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A Case of Cryptococcus gattii in an Immunocompetent Host in Southern California

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Abstract Form

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Abstract

Cryptococcosis is a fungal infection caused by two different species, *Cryptococcus neoformans* and *Cryptococcus gattii*. Both species primarily cause lung infections; however, the two species vary in their genetics, geography, propensity to affect other organs, and notably virulence. *C. gattii* causes severe lung disease and death through the formation of cryptococcomas with occasional dissemination to the CNS, whereas *C. neoformans* disseminates readily to the central nervous system and causes death from meningoencephalitis. Furthermore, Cryptococcal infections had previously been thought to mostly affect immunocompromised hosts, including those with CD4+ lymphopenia, patients on long-term immunosuppression and those with other immunocompromised states, such as diabetes. However, emerging research regarding the genetics of *Cryptococcus gattii* suggests that certain molecular subtypes can infect immunocompetent patients. Additionally, new evidence suggests that the geography of the fungus is changing to affect patients not only in tropical and subtropical areas, but also in North America, though such cases are rare.

We present the case of a healthy 23-year-old Nigerian female living in Los Angeles who presented to a county hospital for one month of cough. Chest imaging showed a wedge-shaped consolidation in the right lung. She was initially treated for community-acquired pneumonia (CAP) but returned for evaluation when her symptoms persisted. A broad workup was sent, including serum cryptococcal antigen, which came back positive. Fungal sputum culture confirmed *C. gattii*. She was treated with oral fluconazole for several months.

This case is illustrative of two important points regarding *Cryptococcus gattii* infections. First, despite the common teaching that cryptococcal infections only affect immunocompromised hosts, certain molecular subtypes of the *C. gattii* species have been shown to preferentially affect immunocompetent hosts. Second, the geography of this fungal infection is changing, and it is now considered an emerging pathogen in North America. *C. gattii* in the United States was initially identified in Southern California, though its dry, warm climate makes cases there exceptionally rare. Cases have also been noted in the Pacific Northwest and even the Southeastern United States. Interestingly, subtype VGIII, found predominantly in California, was the most virulent molecular type with temperature being the dominant influence on virulence.