Journal of
Medical Microbiology & Diagnosis

Malhotra, et al., J Med Microb Diagn 2014, 3:3
DOI: 10.4172/2161-0703.1000145

Case Report Open Access

Brain abscess by *Candida tropicalis*-A rare Case Report from India

Malhotra S*, Sharma S, Bhatia NJK and Hans C

Department of Microbiology, PGIMER and associated Dr RML Hospital New Delhi, India

***Corresponding author:** Malhotra S, Department of Microbiology, PGIMER and associated Dr RML Hospital New Delhi, India, Tel: 7428177617; E-mail: drshalinimalhotra@yahoo.com

Rec Date: April 10, 2014, **Acc date:** July 14, 2014, **Pub date:** July 16, 2014

Abstract

Fungal brain abscess is a rare entity especially in an immune competent host. Here we report a rare case of *Candida* brain abscess in a 19 year old immune competent patient. The diagnosis was made by CT scan of brain and confirmed by microbiological culture. The patient did not respond to surgical intervention and antimicrobial therapy and succumbed to his illness.

Keywords: Brain abscess; *Candida*; Immune competent

Introduction

Brain abscess is a focal, intra-cerebral infection that begins as a localized area of cerebritis and develops into a collection of pus surrounded by well-vascularised capsule [1]. They are relatively uncommon. It results from the invasion of infectious organisms into the brain parenchyma as a consequence of the spread of contiguous infection from non-neural tissue, the result of hematogenous introduction from a remote site or direct mechanical introduction due to penetrating trauma or a surgical procedure [2]. Although brain abscess is generally caused by *Streptococcus* spp., *Peptostreptococcus* spp. etc, yeasts such as *Candida* spp., and other fungi-like Aspergillus spp. have also been implicated in 1-17% cases of brain abscess [1,3]. Over the last three to four decades Candida species have become the fourth cause of blood infection in hospitals [4]. Herein we report an immune-competent adult male with brain abscess due to Candida species.

Case Report

A previously healthy nineteen year old male presented to the Casualty Department of Dr. Ram Manohar Lohia Hospital & PGIMER in an unconscious state. Patient had history of high grade fever, earache & vomiting for past fifteen days and was having pus discharge from left ear since past four days. On arrival, patient was in a comatose state, febrile (Temperature-100°F), pulse rate was 120/min, his blood pressure was 100/70 mmHg & his Glasgow coma scale was 4 ($E_1V_1M_2$). Pupils were non-reactive and fixed. Systemic examination revealed no abnormality. Laboratory findings showed-white blood cell count was 19.9×10^9/L (Polymorphs 87%, Lymphocytes 13%, and Eosinophils 2%), Haemoglobin 15.3 gm% and platelet count 200×10^9/L. Erythrocyte sedimentation rate was 21 mm in the first hour. Serum electrolytes and rest of parameters were all within normal limits. His HIV status was non-reactive & HBsAg and HCV were negative. Contrast enhanced CT scan showed features suggestive of left parietal-temporal abscess (Figure 1). Immediately left temporal Burr whole craniostomy with aspiration of abscess was done under general anaesthesia. About 40 ml of foul smelling dark serosanguinous thick fluid was aspirated and sent for cytology, bacterial & fungal culture. KOH mount showed budding yeast cells along with pseudohyphae. Gram stained smear also showed budding yeast cells and pseudohyphae. No bacterial element was visualised in wet mount. The aspirated fluid was inoculated on to the blood agar, MacConkey agar & Sabouraud Dextrose agar. After 48 hrs of incubation on Sabouraud Dextrose agar, cream coloured, soft, smooth & pasty colonies were seen. Gram stain from colonies showed oval budding yeast cells along with pseudohyphae. Germ tube was negative. This isolate was further speciated by sugar fermentation and sugar assimilation test and it was found to be Candida tropicalis. The isolate was also inoculated on Hi Chrome agar & in automated system (Microscan WalkAway 40plus system) which also identified the isolate as Candida tropicalis (Figure 2). The blood and urine cultures did not reveal growth on SDA, blood agar, and MacConkey agar. The oral, throat swabs and stool culture showed no fungal growth. Patient was started on Amikacin & Metronidazole. However patient succumbed to his illness after two days of antimicrobial therapy by cardio-respiratory arrest.

Figure 1: Contrast enhanced CT scan showing left temporal lobe abscess

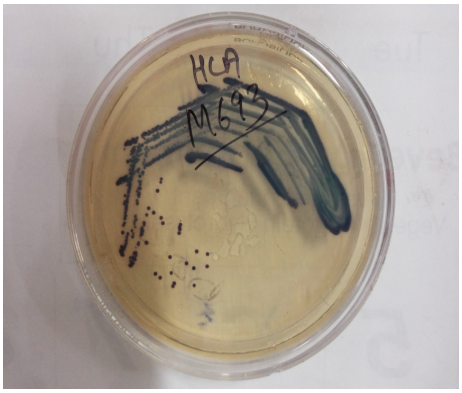

Figure 2: Hi Chrome agar showing blue coloured colonies suggestive of *Candida tropicalis*

Discussion

Brain abscesses in humans are quite uncommon because the brain is remarkably resistant to bacterial and fungal infection. This is due to brain's abundant blood supply and the relatively impermeable blood-brain barrier [4]. Fungal brain abscesses are rare and usually occur in the immune-compromised, where mortality is high. Candida brain abscesses are often implicated in patients with candidaemia and endocarditis. Our patient must have taken broad spectrum antibiotic for the treatment of chronic suppurative otitis media which could have been one of the predisposing factor.

Most common source of microbial infection for brain abscess remains direct or indirect cranial infection arising from the paranasal sinuses, middle ear, and teeth. Seeding of the brain presumably occurs through the valveless veins and permit either direct or retrograde flow into the venous drainage systems of the brain. In our patient there is history suggestive of Chronic Suppurative Otitis Media (CSOM), which continues to be the most frequent predisposing condition in all age groups. This CSOM could have been the entry point from where the infection must have extended to temporal-parietal lobes due to arterial dissemination of infective emboli [5,6]. Diagnosis of brain abscess is based on clinical suspicion and imaging techniques such as CT or MRI scanning [7]. *Candida* typically produce multiple micro abscesses and granuloma which are too small to be detected radiologically, although a single macro abscess, as in this case, may occur [8]. In this case report brain abscess was caused by *Candida* tropicalis. However, a case report by Baradkar et al from India showed isolation of *Candida albicans* from brain abscess [7]. Other studies from worldwide also showed isolation of *Candida albicans* from brain abscess [9].

In conclusion, fungal brain abscess although is a rare entity should be kept in mind when handling brain abscess case as they are associated with a high mortality rate. Aspiration provides the clinical specimen for the diagnosis by culture, which provides the best opportunity to make a microbiological diagnosis. Thus an early recognition by using simple microscopy can assist in prompt initiation of appropriate antifungal therapy.

References

1. Al-Rashdi FM, Al-Ismaily LK, Devi KL (2004) Common bacteria isolated from brain abscesses. Neurosciences (Riyadh) 9: 196-198.
2. Goodkin HP, Harper MB, Pomeroy SL (2004) Intracerebral abscess in children: historical trends at Children's Hospital Boston. Pediatrics 113: 1765-1770.
3. Athanassiadou F, Tragiannidis A, Papageorgiou T, Velegraki A (2006) Fungal brain abscesses in leukemia. Indian Pediatr 43: 991-994.
4. Mathisen GE, Johnson JP (1997) Brain abscess. Clin Infect Dis 25: 763-779.
5. Menon S, Bharadwaj R, Chowdhary A, Kaundinya DV, Palande DA (2008) Current epidemiology of intracranial abscesses: a prospective 5 year study. J Med Microbiol 57: 1259-1268.
6. Prasad KN, Mishra AM, Gupta D, Husain N, Husain M, et al. (2006) Analysis of microbial etiology and mortality in patients with brain abscess. J Infect 53: 221-227.
7. Baradkar VP, Mathur M, Kumar S (2009) Cerebral Candida abscess in an infant. Indian J Med Microbiol 27: 70-72.
8. Burgert SJ, Classen DC, Burke JP, Blatter DD (1995) Candidal brain abscess associated with vascular invasion: a devastating co plication of vascular catheter-related candidemia. Clinical Infectious Diseases21: 202–205.
9. Hsu HY, Huang HC, Chia LW, Wang CL, Liu CA et al. (2006) Central nervous system candidiasis Presenting with Persistent Brain Parenchymal Microabscess in a Premature Infant. Chang Gung Med J 29: 29-34.