

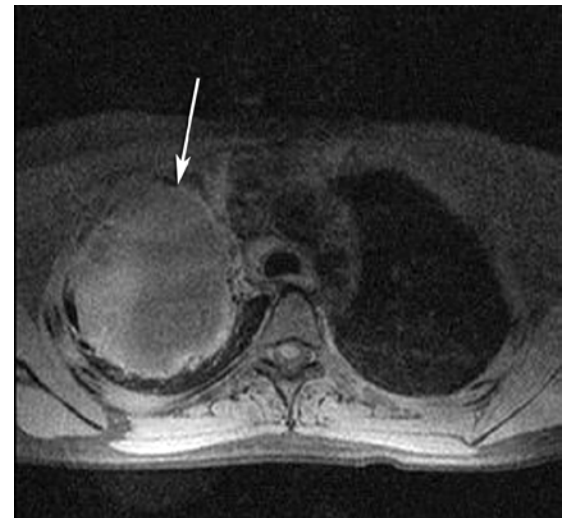
## Pulmonary Cryptococcosis

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### INTRODUCTION

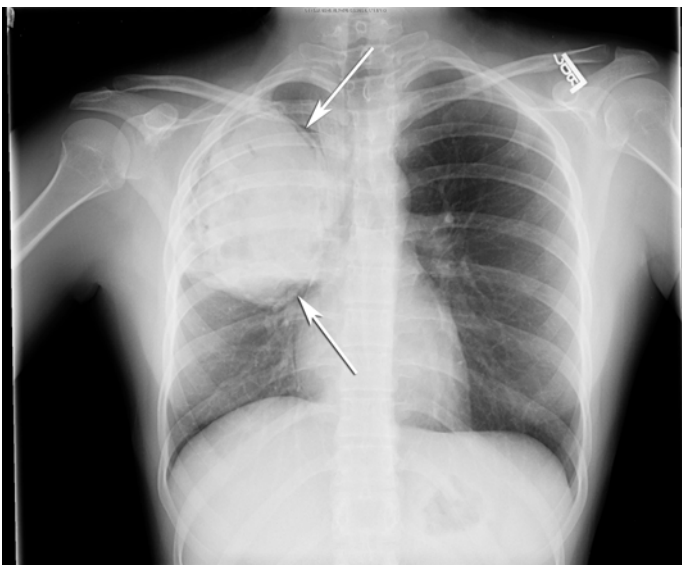
A 15-year-old previously healthy female presented to the emergency room after 2 months of shortness of breath due to presumed bronchitis and new seizure activity. The patient had previously been treated with 2 courses of antibiotics, prednisone, albuterol, and montelukast. Upon admission the patient underwent a brain MRI that was normal. The patient was subsequently discharged but returned 1 week later for repeat MR of the brain which was again normal; however abnormal signal at the right lung apex suspicious was noted on the MRA (Figure 1). A subsequent first chest radiograph demonstrated a large mass within the right upper lobe with a crescentic lucency along its superior aspect and mass effect on the right mainstem bronchus and the bronchus intermedius (Figure 2). CT of the chest demonstrated a large, heterogeneous, well-circumscribed 11 cm cavitory mass in the right upper lobe with irregular areas of crescentic air along the perimeter of the cavity (Figure 4). There was mass effect on the right pulmonary artery without evidence of vascular invasion. There was also compressive atelectasis in the adjacent right middle lobe. The patient subsequently underwent bronchoscopy and biopsy that showed *Cryptococcus neoformans*.

**Figure 1.** Axial T1 weighted image from the MRA of the neck demonstrating a heterogeneous mass within the right upper lobe.

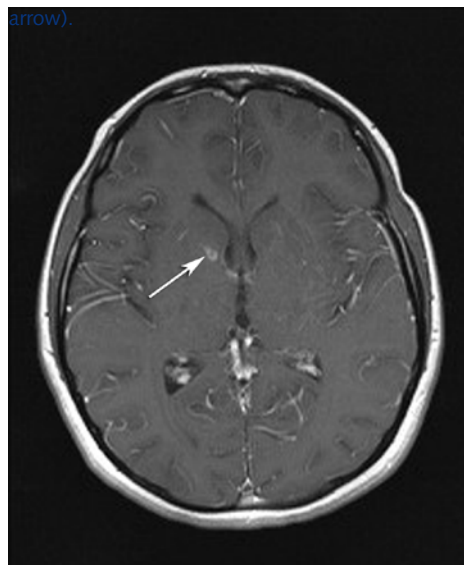


The patient subsequently developed increasing headaches and a ring-enhancing lesion was identified adjacent to the right caudate on a repeat brain MRI (Figure 3). Lumbar puncture showed elevated opening pressure and cerebrospinal fluid (CSF) cultures were positive for *Cryptococcus*. The patient was started on flucytosine for treatment of cryptococcal meningitis. A few weeks later the patient underwent resection of the right upper lobe cavity

**Figure 2.** Chest radiograph demonstrating a large mass in the right upper lobe with multiple crescents of air at the periphery of the mass.



**Figure 3.** MR of the brain with contrast demonstrating a small ring-enhancing lesion in a perivascular space adjacent to the right caudate (white arrow).



**Figure 4.** CT scan of the chest, abdomen, and pelvis showing the right upper lobe mass.



mass. Surgical pathology revealed a Cryptococcal fungal ball with endobronchial extension. The patient continued to improve and was sent home on six weeks of intravenous antifungal treatment.

## DISCUSSION

*Cryptococcus neoformans* is a nonmycelial, budding encapsulated yeast that is found in soil contaminated with pigeon excreta and decaying wood. Infection usually occurs through inhalation of cryptococcal spores into the lungs.<sup>1,2</sup> These spores then can undergo hematogenous dissemination resulting in central nervous system infection. Cryptococcal infection is usually seen in immunocompromised patients, especially in the setting of acquired immunodeficiency syndrome; however, infection can be seen in immunocompetent individuals as described in numerous case reports.<sup>3,4</sup>

Typical findings on chest radiographs include small nodule(s), focal consolidations, and cavitary nodules/masses.<sup>5,6</sup> On chest CT, single or multiple pulmonary nodules and/or masses can be seen, some of which can be cavitary.<sup>7</sup> As in this case, it is not uncommon for patients to present with concomitant cryptococcal meningitis and pulmonary cryptococcal infection. The presentation of pulmonary cryptococcal infections as a single pulmonary mass has also been described previously.<sup>8</sup> However, the differential diagnosis for a large pulmonary mass also includes bronchoalveolar carcinoma, metastatic disease, lymphoma, CCAM, other fungal infections and abscess.

Patients with cryptococcal pulmonary infections tend to present with nonspecific symptoms such as weight loss, fevers, cough and malaise, as was seen in this patient. Initial diagnosis is made by chest radiograph or chest CT followed by bronchoscopy and biopsy. However percutaneous biopsy and open biopsy are also options. While meningeal inflammation can be identified on MRI, positive cerebral spinal fluid (CSF) culture is required for definitive diagnosis.

Treatment of the disseminated *Cryptococcus* is usually with amphotericin B and/or flucytosine. Surgical resection of large pulmonary masses can be performed as in this case.

**Figure 5.** Gross specimen from right upper lobe mass resection.



## References

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