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Case Report

Atypical presentation of tuberculosis: a case report highlighting the challenges of diagnosis and management

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ABSTRACT

Tuberculosis (TB) remains a significant public health issue worldwide and can present with atypical symptoms, making it difficult to diagnose. Atypical TB symptoms include non-specific symptoms and extrapulmonary TB, and patients with comorbidities may present with atypical TB due to impaired immune function. TB treatment includes antibiotics, which can cause hepatotoxicity, and require close monitoring for signs of liver injury. A 32-year-old female with intellectual developmental disorders was admitted to the hospital with suspected pneumonia and acute respiratory viral infection. Despite initial treatment with antibiotics, her oxygen saturation decreased, and she developed recurrent pneumothorax on the right side and neutrophilic pleuritis. Computed tomography (CT) scans showed increasing infiltrative changes, and bronchoalveolar lavage eventually revealed Mycobacterium tuberculosis DNA, leading to the diagnosis of tuberculosis pneumonia with pleurisy. This case report highlights the challenges of diagnosing TB and the importance of maintaining a high index of suspicion for TB in patients who do not fit the typical profile of the disease. The case also emphasizes the potential for drug-induced liver damage with TB treatment and the need for close monitoring. Early diagnosis and appropriate management are crucial to prevent further complications and improve outcomes in patients with TB.

Keywords: Tuberculosis, Atypical presentation, Drug-induced liver damage, Pleurisy, *Mycobacterium tuberculosis*

INTRODUCTION

Tuberculosis (TB) continues to be a significant public health concern globally, causing high morbidity and mortality rates.[1,2] TB can present with classical symptoms such as fever, cough, and weight loss, but it can also have atypical presentations with a varied range of symptoms, making it challenging to diagnose.[3-6]

Atypical presentations of TB are those that do not fit the typical profile of the disease. While classical symptoms such as cough, fever, and weight loss are commonly associated with TB, atypical presentations can manifest in various ways, including extrapulmonary TB, which can involve different organs, such as the bones, lymph nodes, and abdomen, among others.[4,7] Patients with atypical TB may also present with non-specific symptoms such as fatigue, malaise, and night sweats, which can easily be mistaken for other diseases. Additionally, patients with comorbidities such as HIV/AIDS or diabetes mellitus may experience atypical presentations of TB due to impaired immune function.[3,5,6,8]

TB treatment consists of a combination of antibiotics, typically for a period of six to nine months. The first-line drugs used to treat TB, as seen in this case, include isoniazid, rifampicin, ethambutol, and pyrazinamide. These drugs are known to cause various side effects, including hepatotoxicity, and require careful monitoring during treatment.[9-13] Drug-induced liver damage is a well-known complication of TB treatment, and it can be severe

and life-threatening in some cases. The risk factors for developing drug-induced liver damage include pre-existing liver disease, alcohol abuse, and advanced age.[10,12,13] However, it can also occur in individuals with no pre-existing liver disease. It is crucial to monitor patients receiving TB treatment closely for the signs of liver injury, such as jaundice, abdominal pain, and elevated liver enzymes. If drug-induced liver damage is suspected, prompt discontinuation of the offending agent and appropriate management is necessary to prevent further complications.[10,11]

This case report highlights the challenges encountered in diagnosing TB and emphasizes the importance of maintaining a high index of suspicion for TB, even in patients who do not fit the typical profile for the disease. It is worth mentioning that the patient was living the care home which could be additional risk factor, but the contact with TB infected patient was not reported. Although the patient had no recent travel to high-prevalence areas or immunosuppression, living in a country with an incidence of 16 per 100,000 people TB suggests that exposure to the bacterium may have occurred.[1,14-16]

CASE REPORT

The patient was a 32-year-old female with a known diagnosis of intellectual developmental disorders who was admitted to the hospital from a care centre with suspected pneumonia and acute respiratory viral infection (ARVI). She had a two-week history of high fever, cough, and chills. The body temperature continued to increase over time, and the patient developed pain in the left shoulder.

On admission, inflammatory markers were significantly high and the chest X-ray revealed pneumothorax on the right side and pneumonia. The patient was admitted to the pulmonology department for further evaluation and treatment.

The patient's oxygen saturation decreased, and on the first day of hospitalization, a right-sided thoracotomy with insertion of drain was done, which extracted air and a dark yellow, slightly cloudy substance. The analysis revealed cytosis (82696 cells/µl) with neutrophilic cells at 93%, protein at 45.6 g/l, lactate dehydrogenase (LDH) 10482 U/l and glucose of 0.08 mmol which was concluded as neutrophilic exudate indicative of complicated parapneumonic pleuritis.

On the third day, repeated RTG showed that the lung had expanded, and oxygen saturation in the blood had significantly improved. No more discharge from the drain was seen, and it was evacuated. The patient was treated with amoxicillin and clavulanic acid.

However, on the 4th day of hospitalisation, the oxygen saturation decreased again, and a repeated chest X-ray showed recurrent pneumothorax on the right side. A right-sided thoracostomy was performed, and greenish-yellow fluid was extracted together with air. The patient's fever persisted, and the inflammation markers decreased slightly. Computed tomography (CT) scan of the lungs revealed increasing infiltrative changes, leading to a change in the antibacterial therapy to piperacillin/tazobactam on the 6th day of hospitalization (Figure 1). Drain from the pleural space continued to release 100-400 ml of the fluid, but without air.

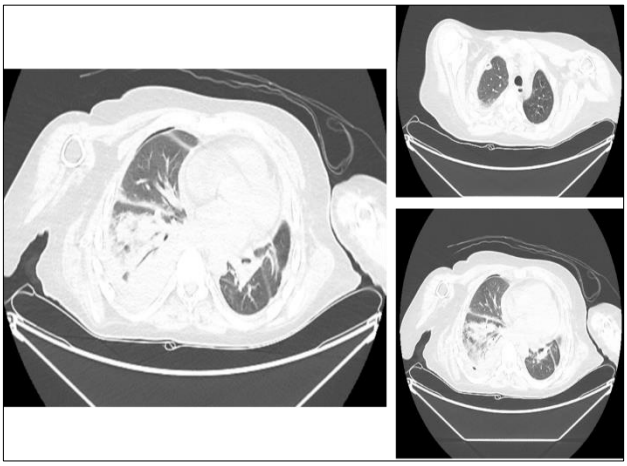

Figure 1: Lung CT on the 6th day of hospitalization.

Patient’s inflammatory markers decreased slightly over time, but the fever of 37.6-37.8 degrees of Celsius continued and the bronchoalveolar lavage was performed from the right side, which showed cytologically lymphocytic alveolitis and negative bacterial pneumonia inducers. On the 12th day of hospitalisation, pleural fluid was tested and revealed a pH of 7.33, lactate 14.3 mmol/l and glucose less than 0.2 mmol/l. However, on the next day BAL test results came back - *Mycobacterium tuberculosis* DNA were detected in low concentrations without rifampicin resistance. Considering the clinical course, tuberculosis pneumonia with pleurisy was the new suspected diagnosis. The patient was transferred to the TB Hospital with the infectious diseases ward.

The patient’s diagnosis was confirmed with molecular testing which came back positive from BAL with MTB DNA in low concentration and pleural fluid also was confirmed with molecular testing The patient's treatment was discussed in Concilium and the treatment was determined to be with isoniazid, pyrazinamide, rifampicinum and ethambutol which complies with the guidelines for the first line TB treatment

Unfortunately, on the 21st day of hospitalization, the patient's labs showed a spike in alanine transaminase (ALT) – 1008 (U/l) which was an indication of liver damage and the treatment of those medications was cancelled and the patient was put on detoxication protocol. The patient was transferred to the intensive care unit and laboratory markers went up to ALAT 2169 (U/l) and aspartate transaminase (AST) 10731 (U/l). Patient rapidly decompensated and entered hepatic coma.

Unfortunately, patient had an exitus letalis on the 25th day of hospitalisation.

DISCUSSION

The presented case is an example of an atypical presentation of tuberculosis, where the patient had no typical symptoms such as cough and weight loss, and only presented with pleuritic chest pain. This highlights the importance of considering TB as a differential diagnosis even in the absence of typical symptoms.[3,5,6,15]

The rapid onset and progression of symptoms, in this case, was also unusual for TB. Typically, TB presents with a more insidious onset, with symptoms developing gradually over several weeks to months. However, this patient's symptoms progressed rapidly, with dyspnoea and pleuritic chest pain developing within just a few days. In addition, the patient's liver function test results suggest drug-induced liver damage, which is a known potential side effect of anti-TB medications.[9-13] This highlights the need for close monitoring of liver function in patients receiving TB treatment and the importance of considering alternative medications or dose adjustments in patients with pre-existing liver disease.

In terms of diagnosis, it is important to consider various diagnostic tests such as sputum and pleural fluid analysis, chest X-ray, and CT scan to aid in diagnosis. However, in cases where TB is suspected but not confirmed, it may be necessary to consider more invasive diagnostic procedures such as bronchoscopy or biopsy.[1,7,15,16]

The development of pleural TB in this patient also adds to the diagnostic challenges of TB. While pulmonary TB is the most common form of the disease, extrapulmonary TB can occur in up to 23% of cases.[17] Pleural TB, in particular, can be difficult to diagnose, as it may not present with typical radiological findings or laboratory findings in the pleural fluid. In this particular case, it may also be worth considering screening for TB in care homes where the patient was living, as TB transmission can occur in communal settings.[2] Additionally, potential risk factors such as immunosuppression, travel history, and exposure to individuals with active TB should be considered.

Regarding the pleural TB presentation with neutrophilic exudate and no radiological findings, this may be due to the patient's immune response to the infection or due to the limitations of imaging studies in detecting the early stages of TB. Therefore, a high degree of clinical suspicion is necessary to ensure prompt diagnosis and appropriate treatment.

In summary, this case highlights the importance of considering TB as a potential diagnosis even in atypical presentations, the need for close monitoring of liver function during anti-TB treatment, and the importance of utilizing various diagnostic tests to aid in diagnosis. Screening in communal settings and consideration of potential risk factors are also important in ensuring timely diagnosis and treatment.

CONCLUSION

This case highlights the importance of maintaining a high index of suspicion for TB, even in patients who do not fit the typical profile for the disease. While TB is often associated with immunosuppression or recent travel to high-prevalence areas, this patient did not have either of these risk factors. However, the fact that the patient lived in a country with an incidence of 16 per 100,000 people of TB suggests that exposure to the bacterium may have occurred – however it is worth to note that the TB incidence in the care homes could be higher.

The diagnostic challenges, in this case, were also noteworthy. The initial workup, including chest X-ray and pleural fluid analysis, did not suggest TB as the underlying cause. The neutrophilic exudate found in the pleural space was atypical for TB, which usually presents with lymphocytic exudate. This further emphasizes the importance of considering TB as a potential cause of pleural effusion, even when the clinical presentation and laboratory findings do not fit the typical profile which is rather rare because even atypical TB is often associated with immune compromise, as well as drug-resistant strains of the bacterium.

In addition to the diagnostic challenges of TB, this case also highlights the potential for TB drug-induced liver damage. The patient in this case had elevated liver enzymes, which can be a result of TB medication-induced liver damage. Monitoring liver function during TB treatment is important to prevent drug-induced liver damage and ensure appropriate dosing of TB medication.

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REFERENCES

1. Dinnes J, Deeks J, Kunst H, Gibson A, Cummins E, Waugh N, et al. A systematic review of rapid diagnostic tests for the detection of tuberculosis infection. Health Technol Assess (Rockv). 2007;11(3):1-196.
2. Van Soolingen D. Molecular epidemiology of tuberculosis and other mycobacterial infections: main methodologies and achievements. J Intern Med. 2001;249(1):1-26.
3. Deshpande A, Gupta P, Simha Reddy AV, Ramachandra Reddy GV. Atypical presentation of tuberculosis. J Oral Maxillofac Pathol. 2020;24(2):404.
4. Sharma SK, Mohan A. Extrapulmonary tuberculosis. Indian J Med Res. 2004;120(4):316-53.
5. Ganesh K, Faizal B, Oomen AT, Rao G, Pillai MGK. Clinical conundrums: Atypical presentations of

tuberculosis. Ann Trop Med Public Health. 2017;10(1).
6. Qi M, Li PJ, Wang Y, Liang ZA. Clinical features of atypical tuberculosis mimicking bacterial pneumonia. Open Medicine (Poland). 2021;16(1):1608-15.
7. Valdés L, Alvarez D, San José E, Penela P, Valle JM, García-Pazos JM, Suárez J, Pose A. Tuberculous pleurisy: a study of 254 patients. Arch Intern Med. 1998;158(18):2017-21.
8. Chaisson RE, Schecter GF, Theuer CP, Rutherford GW, Echenberg DF, Hopewell PC. Tuberculosis in patients with the acquired immunodeficiency syndrome. Clinical features, response to therapy, and survival. Am Rev Resp Dis. 1987;136(3).
9. Bu J, Zhou L, Qin X. Observation of drug-induced liver damage caused by chemotherapy of pulmonary tuberculosis and analysis of its nursing effect. Acta Microscopica. 2020;29(4).
10. Borzakova SN, Aksenova VA, Reĭzis AR. Viral and drug-induced liver damage in children with tuberculosis: prevalence, clinical features. Eksp Klin Gastroenterol. 2013;(1):38-43.
11. Zhang S, Pan H, Peng X, Lu H, Fan H, Zheng X, et al. Preventive use of a hepatoprotectant against anti-tuberculosis drug-induced liver injury: A randomized controlled trial. J Gastroenterol Hepatol. 2016;31(2):409-16.
12. Ikegame S, Wakamatsu K, Fujita M, Nakanishi Y, Kajiki A. A case of isoniazid-induced liver injury diagnosed by use of the DLST, and successful reintroduction of isoniazid for pleural tuberculosis. J Infect Chemother. 2011;17(4):530-3.
13. Su Q, Liu Q, Liu J, Fu L, Liu T, Liang J, et al. Study on the associations between liver damage and antituberculosis drug rifampicin and relative metabolic enzyme gene polymorphisms. Bioengineered. 2021;12(2):11700-8.
14. Kamerbeek J, Schouls L, Kolk A, van Agterveld M, van Soolingen D, Kuijper S, et al. Simultaneous detection and strain differentiation of Mycobacterium tuberculosis for diagnosis and epidemiology. J Clin Microbiol. 1997;35(4):907-14.
15. Smith I. Mycobacterium tuberculosis pathogenesis and molecular determinants of virulence. Clin Microbiol Rev. 2003;16(3):463-96.
16. Denkinger CM, Schumacher SG, Boehme CC, Dendukuri N, Pai M, Steingart KR. Xpert MTB/RIF assay for the diagnosis of extrapulmonary tuberculosis: A systematic review and meta-analysis. Eur Resp J. 2014;44(2).
17. Valdés L, Alvarez D, San José E, Penela P, Valle JM, García-Pazos JM, Suárez J, Pose A. Tuberculous pleurisy: a study of 254 patients. Arch Intern Med. 1998;158(18):2017-21.

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