A STUDY ON CRYPTOCOCCAL MENINGITIS

Deepali Danave¹, Vanita Kulkarni²

¹Associate Professor, Department of Microbiology, RCSM Government Medical College, Kolhapur.
²Professor and HOD, Department of Microbiology, RCSM Government Medical College, Kolhapur.

ABSTRACT

OBJECTIVES
Cryptococcosis is a subacute or chronic infection caused by yeast Cryptococcus neoformans. It has multi-organ involvement with meningitis or meningoencephalitis being the commonest. It is seen with increasing frequency in the era of antibiotics and AIDS pandemic. This study reports on cases of Cryptococcal meningitis (CM).

MATERIALS AND METHODS
Patients presenting with clinical features of meningitis were chosen for cerebrospinal fluid (CSF) analysis. CSF samples were collected from 30 cases and subjected to Gram stain, India ink stain and fungal culture on Sabouraud Dextrose agar (SDA). Colonies grown on SDA were then identified by colony morphology, microscopy and urease test.

RESULTS
Ten samples (33.33%) showed the growth of C. neoformans. Microbiological yield was highest for culture + India ink preparation (70%) followed by India ink (20%) and fungal culture (10%).

CONCLUSIONS
In India, HIV infection is an important risk factor for CM. Hence early diagnosis and prompt treatment of meningitis are of paramount importance in reducing the morbidity and mortality in both HIV infected and non HIV infected population.

KEYWORDS
Cryptococcus neoformans, meningitis, fungal culture.


INTRODUCTION
Cryptococcosis (Torulosis) is a subacute or chronic infection caused by yeast Cryptococcus neoformans [C. neoformans]. It was originally reported from Europe (European Blastomycosis) but is found worldwide. It is now being diagnosed with increasing frequency as a result of the pandemic of human immunodeficiency virus (HIV) infection.[1,2] Infection occurs via Cryptococcus neoformans spores and it disseminates haematogenously with a predilection for the central nervous system causing meningitis/meningoencephalitis. It clinically manifests with sub-acute onset of fever, headache, vomiting with or without focal neurological deficit. The spectrum of disease caused ranges from pulmonary infection to disseminated disease frequently involving the central nervous system and occasionally skin and bones.

India has also been swept in the HIV pandemic. Fungal processing of cerebrospinal fluid (CSF) specimens is now a usual occurrence in suspected cases of meningitis. In the present study fungal isolates of C. neoformans as the possible causative agent of meningitis have been reported.

MATERIALS AND METHODS
The study was conducted in the Dept. of Laboratory Diagnosis in a tertiary care centre from Jan. 2005-Dec. 2005.

<table>
<thead>
<tr>
<th>Microbiological test Positivity</th>
<th>Positive Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>India ink</td>
<td>2 (20%)</td>
</tr>
<tr>
<td>CSF Fungal Culture</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>India ink + CSF Fungal Culture</td>
<td>7 (70%)</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 2: Microbiological Yield

Based on high degree of suspicion cerebrospinal fluid samples were collected from clinically suspected cases of meningitis admitted in various medical units and sent for fungal culture. A total of 30 samples of CSF were processed. India ink and Gram staining were done on the CSF samples. All the samples of CSF were processed for fungal culture on Sabouraud dextrose agar (SDA) which was incubated at 37°C and 25°C. The fungal cultures were followed for three weeks. The colonies of C. neoformans were identified, based on their yeast like colony morphology, the presence of spherical yeast cells without hyphae/pseudohyphae on microscopy and a positive rapid urease test. Thick capsules on India ink stain were noted.

RESULTS
Out of 30 samples, 10 samples (33.33%) showed the growth of C. neoformans - Table 1. Microbiological yield was highest for culture + India ink preparation (70%), followed by India ink (20%) and least for fungal culture (10%) - Table 2.
DISCUSSION
Cryptococcal meningitis (CM) is considered the AIDS defining illness in up to 69% of patients with HIV infection.[3,4] As reported in various studies the mortality rate ranges from 30-80% in untreated cases.[5,6] Within India the reported mortality rates due to CM have varied considerably from 18-38.3%.[6,7] The incidence of CM has declined in HIV patients who are on anti-retroviral therapy in developed countries. However, in developing countries like India it remains a leading cause of mortality with rapidly increasing incidence of HIV infection. Studies done in the pre ART era showed HIV infection as a predisposing factor in 43.9% of patients while more recent studies showed that up to 78.4% of patients with CM are HIV positive.[3,4]

Besides meningitis, disseminated infection can involve any other anatomic sites such as skin, eyes, genitourinary tract, gastrointestinal tract and abdominal cavity. A few studies have reported rare occurrence of cutaneous cryptococcosis with pancytopenia with no apparent signs of meningeal involvement in HIV infected cases.[8,9]

We isolated *C. neoformans* from 10 cases (33.33%) of meningitis in our study. The diagnostic yield of Cryptococcus was higher by CSF fungal culture + India ink preparation (70%) as compared to fungal culture (10%) and CSF India ink smear only (20%). This finding is similar to a study reported in South India.[10]

Apart from HIV infection Cryptococcosis has also been reported sporadically in patients of organ transplant and chemotherapy related immunosuppression, reticuloendothelial malignancies and corticosteroid therapy.[11] Considering the patients history, risk factors, careful clinical evaluation are all vital in CM. Thorough assessment with early diagnosis and prompt treatment are thus lifesaving.

CONCLUSION
In India, HIV infection is an important risk factor for CM. Hence early diagnosis and prompt treatment of meningitis are of paramount importance in reducing the morbidity and mortality in both HIV infected and non HIV infected population.

REFERENCES