



Disseminated Tuberculosis in A Young Immunocompetent Male – A Case Report

KEYWORDS

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ABSTRACT *CASE REPORT: A 30 year old male patient presented with fever and breathlessness associated with loss of weight and appetite for 5 months. Physical examination revealed bilateral crepitations and wheeze over all areas of the chest. Laboratory investigations showed thrombocytopenia with elevated liver enzymes. CT-thorax showed miliary mottling. CT-abdomen showed enlarged lymph nodes and liver involvement. Bone marrow biopsy revealed granulomatous inflammation suggestive of TB. Viral markers were negative. Patient during the course in the hospital had worsening lungs monitored by ABG and patient had ARDS complicated with pneumothorax and hence diagnosed as disseminated miliary-TB involving the lung, liver and bone marrow. Miliary-TB is a lethal form of tuberculosis usually affecting immunocompromised individuals however 1-2% can occur in immunocompetent individuals as in this case. Early diagnosis by clinical suspicion and initiation of early anti tuberculosis treatment is essential for improved outcome and reduced mortality.*

INTRODUCTION

Disseminated tuberculosis refers to concurrent involvement of atleast two non-contiguous organ sites of the body, or involvement of blood or bone marrow by tuberculosis process. Miliary tuberculosis results from hematogenous spread causing discrete foci, usually of millet seed size over the lung and other viscera. Miliary pattern on chest radiograph is the hallmark of miliary tuberculosis. Miliary or disseminated tuberculosis continues to be a diagnostic problem even in endemic areas. Mortality remains high despite the effective therapy available. It usually occurs in immunocompromised individuals, however 1-2 percent occur in immunocompetent individuals.

CASE REPORT

A 30 year old male patient came with complaints of fever for five months, intermittent, occasionally associated with chills, with evening rise of temperature. He complained of breathlessness for one month, which was grade 1 by MRC classification which progressed to grade 2 for the past 5 days with no history of orthopnea or paroxysmal nocturnal dyspnea. Complained of cough for one month with minimal sputum production which was white, mucoid and not blood stained. He also gave history of weight loss around 4 kilograms in a month, loss of appetite. He had no comorbidities like diabetes mellitus, systemic hypertension or bronchial asthma. He had no history of tuberculosis or swine flu. He had no history of smoking or alcohol consumption.

On examination, He was moderately built and moderately nourished with a BMI of 19.1 with no external markers of tuberculosis. He was febrile with a temperature of 101 degrees fahrenheit and had pallor. His heart rate was 106 per minute with a blood pressure of 120/80 mm of Hg. Respiratory system examination revealed bilateral diffuse crepitations and wheeze. On abdominal examination, he had non

tender hepatomegaly with a liver span of 15 cm. Cardiovascular and neurological examination were unremarkable.

Table 1:

PH	7.384	7.456 12.1	7.399	7.393	7.066
PCO2	33.4	27.9	40.4	46.1	72.6
PO2	63.4	51.7	80.6	64.4	73.4
HCO3	19.5	20.4	24.4	27.5	19.9
PO2/FIO2 RATIO	176	76	80	106	73

Table 2:

	19.2.15	02.03.15	06.03.15	08.03.15
HEMOGLOBIN	10.7	10.5	8.6	10.2
TOTAL COUNT	2800	6000	3200	13700
PLATELETS	0.90	1.35	0.90	1.50
T.BILIRUBIN/ D.BILIRUBIN	1.23/0.87	1.77/0.38	0.59/0.8	0.83/0.40
SGOT/SGPT	200/144	152/124	67/60	112/67
ALBUMIN	2.8	2.9	2.6	2.7
ALKALINE PHOSPHATAS E	325	292	196	177
BUN/CREATINI N	13/0.7	16/0.6	15/0.8	34/1.0

ECG showed sinus tachycardia. Room air ABG (table 1) had Hypoxia (pH-7.384, pCO₂-33.4, pO₂-63.4, HCO₃-19.5), Chest X-ray (figure 1) showed features suggestive of miliary mottling. (table 2) Complete blood count showed pancytopenia (Hb-10.9, TC-2100 [poly-84.7], platelet-0.90). Liver function test showed elevated bilirubin (total-1.77, direct-1.38), elevated liver enzymes (SGOT-194, SGPT-143) and elevated alkaline phosphatase. Serum LDH was elevated (777). Tuberculin test was positive. In view of pancytopenia, peripheral smear was done which showed normocytic, normochromic with neutropenia with neutrophilic predominance and toxic granules with MP, MF- negative), Ferritin was high (1575), DCT and ANA were found to be negative. Viral markers (HIV, HBSAG, HCV) were negative. RT PCR for TB, throat swab for swine flu and scrub typhus were negative. Patient continued to have fever spikes and dyspnea for which steroids were added and patient was shifted to an intensive care unit. In view of worsening shortness of breath, CT thorax (figure 2, figure 3) was done which showed diffuse scattered ground glass densities with associated septal thickening, small cyst and minimal bronchiectasis in both lungs. Few scattered central lobular nodules in the posterior segment of right upper lobe and lateral segment of right middle lobe, enlarged lymph nodes in the right hilum and paratracheal region suggestive of pulmonary alveolar proteinosis or tuberculosis. CT abdomen (figure 4) showed enlarged liver 16 centimetre in size and enlarged lymph nodes, splenomegaly and minimal free fluid in the pelvis. In view of persistent pancytopenia, bone marrow aspiration and biopsy was done which showed Reactive marrow with erythroid suppression on aspiration and biopsy showing granulomatous inflammation of bone marrow probably tuberculous in origin. Patient suddenly developed tachypnea with ABG showing severe hypoxia and patient had low GCS for which patient put on mechanical ventilation. Patient was treated with on anti-tuberculous treatment (liver safe - isoniazid 180mg OD, T. Rifampicin 450mg OD, T. Levoflox 750mg OD, Inj. Streptomycin 1gm IV OD) along with IV antibiotics (Piperacillin with Tazobactam 4.5 grams IV three times a day with Capsule doxycycline 100 milligrams twice a day). Due to worsening hypoxia, CXR was done which showed left pneumothorax and so ICD was in situ.

Figure 1: Chest X ray – miliary mottling



Figure 2: CT thorax confirming x ray findings

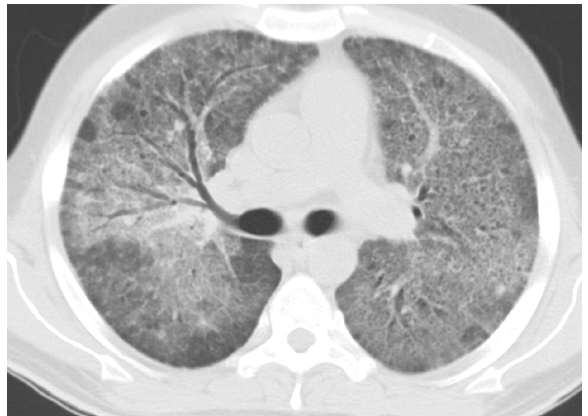


Figure 3: CT thorax



In view of lung, liver and bone marrow involvement the diagnosis of disseminated tuberculosis was made with a complication of ARDS and left pneumothorax. Patient however continued to have fever spikes and worsening hypoxia and succumbed to death on day 6 of ventilation.

Figure 4: CT Abdomen – Hepatosplenomegaly, para aortic lymphadenopathy



DISCUSSION:

Military tuberculosis results from hematogenous spread of mycobacterium tuberculosis. It was coined by John Jacobus Magnet in 1700 who likened the appearance of tuberculosis over the surface of the lung with small white nodules which he compared to millet seeds.

The WHO estimated 9 million new tuberculosis cases in 2011, 1.5 million were HIV positive. Out of 9945 cases, 2100 (21%) had tuberculosis with no demonstrable pulmonary involvement. 1016 cases (10%) had pulmonary and extra-pulmonary involvement including 349 cases with military tuberculosis. It is estimated that 1-2% of all cases of tuberculosis occur in immunocompetent persons.

Tuberculosis remains a disease of poverty, overcrowding and malnutrition. Other factors include childhood infection, HIV infection, diabetes mellitus, smokers, alcoholics and use of immunosuppressants. Military tuberculosis occurs as a result of progressive primary infection or via rehabilitation of latent focus with subsequent spread. Clinical presentation is variable. It can be acute, sub acute or chronic resulting in multi organ failure and ARDS. Organ involvement include lymphatic system, central nervous, gastrointestinal, cardiovascular, genitourinary and adrenal system and bone marrow involvement, etc. Many studies done show the predictors of poor outcome of cases with military and disseminated tuberculosis (table 3). Our patient had thrombocytopenia, elevated serum alkaline phosphatase level, male sex, hypoalbuminemia, hyperbilirubinemia and delay in starting antituberculous drugs. Along with complications of ARDS and pneumothorax could be the cause of high mortality in this case.

Table 3:

STUDY (REFERENCE)	YEAR OF PUBLICATION	PREDICTORS OF POOR OUTCOME
GELB ET AL (45*)	1973	Stupor, meningitis, increasing age, cirrhosis of liver, leucopenia, leucocytosis
GRIECO AND CHMEL(46)	1974	Increasing age, presence of underlying disease, history of cough, night sweats
KIM ET AL(50)	1990	Female sex, altered mental status
MAARTENS ET AL(51)	1990	Age >60, lymphopenia, thrombocytopenia, elevated transaminase levels, delay in starting ATT
SHARMA ET AL (52)	1995	Dysnea, chills, temperature > 39.3 degrees, icterus, hepatomegaly, hypoalbuminemia, hyponatremia, elevated transaminase levels
LONG ET AL (20)	1997	Presence of one or more risk factors
MERT ET AL(40)	2001	Male sex, presence of atypical radiograph pattern, delay in ATT
HUSSAIN ET AL(41)	2004	Presence of altered mental status, lung crackles, leucocytosis, thrombocytopenia, need for ventilation
WANG ET AL(2)	2007	Hypoalbuminemia, hyperbilirubinemia, renal insufficiency and delay in ATT

CONCLUSION:

Military tuberculosis is a lethal form of tuberculosis usually affecting immunocompromised individuals however 1-2% can occur in immunocompetent individuals as in this case. Early diagnosis by clinical suspicion and initiation of early anti tuberculosis treatment is essential for improved outcome and mortality.

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