

Medical Image of the Month: *Penicillium* Pneumonia Presenting as a Lung Mass



Figure 1. Representative image from thoracic CT scan in lung windows.

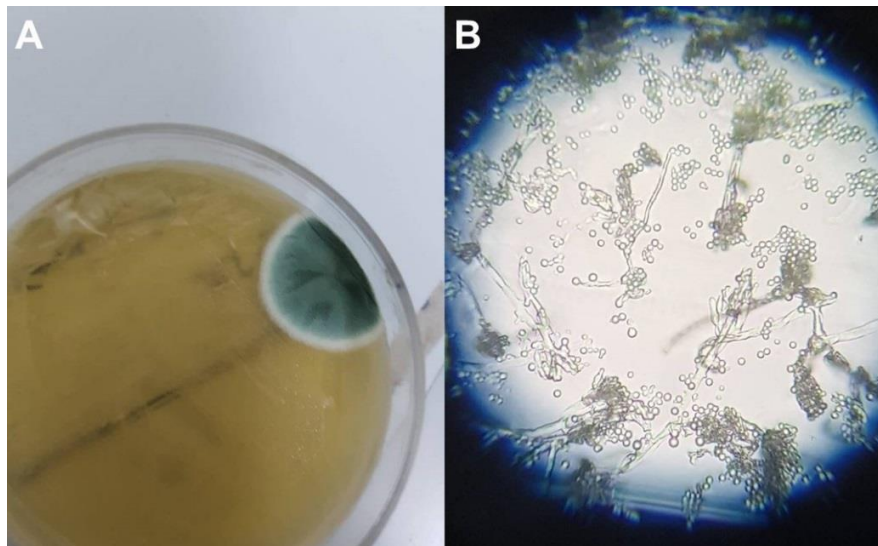


Figure 2. Panel A: Culture plate showing growth on culture plate. Panel B: photomicrograph showing the dimorphic fungus taken from the culture plate.

A 72-year-old woman who is a non-smoker was referred for evaluation of a suspected lung cancer. She had progressive shortness of breath at rest for 5 months associated with right-sided chest pain, cough and yellowish sputum. She failed multiple courses of antibiotics.

Her past medical history was significant for hypertension, dyslipidemia, hypothyroidism and poorly controlled diabetes mellitus type 2. She also had mild coronary artery disease for which she was on dual antiplatelet therapy. On physical examination, her oxygen saturation was 94% on room air her other vital signs also being unremarkable. Her physical exam revealed decreased breath sounds on the right associated with dullness to percussion.

Her chest radiograph demonstrated right middle lobe opacities. Her chest CT showed a right hilar mass surrounded by multiple nodules along with interlobular septal thickening, a right middle lobe consolidation with air bronchograms, and multiple mediastinal lymph nodes – all suggestive of malignancy (Figure1).

The patient underwent bronchoalveolar lavage and multiple transbronchial biopsies from the right upper and right middle lobes. The lung biopsy showed nonspecific lymphocytic inflammatory infiltrates. Her bronchoalveolar lavage was positive for fungus on PAS stain. The BAL culture showed germ tube negative yeast, which were identified to be *Penicillium* species (Figure 2).

Fungi are uncommon causes of pneumonia in the general population, but they are more prevalent in immunocompromised hosts with HIV infection, bone marrow transplant, patients on steroids, or patients with neutropenia (1). *Penicillium* are thermally dimorphic fungi, widely spread in the environment (2). They found especially in soil or where decaying organic material is present. They are saprophytic and capable of causing food spoilage. Patients usually inhale the spores of *penicillium* present in soil, and so lungs are the primary site of infection. However, disseminated *Penicilliosis* with lymphadenopathy and organomegaly (especially in immunocompromised patients) can be seen. There was no evidence of disseminated *Penicilliosis* in our patient. She was not immunocompromised, and her only risk factor was poorly-controlled diabetes mellitus. If not recognized early, *Penicillium* pneumonia can be fatal. The diagnosis depends on obtaining tissue, sputum and/or BAL samples for fungal cultures. Use of a serum galactomannan antigen assay may facilitate earlier diagnosis of *Penicillium* infections, however it is not specific for this pathogen as it is a polysaccharide cell wall component of most *Aspergillus* species as well (3).

There is no consensus about the treatment of *Penicillium* pneumonia, however standard therapy consists of intravenous amphotericin B, followed by oral itraconazole for several weeks. The optimal duration of treatment is unknown as several cases of relapse have been reported in the literature.

The patient received two weeks of intravenous amphotericin B deoxycholate followed by 12 months of oral itraconazole. The patient improved significantly with resolution of the consolidation seen on her previous chest radiography.

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