GSC Biological and Pharmaceutical Sciences
eISSN: 2581-3250 CODEN (USA): GBPSC2
Cross Ref DOI: 10.30574/gscbps
Journal homepage: https://gsconlinepress.com/journals/gscbps/

(CASE REPORT)

Check for updates

Rifampicin-Resistant Pulmonary Tuberculosis in an Immunocompetent Adult Without Prior Antituberculous Treatment: A Case Report

Omar Lamridi [1, 2, *], Yassine Akrim [1, 2], Youssef El Kamouni [1, 2], Lamiae Arsalane [1, 2] and Said Zouhair [1, 2]

[1] *Department of Bacteriology and Virology, Avicenna Military Hospital, Marrakech, Morocco.*
[2] *Faculty of Medicine and Pharmacy, Cadi Ayyad University, Marrakech, Morocco.*

GSC Biological and Pharmaceutical Sciences, 2025, 33(02), 115-118

Publication history: Received on 27 September 2025; revised on 05 November 2025; accepted on 08 November 2025

Article DOI: https://doi.org/10.30574/gscbps.2025.33.2.0433

Abstract

Rifampicin-resistant tuberculosis (RR-TB) represents a growing public health concern, particularly in high-burden countries. It is most commonly observed in patients with a history of tuberculosis (TB) treatment or immunosuppressive conditions. We report a case of rifampicin-resistant pulmonary TB in a 48-year-old immunocompetent Moroccan male with no History of antituberculous treatment, recent exposure, or known comorbidities. He presented with chronic cough, night sweats, and weight loss. Clinical examination revealed bilateral cervical and supraclavicular lymphadenopathy accompanied by bronchial rales. Imaging and molecular diagnostics confirmed active pulmonary TB with rifampicin resistance. This case underscores the importance of considering drug-resistant TB even in immunocompetent individuals without prior exposure. Early molecular diagnosis is critical for timely referral and initiation of appropriate therapy.

Keywords: Rifampicin-Resistant Tuberculosis; Pulmonary Tuberculosis; Genexpert.

1. Introduction

Tuberculosis (TB) remains a leading cause of morbidity and mortality worldwide, with increasing challenges arising from drug-resistant strains [1]. Rifampicin-resistant TB (RR-TB), a frequent surrogate marker for multidrug-resistant TB (MDR-TB), typically develops in patients with prior TB treatment or underlying immunosuppression, particularly HIV infection [2]. However, recent reports have described RR-TB in immunocompetent individuals without previous TB exposure, suggesting changing transmission patterns and potential community spread [3]. This case report describes a rare presentation of RR-TB in an immunocompetent adult male with no History of antituberculous treatment or identifiable risk factors.

2. Case Presentation

A 48-year-old Moroccan man presented to the outpatient clinic with a three-month history of chronic cough, night sweats, and unintentional weight loss. He denied any previous TB infection, recent known TB contact, or comorbidities. He had no history of smoking, substance abuse, or immunosuppressive conditions. On clinical examination, the patient was alert (Glasgow Coma Scale: 15/15), hemodynamically and respiratorily stable. His weight was 68 kg, height 1.74 m (BMI: 22.5 kg/m^2). Physical examination revealed bilateral bronchial rales and two firm, mobile lymph nodes on each side of the cervical and supraclavicular regions, each approximately 1 cm in diameter. The rest of the systemic examination was unremarkable. A chest X-ray showed diffuse bilateral reticulomicronodular infiltrates (Figure 1).

* Corresponding author: Omar Lamridi

Figure 1 Chest X-ray showing diffuse bilateral reticulomicronodular infiltrates

A sputum sample tested positive for *Mycobacterium tuberculosis* using the GeneXpert MTB/RIF assay, which also detected rifampicin resistance. Additional pre-treatment investigations revealed:

- White blood cell count: 13,000/mm^3 (neutrophils: 9,700/mm^3)
- Hemoglobin: 12.9 g/dL
- Platelet count: 357,000/mm^3
- C-reactive protein (CRP): 97 mg/L
- Normal renal and hepatic function tests
- Negative HIV serology

Thoracic computed tomography (CT) confirmed features consistent with post-primary pulmonary TB with signs of active disease (Figure 2).

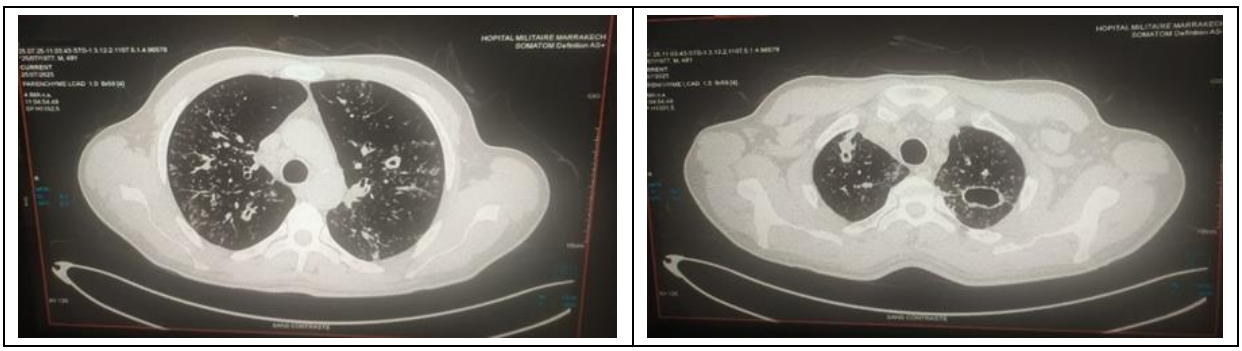

Figure 2 Chest CT demonstrating post-primary pulmonary tuberculosis with active lesions

The patient was referred to a national reference center in Rabat for management under the drug-resistant TB program.

3. Discussion

This case presents both a diagnostic and epidemiological challenge due to the absence of classical risk factors for RR-TB. Drug-resistant TB is frequently associated with prior anti-TB therapy, poor adherence, or immunosuppression. However, the detection of rifampicin resistance in an immunocompetent, HIV-negative patient with no prior antituberculous treatment history may indicate a spontaneous genetic mutation, primary transmission of a resistant strain, or unrecognized community exposure [4].

Tuberculosis continues to represent a significant global public health challenge, particularly in Morocco, where an estimated 35,000 new cases are reported annually, with 261 cases of drug-resistant tuberculosis documented in 2024 [5].

In Morocco, rifampicin-resistant tuberculosis (RR-TB) among newly diagnosed, treatment-naïve patients remains relatively uncommon; however, recent evidence suggests a growing cause for concern. A landmark study conducted in Casablanca between 1992 and 1994 reported a primary rifampicin resistance rate below 1% among treatment-naïve individuals [6]. In contrast, a systematic review covering the period 2010–2020 identified rifampicin resistance in 24.3% of *Mycobacterium tuberculosis* isolates collected in Morocco, although the data did not clearly differentiate between new and previously treated cases [7]. More recently, among 1365 tuberculosis cases diagnosed (of which 1211 were confirmed by GeneXpert) from 10997 specimens at the Bacteriology Laboratory of Mohammed V Military Teaching Hospital in Rabat between 2018 and 2024, 36 cases (2.97 % of positive GeneXpert tests) exhibited rifampicin resistance, predominantly in pulmonary tuberculosis (30 cases), though the exact proportion of newly diagnosed patients was not specified [8].

These findings point to an evolving epidemiological trend, suggesting possible community transmission of resistant strains and emphasizing the need for enhanced surveillance. Early detection using rapid molecular methods such as GeneXpert is crucial for the identification of resistant strains, enabling prompt initiation of appropriate therapy and preventing transmission [9].

Rifampicin resistance significantly impacts treatment complexity, duration, and prognosis. Management necessitates referral to specialized centers equipped to administer second-line anti-TB drugs and ensure adherence through directly observed therapy [10].

This case highlights the need to apply rapid molecular diagnostic tools in all presumptive TB cases, regardless of risk profile, to facilitate early detection of drug resistance. Furthermore, it underscores growing concerns regarding community transmission of drug-resistant TB strains and the importance of enhanced public health surveillance [9].

4. Conclusion

Rifampicin-resistant tuberculosis can occur in immunocompetent individuals without prior TB history or known exposure, emphasizing the evolving nature of TB epidemiology. This case highlights the vital role of molecular diagnostics in early detection and appropriate referral. Public health strategies must evolve to address the community transmission of drug-resistant TB strains.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that there are no conflicts of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Funding information

The authors received no specific grant from any funding agency.

References

[1] World Health Organization. Global tuberculosis report 2024. Geneva: WHO; 2024.

[2] Lange C, Chesov D, Heyckendorf J, et al. Drug-resistant tuberculosis: An update on disease burden, diagnosis and treatment. Respirology. 2023;28(2):95–105.

[3] David P Bui , Shruthi S Chandran , Eyal Oren et al. Community transmission of multidrug-resistant tuberculosis is associated with activity space overlap in Lima, Peru . BMC Infect Dis. 2021 Mar 18;21(1):275.

[4] Dheda K, Gumbo T, Maartens G, et al. The epidemiology, pathogenesis, transmission, diagnosis, and management of multidrug-resistant, extensively drug-resistant, and incurable tuberculosis. Lancet Respir Med. 2017;5(4):291–360.

[5] Ministère de la Santé et de la Protection Sociale. Programme National de Lutte Antituberculeuse (PNLAT) – Situation épidémiologique de la tuberculose au Maroc, 2024.

[6] Chaoui I, El Messaoudi MD, et al. Drug resistance of Mycobacterium tuberculosis in Casablanca (Morocco). Med Mal Infect. 1997;27(7):596–9.

[7] Chakroun A, et al. Molecular characterization of drug-resistant Mycobacterium tuberculosis in Morocco: a systematic review and meta-analysis (2010–2020). Pan Afr Med J. 2020;37:308.

[8] Malihy Z, Ameur O, Tilila A, et al. Épidémiologie de la tuberculose et de la résistance à la rifampicine dans un hôpital marocain. 9e Journées Scientifiques de la Société Marocaine de Microbiologie (SMAMM). 2025.

[9] Boehme CC, Nabeta P, Hillemann D, et al. Rapid molecular detection of tuberculosis and rifampin resistance. N Engl J Med. 2010;363(11):1005–1015.

[10] Migliori GB, Tiberi S, Zumla A, et al. MDR/XDR-TB management of patients and contacts: Challenges facing the new decade. International Journal of Infectious Diseases 92S (2020) S15–S25.