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**Introduction :**

Worsening of symptoms and imaging findings after initiating anti-tuberculous medications is common. It is important to identify the cause of these reactions as they can potentially alter treatment plans and cause significant morbidity and mortality. Here we discuss the case of 22-year-old male with tuberculosis and his difficult treatment course.

**Case Description:**

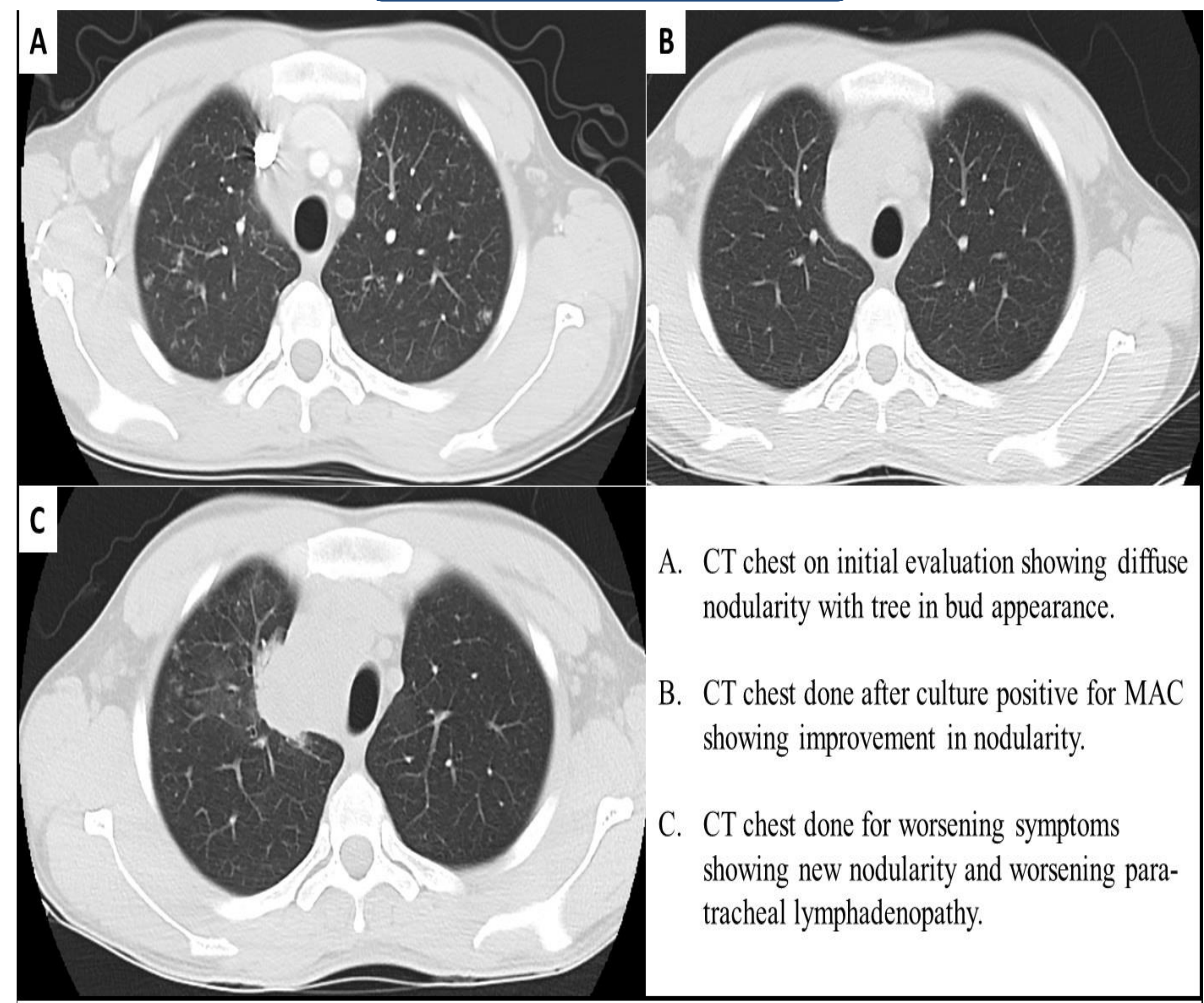
A 22-year-old HIV negative male from Yemen was diagnosed with smear negative, culture positive pulmonary tuberculosis and was initiated on anti-tuberculous treatment. The patient was followed up on treatment and was found to have worsening symptoms. A BAL was performed at the time of diagnosis which also showed growth of *Mycobacterium avium* complex (MAC). With a positive MAC culture, a repeat CT of chest was performed, which showed new nodular densities but otherwise improvement from the previous CT chest. Initially the new nodularity was thought to be a paradoxical reaction since the patient was symptomatically improving.

Two months after diagnosis the patient presented with worsening respiratory symptoms, cough and fatigue. The repeat CT of chest revealed a new tree in bud appearance, patchy nodular and groundglass infiltrates within the right upper lobe, and worsening mediastinal lymphadenopathy (Figure 1). The patient insisted that he was compliant with his medication and denied any side effects. Repeat sputum cultures for AFB were sent which were negative. The patient underwent bronchoscopy with BAL, TBNA of right paratracheal lung nodule, and trans-bronchial biopsies. The work-up including bronchial culture and biopsies were negative for any organisms but showed signs of chronic inflammation. Despite negative cultures, treatment for MAC with ethambutol and azithromycin was initiated. Upon follow-up the patient showed significant improvement in overall symptoms

**Discussion:**

It is important to identify the reason for the worsening signs and symptoms in a patient on treatment for tuberculosis especially in immunocompetent patients. The most common cause of worsening signs and symptoms in an immunocompetent patient is non-compliance. Other common causes are worsening of the disease process, antibiotic resistance, superimposed infections, and paradoxical reactions. In our case, worsening of symptoms subsequent to anti-tuberculous treatment may have been due to paradoxical reaction or MAC infection. Though paradoxical reaction was suspected, treatment for MAC infection was initiated with good outcomes. Early recognition of the cause with treatment of the worsening of symptoms is imperative in improving outcomes for patients.

**Figures:**



A. CT chest on initial evaluation showing diffuse nodularity with tree in bud appearance.  
B. CT chest done after culture positive for MAC showing improvement in nodularity.  
C. CT chest done for worsening symptoms showing new nodularity and worsening paratracheal lymphadenopathy.

**References:**

Kerlikowske KM, Katz MH. *Mycobacterium avium* complex and *Mycobacterium tuberculosis* in patients infected with the human immunodeficiency virus. *West J Med.* 1992 Aug; 157(2): 144-148.