Contents lists available at ScienceDirect

Asian Pacific Journal of Tropical Disease

journal homepage:www.elsevier.com/locate/apjtd

Document heading doi: 10.1016/S2222-1808(12)60109-1

Miliary tuberculosis with bilateral pneumothorax - A case report

TM Dhamgaye MD[1], Gyanshankar Mishra MD[2], Kunal Deokar MBBS[3]

[1]*Prof. & Head, Dept. of Pulmonary Medicine, BJ Medical College, Pune, Maharashtra, India*
[2]*Assistant Professor, Dept. of Pulmonary Medicine, Government Medical College, Nagpur, Maharashtra, India*
[3]*Junior Resident (3rd Year), Dept. of Pulmonary Medicine, Government Medical College, Nagpur, Maharashtra, India*

ARTICLE INFO

Article history:
Received 24 August 2012
Received in revised form 10 September 2012
Accepted 18 December 2012
Available online 28 December 2012

Keywords:
Miliary tuberculosis
Bilateral pneumothorax

ABSTRACT

A thirty five year-old male presented with cough, fever and anorexia since two months and sudden increase in shortness of breath three days back. Chest radiograph showed bilateral miliary mottling with bilateral pneumothorax. Patient was managed with bilateral intercostal drainage tube and anti-tubercular treatment. However patient did not adhere to advised regular follow-up and died six months after starting anti-tubercular treatment.

1. Introduction

Tuberculosis (TB) is an infectious disease entailing enormous mortality and morbidity. Each year, *Mycobacterium tuberculosis* (*M. tuberculosis*) accounts for nearly 2 million deaths and is responsible for 9 million newly diagnosed cases of tuberculosis worldwide. In India, about 33 million people are infected with *M. tuberculosis*, and 3 million people suffer from pulmonary tuberculosis. Pneumothorax is common in cavitary tuberculosis[1], however it is rare in miliary tuberculosis. We report a case of miliary tuberculosis with bilateral pneumothorax.

2. Case report

A 35 year-old married male farmer had been presented with cough with scanty expectoration, evening rise fever and anorexia for two months. He also complained of rapid development of severe breathlessness for the past three days. The patient was non-smoker and non-alcoholic. History of past illness was insignificant. He was taking anti tuberculosis treatment (RNTCP- Revised National Tuberculosis Programme) under category 1 (rifampicin, ethambutol, isoniazid and pyrazinamide to be administered for two months, followed by two drugs (rifampicin and isoniazid) to be administered for four months (the drugs being given on every alternate day) for pulmonary tuberculosis from a primary health care centre since the last fifteen days. He was sputum smear negative for acid-fast bacilli at the initiation of treatment as per the treatment card. Physical examination revealed that patient had drowsiness, cyanosis, tachycardia (pulse 128/min), hypotension (blood pressure 90 mm of Hg systolic, diastolic- not recordable) and tachypnea (respiratory rate 40 breaths/min). Chest movements were diminished bilaterally with central trachea. Percussion revealed hyperresonant note on both sides. Breath sounds were decreased bilaterally.

Laboratory investigations revealed total leukocyte count of 7 400/mm^3, differential leukocyte count-polymorphs-75%, lymphocytes-21%, eosinophils-2%, monocytes-2%, hemoglobin-14 gm%, erythrocyte sedimentation rate was 28 mm at the end of 1st hour and random blood sugar-90 mg%. Liver function tests and kidney function tests were normal. The patient was seronegative for HIV and HBSAg antigen.

*Corresponding author: Gyanshankar Mishra, Assistant Professor, Dept. of Pulmonary Medicine, Government Medical College, Nagpur , Maharashtra , India- 440003
Tel.: 91-9850349074
E-mail: gpmishra81@gmail.com

Serum sodium was 134 mEq/L and serum potassium was 3.2 mEq/L.

Urgent chest X-ray was suggestive of bilateral miliary mottling with bilateral pneumothorax (Figure 1). Intercostal drainage chest tubes (connected to under-water seal) were inserted bilaterally (one on each side) in 6th intercostal space in mid-axillary line (Figure 2). It resulted in immediate relief of breathlessness. Sputum direct smear was repeatedly negative for acid-fast bacilli and also sputum culture for acid-fast bacilli was negative. Mantoux test with 1 tuberculin unit was negative.

Figure 1. Chest X-ray PA view at presentation suggestive of bilateral miliary mottling with bilateral pneumothorax.

Figure 2. Chest X-ray PA view after bilateral insertion of intercostal drainage Chest tubes.

Fibre-optic bronchoscopy was done and broncho-alveolar lavage fluid was negative for acid-fast bacilli smear and culture, fungus staining and culture and Gram stain and culture. Transbronchial lung biopsy was done which revealed granulomatous inflammation. TB PCR of the broncho alveolar lavage fluid was positive for *Mycobacterium tuberculosis*. Ultrasonography of the abdomen revealed sub-centimetric lymphadenopathy in pre and para aortic region. Fundoscopy was within normal limits.

Diagnosis of "miliary tuberculosis with bilateral pneumothoraces" was made. The patient was put on four drug anti tuberculosis treatment. Four drugs (rifampicin, ethambutol, isoniazid and pyrazinamide) was administered for two months, followed by two drugs (rifampicin and isoniazid) to be administered for four months. His general condition gradually improved, fever subsided, breathlessness became less and blood pressure was normalized. After fifteen days and twenty days respectively, the chest tubes on left and right side were removed after complete expansion of both lungs.

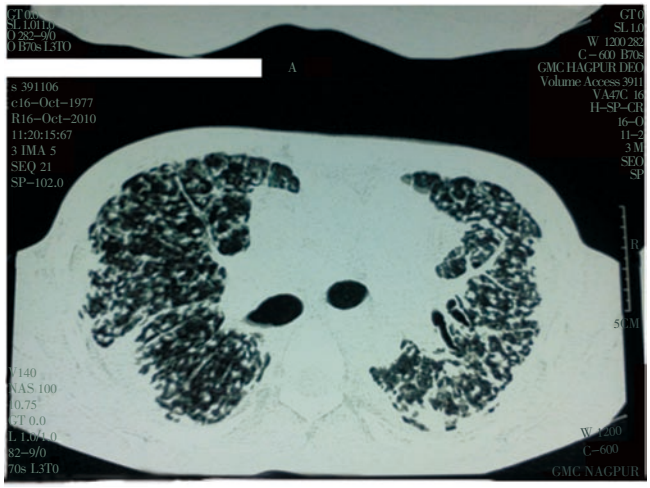

Figure 3. HRCT Thorax done after bilateral chest tube removal.

Figure 4 . Chest X-ray PA View after 1 month suggestive of bilateral military mottling.

High resolution computed tomography scan of the thorax (HRCT Thorax) (Figure 3) done after bilateral chest tube removal revealed following: a) multiple well-defined small nodules diffusely scattered throughout both lung fields; b) small cavitary lesion involving both apico-posterior segment of upper lobe; c) diffuse pleural thickening upper and lower

lobe on both sides; d) mediastinal lymphadenopathy.

Patient was discharged on 40th day in a hemodynamically stable condition.

After one month patient was followed up for review in outpatient department. At this time patient had a sense of generalized well-being, he had gained two kilograms weight in the last one month. Fever and cough had subsided, however breathlessness persisted. Chest X-ray (Figure 4) was suggestive of bilateral miliary mottling. Complete blood count, random blood sugar, liver and kidney function tests were within normal limits. Sputum direct smear was negative for acid-fast bacilli. Ultrasonography of the abdomen was within normal limits. 2D-echo revealed mild pulmonary hypertension with pulmonary arterial systolic pressure of 45 mm of Hg. Patient's anti-tuberculosis treatment was continued.

After this follow up, patient did not report to the outdoor patient department inspite of repeated instructions. However telephonic enquiry regarding the patient's health status was made at regular intervals. Five months after the last follow up the patient developed sudden breathlessness at night and died within four hours at home as per the history given by the relatives.

3. Discussion

The commonest cause of pneumothorax in India is tuberculosis[2]. Although pneumothorax is a common complication of cavitary pulmonary tuberculosis, its occurrence as a complication of miliary tuberculosis is rare.

Miliary tuberculosis has been shown to be present in 5.4% of cases of simultaneous bilateral spontaneous pneumothorax[3]. Although miliary tuberculosis is rare, when associated with bilateral pneumothorax, it is potentially life-threatening. Also it may not be present at the beginning of the therapy but might be seen during the course of therapy when it is least expected[4]. Recurrence of pneumothorax is also known to occur in patients of miliary tuberculosis[5,6] which could have been the cause of death in the present case.

Various mechanisms have been proposed to explain the pathogenesis of pneumothorax in miliary tuberculosis[7], including a) formation of small area of confluent subpleural miliary nodule that undergoes caseation and necrosis with subsequent rupture into pleural space causing pneumothorax; b) increased intra-alveolar pressure due to excessive coughing ruptures intra-alveolar septa that cause pneumomediastinum. Pneumothorax in this situation occurs due to rupture of air through mediastinal pleura; and c) bullous or emphysematous lesion might form near military tubercles that may rupture to produce pneumothorax.

In the present case there was no pneumomediastinum. The first and third mechanism could be the possible mechanisms in our case since the computed tomography scan of the thorax revealed small cavitary lesion in the apicoposterior segment of both upper lobes.

The emergency management for pneumothorax in military tuberculosis is tube thoracostomy. In patients with recurrent pneumothoraces, chemical pleurodesis or VATS pleurodesis may be considered for successful outcome[7]. Early diagnosis and initiation of anti tuberculosis treatment with appropriate anti tuberculosis drug regime is extremely essential in such cases. TB PCR investigation was positive in the present case and it pointed towards the tubercular etiology of the disease process. The sensitivity of TB PCR in broncho-alveolar lavage fluid is 28.1% with a specificity of 99.0%[8,9].

The present case highlights the fact that pneumothorax or its recurrence should be suspected in patients with miliary tuberculosis who present with worsening clinical course especially in the form of increased breathlessness. Bilateral pneumothorax in a case of military tuberculosis is a poor prognostic factor.

Conflict of interest statement

We declare that we have no conflict of interest.

References

[1] Wilder RJ, Beacham EG, Ravitch MM. Spontaneous pneumothorax complicating cavitatory tuberculosis. *J Thoracic Cardiovascular Surg* 1962; **43**: 561-573.

[2] Agnihotri S, Sharma TN, Jain NK, et al. Spontaneous pneumothorax: A clinical study of eight cases in Jaipur. *Lung India* 1984; **4**: 189-192.

[3] Graf-Deuel E, Knoblauch A. Simultaneous bilateral spontaneous pneumothorax. *Chest* 1994; **105**: 1142-1146.

[4] Wammanda RD, Amen EA, Ali FU. Bilateral pneumothorax complication of miliary tuberculosis in children: Case report and review of literature. *Ann Trop Paediatr* 2003; **23**: 149-152.

[5] Gupta PP, Mehta D, Aggarwal D, Chand T. Recurrent pneumothorax developing during chemotherapy in a patient with miliary tuberculosis. *Ann Thorac Med* 2007; **2**(4): 173-175.

[6] Tiwari N, Kandpal V, Tewari A, Rao KRM, Tolia VS. Investigation of tuberculosis clusters in Dehradun city of India. *Asian Pac J Trop Med* 2010; **3**(6): 486-490.

[7] Arya M, George J, Dixit R, Gupta RC, Gupta N. Bilateral spontaneous pneumothorax in miliary tuberculosis. *Indian J Tuberc* 2011; **58**: 125-128.

[8] Jaafar J, Hitam WHW, Noor RAM. Bilateral atypical optic neuritis associated with tuberculosis in an immunocompromised patient. *Asian Pac J Trop Biomed* 2012; **2**(7): 586-588.

[9] Boonsarngsuk V, Suwannaphong S, Laohavich C. Combination of adenosine deaminase activity and polymerase chain reaction in bronchoalveolar lavage fluid in the diagnosis of smear-negative active pulmonary tuberculosis. *Int J Infect Dis* 2012; Epub ahead of print.