

# Tubercular Brain Abscess: Diagnostic Dilemma-A Case Report

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## ABSTRACT

Isolated central nervous system tuberculosis is uncommon in immunocompetent patients. It resembles a pyogenic brain abscess clinically and radiologically and poses a problem in diagnosis and treatment. Here we described a case of recurrent frontal lobe abscess, which was diagnosed as a tubercular abscess. There was no clinical or radiological evidence of active tuberculosis elsewhere in the body. The diagnosis of the tubercular abscess was confirmed by *Mycobacterium tuberculosis* by Polymerase Chain Reaction (TB-PCR) in the abscess material aspirated via a burr hole.

**Key-words:** Central nervous system tuberculosis, Frontal lobe abscess, Tubercular brain abscess

## INTRODUCTION

The intracranial abscess occurs in 4% - 8% of Central nervous system-Tuberculosis (CNS-TB) which itself occurs in 10% of cases of pulmonary TB. It occurs in 20% of patients who do have HIV infection. Evidence of Isolated CNS-TB is extremely rare occurring in developing countries and almost always in immunocompromised patients and can be fatal if undiagnosed <sup>[1,2]</sup>. Tubercular brain abscess always poses a diagnostic dilemma as they are hard to distinguish from pyogenic brain abscesses, tuberculous meningitis, and tuberculoma on the basis of sign and symptoms, laboratory reports and radiographical presentation. Only a few cases of Tubercular brain abscess have been reported from India <sup>[2,3]</sup>. Here we report a successfully treated case of Tubercular brain abscess in an immunocompetent male.

## CASE REPORT

A 40 year old male presented in the neurology OPD with altered behaviour and headache for the past 10 days.

The CT scan taken on admission showed a left frontal lobe space-occupying lesion (SOL). He was admitted to the neurosurgery department.

On admission, the following tests were performed- Total leukocyte count  $14.47 \times 10^9/L$ ; serum urea 12 mg/dl; serum creatinine 0.48 mg/dl; Viral markers: negative; International normalized ratio (INR) 1.04; Prothrombin time: 10.1 sec; Activated partial thromboplastin time 19.2 sec; LFT was within normal limit.

A burr hole drainage was done the next day as shown in Fig 1. Pus drained was sent to the Microbiology lab for routine culture sensitivity and Ziehl Neelsen (ZN) smear for Acid fast Bacilli (AFB). The Gram stain of the pus showed 10–15 pus cells per oil immersion field. No organisms were seen. The culture was done on Blood agar (Biomerieux), MacConkey agar (MA) and Brucella blood agar (BBA) (from Oxoid). Pus was inoculated into Robertson cooked meat (RCM) broth (Hi-Media). A second subculture was done from RCM broth after 5 days in BA and BBA. BBA plates were incubated anaerobically in McIntosh jar for 48 hours. The culture was sterile after 5 days. No AFB was seen on ZN staining.

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**Fig. 1:** CT scan showing a burr hole in the frontal region

He was given empirical antibiotics, discharged and asked to come for review after a month. A follow up CT scan after one month showed a SOL again in the frontal lobe. This time, the pus sample was also sent for TB-PCR (Real Time PCR) at SRL Diagnostics along with routine culture and sensitivity and AFB smear. For detection of *Mycobacterium tuberculosis* complex MTC, Real Time PCR targeting *rpoB* gene was standardized using Qiagen DNA Mini Kit [4]. Culture was sterile after 5 days. A melt curve analysis performed on the Rotor Gene 3000 confirmed the presence of *rpoB* fragment amplification specific to *M. tuberculosis*.

Anti-tuberculous treatment was then started. All this time the patient was asymptomatic. Patient was started on Rifampicin 450 mg, Isoniazid 300 mg, Ethambutol 800 mg and Pyrazinamide 1500 mg daily for 2 months. After 2 months, Pyrazinamide and Ethambutol antibiotics were stopped. Regimen continued for 18 months. Patient recovered successfully.

## DISCUSSION

TB brain abscess can be confused with pyogenic brain abscess as both of them present acutely with same cerebrospinal fluid CSF abnormalities as happened in our case. It was difficult to differentiate between pyogenic and tubercular abscess clinically [5]. Therefore tuberculosis should always be kept as a differential diagnosis of brain abscess. Patients may present with features of raised intracranial pressure and focal

neurological deficit commensurate with the site of the abscess. A history of pulmonary tuberculosis may be present. A relatively long clinical history and an enhancing capsule with thick wall were suggestive of TBA. Pyogenic abscess, however, has a thin rim on contrast CT [6]. AFB culture or nucleic acid detection of smear negative patients should be performed to reduce morbidity and early initiation of ATT. In cases of recurrent brain abscess with AFB smear and AFB culture negative, Real time PCR should always be done to rule out tuberculosis. The high index of suspicion and timely intervention is required to diagnose and treat this potentially fatal but easily treatable condition

## CONCLUSIONS

We concluded that *M. tuberculosis* is a rare cause of brain abscess; however, this organism should be considered in patients with disseminated *tuberculosis* or in individuals from areas where tuberculosis is endemic and in cases of recurrent brain abscess where AFB smear and AFB culture was negative, Real time PCR should always be done to rule out Tuberculosis. High index of suspicion and timely intervention is required to diagnose and treat this potentially fatal but easily treatable condition.

## CONTRIBUTION OF AUTHORS

All the authors have contributed equally.

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