Disseminated Cryptococcosis diagnosed on fine needle aspiration cytology

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Objectives: A 46-year-old male with no prior corroborate presented to our infectious disease clinic with invariant low-grade fever and gradual progressive swelling in his left axilla for 3 months. On further probing, the patient also gives a history of weight loss of around 3 kg. The patient belonged to a northern state of the Indian subcontinent and owned a grocery shop, where he worked. There was no recent or remote travel history, no history of exposure to animals or birds, no high-risk behavior, and no past or known contact history of tuberculosis. Still, in an endemic country like India and in this given clinical scenario, we kept tubercular lymphadenitis as the first differential and investigated the case further.

Methods/Investigation: A contrast-enhanced computed tomography (CECT) of the chest and abdomen was done, showing multiple enlarged mediastinal and axillary lymph nodes with bilateral adrenal mass (Fig. 1). To further evaluate the etiology, a fine needle aspiration of the left axillary swelling was done. A hematoxylin and eosin (H and E) stain of the same showed the presence of numerous organisms of varying sizes present both intraacellularly and extracellularly along with chronic inflammatory cells (Fig. 2a). Based on the picture, differentials of Histoplasma, Cryptococcus, or Toxoplasma were kept. But considering the empty spaces (halos) which probably represent the capsule and viability in the size, a strong possibility of Cryptococcus was kept. Serous cryptococcal antigen (duste agglutination) test was negative but eventually, the fungal culture of the aspirated sample grew cream-colored, slaty dome-shaped, mucoid colonies on Sabouraud Dextrose Agar suggestive of Cryptococcus (Fig. 2b). The same was confirmed on Bird seed agar and Martin-assisted laser desorption/ionization-timed of flight (MALDI-TOF) mass spectrometry (MS). Gene Xpert of the aspirated sample was negative and serum tested with serum adenosine deaminase (ADA) were under normal limits.

Results/Diagnosis: A diagnosis of disseminated cryptococcosis was made based on the involvement of more than two non-contiguous sites (mediastinal with axillary lymph nodes and adrenal gland). The patient was initially started on liposomal Amphotericin B (3 mg/kg intravenous daily) with which he improved clinically. Same was continued for 2 weeks and later he was shifted to fluconazole 400 mg daily. As of now, the patient is on his 3rd month of fluconazole and doing well on follow-up.

Conclusion: Cryptococcus (Cryptococcus neoformans and Cryptococcus gattii) is an encapsulated yeast causing immense fungal infection, with vast majority occurring in immunocompromised host1. It has a global distribution, predominantly involving the central nervous system (CNS) and lung. Management of non-CNS and non-pulmonary cryptococcosis is tricky as looking for dissemination is key (as in the initial choice of agent varying). Adrenal involvement in Cryptococcosis uncommon (as seen in our case). Examination of FNAC sample for Cryptococcus is also challenging as other microbes can also closely mimic the same. Finally, in a tuberculosis-endemic country like India, clinical symptoms of Cryptococcal lymphadenitis can closely resemble tubercular lymphadenitis, so empirical therapy may be risky.

Figure 1 Axial CT Chest images showing multiple enlarged mediastinal lymph nodes (red arrow).

Figure 2a Fine needle aspiration cytology (FNAC) from the left axillary swelling stained with hematoxylin and eosin showing numerous organisms of varying sizes present both intraacellularly (black arrow) and extracellularly with surrounding halos in a background chronic inflammatory cells.

Figure 2b Fine needle aspirate sample incubated at 37°C on Sabouraud Dextrose agar with germans showing cream-colored, dome-shaped, slaty, mucoid colonies with smooth edge (characteristic of Cryptococcus).

Sources:


Basidiobolus omanensis, an emerging pathogen to watch out for?

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Introduction: Basidiobolus species can be found in amphibian, reptile, lizard, insectivorous bat, and soil, as well as decaying vegetables, and fruits. Basidiobolus species infect both adults and children, with the majority of cases reported from the Middle East, including Oman. Basidiobolomyces is a chronic subcutaneous infection of the trunk and limbs that typically manifests as subcutaneous or gastrointestinal lesions with only a few cases of systemic involvement. Basidiobolus haptosporus, B. heterosporus, B. magnus, B. norrispores, B. microsporus, B. omanensis and B. ranarum are the seven species in the genus Basidiobolus. Four of these species have been linked to gastrointestinal infections in humans. Basidiobolus ranarum is the most commonly reported species from humans, followed by B. omanensis. We recently described B. omanensis as a novel species from a patient in Oman. It was isolated from a boy with type 1 diabetes who died as a result of basidiobolomyces complications. Four more fatal human cases have been documented since then (unpublished data), but little is known about its role as a pathogen in humans.

Objective: The goal of this paper is to present four cases of basidiobolomyces caused by B. omanensis in young children and adults, each with unique diagnostic and treatment challenges.

Methods: We collected four cases of basidiobolomyces caused by B. omanensis from various tertiary hospitals in Oman. All identifications were based on ribosomal DNA gene sequencing of the internal transcribed spacers (ITS) and partial large subunit (LSU). The CLSI method was used for testing the antifungal drug susceptibility in vitro.