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Case Report

Extra pulmonary tuberculosis: health care challenges faced by a rural family in a low middle-income country

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ABSTRACT

Tuberculosis (TB) is a highly infectious disease prevalent in many developing countries like India. The variation in its clinical presentation and the social stigma attached to the disease are the mainstay for its delay in diagnosis and management. We report a case of extrapulmonary TB (EPTB) in an individual from a rural family background. Despite a known family history of TB, there were delays in diagnosis at both the primary (patient) and secondary (healthcare) levels. In developing countries like India, the high prevalence of TB should foster clinicians to be highly suspicious even if the patient presents with non-specific symptoms in establishing early diagnosis and treatment of TB to reduce morbidity and mortality.

Keywords: Tuberculosis, Extrapulmonary tuberculosis, Delayed diagnosis, Pulmonary tuberculosis, Pleural effusion

INTRODUCTION

Tuberculosis (TB) remains a major global health issue and the leading infectious cause of death worldwide. According to the global TB report 2024, an estimated 10.8 million people developed TB in 2023, resulting in 1.09 million deaths among HIV-negative individuals and 161,000 deaths among those with human immunodeficiency virus (HIV).[1] Eight countries, led by India (26%), accounted for over two-thirds of global TB cases.

EPTB, which involves organs other than the lungs, such as pleura, lymph nodes, genitourinary tract, bones, and meninges, constituted 16% of TB cases globally in 2020.[2]

In India, EPTB accounts for 20-24% of all TB cases, with higher prevalence in immunocompromised individuals. Pleural and mediastinal TB are the second and third most common forms of EPTB after TB lymphadenitis, comprising about 20% of EPTB cases.[3]

Diagnosing EPTB is more difficult than pulmonary TB due to its nonspecific symptoms and reliance on specialised or invasive diagnostic procedures. In resource-limited settings, inadequate healthcare infrastructure, limited access to diagnostic tools, stigma, and socio-cultural barriers further complicate timely diagnosis and treatment. These challenges make EPTB a significant hurdle in India's ambitious goal of eliminating TB by 2025, five years ahead of the global world health organization (WHO) target.

CASE REPORT

A 42-year-old woman (AB) from a rural area in Bilaspur district, Himachal Pradesh, India, presented with a six-month history of chest pain. The pain was insidious in onset, gradually progressive, radiated to the back, and worsened with walking but was relieved by rest. Over the past two months, she also experienced decreased appetite and generalized weakness, without associated symptoms like fever, dyspnoea, cough, or night sweats.

Initially, the patient delayed seeking medical care, relying on home remedies. This patient delay was followed by a diagnostic delay, defined as the interval between first contact with the healthcare system and confirmation of the diagnosis, both critical factors in diseases like TB, where early intervention is essential.

Eventually, she visited a tertiary care centre where investigations revealed left-sided pleural effusion with elevated adenosine deaminase (ADA) levels in pleural fluid. She was diagnosed with EPTB and initiated on antitubercular therapy (ATT). She had no comorbid conditions such as diabetes, hypertension, HIV infection, chronic kidney disease, or immunocompromised status. She was also a non-smoker and non-alcoholic.

This case highlights the dual burden of patient and diagnostic delays in rural TB management and underscores the importance of early recognition and improved access to diagnostic services for EPTB, which often presents with non-specific symptoms and requires specialized testing.

Investigations

A chest X-ray (PA view) of the patient (AB) showed a left-sided pleural effusion (Figure 1). A pleural tap was performed, yielding 500 ml of pleural fluid. Cartridge-based nucleic acid amplification test (CB-NAAT) on the pleural fluid was negative for *Mycobacterium tuberculosis* (MTB). Biochemical analysis revealed elevated lactate dehydrogenase (LDH) at 368 IU/L and ADA at 45 IU/L. A sputum smear was negative for acid-fast bacilli (AFB), indicating that pulmonary TB was unlikely.

Outcome and follow-up

Following confirmation of the diagnosis, AB was started on ATT and remained compliant throughout her treatment.

Sociocultural practices

The family practiced segregation of personal belongings (clothes, utensils) of TB patients, reflecting a strong belief in disease transmissibility. They initially relied on traditional remedies and Ayurvedic treatments handed down through generations, which led to delays in seeking formal healthcare. The symptoms worsened before they sought medical attention. Moreover, diagnostic delays also occurred due to inadequate history-taking and failure to consider TB in the differential diagnosis at initial healthcare contacts.

Health-seeking behaviour

Despite being aware of TB transmission and prevention, the family exhibited poor health-seeking behaviour. Their mistrust in public health facilities and preference for home or alternative treatments contributed to delays. Due to the stigma associated with TB, they chose to collect medications from a nearby health and wellness centre rather than their village's primary health centre to avoid community judgment or discrimination.

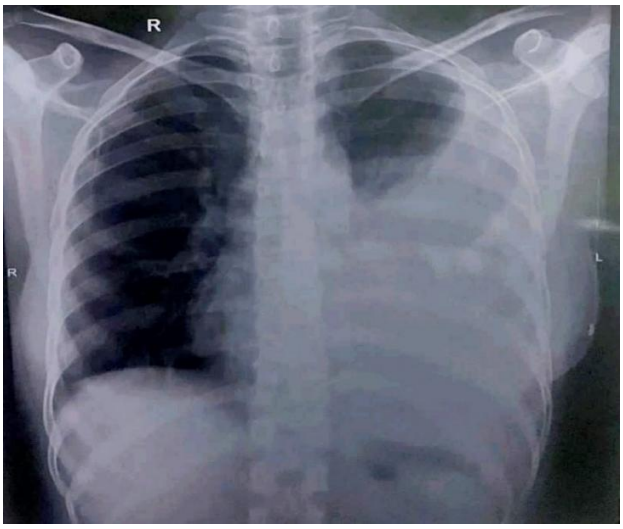

Figure 1: Chest X-ray posteroanterior view of AB.

DISCUSSION

TB continues to be a leading cause of preventable illness and death globally.[4] EPTB accounts for 10-20% of cases in immunocompetent individuals and up to 40% in immunocompromised patients.[5] Diagnosing EPTB can be particularly challenging due to its nonspecific clinical features and the low sensitivity of conventional tests like AFB staining and culture, which require a high bacterial load.[6]

Symptoms such as dry cough and pleuritic chest pain are commonly seen, while other signs like fever, night sweats, fatigue, and weight loss may overlap with various other conditions[7]. A high clinical suspicion is essential to avoid missed or delayed diagnoses. Many individuals delay seeking care, either misinterpreting the symptoms or relying on traditional remedies.

In this case, a notable finding was that AB's husband had been diagnosed with EPTB a year earlier. He experienced prolonged neck pain and was advised only symptomatic treatment at several facilities. He, too turned to Ayurvedic remedies before being correctly diagnosed at a tertiary centre. Later, while still on ATT, his daughter developed fever and cervical lymphadenopathy and was diagnosed with pulmonary TB. She also delayed disclosing her symptoms, contributing to patient delay.

These cases highlight how sociocultural beliefs, stigma, and limited trust in healthcare services contribute significantly to both patient and diagnostic delays. This pattern has also been noted in other studies on EPTB, where stigma and traditional beliefs hinder timely care.[8,9]

CONCLUSION

Addressing these issues requires a comprehensive approach such as tailoring health communication to cultural norms, increasing awareness about TB symptoms and treatment, reducing stigma, and enhancing the accessibility and quality of healthcare services. Training healthcare providers and improving diagnostic infrastructure, particularly in rural areas, are critical steps toward timely diagnosis and effective TB control.

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