

# Cryptococcal Peritonitis: A Bad Gut Feeling

Reading Hospital - Tower Health, West Reading PA

Robert Libera DO, Christian Akem Dimala MD, Kathleen Oakes,  
Caitlyn Moss MD

## Introduction

*Cryptococcus* is a rare pathogenic fungus. Two species of *cryptococcus* are associated with human infections, *Cryptococcus neoformans* and *Cryptococcus gatti*.

Cryptococcal species are encapsulated yeasts, often found in bird droppings and decaying wood.<sup>1</sup>

Risk factors for developing infection include acquired immunodeficiency syndrome (AIDS), liver cirrhosis, and the use of chronic immunosuppressive medication.<sup>2</sup>

Inoculation typically occurs through inhalation of spores, which are contained in the immunocompetent host, but which can disseminate hematogenously when an individual is immunosuppressed.<sup>3</sup>

The most common clinical manifestations are meningoencephalitis and respiratory involvement.

Treatment of cryptococcal disease is based primary on the 2010 Infectious Diseases Society of America Guidelines and consists of antifungal medications. Specific regimens depend on the type of infection and type of host; however, they are not well established in patients presenting with non-meningeal, non-pulmonary disease.<sup>4</sup>

## Case Presentation

*History of Present Illness:* 76-year-old female with a history of non-alcoholic steatohepatitis-induced cirrhosis presented complaining of dyspnea on exertion, abdominal distension and bilateral lower extremity swelling over several weeks. She denied fevers, chills, headache and cough. She lived on a farm with some livestock but denied a large pigeon population or exposure to droppings.

*Physical Exam:* Patient was afebrile and normotensive with a heart rate of 80 and an oxygen saturation of 97% on room air. Breath sounds were diminished in the right mid and lower lung lobes. She had moderate abdominal distension, dullness to percussion, a positive fluid wave and generalized tenderness. There was pitting edema in the lower extremities. There was no asterixis.

*Investigations:* Labs revealed normal kidney function without leukocytosis. Liver function was at her baseline. A computed tomography scan of the chest/abdomen/pelvis demonstrated a large right-sided pleural effusion moderate abdominal ascites and cirrhosis of the liver. Cultures from both thoracentesis and paracentesis yielded *Cryptococcus neoformans*. Blood cultures and serum cryptococcal antigen were negative. Cryptococcal antigen was negative in her CSF.

*Treatment Course:* Amphotericin B liposome 4 mg/kg/dose IV daily and flucytosine 25 mg/kg/dose PO daily for two weeks and transitioned to fluconazole 400 mg PO daily for eight weeks, with plans to reduce the dose to 200 mg afterwards for an extra 12 months. Follow-up records indicated the patient was doing well for approximately two months. Subsequently, the patient was readmitted to the hospital for worsening abdominal pain which was not investigated with invasive studies as the patient elected for comfort measures and passed away shortly thereafter under hospice care.

## Discussion

To our knowledge, there have been no reported cases of isolated cryptococcal pleuritis and peritonitis without evidence of disseminated disease. In our case, the suspected mechanism of infection was cryptococcal pleural infection which spread contiguously to the ascitic fluid in the setting of her decompensated cirrhosis and hepatic hydrothorax.

In our patient's case, we initiated antifungal therapy, targeting peritoneal and pulmonary involvement after CT head and lumbar puncture ruled out CNS infection.

There are currently no standardized guidelines regarding the management of cryptococcal peritonitis. Management with antifungals and choice of antifungals has often been done on a case-by-case basis.

Even though the extent of liver disease decompensation affects overall patient mortality<sup>5</sup>, it is unclear to what extent this plays a role in cases of cryptococcal peritonitis. Scoring systems such as the Child-Pugh score and the MELD/Na score, which are used to predict mortality in patients with cirrhosis, have not routinely been reported in cases of patients with liver disease and cryptococcal infections.

## References

1. Mada PK, Jamil RT, Alam MU. Cryptococcus. [Updated 2022 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK431060/>
2. Lin YY, Shiao S, Fang CT. Risk factors for invasive *Cryptococcus neoformans* diseases: a case-control study. *PLoS One*. 2015;10(3):e0119090.
3. Denham, S. T., & Brown, J. (2018). Mechanisms of Pulmonary Escape and Dissemination by *Cryptococcus neoformans*. *Journal of fungi (Basel, Switzerland)*, 4(1), 25. <https://doi.org/10.3390/jof4010025>
4. Perfect JR, Dismukes WE, Dromer F, Goldman DL, Graybill JR, Hamill RJ, Harrison TS, Larsen RA, Lortholary O, Nguyen MH, Pappas PG, Powderly WG, Singh N, Sobel JD, Sorrell TC. Clinical practice guidelines for the management of cryptococcal disease: 2010 update by the Infectious Diseases Society of America. *Clin Infect Dis*. 2010 Feb 01;50(3):291-322.
5. Tsois A, Marlar CA. Use Of The Child Pugh Score In Liver Disease. [Updated 2022 Mar 18]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK542308/>