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# Cryptococcal Empyema: A Rare Manifestation of Disease

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## Introduction

*Cryptococcus Neoformans* is a pathogenic yeast that is acquired from the environment via inhalation. However, pulmonary infection is uncommon. Cryptococcosis usually manifests as a CNS or disseminated infection especially in immunocompromised patients. Infection of the pleural space with *C. Neoformans* is quite uncommon [1].

## Case Presentation

A 66 year old man with past medical history of diabetes was admitted because of right sided pleuritic chest pain. Patient was afebrile and hemodynamically stable. Patient had decreased air entry on auscultation of the right lung. Imaging showed loculated right sided pleural effusion (Figure 1). Pleural fluid culture grew *Streptococcus Intermedius*. A chest tube was placed. He then underwent thoracotomy and decortication of the right pleura. As well, patient received a complete course of appropriate antimicrobials (i.e., ceftriaxone and metronidazole and then, clindamycin after discharge). The pleural peel fungal culture grew *Cryptococcus Neoformans* one month later.

The patient was thus seen at the Infectious Diseases clinic. He was still complaining of ongoing fatigue and right sided pleuritic chest pain, but he denied fevers, chills, night sweats, cough, dyspnea, headaches, stiff neck, nausea, vomiting and photophobia. Serum cryptococcal antigen was positive at 1:80, so he was started on oral fluconazole for 4 months along with serial cryptococcal antigen assays during the treatment course.

## Discussion

Cryptococcal pleural effusions are often reactive and sterile that may resolve spontaneously or respond to surgical drainage well [2]. The immune status is the most important determinant of the subsequent course of the infection by *C. Neoformans* [3]. Most cases of cryptococcal empyemic pleural effusions were limited to severe immunosuppressed patients [4]. The factors that determine whether an exposed person develops symptomatic infection include the inoculum of fungi and/or virulence factors of the infecting strain. Unlike bacterial empyema, there is no consensus on how to define fungal empyema or specific recommendations for treatment including indications for drainage via chest tube. Common symptoms include cough, sputum production, hemoptysis, dyspnea, chest pain, fever, malaise, night sweats and weight loss [5].



Figure 1: Right sided loculated pleural effusion

## Conclusion

This patient is an example of a changing spectrum of cryptococcal pleural disease that is conventionally believed to be confined to immunocompromised patients. A serum cryptococcal antigen was diagnostic in our case and should be included in the diagnostic evaluation of unexplained pleural empyema/effusion in an immunocompetent patient. Aggressive surgical debridement and concurrent antifungal chemotherapy predict a successful clinical outcome.

## References

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| Time after starting fluconazole  | 1 month | 2 months | 3 months | 4 months     |
|----------------------------------|---------|----------|----------|--------------|
| Serum cryptococcal antigen titer | 1:80    | 1:20     | 1:5      | Non-reactive |