Letters to Editor

Candida albicans meningitis with ventriculitis in a four-year-old child

Sir,

A four-year-old male child was admitted to the neurosurgery intensive care unit (NICU) of our hospital with abnormal posture and loss of consciousness since morning. Two months before admission, he had undergone suboccipital craniotomy for medulloblastoma with right ventriculo-peritonial shunt (VP) *in situ*. The patient was reoperated after a month for recurrence and shunt revision was also done in a different hospital and his postoperative course could not be ascertained. On admission the child was afebrile (98°F); his pulse and blood pressure were 120/min and 130/80 mm Hg, respectively and respiration was labored. Pupils were bilaterally of normal size and nonreacting. Neurological examination showed unconscious child with a Glasgow Coma Scale score E1V1M2 and plantars were bilaterally upgoing. Chest examination was clear and air entry was equal bilaterally.

Complete blood picture: Hemoglobin 12.28 gm%, total leukocyte count of 17,500/cu mm, differential counts neurtophils 90%, limphocytes 9% and monocytes 1% and platelet number adequate. Blood biochemistry was normal. Blood and urine cultures were negative. Chest X-ray was normal. A contrast enhanced computed tomography (CCT) brain scan showed hydrocephalus with shunt in situ. After evaluation, urgent ventricular tapping was done and the pressure was moderately raised. The right VP shunt was malfunctioning. Unfortunately cerebrospinal fluid (CSF) sample was not evaluated for biochemistry and pathogens. Revision surgery of right VP shunt was done using ceredrain new assembly without chamber. Three days after revision of shunt, the child deteriorated and developed decerebrate posturing and was mechanically ventilated. Another ventricular tapping was done and external ventricular drain (EVD) was done. After five days of admission to the hospital. EVD tip and CSF sample were processed for culture and were sterile. The child developed hypoproteinemia and albumin supplementation was given. CSF sample obtained from EVD after 12 days of hospital stay, showed white cells count of 95 cells/cu mm (85 cells/cu mm polymorphs and 10 cells/cu mm lymphocytes), proteins 31 mg/dl and glucose 20 mg/dl, budding yeast cells and pseudohyphae. India ink stain was negative for capsulated round yeast cells. Gram stained smear also revealed budding yeast cells and pseudohyphae. A CSF culture on Sabouraud's dextrose agar yielded growth of Candida albicans that was positive for germ tube and formed terminal chlamydospore on cornmeal agar and was confirmed by sugar fermentation and assimilation test. Antifungal sensitivity performed for fluconazole, itraconazole, clotrimazole, nystatin and amphotericin B by disk diffusion showed that the strain was sensitive. A repeat CSF sample examined the next day also gave similar result. Serology for antiHIV-1 and HIV-2 was negative. A diagnosis of Candida albicans meningitis with ventriculitis in a HIVnegative postneurosurgical host was made. The patient was treated with intravenous fluconazole 200 mg for the first day, followed by 150 mg every 24 h. However, the child succumbed to the disease before the third dose of antifungal could be administered.

Use of CSF shunt devices is a common practice in neurosurgery and infection of the shunt is the most frequent complication. There are two main sources for the EVD system infection. One source is contamination of the EVD catheter lumen as a result of injection of drugs, CSF aspiration, change of the collection system or its bag. The second source is contiguous spread of infection from the skin exit site, which can progress to a tunnel infection. Infection by both the routes can result in ventriculitis. Although, Candida species are normal commensals of the skin and mucous membranes, Candida meningitis following neurosurgical procedures has been reported in the literature. Among Candida, Candida albicans is the most common agent causing meningitis and brain abscess.^[1] Other species such as C. tropicals, C. parapsilosis, C. krusei, C. lusitaniae, and C. glabrata are less common. The Indian literature on central nervous system candidiasis is sparse. Sundaram et al., [2] reported Candida microabcesses in six patients at autopsy. Radhakrishnan and coleagues^[3] reported two patients otherwise immunocompitent with multiple intracerebral abscesses.

The reported mortality rate is significant even in treated patients and about one third in postneurosurgical patients with clinically significant Candida meningitis treated with antifungal. Recommended antifungal therapy for invasive central nervous system candidiasis is liposomal amphotericin B (LFAmB) 3-5 mg/kg with or without 5- flucytocine (5- FC) 25 mg/kg every six hours for several weeks, followed by fluconazole 400-800 mg (6-12 mg/kg) daily. For patients not able to tolerate LFAmB fluconazole 400-800 mg (6-12 mg/kg) daily is an alternative option.^[4] Our patient was managed with intravenous fluconazole. Among azoles, fluconazole has the greatest penetration into the CSF achieving concentrations of at least 50% of the serum.^[5] Our patient could not be saved because of late institution of the drug therapy and also the underlying neurological condition

In conclusion, candida meningitis is a significant complication in neurosurgical patients following surgery. In suspected cases multiple CSF sampling for culture is the essential step in the management of these patients. Due to high mortality associated with Candida meningitis, any positive Candida culture should be considered significant and further worup should be done before it being considered as contaminant or colonizer.

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