Positive Outcome of Pulmonary Tuberculosis Associated with Extraordinary Extensive Extrapulmonary Tuberculosis in an Immunocompetent Adult

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Abstract

Tuberculosis (TB) is known to cause a wide variety of complications and atypical presentations. It usually presents with typical symptoms. Here, we present the unusual case of pulmonary TB with the involvement of lungs, brain, liver, spleen, vertebra, skin, left cervical lymph nodes, bone marrow, and heart. It is unique with this case of disseminated TB presenting in a squall and decimating manner involving many different organs simultaneously in an immunocompetent patient who was treated successfully with antitubercular treatment. According to literature review, this is the first case report of this type especially from an endemic country like India.

Keywords: Atypical presentation, cold abscess, meningitis, pancytopenia, Pott’s spine

INTRODUCTION

One-third of the world’s population is affected with tuberculosis (TB) and is the leading cause of mortality and morbidity.¹ Its treatment remains the most efficient and cost-effective of all health interventions. Pulmonary TB typically presents with the symptoms of cough, weight loss, anorexia, night sweats, and malaise that is usually present for a few weeks before presentation to clinicians.² The factors, especially in developing countries such as India which contribute to increase in incidence and prevalence of TB, are poverty, malnutrition, unhygienic living standards, homelessness, drug abuse, spread of the HIV epidemic, and immigration.¹,³⁻⁵ However, atypical presentation of TB is not uncommon in developing countries like India.⁶

CASE REPORT

A 57-year-old male, nonsmoker, farmer was referred to the emergency department with complaints of low-grade fever, cough with expectoration, and generalized weakness for 14 days and headache and low backache for 5 days followed by altered behavior (general condition E3V4M5) for 1 day. His vitals were as follows: blood pressure in the right arm 112/80 mm Hg, pulse rate 52/min, respiratory rate 18/min, and temperature 100.6°F. General examination revealed pallor and left cervical lymphadenopathy. Chest examination found a cold abscess on the back of chest (interscapular area) and crepitations in both the lung fields [Figure 1a]. Right hypochondrium was tender. Cardiac examination was unremarkable, except bradycardia. Signs of meningeal irritation (neck rigidity and Kernig’s sign) were present and Brudzinski’s sign was absent. Bilateral plantar reflex was extensor. Bilateral pupils were normal in size and reaction to light. He had no history of diabetes, hypertension, steroid or drug abuse, smoking, malignancy, chronic illness, organ transplantation, recurrent infection, or similar episode. Detailed history and examinations were performed, and blood samples were sent for relevant investigations. His complete blood count showed hemoglobin 6.5 g/dL (12–15), total leukocyte count 3.1 × 10³/μL (4–11), and platelet count 75 × 10³/μL (150–410). His liver function test was mildly deranged with serum bilirubin total 0.8 mg/dL (up to 1.0), alanine aminotransferase 74

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U/L (up to 41), aspartate aminotransferase 88 U/L (up to 40), alkaline phosphatase 112 U/L (0–105), serum protein 7.2 g/dL (6.4–8.3), and serum albumin 4.0 g/dL (3.4–4.8).

Renal function test, serum electrolytes, random blood sugar, and urine examination were normal. Serology for hepatitis A, B, and C, HIV, and dengue was negative. Malaria and typhoid were not detected. Electrocardiography revealed sinus bradycardia. Chest X-ray showed bilateral multiple heterogeneous reticulonodular infiltrates [Figure 2a]. Computed tomography (CT) of the head was normal. Contrast-enhanced CT of the chest and abdomen revealed multiple randomly distributed centrilobular nodules with tree in bud opacities in both lung parenchyma with multiple hypodense lesions in the liver and spleen and an inflammatory lesion in interscapular region between paraspinal muscles with the destruction of D2 spinous process [Figure 2b-d]. Bone marrow aspiration examination showed normoblastic erythroid hyperplasia [Figure 3]. Examination of the sputum and pus from cold abscess was positive for acid-fast bacilli (AFB) Mycobacterium tuberculosis. Fine-needle aspiration from the cervical lymph node was suggestive of TB. Cerebrospinal fluid (CSF) analysis revealed straw color, total cell count 200/mm³ (0–5) with lymphocyte predominant, protein 128 mg/dL (15–45), sugar 28 mg/dL (40–80), and adenosine deaminase 18 U/L (0–10). AFB was not detected in CSF, and its culture was sterile. The patient denied for organ (liver and spleen) biopsies. Final diagnosis based on clinical examination and investigation was established as disseminated TB involving multiple organs with pancytopenia.

Antitubercular treatment (ATT) with four-drug regimen (rifampicin, isoniazid, ethambutol, and pyrazinamide) with corticosteroid was added to the treatment according to weight and ATT was continued for 12 months. The patient started getting improvement on ATT; cold abscess was healed [Figure 1b]. He was alright after completion of ATT and further follow-up of 15 months.

DISCUSSION

According to the World Health Organization Global TB Report published in 2017, India remains to have the highest number of TB cases throughout the world. It is estimated to have 10.4 million new TB cases worldwide in 2016, in those India remains to have the highest number of TB cases throughout the world with 27.9 lakh cases. Moreover, up to 4.23 lakh mortalities were estimated during the same year.[7] In spite of many major advances in awareness, treatment, and control program of the disease, there is consistent high burden in developing countries. Sometimes, it may be an uncommon presentation of disease which becomes a diagnostic dilemma so delays in early diagnosis.[2,6] Disseminated TB is rare, especially in the immunocompetent host. It is caused by lymphohematogenous spread of massive numbers of tubercle bacilli during both primary and postprimary TB involving two or more organs.[6,9] Miliary TB is potentially fatal and occurs most commonly in infants, malnourished patients, and immunosuppressed patients. This may be because of host immunity.[9] Dissemination of TB may involve any body organ, but commonly affected organs are lungs, liver, and spleen (80%–100%), followed by kidneys (60%) and bone
marrow (25%–75%).\textsuperscript{[9,10]} Bones and joints were also reported the second most frequently involved organ after lungs.\textsuperscript{[9]} Hence, significant improvement or good outcomes in cases of disseminated TB are associated with early initiation of ATT.\textsuperscript{[6,8]} There was only a case of disseminated TB involving lung, liver, spleen, and vertebra with sparing of bone marrow in an infant.\textsuperscript{[7]} To the best of our knowledge, there have been no cases of pulmonary TB of immunocompetent adult with the involvement of lung, brain, liver, spleen, vertebra, skin, left cervical lymph nodes, bone marrow, and heart. Cutaneous TB can have various presentations.\textsuperscript{[11]} Tuberculous abscesses are nontender and fluctuant subcutaneous nodules accounting with acute miliary TB but infrequently associated with immunocompetent patients. These lesions are frequently reported on the extremities but may occur at any skin site as in our case cold abscess was developed in interscapular regions which was a presentation of unusual site.\textsuperscript{[12]} Literature has shown the various atypical features associated with TB such as haematological abnormalities such as anemia of different types, pancytopenia, leukoerythroblastic anemia, leukemoid reaction, rarely dissemination intravascular coagulation (disseminated intravascular coagulation), and myelofibrosis.\textsuperscript{[13]} Some study considered that pancytopenia is found only in patients with disseminated/miliary TB and the factors contributing pancytopenia are hypersplenism, histiocytic hyperplasia, maturation arrest, or infiltration of the bone marrow by caseating or noncaseating granulomas causing reversible or irreversible fibrosis.\textsuperscript{[14]} Despite negative workup for immunosuppression in this case, dissemination of TB was a considerable seriousness.

**Conclusion**

The present report draws attention to the importance of the uncommon presentation of pulmonary TB with the involvement of multiple organs of a commonly encountered condition of developing country, but timely diagnosis and rapid initiation of treatment result favorable outcomes.

**Declaration of patient consent**

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

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**Conflicts of interest**

There are no conflicts of interest.

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