Miliary tuberculosis with pulmonary and extrapulmonary component complicated with acute respiratory distress syndrome

Bhupen Barman¹, Iadarilang Tiewsoh¹, Kyshanlang G. Lynrah¹, Baphira Wankhar², Taso Beyong¹, Neel Kanth Issar¹

Departments of ¹General Medicine and ²Radiology, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong, Meghalaya, India

ABSTRACT

Miliary tuberculosis results from the lymphohematogenous spread of the tubercle bacilli to the vascular beds in the lungs and other organs. Diagnosis is made by clinical judgment and chest X-ray showing miliary mottling of the lung fields. Another imaging study like computed tomography imaging of the lungs and abdomen can also be supportive in diagnosing miliary tuberculosis. We present a case of miliary tuberculosis in an immunocompetent young male with atypical manifestation of a left-sided pleural effusion and a life-threatening complication of acute respiratory distress syndrome during hospital stay which required noninvasive mechanical ventilation and steroids therapy, along with antitubercular medication.

Keywords: Acute respiratory distress syndrome, miliary tuberculosis, pleural effusion

Introduction

Tuberculosis remains one of the most common causes of death from infectious disease globally. Miliary tuberculosis is a potentially fatal form of tuberculosis which results in the hematogenous dissemination of the Mycobacterium tuberculosis hence includes both pulmonary and extrapulmonary form of tuberculosis.¹ We report a rare presentation of miliary tuberculosis in the form of pulmonary manifestation, with extrapulmonary lesion, left-sided tubercular pleural effusion complicated with acute respiratory distress syndrome which accounts a high mortality rate if not dealt in time and aggressively.

Case Report

A 25 year old male who is a hospital ward attendant by occupation presented to emergency ward with the chief complaints of left sided chest pain, productive cough and low grade fever with night sweats for the last one month. This was associated with significant loss of his weight and appetite. There was no history of swelling of his limbs, jaundice and diarrhea. He was a non diabetic, non hypertensive and there was no past history of tuberculosis or any major febrile illness in the past. There was no history of intravenous drug abusers or high risk behaviors. On examination of the patient, he was febrile, with a pulse rate of 106 beats/min, blood pressure of 110/70 mmHg, and respiratory rate of 30/min. Respiratory system examination had a dull note on percussion with decreased breath sounds on auscultation suggesting the presence of a left-sided pleural effusion. Other

Address for correspondence: Dr. Bhupen Barman, Department of General Medicine, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong - 793 018, Meghalaya, India. E-mail: drbhupenb@gmail.com

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systems yielded no clinical abnormalities. His chest x ray was suggestive of bilateral miliary mottling with a left sided moderate pleural effusion which later resolved with intercostal drainage (ICD) [Figure 1a and b]. Laboratory evaluation showed exudative pleural effusion by Light's criteria with pleural fluid protein of 5.5 mg/dl, pleural fluid lactate dehydrogenase 1194 mg/dl, gram-stain showing no pus cells, with lymphocyte prominent cells on cytology and high adenosine deaminase levels of the pleural fluid 216 µIU/ml. Contrast enhanced computed tomography chest revealed multiple miliary nodules in the left lung, consolidation in the right lung with relative subpleural sparing [Figure 2]. The hematological profile showed mild anemia with high erythrocyte sedimentation rate. Except for his mild liver dysfunction, rests of the biochemistry results were normal. Except for his mild liver dysfunction, rests of the biochemistry results were normal. His viral markers (hepatitis B surface antigen, anti-hepatitis C virus, HIV) were negative. Blood, urine, and sputum culture were sterile, and sonography of abdomen was normal. With the above evidence, the patient was started on antitubercular therapy, isoniazid, rifampicin, pyrazinamide, and ethambutol under directly observed treatment, short-course regimen. On the 4th day, the patient had respiratory distress with oxygen saturation to 60% at room air and the arterial blood gas was suggestive of low PO2 40% with a PF ratio of 200. His chest X-ray was suggestive of acute respiratory distress syndrome (ARDS) [Figure 1c], and transthoracic two-dimensional echocardiography showed a good left ventricular function. The patient was given noninvasive ventilation with the initiation of corticosteroid. Pathologically ARDS in miliary tuberculosis is said to develop due to the release of Mycobacterium or their products into the pulmonary circulation. The predictors of ARDS in tuberculosis includes miliary tuberculosis, duration of illness more than 30 days, elevated serum alanine transferase >100 IU/ml and absolute lymphocyte count <1625/mm3 for which our patient had the initial three predictors.[7] Another differential diagnosis in such a case was immune reconstitution inflammatory syndrome (IRIS) which usually occurs after 1–2 weeks of antitubercular therapy, resulting in fever, weight loss, worsening respiratory symptoms, with imaging suggestive of new pulmonary infiltrates and intrathoracic lymph node enlargement. However, since the onset of the respiratory symptoms and signs worsening occurred acutely within 2–3 days, IRIS was not considered and imaging and laboratory finding were more suggestive of an acute respiratory distress syndrome.

Miliary tuberculosis is found to have a fatal course. Corticosteroids in miliary tuberculosis have been found to be beneficial in those with associated tubercular meningitis, ARDS,
IRIS, large pericardial effusion, immune complex nephritis, and histiocytic phagocytosis syndrome. The dose of prednisolone used in ARDS with tuberculosis is 40 mg a day for 1 week, followed by 20 mg for 6 weeks which is tapered over 5 months. Studies have shown a reduced mortality in the steroid group compared to the control group but with few studies showing conflicting results.

Conclusion

This case highlights the atypical presentation of miliary tuberculosis which if left untreated is usually fatal, and early recognition of this disease is of great importance acknowledging the important predictors of the complications. In the present era of increased evolving cases of multidrug-resistant tuberculosis, tuberculosis should be one of the differential diagnoses in patients presenting for the first time with acute respiratory distress syndrome masking the typical picture of miliary tuberculosis on the chest X-ray.

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Conflicts of interest

There are no conflicts of interest.

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