Cryptococcus gattii FUNGEMIA: REPORT OF A CASE WITH LUNG AND BRAIN LESIONS MIMICKING RADIOLOGICAL FEATURES OF MALIGNANCY

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SUMMARY

A 64-year-old apparently immunocompetent white man developed lung and brain lesions of disseminated cryptococcosis. The radiologic features mimicked those of lung cancer metastatic to the central nervous system. C. gattii was recovered from cultures of bronchoalveolar lavage fluid, brain biopsy, and blood. The same fungus was recovered from pulmonary and brain specimens at autopsy. Serum and cerebrospinal fluid cryptococcal antigen tests were diagnostic in our case and should be included in the diagnostic evaluation of unexplained pulmonary and cerebral lesions. A literature search showed few reports of fungemia by this species of Cryptococcus, contrasting to C. neoformans.

KEYWORDS: Fungemia; Cryptococcosis; Cryptococcus gattii.

INTRODUCTION

Cryptococcus gattii differs from the closely related yeast C. neoformans in phenotypic characters, natural habitat, epidemiology, clinical manifestation of disease and response to antifungal therapy. C. gattii unlike C. neoformans, is considered to be a primary fungal pathogen because virtually always affects apparently immunocompetent hosts, human and animal. We describe a case of Cryptococcus gattii infection in a patient without evidence of immunosuppression (including HIV infection) with fungemia, an unusual manifestation of this species of Cryptococcus, in whom lung and brain lesions of disseminated cryptococcosis mimicked bronchogenic carcinoma with brain metastases.

CASE REPORT

A 64-year-old apparently immunocompetent white man was admitted to the hospital complaining of fever, weakness, anorexia, headache, dyspnea, cough, purulent sputum production, and disorientation (one week duration). It was noted that he had lost 20 kg in weight during the previous three months. He had smoked one pack of cigarettes daily for the past 50 years. One year prior to admission arterial hypertension was found. On physical examination he was a thin man who was confused and mumbling. The temperature was 39 °C, the pulse concentration of 105 mg/dL and glucose of 51 mg/dL, while in blood puncture revealed clear cerebrospinal fluid (CSF) with a protein concentration of 105 mg/dL and glucose of 51 mg/dL, while in blood glucose was 143 mg/dL. There were 16 erythrocytes and two white cells identified, and grew encapsulated cells morphologically consistent with Cryptococcus. Bacterial cultures were negative. Lumbar puncture revealed clear cerebrospinal fluid (CSF) with a protein concentration of 105 mg/dL and glucose of 51 mg/dL, while in blood glucose was 143 mg/dL. There were 16 erythrocytes and two white cells identified, and grew encapsulated cells morphologically consistent with Cryptococcus. Bacterial cultures were negative. Lumbar puncture revealed clear cerebrospinal fluid (CSF) with a protein concentration of 105 mg/dL and glucose of 51 mg/dL, while in blood glucose was 143 mg/dL. There were 16 erythrocytes and two white cells.
per cubic millimeter. The CSF cryptococcal antigen titer was 1:4096 with a serum titer of 1:2048. An anti-HIV test (ELISA) was negative. Specimen of blood was obtained for culture with lysis-centrifugation technique (Isolator, Wampole Laboratories, Cranbury, NJ) and plated on SDA and brain-heart infusionagar (BHI) grew *C. gattii*.

Follow-up cranial CT scan carried out one day later revealed the persistence of the mass lesions and the progression of hydrocephalus. Another chest roentgenogram showed diffuse opacity throughout both lungs with a diffuse brochopneumonic appearance.

Despite the institution of intravenous amphotericin B, the patient continued to deteriorate neurologically and died two days after beginning therapy. The autopsy showed diffuse *Cryptococcus* pneumonia and multiple intracerebral lesions with numerous fungal cells. Cultures revealed *C. gattii*.

**DISCUSSION**

*Cryptococcus gattii* is emerging as a primary human and animal pathogen. The principal source of the organism is wood debris in hollows, particularly that of eucalyptus8 and is prevalent in the tropical and subtropical areas and rare in cold climates5. In contrast, *C. neoformans* is widespread in the environment, especially in areas burdened with bird excreta, and has a worldwide distribution. After gaining entry through the respiratory tract, both have tropism for the central nervous system (CNS); patients infected by *C. gattii* are more likely to evidence focal pulmonary and CNS mass2,7,9. Both inhibition of polymorphonuclear leukocyte migration to the site of infection3 and inhibition of neutrophil function11 by products of *C. gattii* may promote survival of extracellular organisms, and local multiplication to form cryptococcomas.

Infection due to *C. gattii* can pose a diagnostic challenge to clinicians. This case vividly illustrates the fact that, pulmonary cryptococcosis with mass-like lesion with associated cerebral infection, exhibit radiologic features that mimic those of lung cancer metastatic to the CNS. Isolated pulmonary cryptococcosis simulate pulmonary cancer particularly when it appears as an apical mass, including with a typical Pancoast's syndrome6. In these cases, cryptococcal antigen testing by latex agglutination, a rapid test with high specificity, would be useful in the differential diagnosis.

Fungemia10 and funguria4 by *C. gattii* is highly unusual. On the other hand, infections due to *C. neoformans* can be isolated from blood up to 63% of patients8. Positive blood culture is a sign of very poor prognosis and most patients had a high tissue burden of organisms in the lung and CNS1, like our patient.

In summary, *C. gattii* must be included in the differential diagnosis of pulmonary and brain masses. Furthermore, with fungal cultures, smears, and serologic test systemic cryptococcosis will be diagnosed sooner, leading to earlier treatment which may be life-saving.

**RESUMO**

Fungemia por *Cryptococcus gattii*: relato de um caso com lesões cerebrais e pulmonares nos achados radiológicos mimetizando câncer

Homem branco de 64 anos, aparentemente imunocompetente, desenvolveu lesões pulmonares e cerebrais por criptococose dissemina-
da. Os achados radiológicos foram similares àqueles encontrados em pacientes com câncer de pulmão e metástase no sistema nervoso central. *C. gattii* foi isolado de cultivos de lavado broncoalveolar, biópsia cerebral e sangue. O mesmo fungo foi encontrado em fragmentos pulmonares e cerebrais obtidos da autópsia. Testes de antígeno no soro e no líquido cefalorraquidiano foram diagnóstico no nosso caso e devem ser incluídos na avaliação diagnóstica de lesões pulmonares e cerebrais indefinidas. Pesquisa na literatura mostrou poucos relatos de fungemia por esta espécie de *Cryptococcus*, contrastando com *C. neoformans*.

**REFERENCES**


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