgical excision for this swelling had been done, revealed

**Address for correspondence:** Dr. Wasnaa Hadi Abdullah,  
Department of Pediatrics, College of Medicine, Mustansiriya University,  
Baghdad, Iraq.  
E-mail: wasnaa.hadi@uomustansiriya.edu.iq

Submitted: 19-Jun-2024 Revised: 12-Jul-2024 Accepted: 13-Jul-2024 Published: 13-Sep-2024

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** WKHLRPMedknow\_reprints@wolterskluwer.com

**How to cite this article:** Abdullah WH, Alabedi RF. Isolated tuberculosis of the rib in a 12-year-old adolescent boy: A case report from Iraq. Mustansiriya Med J 2024;23:95-7.

destroyed 4.2 cm crushed fourth rib which was resected in addition to the removal of the subcutaneous lymph node, histopathology revealed calcified mature bony trabeculae, multiple caseating granulomatous tissue reaction, and a plenty of giant cells included Langhans giant cells, picture is consistent with chronic specific TB rib lesion, subcutaneous lymph node showing chronic specific TB lymphadenitis, acid-fast bacilli stain was positive for TB bacilli, no evidence of malignancy.

The patient received rifampicin, isoniazid, ethambutol, and pyrazinamide for 2 months then continued rifampicin and isoniazid for a further 7 months. Vitamin B6 (pyridoxine) was given daily for the entire 9 months. The postoperative period was uneventful and the patient is doing well, Figure 1 demonstrates the transverse submammary scar of the done surgery.

## DISCUSSION

Primary rib tubercular osteomyelitis is a very uncommon condition. The vertebral column (50%) is the most prevalent site of skeletal system TB, followed by the hips (15%) and knees (5%). Rib involvement in TB, however, is quite rare. Skeletal TB is the most frequent inflammatory condition involving the ribs. After metastasis, TB is thought to be the second-most frequent cause of rib destruction.<sup>[6]</sup>

Tubercular osteomyelitis of the ribs can be caused by lymphatic or hematogenous seeding or by a contagious infection such as pneumonia or empyema; whereas direct extension from the lung is less common.<sup>[7]</sup> It can take longer to diagnose and treat TB rib involvement because of its typically mild and vague first appearance,<sup>[8]</sup> as in our index child, he had no history of pneumonia or immunosuppression.

One or more ribs may be affected by TB, and some individuals may also have concurrent disease at other bone locations such as the sternum, major joints, and spine. Multifocal skeletal TB (including rib lesions) has been reported by Lynn *et al.*<sup>[9]</sup>



**Figure 1:** A transverse submammary scar on the resected fourth anterior right rib

Early detection of rib TB osteomyelitis made treatment possible promptly, avoiding complications such as chest wall sinuses that might have called for multiple surgeries. This result is not always the case, Chang *et al.* examined 12 surgically confirmed cases of rib TB and discovered that the predominant presentations were chest wall masses with draining sinuses,<sup>[10]</sup> the diagnosis was often delayed due to confusion with other conditions and poor choice of diagnostic tests.

Few case reports about TB rib osteomyelitis in pediatrics had been observed due to the rarity of this condition, a 13-year-old boy with chest wall swelling was a case reported by Kashyap *et al.*, the etiology of the lesion was not discovered by fine-needle aspiration cytology of the lesion, he was diagnosed with rib TB osteomyelitis after undergoing surgical excision of his entire sixth rib.<sup>[7]</sup> Primary TB of the sternum in a 1-year-old child was reported by Abdulrazaq and Fakhri in Iraq.<sup>[11]</sup>

González Saldaña *et al.* documented three cases of previously healthy children in Mexico who initially presented with swelling of the rib, due to the absence of contact with the TB patient, the disease was not initially considered, resulting in diagnostic delays of few months, diagnosis was eventually confirmed with TB osteomyelitis of the rib, treatment courses lasted 9–12 months, follow-up of all patients revealed children free of relapse or active disease.<sup>[1]</sup> These cases underscore the importance of considering chest wall TB in patients from endemic areas presenting with rib abnormalities.

## CONCLUSION

A high index of suspicion is necessary for the diagnosis of tubercular rib osteomyelitis. Usually, there is no significant morbidity and full remission following surgical removal of the affected rib in conjunction with the proper antitubercular therapy.

## Ethical approval

The case report was carried out with patient and his family approval.

## Acknowledgment

To our indexed case and his family to make this case ready to be published and to our beloved University; Mustansiriyah for continuous support.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

## Financial support and sponsorship

Self-funded.

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

1. González Saldaña N, Macías Parra M, Arias de la Garza E, Solorzano Morales S, Galvis Trujillo D, Juárez Olguin H, *et al.* Case report: Chest wall tuberculosis without pulmonary involvement in three pediatric immunocompetent patients. *Am J Trop Med Hyg* 2019;101:1073-6.
2. WHO Iraq Program: Tuberculosis; 2016. Available from: <https://www.iris.who.int/handle/10665/250441>. [Last accessed on 2024 May 18].
3. Huseynova S, Hashim DS, Tbeni MR, Harris R, Bassili A, Abubakar I, *et al.* Estimating tuberculosis burden and reporting in resource-limited countries: A capture-recapture study in Iraq. *Int J Tuberc Lung Dis* 2013;17:462-7.
4. AL-Kaisse AA, AL-Thwani AN, Mankhi AA, Abood ZH, Ali RM. Epidemiological study of prevalence TB in Iraq. *Revis Bionatura* 2023;8:27.
5. Santosh T. Isolated tuberculosis of rib: A case report. *J Cytol Histol* 2019;10:2.
6. Swarup MS, Bhatt S, Rawal R, Tandon A, Dangwal S. Tuberculosis, a great masquerader: A case series unveiling rare sites of musculoskeletal involvement through imaging. *SA J Radiol* 2020;24:1919.
7. Kashyap NK, Jindal A, Borkar NK, Wasnik M. Primary tuberculous osteomyelitis of rib in a child. *J Clin Diagn Res* 2017;11:D08-9.
8. Kim YJ, Jeon HJ, Kim CH, Park JY, Jung TH, Lee EB, *et al.* Chest wall tuberculosis: Clinical features and treatment outcomes. *Tuberc Respir Dis* 2009;67:318-24.
9. Lynn MM, Kukanesen JR, Khan AW. Troublesome tuberculosis: A case report on multi-focal tuberculous osteomyelitis in an immunocompetent patient. *J Clin Med Res* 2012;4:73-6.
10. Chang JH, Kim SK, Lee WY. Diagnostic issues in tuberculosis of the ribs with a review of 12 surgically proven cases. *Respirology* 1999;4:249-53.
11. Abdulrazaq MY, Fakhri RT. Primary tuberculosis of sternum; a rare presentation of extra-pulmonary tuberculosis. *Iraqi New Med J* 2022;8:55-7.