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Case report

Acremonium pneumonia in an AIDS patient

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ABSTRACT

Acremonium is a saprophytic fungus mostly causing superficial skin, nail, or ocular infections after traumatic inoculation. However, it is being recently recognized as one of the opportunistic infections in immunocompromised patients including neutropenia, malignancies, chronic granulomatous disease (CGD) and transplant recipients. To our knowledge there have been no reported cases of *Acremonium* infection, related to HIV or AIDS. We present a case of *Acremonium* pneumonia in a patient with no past medical history who was found to have AIDS.

Introduction

Acremonium is a genus of fungi, formerly known as Cephalosporium, from which cephalosporin antimicrobials were derived. The genus contains about 150 species, most of which cause opportunistic infections in humans and animals such as eumycetomas and onychomycosis. Most reported cases were cutaneous infections or keratitis but pneumonia and systemic infections have been rarely reported and only in the setting of malignancy, neutropenia, transplant or other type of immune deficiency [1,2]. There have been case reports of *Acremonium* pneumonia in a diabetic patient who was otherwise immunocompetent [3] and a lung abscess in a young patient with no other known risk factors who were successfully treated with amphotericine and itraconazole [4]. However *Acremonium* pneumonia has not yet been reported in HIV/AIDS patients.

Case presentation

A 56 year old male with no significant medical history presented with 40 Ib weight loss, fever, chills, night sweats, loss of appetite, fatigue and dry cough for the past few weeks. He was an active smoker, originally from Trinidad and came back from a 3 month trip to Trinidad 2 weeks ago. He worked at construction sites and denied any other travels or sick contacts. He was found to be tachycardic to 115 beats/min and febrile to 103.1◦ F. On physical exaimination he was cachectic with supraclavicular lymphadenopathy as well as diffuse wheezing and rales on lung auscultation.

Initial laboratory results demonstrated a white blood cell count of 4.3 K/uL, neutrophils: 88%, bands: 2%, lymphocytes: 6%, sodium: 129 mmol/L, potassium: 5.6 mmol/L, blood urea nitrogen: 22 mg/dL, creatinine: 1.23 mg/dL, alkaline phosphatase: 59, aspartate aminotransferase (AST): 87, alanine aminotransferase: 52, lactate dehydrogenase: 794 U/L.

Chest X-ray showed right upper lobe opacity with nodular opacities in the remainder of the lungs suggestive of miliary nodules. Chest CT scan showed right upper lobe opacities with innumerable sub centimeter and miliary pulmonary nodules in a random distribution, mediastinal, axillary and subclavicular lymphadenopathy, necrotic paratracheal and centrilobular emphysema (Figs. 1 and 2). The patient was admitted to rule out any malignancy, or infections such as *Mycobacterium tuberculosis* (TB).

Further work up revealed negative blood and urine culture, negative AFB smear of sputum, negative hepatitis serology but was positive HIV 1 antibody. HIV viral load was 33862 copies/mL with absolute CD4 count of 4 cells/uL. At this point the patient was started on prophylactic trimetoprim/sulfamethoaxazole, azithromycin and fluconazole for oral thrush.

Abdomen/Pelvis CT scan showed innumerable hypodense splenic lesions and calcifications of seminal vesicles which could be due to a granulomatous infection. Quantiferon gold was checked, which was indeterminate. Serum antigen for Cryptococcus was also negative. He then underwent bronchoscopy for definitive diagnosis.

During his stay the urine antigen for histoplasma was reported to be positive with a level > 23 and the patient was started on amphotericin B with a presumptive diagnosis of histoplasmosis. Histoplasma capsulatum yeast antibody was negative < 1:8 but the Histoplasma capsulatum mycelical antibody was positive to 1: 16. His symptoms improved gradually and he became afebrile.

Patient was discharged on voriconazole and his bronchial fungal culture eventually started growing a mold. He was also started on

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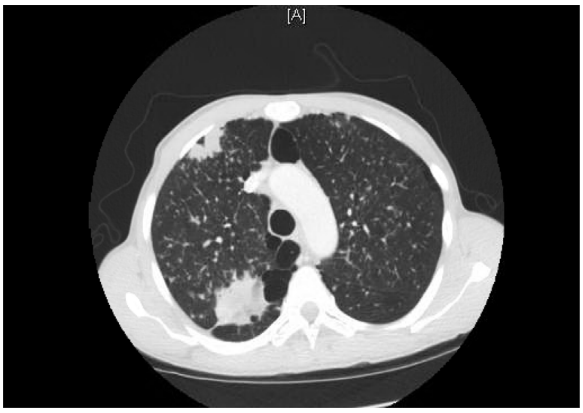

Fig. 1. RUL opacities.

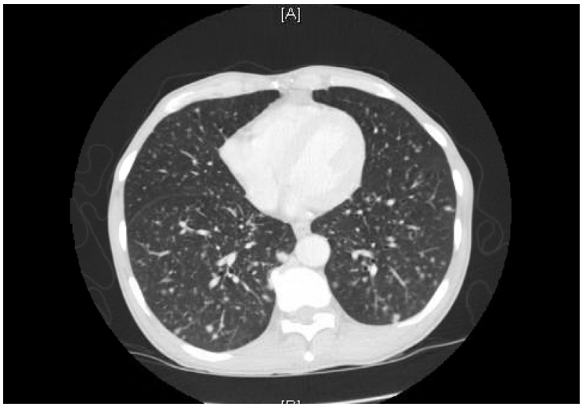

Fig 2. Innumerable sub centimeter and miliary pulmonary nodules.

abacavir/lamivudine/dolutegravir for HIV management. Clinically, the patient continued to improve after discharge, gained weight and no longer had night sweats or cough. However, after 4 weeks, the mold in the BAL culture was identified as *Acremonium* species.

Although the sputum for AFB smear was negative, specimens grew MAI after two weeks but we did not consider MAI as the real pathogen and its significance is unclear.

The urine antigen for histoplasma became negative after 3 months of therapy and in view of his travel history to Trinidad; we consider this a co-infection with histoplasma and acremonium sp. leading to pneumonia.

Discussion

Acremonium spp. are filamentous moulds which are widespread in environment found in soil or dead plant matter. They are a rare source of infection in humans.

We are reporting a rare case of pneumonia secondary to dual fungal infection with histoplasma and *Acremonium* in a patient with new diagnosis of AIDS. There have been case reports of fungemia, pneumonia and lung abscesses but, no reports of *Acremonium* pneumonia, related to HIV or AIDS. We believe that both fungi were pathogenic in our patient based on the BAL culture which was positive for *Acremonium* and urine antigen which was positive for histoplasma.

According to Fakharian et al., only 10 cases of pulmonary infection due to *Acremonium* spp. have been reported until 2015.

Diagnosis is mostly made through culture via bronchoscopy or biopsy. The findings are non specific on imaging and cannot be used to differentiate with other fungal pneumonias. Odabasi et al. stated that Beta −D glucan (BG) might have potential to identify invasive fungal infections such as *Acremonium* spp. However, further investigations are required to establish a definite cut off for such rare fungal agents [6–8]. Even though Histoplasma urine antigen has a high rate of cross reaction with other dimorphic fungi such as blastomycosis, paracocidiomycosis, cocidiomycosis, penicillosis marneffei and maybe aspergillosis. As the *Acremonium* infections have rarely been studied, it's cross reaction with Histoplasma antigen is not described in the literature hence we consider that in our patient it was a co-infection resulting in pneumonia.

The optimal treatment has not been well defined as the *Acremonium* infections are rarely encountered.

Despite the reported in vitro resistance of these fungi to azoles, combination of amphotericine and azoles mostly itraconazole and voriconazole have been successful [5].

Recently, several cases of successful treatment with voriconazole have been published and it seems that voriconazole, can be used as the agent of choice for treatment of *Acremonium*. [9]

Our patient did really well with voriconazole monotherapy.

Conclusion

Our case suggests that *Acremonium* can present as one of the opportunistic pulmonary infections in AIDS patients which can be treated successfully with voriconazole as a single agent.

Competing interests

The authors declare that there is no conflict of interests regarding the publication of this paper

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