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Case Report

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Pseudallescheria Boydii pneumonia in an immunocompetent host

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Summary

Background: *Pseudallescheria boydii* pneumonia is rarely reported among immunocompetent patients.

Case Report: We report a case of a 62 year old white female with *pseudallescheria boydii* pneumonia. The patient was non-immunocompromised, had a history of mycobacterium avium complex (MAC) infection prior to presentation. After successful response to initial antitubercular therapy, the patient developed recurrent symptoms and bibasilar nodular infiltrates. Second line therapy for MAC failed to improve symptomatology. *Pseudallescheria boydii* pneumonia was diagnosed from a bronchoscopic biopsy. Treatment with voriconazole resolved her symptomatology and radiological infiltrates.

Conclusions: This case highlights the importance of a high index of suspicion for superimposed fungal infections in patients who are refractory to medical treatment of bacterial pneumonitis such as MAC. Further diagnostic interventions are encouraged when insufficient clinical improvement is observed. Prompt initiation of an antifungal regimen is warranted.

key words: ***Pseudallescheria Boydii*** • **pneumonia** • **immunocompetent host**

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Background

Pseudallescheria boydii is a fungal organism known to affect immunocompromised patients. This organism, a soil and water natural inhabitant, is known to cause madura foot and in severe cases, invasive infection of various organs (central nervous, cardiovascular, respiratory systems). We report an unusual case of pulmonary p. boydii pneumonia in an immunocompetent host with previous history of mycobacterium avium complex (MAC) pulmonary infection. This case highlights the importance of including uncommon fungal pathogens in the differential diagnosis of nodular pulmonary granulomatous diseases.

Case Report

A 62 year old white female presented with persistent fever, dyspnea, cough, and worsening pulmonary nodules for two months. She had a history of pulmonary MAC infection diagnosed 2 ½ years earlier. Over two years she had been treated with clarithromycin, ethambutol, and clofazimine (based on susceptibilities). There was no history of steroid or tobacco use. Upon completion of the MAC treatment course, symptoms recurred within two months and included weight loss, fatigue, chills and occasional night sweats. Physical exam was positive for bilateral ronchi. There were no ocular or skin lesions. Laboratory testing was unrevealing. Chest radiograph displayed bilateral pulmonary infiltrates. Chest computed tomogram (CT) was remarkable for diffuse bilateral nodular infiltrates, more prominent in bases, and mediastinal lymphadenopathy (Figures 1, 2). Bronchoscopic and CT guided needle biopsies were negative. An open lung biopsy was performed which was consistent with caseating granulomas; AFB and gram staining were negative. Based on high index of suspicion for recurrent infection, she resumed her previous anti-mycobacterial regimen and empiric antibiotics were started. After two months of treatment, there was lack of clinical improvement with persistent cough and intermittent fever. A repeat chest CT showed worsening of bilateral nodular infiltrates. The patient underwent a repeat bronchoscopy. Biopsy demonstrated again caseating granulomas. The BAL showed many pseudohyphae which were subsequently identified as *p. boydii* (Figures 3–5). Treatment with voriconazole (200 mg/day PO every 12 hours) improved her symptoms. She was able to gain weight and follow up imaging studies revealed improvement in the infiltrates.

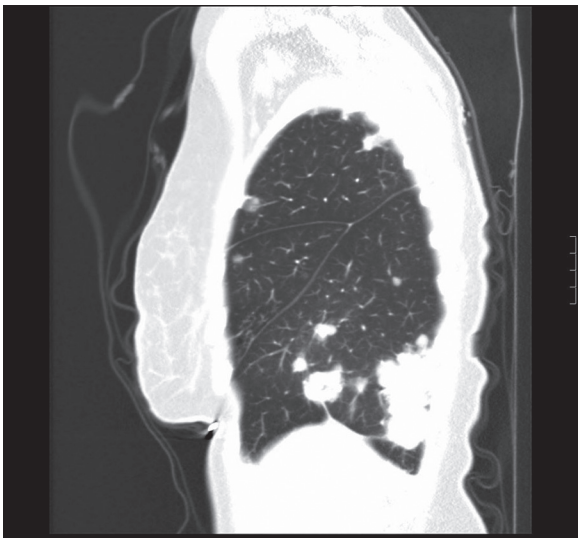

Figure 2. Chest CT. Multifocal alveolar infiltrates.

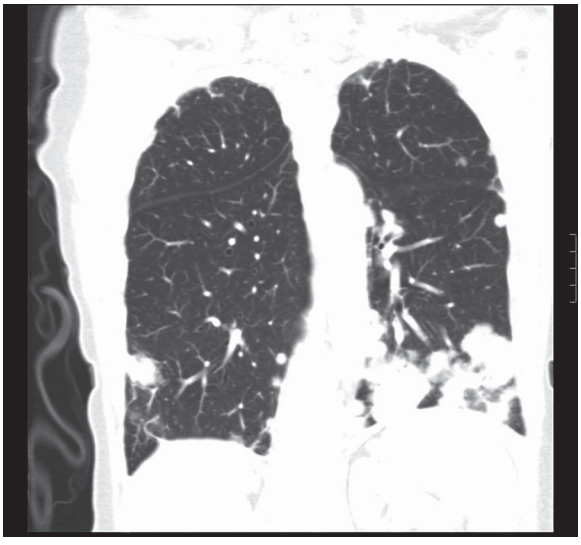

Figure 1. Chest CT. Multilobar pneumonia.

Discussion

Pseudallesheria boydii and its asexual anamorph, *Scedosporium*, are ubiquitous filamentous fungi found in soil, water, and sewage. [1,2] *P. boydii* pneumonia affecting immunocompetent hosts is rare. [3] It is a frequent pathogen in near drowning victims, especially in areas where *P. boydii* is endemic. [3,4] This organism has septated, thin-walled, branching hyphae and an angioinvasive tendency [5]. Clinically, *P. boydii* infection has an insidious onset and is often fatal in immunocompromised hosts [6,7]. Central nervous system abscesses, rhinosinusitis, endophtalmitis, pneumonia, and skin lesions (madura foot) may be present. [8–12] In cases where a specimen is obtained, Gomori methenamine silver stains *P. boydii* hyphae [13].

The diagnosis of this organism is challenging as clinic findings and tomographic imaging are non specific. Chest CT abnormalities may display pulmonary cavitations or non cavitary masses, tree-in-bud nodules, ground-glass opacities, bronchial thickening, and mediastinal lymphadenopathy [5].

The antifungal treatment varies according to immunologic status. Voriconazole is the mainstay of treatment in immunocompetent hosts. *P. boydii* is generally sensitive to azoles. Various reports indicate an intrinsic *P. boydii* resistance to polyenes [14]. Surgical resection of pulmonary and central nervous system mycetomas is warranted [15,16].

Conclusions

This case highlights the importance of a high index of suspicion for superimposed fungal infections in patients who are refractory to medical treatment of bacterial pneumonitis such as MAC. Uncommon fungal pathogens should be considered in the differential diagnosis of nodular pulmonary granulomatous disease. Further diagnostic interventions are warranted when insufficient clinical

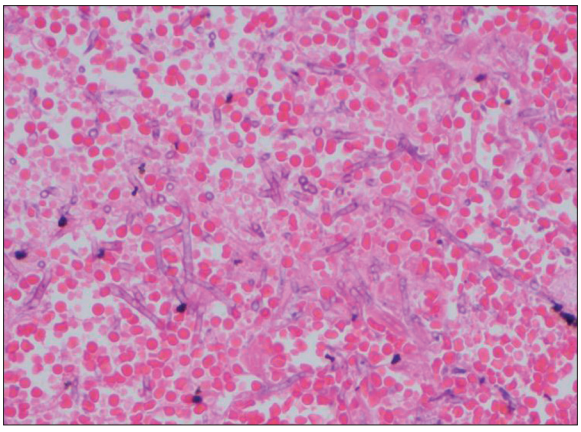

Figure 3. Pathological examination. Hemotoxylin and eosin. A case of pulmonary fungal infection with *Pseudallescheria boydii*. Areas of necrosis within the lung demonstrate numerous septate hyphae with acute angle branching. These hyphal forms are morphologically indistinguishable from *Aspergillus* spp. on H&E or GMS stain.

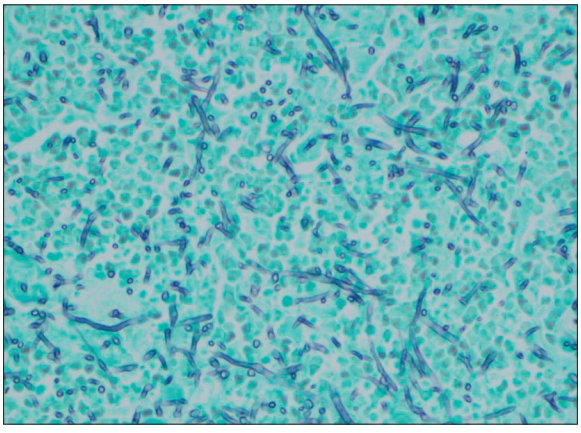

Figure 4. Pathological examination. Gomori methenamine-silver. The same area of necrosis in the lung as figure Pb1. This GMS stain highlights the morphology of the fungus in this patient infected with *Pseudallescheria boydii*.

improvement is observed to prevent treatment failure and adverse outcomes.

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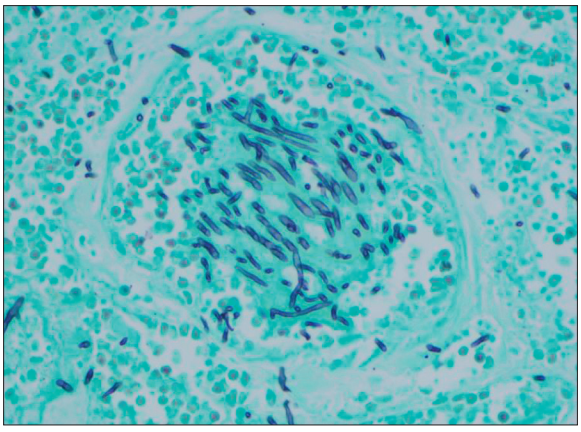

Figure 5. Pathological examination. Gomori methenamine-silver. Numerous septate hyphae of *Pseudallescheria boydii* within a vascular lumen. The background lung parenchyma is necrotic.

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