

# CHALLENGES IN THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS PNEUMONIA WITH SEPTIC SHOCK : RARE CASE REPORT

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## INTRODUCTION

Tuberculous pneumonia (TP) is a rare and acute manifestation of pulmonary tuberculosis (TB), often presenting with symptoms resembling those of bacterial pneumonia, such as fever, cough, and chest pain.<sup>1,2</sup> The clinical course of TP can be severe, leading to complications like acute respiratory distress syndrome (ARDS) and septic shock, particularly in immunocompetent individuals.<sup>3,4</sup> Early diagnosis is challenging due to the nonspecific nature of symptoms and the similarity in radiographic findings to bacterial infections.<sup>5,6</sup> Chest radiography (CXR) plays a pivotal role in the diagnosis of TP.<sup>7</sup> Typical radiographic features include homogeneous, segmental consolidation, often misinterpreted as bacterial pneumonia.<sup>8</sup> A study by Matsuura et al. (2018) highlighted that TP commonly manifests as acute respiratory infection, initiating with a dry cough followed by fever, with CXR showing alveolar consolidation.<sup>1</sup> This case report highlights a rare instance of TP complicated by septic shock in an immunocompetent individual, emphasizing the importance of early recognition and appropriate management.<sup>9</sup>

## CASE DESCRIPTION

A 30-year-old female patient was admitted to the emergency room. She complained of shortness of breath for 3 months, coughing up phlegm for 2 weeks, a history of fever, and weight loss. Her vital signs were blood pressure of 104/73 with norepinephrine and oxygen saturation of 99% with 8 liters of oxygen per minute. The patient's weight was 49 kg with a height of 168 cm (BMI score 17.3 kg/m<sup>2</sup>), putting her in the underweight category. Auscultation of the lungs revealed rales, and chest X-ray showed infiltrates, fibrosis, and cavities. Blood culture results showed *Staphylococcus kloosii* sensitive to Linezolid, Tetracycline, and Vancomycin. Sputum culture results showed *Aeromonas salmonicida ssp. salmonicida*, which is a contaminant organism. The patient was diagnosed with tuberculosis pneumonia accompanied by septic shock and was hospitalized for 18 days. The patient get ceftriaxone 1g/12 hours for 11 days combined with levofloxacin 750mg/24 hours for 14 days and also norepinephrine. The patient still showed no significant improvement, so the antibiotic was changed to vancomycin 1 g/12 hours based on the blood culture results for 6 days. Anti-tuberculosis medication was administered for 15 days, with 4 FDC regimen. After combination treatment, vancomycin and 4 FDC, the patient showed significant clinical and laboratory improvement, and allowing for discharge.

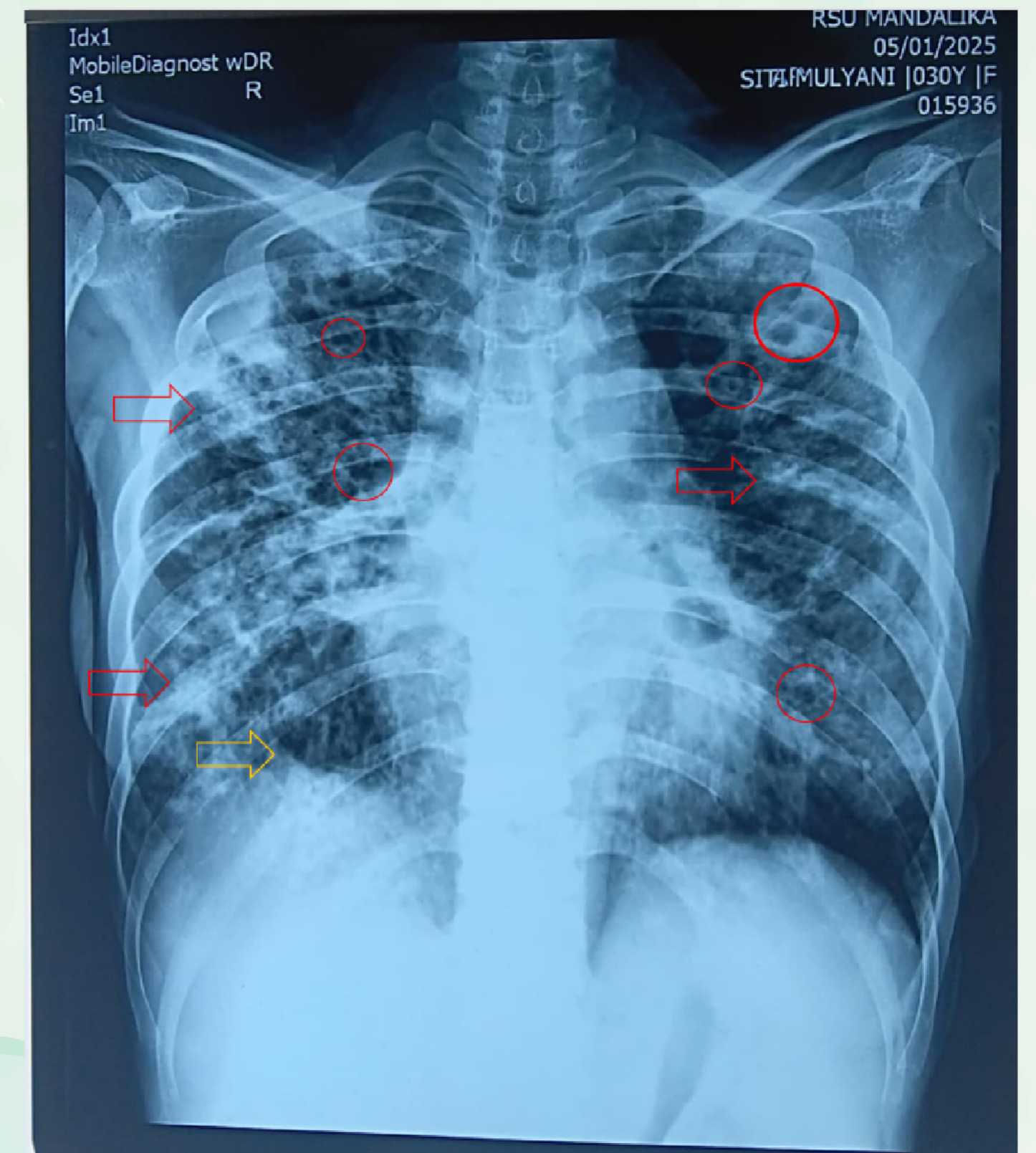


Figure 1. Chest X-ray showing multiple cavities (red circle), fibrosis (yellow arrow), and fibroinfiltrate (red arrow).

## DISCUSSION

This case involves a patient with tuberculosis (TB) pneumonia complicated by septic shock and a secondary infection. The immunosuppressive nature of TB facilitates the proliferation of opportunistic pathogens, such as *Staphylococcus kloosii*, a methicillin-resistant strain (MRS), leading to a severe secondary infection. This phenomenon is well-documented in TB patients, as the body's immune response is often compromised, increasing vulnerability to bacterial pathogens like *Staphylococcus*.<sup>10</sup> Additionally, the patient's underweight status further suppresses the immune system, contributing to the increased risk of infections. Bacteremia, in this case caused by *Staphylococcus kloosii*, occurs when bacteria enter the bloodstream, typically through compromised skin or mucosal barriers, or via invasive medical devices, such as intravenous catheters.<sup>11</sup> There is also a theoretical risk that the patient's infection could have been introduced through a non-sterile tattoo procedure. Although tattoos are generally safe in healthy individuals, they can lead to bacteremia in immunocompromised patients, as bacteria can be introduced into the bloodstream during the tattooing process.<sup>12</sup> Despite ceftriaxone being considered less effective against MRS, it may still contribute to clinical improvement when used in combination with antibiotics like levofloxacin, which has a broader spectrum of activity.<sup>13</sup> Vancomycin, a glycopeptide antibiotic, exerts its effect by binding to the D-Ala-D-Ala terminus of peptidoglycan precursors, inhibiting cell wall synthesis in Gram-positive bacteria.<sup>14</sup> This disruption weakens the bacterial cell wall, leading to bacterial lysis and death.<sup>14</sup> Vancomycin is particularly effective against *Staphylococcus* strains that are resistant to methicillin (MRS), including those exhibiting the MLSb (macrolide-lincosamide-streptogramin B) phenotype, which confers resistance to multiple classes of antibiotics.<sup>14</sup> In this case, *Aeromonas salmonicida* was identified in the sputum culture as a contaminant, typical of non-pathogenic isolates. *Aeromonas salmonicida ssp. salmonicida* is typically found in aquatic environments, particularly freshwater, and is a pathogen of fish, especially salmonids.<sup>15</sup>

## CONCLUSION

This case demonstrates that tuberculosis pneumonia can cause severe complications such as septic shock, even in individuals with normal immune systems. Early diagnosis is difficult because the symptoms resemble those of bacterial pneumonia. Appropriate management, including a combination of antituberculosis therapy, antibiotics based on culture results, and intensive support such as vasopressors, has been shown to be effective in improving the patient's condition. Rapid detection and treatment are essential to prevent mortality. The weakness of this case requires a procalcitonin test to determine whether this was tuberculosis pneumonia or not, but we didn't do it because of source limitation

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