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A unique presentation of Cryptococcus neoformans and Pneumocystis jirovecii PJP) co infection in a newly diagnosed HIV patient

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A unique presentation of *Cryptococcus neoformans* and *Pneumocystis jirovecii*(PJP) co-infection in a newly diagnosed HIV patient

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Introduction

We present a newly diagnosed HIV patient with respiratory symptoms and shock found to have pulmonary co-infection with PJP and *Cryptococcus neoformans*, confirmed on the pathology report. This is uncommon in the literature (1). Additionally, this case is unique in reporting the presentation of Cryptococcus neoformans as involving the mediastinal lymph nodes (2) and myocardium(3).

Clinical Presentation

30 year old smoker male with a past medical history significant for intermittent asthma presented to emergency with shortness of breath, wheezing, productive cough, and generalized fatigue for 1 week. He was afebrile, normotensive, tachycardic and had oxygen saturation of 96% on room air. Physical examination showed cachexia, audible wheezes and oropharyngeal erythema. Labs showed WBC 3600/uL with lymphocyte count of 700/uL and mild thrombocytopenia. Chest X-ray was clear. Serology was reactive for HIV, pending viral load. The working diagnosis was asthma exacerbation in the setting of a possible viral infection for which he was discharged home to complete a 5-day course of high dose prednisone, with follow up with infectious diseases as an outpatient. Subsequent, HIV viral load after discharge was 194,643 copies/mL. A CD4 count was not obtained.

One week later, he presented to the ED with worsening respiratory symptoms, new-onset chest pain and vomiting. He was hypotensive, tachycardic, tachypneic, and afebrile. He had leukocytosis of 12,700/uL with neutrophilia, lactate of 6.6, BNP 841. Influenza A, B and RSV, and urine Histoplasma antigen were negative. EKG showed abnormal ST-segment elevation with concerns for STEMI. Chest CT revealed multifocal, bilateral ground glass and nodular opacities with cystic cavities. Mediastinal and hilar lymphadenopathy was also noted. Pulmonary embolism and pneumothorax were ruled out. Blood gases reflected acute hypoxemic respiratory failure. Vancomycin and piperacillin/tazobactam were started. Bedside ultrasound showed significantly dilated right ventricle with severely reduced function and hence concerns for a cardiogenic component of shock. He was intubated and shortly after developed asystole and expired after prolonged cardiopulmonary resuscitation within twelve hours of admission.

Results

At autopsy, the gross exam showed bilateral pulmonary congestion, bilateral hilar adenopathy and matted lymph nodes in the mediastinum(Figure 1). Microscopy revealed cryptococcus (mucicarmine positive encapsulated yeast forms) involving intraalveolar and alveolar septal parts of all lobes of the lungs, effacing lymph nodes, and involving microscopic foci in bilateral myocardial ventricles(Figure 2). Modified GMS-positive cup-shaped Pneumocystis organisms involved the alveoli of all lung lobes(Figure 3). The lung parenchyma showed a minimal inflammatory response.

Table

Labs	Initial Presentation	Second Presentation
WBC Count	3600/uL	12,700/uL
Lymphocyte Count	700/uL	500/uL
CD4	**N/A**	**N/A**
HIV Viral Load	194,643 copies/mL	--
BNP	--	841
Lactate	--	6.6
Influenza A, B and RSV	--	Negative
Urine Histoplasma Antigen	--	Negative

Pathology Images

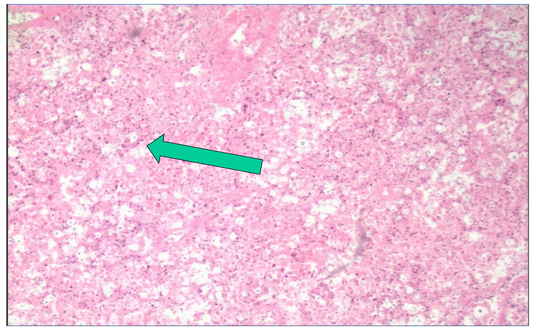

Figure 1. Low power showing alveolar spaces filled with eosinophilic, amorphous material along with pleomorphic, oval/round yeast

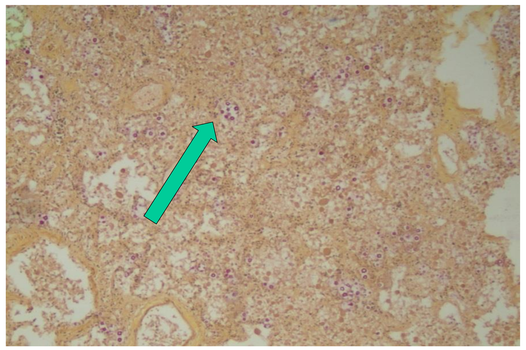

Figure 2. Mucicarmine stain showing bright red; encapsulated yeast form(cryptococcus)

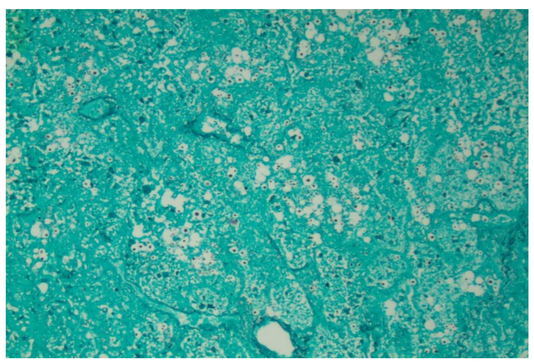

Figure 3. GMS stain highlighting *Pneumocystis jirovecii*

CT Scan Chest

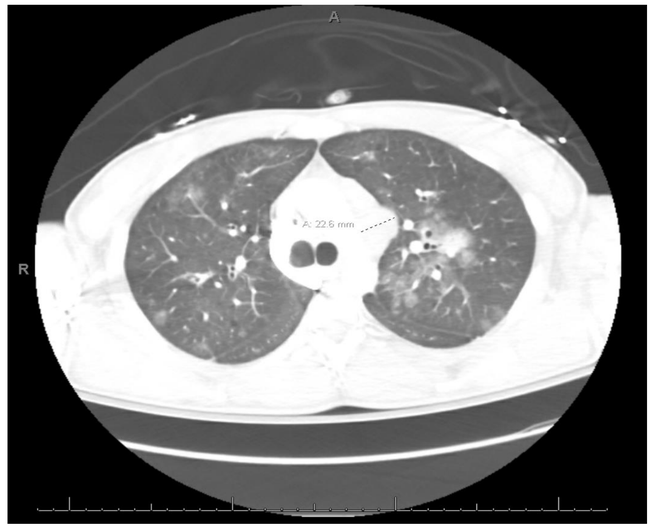

Figure 4. Chest CT – multifocal, bilateral ground glass and nodular opacities with cystic cavities. Mediastinal and hilar lymphadenopathy.

Discussion and Conclusion

Our case report demonstrates that opportunistic co-infections may be under-recognized in immunocompromised patients and that patients with new HIV diagnosis can have diverse presentations at diagnosis. We usually associate cryptococcal infection with CNS disease in HIV patients; however, our patient had a myocardial disease which is rare in literature. He likely had cryptococcal myocarditis as was suggested by clinical presentation, lab, imaging and pathology report, resulting in cardiogenic shock along with PCP pneumonia. This scenario would be clinically significant given the therapy of both pathogens is different, and if left untreated can be fatal. In conclusion, this highlights the possibility that in immunocompromised individuals the principle of Occam's razor may not hold true and that more than one infection may be concurrently ongoing.

References

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