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Case Report

Pulmonary melioidosis misdiagnosed as pulmonary tuberculosis

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ABSTRACT

Background: *Burkholderia pseudomallei* is a facultative Gram-negative saprophytic bacterium commonly found in soil or contaminated water causing melioidosis. Melioidosis can mimic various other disease due to its heterogenous clinical manifestations and different organ involvement. Because of its versatility it is called as "the great imitator" and remains challenging to diagnose. We report a case of melioidosis misdiagnosed and treated as pulmonary tuberculosis.

Case Presentation: A 54-year-old male non-smoker with history of diabetes admitted with persistent cough, breathlessness and hemoptysis for 5 months. Initially there was pleuritic chest pain and high-grade fever. He was treated with multiple intravenous broad-spectrum antibiotics and anti-tubercular therapy multiple times in the local hospitals based on clinical symptoms and radiological manifestation though Sputum examination for AFB and Gene xpert for Mycobacterium tuberculosis was negative. Chest radiology showed multiple thick-walled cavities with pericavitary consolidation along with patchy infiltrative opacities. BALF culture identified *Burkholderia pseudomallei*. The respiratory morbidity was resolved using antibiotics based on antibiotic susceptibility tests.

Conclusion: This case study described a case of melioidosis in adult male with diabetes and engaged in farming presented with diverse and indistinct clinical manifestations that mimics many other diseases. Definitive diagnosis was made by isolation *Burkholderia pseudomallei*, in culture collected through bronchoscopic examination.

1. Introduction

Gram-negative *bacillus Burkholderia* (*Pseudomonas*) pseudomallei (Whitmore bacillus) is the causative organism for a rare infectious disease called Melioidosis which could affect whole body but the most commonly affected organ is the lung followed by spleen, skin and soft tissue. It could manifest in acute, subacute, or chronic forms.[1] It is an emerging, potentially life-threatening infection in India as well as south East Asia.

2. Case Presentation

A 54 years male from Assam, India, and farmer by occupation admitted with persistent cough, breathlessness and hemoptysis for 5 months. Initially there was pleuritic type chest pain and high-grade fever. He was treated with multiple intravenous broad-spectrum antibiotics in the local hospitals. Sputum examination for acid-fast bacilli (AFB) and Gene xpert for Mycobacterium tuberculosis was done which came out to be negative. He was started with anti-tubercular therapy HREZ regime consisting of isoniazid (H), rifampicin (R), ethambutol (E) and pyrazinamide (Z)) initially then stopped after 2 months and again started with HREZ) based on clinical symptoms and radiological

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manifestation. Despite anti tubercular therapy there was recurrent hemoptysis and he presented to us after 5 months with worsening of symptoms. He was diabetic with good glycemic control and non-smoker.

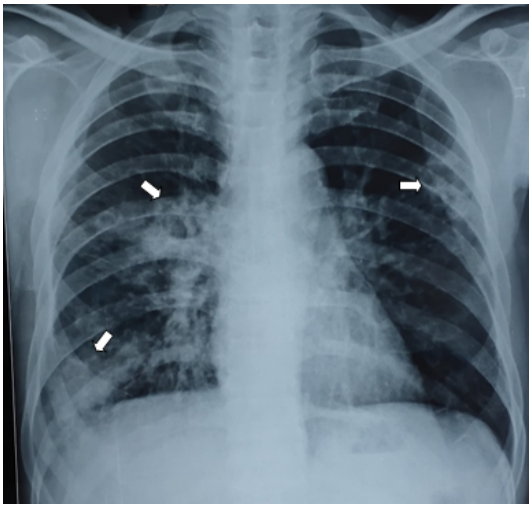

Fig. 1: CXR on initiation of symptoms (done outside our hospital) showing multiple small cavitary lesion with pericavitary consolidation in bilateral upper lobe, right lower lobe and right parahilar region (white arrow).

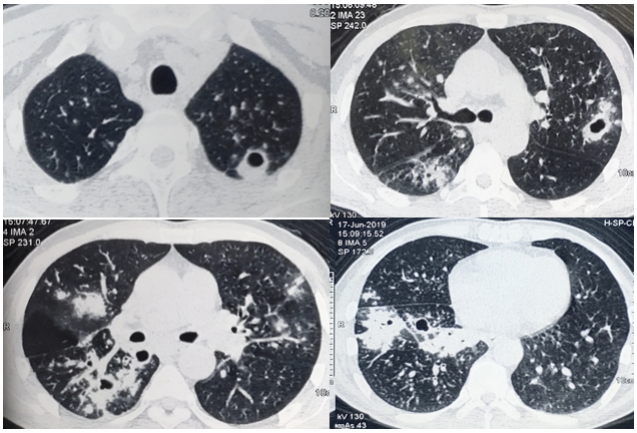

Fig. 2: HRCT chest at presentation: showing multiple thick-walled cavities with pericavitary consolidation in RUL, RLL, LUL and LLL with parenchymal infiltrations and tree in bud appearance

On general examination, he was febrile and ill looking. There was pallor but no clubbing, palpable lymph node or skin lesion present. Examination of respiratory system revealed bilateral coarse inspiratory crepitation in both lungs with an isolated area of bronchial breath sound without any evidence of pleural effusions. No abnormalities were detected on cardiac and abdominal examinations.

On admission there was microcytic hypochromic anemia (Hb-8.4%), Neutrophilic leukocytosis (WBC - 14900, Neutrophil-92%), raised erythrocyte sedimentation rate

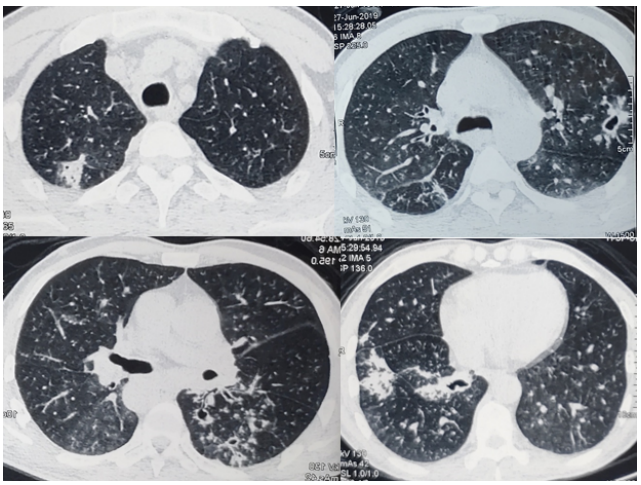

Fig. 3: HRCT chest after 10 days of proper antibiotic therapy showing resolving consolidation,cavitary lesion and decreased infiltrations

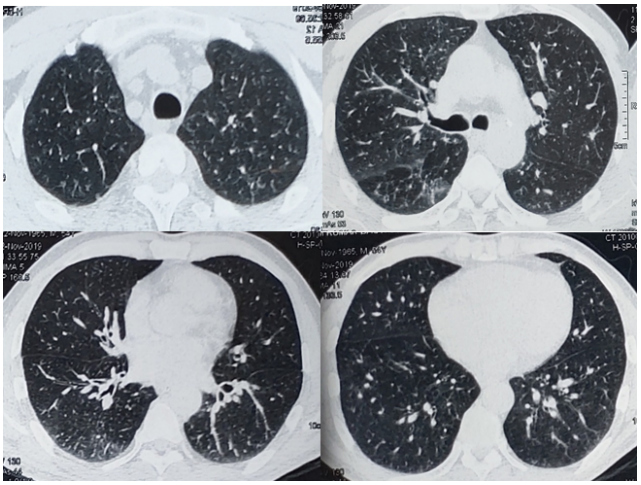

Fig. 4: HRCT after 9 month showing complete resolution of lung opacities

(ESR) of 132 mm/hr. and C- reactive protein of 236 mg/l. Chest X-ray (Figure 1) showed multiple cavitary lesion with pericavitary consolidation in bilateral upper lobe and right lower lobe. and multiple patchy infiltrates in both lung fields. HRCT chest (Figure 2) showed multiple thick-walled cavities with pericavitary consolidation in left upper lobe (LUL), Right upper lobe (RUL), right lower lobe (RLL) along with patchy infiltrative opacities. Mantoux test with 5TU and Sputum examination for AFB were negative. Sputum bacterial culture and sensitivity showed no growth. He was started with empirical intravenous Piperacillin and tazobactam and doxycycline. However, symptoms including fever persisted. Subsequently, his clinical condition was worsened with elevated inflammatory markers. Possibility of infective endocarditis was excluded by a transthoracic

echocardiography. Tests for antinuclear antibody (ANA), antinuclear cytoplasmic antibodies (ANCA) and retroviral screening were also negative. Subsequently, a bronchoscopy was done and bronchoalveolar lavage (BAL) taken. BAL culture grew *Burkholderia pseudomallei* sensitive to ceftazidime, and cotrimoxazole. BAL for GeneXpert for mycobacterium tuberculosis, galactomannan and fungal culture were negative. BAL cytology for malignant cell was negative.

According to the antibiotic sensitivity pattern, he was started with IV ceftazidime for 10 days and significant clinical and radiological improvement (Figure 3) was found. He was discharged with oral cotrimoxazole twice daily for next 12 weeks.[2] Repeat HRCT after 9 months revealed total radiological resolution and no recurrence of symptoms (Figure 4).

3. Discussion

B. pseudomallei (causative organism of Melioidosis) is a facultative Gram-negative saprophytic bacterium and is commonly found in soil or contaminated water.[3] Risk factors for melioidosis include chronic alcohol use, diseases (such as diabetes mellitus, thalassemia and renal disease), immunosuppressive therapy including steroids and occupational exposure to contaminated soil or water.[4,5] As our patient was known diabetic and farmer by occupation with a possibility of contact with the contaminated water and soil. This may have predisposed him to melioidosis infection.

It could present with diverse clinical manifestations and organ involvement depending upon the duration of infection and could mimic many diseases (earning a name "the great imitator".[6] The Darwin study found pneumonia to be the most common presentation of melioidosis (50%) followed by genitourinary infection (14%), skin infection (13%), non-specific bacteremia (11%), and less commonly septic arthritis or osteomyelitis (4%) and neurological melioidosis (3%).[7] Because of this, its clinical diagnosis remains a challenge. Acute melioidosis, usually rapidly progressive and predominantly affects upper lobes with early cavitation. On the other hand, in subacute and chronic forms, it could mimic tuberculosis in radiological examination, with involvement of upper love and/or patchy alveolar infiltrate with cavities or fibroreticular lesions.[8]

4. Conclusions

This case study described a case of melioidosis in adult male with diabetes and engaged in farming presented with diverse and indistinct clinical manifestations that mimics many other diseases. Definitive diagnosis was made by isolation *Burkholderia pseudomallei,* in culture collected through bronchoscopic examination.

5. Declaration of Patient Consent

Identity and confidentiality of the patient maintained properly; proper informed consent has been obtained as well.

6. Source of Funding

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7. Conflict of Funding

None.

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Contributors: CKS, SG: clinical care of the patient. SC, CKS: compiling data and interpretation, figures, manuscript writing. CKS, SC & BC: revision and final approval of manuscript. Final approval of the version published has been agreed by SG, SC, BC & CKS.

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