

Mycobacterium avium-intracellulare brain abscess in HIV-positive patient

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Abstract

Mycobacterial opportunistic infections are a major cause of morbidity and mortality among patients living with HIV (PLHIV) worldwide. Nontuberculous mycobacterial (NTM) infection is one of the leading causes of opportunistic infection in patients with advanced acquired immunodeficiency syndrome i.e., with CD4 count less than 50/cu.mm. Mycobacterium avium complex (MAC) is among the most common opportunistic bacterial infections in those patients with advanced immunodeficiency apart from cryptococcal meningitis, progressive multifocal leukoencephalopathy, etc. Common presentations of mycobacterium avium complex are fever, lymphadenitis and respiratory disease. Immune reconstitution disease is also known to manifest with MAC infections in PLHIV on highly active antiretroviral therapy. Very few cases of central nervous system involvement due to NTM infection have been described. We are reporting a case of advanced acquired immunodeficiency who presented with brain abscess due to Mycobacterium avium intracellulare.

Key Words

Brain abscess, mycobacterium avium intracellulare, non tuberculous mycobacterium

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Introduction

Nontuberculous mycobacterial (NTM) infection remains one of the most important causes of opportunistic infection in patients with acquired immunodeficiency syndrome (AIDS). Mycobacterium avium intracellulare (MAI) and others like *Mycobacterium kansasii*, *Mycobacterium xenopi*, *Mycobacterium Scrofulaceum*, etc., have been described as pathogens causing disseminated infection in patients with AIDS. Still CNS involvement remains a rare presentation. There is no reported case of MAI infection causing brain abscess in HIV-positive patient from India. We are presenting probably first case of brain abscess caused by MAI in patient with AIDS.

Case Report

A forty-two-year-old female PLHIV (people living with HIV)

not on antiretroviral treatment (ART) was admitted with the history of sudden onset left hemiplegia and altered sensorium for 4 days. There was no history of fever, headache, vomiting or convulsion. She received antituberculosis treatment for pulmonary tuberculosis 6 months back. On examination she was afebrile, pulse was 54 per minute regular and blood pressure was 140/90 mmHg. Pallor and oral candidiasis were noted. There was no evidence of lymphadenopathy.

Central nervous system examination revealed GCS of 5/15. Right pupil was dilated and nonreacting, no papilledema on fundoscopy. Left upper motor neuron facial palsy present. Patient had left hemiplegia. Other systems examination was normal.

On investigations, her hemoglobin was 9 gm%, total leucocytic count was 8000/cumm. Metabolic lab was normal. Her CD4 count was 14/cumm and chest X-ray was normal. CT scan brain showed large 5×4×4.5 cm abscess in right frontoparietal region with severe mass effect and leptomeningitis. [Figure 1]. Urgent drainage of intracranial abscess was done by neurosurgeon. Approximately 50 cc pus was drained.

Patient became ambulatory by fifth postoperative day with marked improvement in sensorium.

Acid fast bacilli were seen on ZN staining of pus. Pus was

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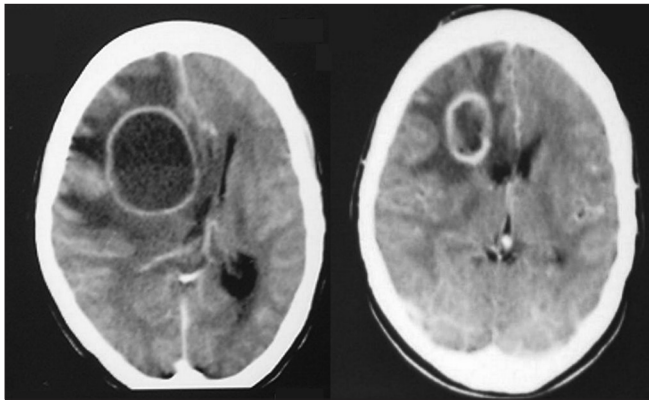


Figure 1: CT scan brain showing large 5x4x4.5 cm abscess in right frontoparietal region with severe mass effect and leptomeningitis. Postdrainage CT scan showing reduction in size of abscess and perilesional edema

inoculated on Lowenstein Jensen's medium. Single white colony was grown by second week which was not rough and dry as seen in typical mycobacterium tuberculosis growth, but was smooth and wet in appearance and nonpigmented. Smear was strongly positive for acid-fast bacilli which were long and slender. Further confirmation was done by niacin test which was negative which favored the infection by NTM. The organism was further identified as MAI by standard biochemical tests.

Patient was started on tab Clarithromycin, tab Ethambutol, and ART. Repeat CT scan brain after 1 week, showed reduction in the size of abscess with perilesional edema [Figure 1].

Discussion

Spectrum of neurological diseases in HIV-positive patient is very broad. Brain abscess in these patients is reported to be caused by the pathogens like *Toxoplasma gondii*, *Aspergillus* spp, *Nocardia* spp, *Mycobacterium* spp, and *Cryptococcus neoformans*. MAI infections commonly present as immune reconstitution disease (IRD) in patients with HIV infection receiving HAART. Sixty-four cases of MAI-associated IRD have been reported in a review by Stephen D *et al*. None of them had CNS involvement.^[1] Jacob *et al*. reported 16 cases of PLHIV with CSF cultures positive NTM over 11 years. All patients had widespread dissemination and mortality was 67% indicating very poor prognosis.^[2]

NTM infection presenting as a brain abscess is very rare. Flores R *et al* in 1996 reported *M. kansasii* scalp infection invading the central nervous system in HIV-positive patient.^[3] Claude Fortin *et al*, in 2005 reported a case of cerebral *Mycobacterium*

avium abscesses due to late immune reconstitution syndrome in an HIV-1-infected patient after receiving highly active antiretroviral therapy.^[4]

Very low CD4 count of our patient, morphology of acid-fast bacilli and colonies raised the suspicion of infection by NTM which was confirmed by the Niacin test.^[5] Disseminated *M. avium* complex disease remains a substantial cause of morbidity and mortality among patients with AIDS. Prolonged survival was associated with treatment with clarithromycin and combination antiretroviral therapy that included a protease inhibitor.^[6]

Conclusions

Mycobacterium avium intracellulare infection resulting in brain abscess in immunocompromised patient is rare but treatable entity. In severely immunocompromised patient represented by low CD4 count (<50/cu.mm.) and focal neurological deficit, NTM infection should be considered as a possibility. Urgent imaging and detail microbiological workup for isolation and identification of rare organisms like NTM may help in management.

References

1. Lawn SD, Bekker LG, Miller RF. Immune reconstitution disease associated with mycobacterial infections in HIV infected individuals receiving antiretrovirals. *Lancet Infect Dis* 2005;5:361-73.
2. Jacob CN, Henein SS, Heurich AE, Kamholz S. Nontuberculous Mycobacterial Infection of the Central Nervous System in Patients With AIDS. *South Med J* 1993;86:638-40.
3. Flores R, Salvato P, Thompson C, Knight B. Invasive *Mycobacterium kansasii* brain abscess: A case report. *Int Conf AIDS* 1996;11:120.
4. Fortin C, Rouleau D. Cerebral *Mycobacterium avium* abscesses: Late immune reconstitution syndrome in an HIV-1-infected patient receiving highly active antiretroviral therapy. *Can J Infect Dis Med Microbiol* 2005;16:187-9.
5. Runyon EH, Selin MJ, Harris HW. Distinguishing mycobacteria by the niacin test, a modified procedure. *Am Rev Tuberc* 1959;79:663-5.
6. Horsburgh CR Jr, Gettings J, Alexander LN, Lennox JL. Disseminated *Mycobacterium avium* Complex Disease among Patients Infected with Human Immunodeficiency Virus, 1985-2000. *Clin Infect Dis* 2001;33:1938-43.

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