Role of microbiology laboratory in the diagnosis of patients with suspected infections of CNS

DIAGNOSIS:
Cryptococcus neoformans

Cryptococcosis is a systemic mycosis with a universal distribution caused by a levadure-form fungus, Cryptococcus neoformans. We present the case of HIV-positive man with cryptococcal meningitis due to non-habitual of fungi. Cryptococcosis is the most frequent systemic mycosis among AIDS patients, with prevalence between 5-25% in different geographical regions (1).

It produces principally acute or subacute meningitis or meningoencephalitis, depending on the immunology status of the patient and requires immediate antifungal treatment (2).

The India ink microscopy is extensively used by the search capsulated yeasts in CSF samples of AIDS patients with presumptive cryptococcosis and habitually only rounded capsulated cells of Cryptococcus neoformans are observed in the samples (3). The described case showed non-habitual pseudohyphae in the sample.

The culture of the CSF samples on Sabouraud dextrose agar and Sunflower seed agar at 28°C and 37°C, showed colonies of C. neoformans with typical macro and micromorphology (4), while all were identified with the CGB media as Cryptococcus neoformans var. neoformans (5). No differences were observed in the growth time, phenol-oxidase production and size of the capsules, neither among them nor respect to the other strains previously isolated in other patients with AIDS associated cryptococcosis.

The values of MIC of the strains isolated from CSF samples, performed by the method of microdilution in plates, were all within the susceptibility range; amphotericin B (0.25μg/ml), fluocitosine (4μg/ml), itraconazole (<0.015μg/ml) and fluconazole (8μg/ml) (6).

Although Lurie and Shadomy described true hyphae producing strains of C. neoformans in the tissues of experimentally infected mice (7), Neilson et al. observed the absence of cerebral lesions and yeasts in mice inoculated with forming pseudo hyphae strains of C. neoformans (8).

CNS cryptococcosis commonly presents with manifestations of meningitis and encephalitis such as headache, nausea, irritability, confusion and blurred vision. Both fever and nuchal rigidity are mild or absent. The course may be fulminant or chronic and insidious. Lumbar puncture is the single most useful laboratory investigation. CSF pressure is often raised and may show mild to moderate leukocytosis, decreased glucose and elevated protein levels. India ink smears demonstrate the yeast. Elevated cryptococcal antigen may be found in the serum or CSF (9). Nevertheless, the diagnosis of cryptococcal meningitis in HIV patients require a high index of suspicion, as symptoms and signs may initially be subtle due to patient impaired immunity. Cryptococcosis ranks second among fatal opportunistic infections in patients infected by HIV and who are profoundly immunosuppressed. The
increase in reporting of cryptococcosis in both immunosuppressed and immunocompetent individuals in recent years reflects in some measure an enhanced clinical awareness and improved diagnostic capability (10).

The systemic cryptococcal infection can masquerade clinically with tuberculosis, which is endemic in Argentina. Therefore, awareness of the disease and a high index of suspicion are crucial to arrive at both clinical and etiological diagnosis of cryptococcosis. The microscopic recognition of typical rounded and capsulated yeasts in the centrifuged of the CSF, stained with India ink, is a common, rapid and effective method for the diagnosis of cryptococcal meningitis among AIDS patients. Atypical forms of C. neoformans and other fungal agents must be recognized by mycologists and their presence must be included in the report, although the habitual forms achieve the diagnosis.

We believe awareness of clinicians and microbiologists will pave the way for arriving at a definite clinical and etiological diagnosis of cryptococcosis, which would have been otherwise missed or undergone treatment of tuberculosis. AIDS and cryptococcal meningitis account for more than 80% of the patients with cryptococcosis (11). In patients who are immunocompromised, the mortality from cryptococcal meningitis is 25 to 30%. An aggressive course of treatment is recommended. With early diagnosis, infections from Cryptococcus, including CNS and disseminated infections, usually respond to therapy. In patients with AIDS, amphotericin B usually can control the disease but life-long suppression with fluconazole is required to prevent relapse (12).

REFERENCES


