

CASE REPORTS

Candida Meningitis Resulting from Cribriform Plate Damage Following Head Injury

Karuna Thapar, Naresh Jindal, Gaurav Dhawan, Ira Dhawan

Introduction

Although cryptococcosis is the most frequent, zygomycosis, candidiasis and aspergillosis are the other opportunistic mycoses that can cause infection in CNS. Candida meningitis is a rare candidal infection of the central nervous system. Three distinct forms of this infection are chronic candida meningitis, candida meningitis in patients with acquired immune deficiency syndrome, and candida meningitis in neurosurgery and head injury patients. The clinical course differs for each.

Case Report

A 16 year old female presented to us with a 15 days history of headache, stiff neck, fever & vomiting. On general physical examination patient was lethargic and irritable. Her height and weight were normal; examination of other systems were found to be normal. She was a known case of recurrent meningitis following a head injury at age of 2 years. Since then, she had got 10 episodes of meningitis and had received treatment from various centers. She was treated for pyogenic meningitis at our centre 3 years back when a MRI scan was done. It showed a rent in cribriform plate in the middle third on right side with CSF leak. She was also administered Pneumococcal and Meningococcal vaccines at that time. Thereafter, she remained asymptomatic for 3 years until the occurrence of present features.

Routine investigations, serum electrolytes, renal and liver function tests were found within normal ranges. ELISA for HIV was negative. A CSF examination was showing a lymphocytic pleocytosis (total cells 325 with 90% lymphocytes), a reduced glucose level (34 mg %), and an elevated protein level (185 mg %). No parasites were revealed in the CSF examination. A gram stained smear revealed budding yeast cells suggesting *Candida albicans*. Bacterial cultures were negative. A diagnosis of candidal meningitis was thus established.

Child was put on IV Fluconazole and after 3 weeks of therapy CSF lymphocytic count, protein and sugar levels were normal and CSF culture was negative. She responded well to IV Fluconazole and therapy was continued for 4 weeks. Child was discharged in good general condition thereafter.

Discussion

Candida infection can occur in patients with neurosurgery and head injury and can affect both the meninges and parenchymal brain tissue. Candida meningitis is the most frequent manifestation of invasive candidiasis. Clinical features of candida meningitis range from meningitis to encephalitis to no apparent CNS abnormality (1). Clinical patterns of CNS candida infections, in approximate order of frequency are candidal meningitis, brain abscess and granuloma (1, 2). Scattered brain microabscesses, brain abscesses, vasculitic thrombosis and infarction are the other manifestations of CNS candidiasis (3).

Candida is seen on wet mount or gram's stain in 30-40% cases (4). Diagnosis is established by isolation of Candida from cerebrospinal fluid (CSF). Large quantity of CSF can increase the yield of candida (10-20 ml)

(5). Most of the patients with candida meningitis have cerebrospinal fluid (CSF) pleocytosis. Typical abnormalities include CSF pleocytosis between 500-600 cells/mm³, lymphocyte or polymorphonuclear preponderance (50 % for both) moderately low glucose (60 % of the cases) and mild increase in protein levels (1). Isolation of candida from blood does not establish the diagnosis.

The successful treatment of candidal meningitis rests upon prompt diagnosis, early initiation of appropriate therapy and immune status of the host (1). Fluconazole which has better CSF penetration and is less toxic has been used in candida meningitis with variable results (6). Anti fungal drugs must be given for 4 weeks in CNS candidiasis, longer duration of therapy is required in complicated cases (6). The duration of treatment with Amphotericin B and Fluconazole ranges from 4 to 6 weeks according to various reports. Definitive duration of therapy has not been documented. Therefore many investigators offer to continue the therapy 3-14 days after the first negative CSF culture is obtained.

Conclusion

In cases of recurrent meningitis with anatomic abnormality which allows pathogens a pathway into the CSF; investigations should also include examination for fungus and parasites in CSF. Early initiation of treatment may help reduce the mortality rate associated with this disease.

References

1. Edwards JE Jr. *Candida Species*. In Mandell GL, Bennett JE, Dolin R, eds. Principles and Practice of Infectious Diseases. 5th edition, Philadelphia; Churchill Livingstone 2000; 2656- 2674.
2. Thron A, Wietholter H. Cerebral candidiasis: CT studies in a case of brain abscess and granuloma due to *Candida albicans*. *Neuroradiol* 1982; 23(4): 223-225.
3. Lipton SA, Hickey WF, Morris JH, Loscalzo J. Candidal infection in the central nervous system. *Am J Med* 1984; 76: 101-108.
4. Bayer AS, Edwards JE, Seidel JS, Guze LB. Candida meningitis: Report of seven cases and review of English literature. *Medicine* 1976; 55: 477-486.
5. Greenlee JE. Approach to diagnosis of meningitis. Cerebrospinal fluid evaluation. *Infect Dis Clin North Am* 1990; 4: 583-598.
6. Smego RA Jr, Perfect JR, Durack DT. Combined therapy with Amphotericin B and 5-flucytosine for *Candida meningitis*. *Rev Infect Dis* 1984; 6: 791-801.
7. Al-Mohsen I, Hughes WT. Systemic antifungal therapy: past, present and future. *Annals Saudi Med* 1997; 18(1): 97-129.
8. Huttova M, Kralinsky K, Horn J, Marinova I et al. Prospective study of nosocomial fungal meningitis in children – report of 10 cases. *Scand J Infect Dis* 1998; 30: 485-487.

E-published: February 2008

From: Department of Pediatrics, Government Medical College, Amritsar

Address for correspondence: Karuna Thapar, House No. 9-A, Krishna Square, Near Shivala Mandir, Amritsar-143001. Email: kthapar2000@yahoo.com