Cryptic chaos:
Navigating a rare encounter with cryptococcal empyema

Angila Bag, MD[1], Gabriel Alugba, MD[1], Rayan Elhag, MD[1], Sabena Ramsetty, MD[2], Kevin Lazo, DO[3], Dipal Patel, MD[1]

[1]Internal Medicine, [2]Infectious Disease, [3]Pulmonary Medicine, Englewood Hospital, Englewood, NJ

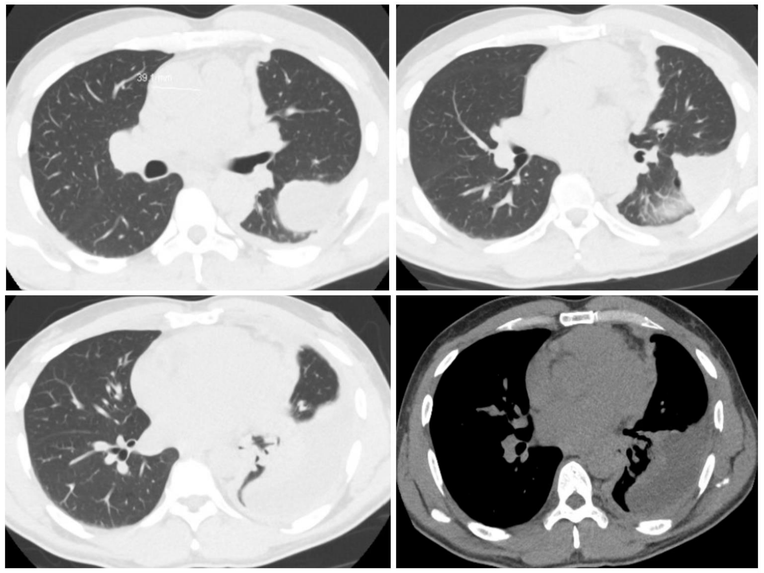
Case Background

- 55 year old male with newly diagnosed AIDS presented with 3 month history of headaches with nausea, cough and pleuritic chest pain.
- PMHx: AIDS diagnosed 3 weeks prior to presentation, started immediately on antiretroviral therapy (ART).
- Cryptococcal antigen was not checked prior to starting ART.

Workup & Management

	On admission	Prior to ART initiation
CD4 count	81 cells/uL	114 cells/uL
CD4 %	12%	12.1%
Viral load	undetectable	37,800 copies/mL

- Cryptococcal antigen: positive (titer >1:2,590)
- CT head and brain MRI negative



CT findings: moderate-sized loculated left pleural effusion, circumferential pleural thickening, enlarged left paracardiac lymph nodes

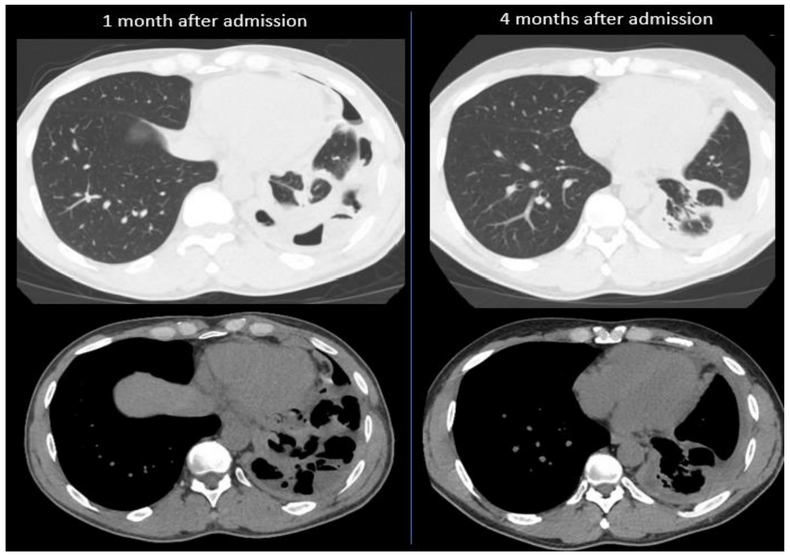
Workup & Management

Pleural fluid analysis

	Pleural fluid	Serum
WBC	1,616/mm^3 (lymphocytic predominance)	
Protein	4.4 g/dL	5.9 g/dL
LDH	371 U/L	115 U/L
Culture	Cryptococcus neoformans	negative

Lumbar puncture
- high opening pressures
- Gram stain showing yeast
- CSF culture and antigen positivity for Cryptococcus

- IV amphotericin B and flucytosine.
- Repeat imaging - persistent left-sided pleural effusion, pleural thickening, organization of pleural space.
- Initially planned for VATS for pneumolysis and decortication - deferred due to persistently elevated ICP requiring serial LP.
- Chest tube placed draining serosanguinous fluid - removed one week later with no significant reaccumulation of pleural fluid.
- For cryptococcal meningitis – needed serial LPs, refused VP shunt



Discussion

- Cryptococcal meningitis is the main manifestation of cryptococcosis.
- Lung involvement of cryptococcus is also prevalent – pulmonary nodules are the most common, diffuse interstitial changes can be seen in severe immunocompromise.
- Fungal empyema occur in <1% of pleural infections with mortality >70% - improved outcomes with early antifungal treatment.
- Cryptococcal empyema is extremely rare.

- Antifungal therapy alone has showed to be ineffective.
- May need more invasive procedures – VATS with decortication, intrapleural fibrinolysis.
- Some level of immune reconstitution inflammatory syndrome (IRIS) given severity of symptoms in our patient with simultaneous cryptococcal empyema and meningitis.
- Cryptococcal antigen should be checked prior to initiation of ART for newly diagnosed HIV/AIDS.
- Early diagnosis is important to start antifungal therapy and pleural fluid drainage to prevent disease progression in severe immunocompromise.

References

- Hu Z, Chen J, Wang J, Xiong Q, Zhong Y, Yang Y, Xu C, Wei H. Radiological characteristics of pulmonary cryptococcosis in HIV-infected patients. PLoS One. 2017 Mar 16;12(3):e0173858. doi: 10.1371/journal.pone.0173858. PMID: 28301552; PMCID: PMC5354418.
- Ko SC, Chen KY, Hsueh PR, Luh KT, Yang PC. Fungal empyema thoracis: an Reference #2: emerging clinical entity. Chest. 2000 Jun;117(6):1672-8. doi: 10.1378/chest.117.6.1672. PMID: 10858401.
- Maziarz EK, Perfect JR. Cryptococcosis. Infect Dis Clin North Am. 2016 Mar;30(1):179-206. doi: 10.1016/j.idc.2015.10.006. PMID: 26897067; PMCID: PMC5808417.
- Salkowski CA, Balish E. Role of natural killer cells in resistance to systemic cryptococcosis. J Leukoc Biol. 1991 Aug;50(2):151-9. doi: 10.1002/jlb.50.2.151. PMID: 2072032.

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