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A Case of Cryptococcosis in An Immunocom Promised Patient

KEYWORDS: Cryptococcus neoformans, hiv, immunocompromised,pseudocysts,cryptococcomas

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ABSTRACT *AIMS & OBJECTIVES: To review the clinical presentation and imaging findings of cryptococcosis in an immunocompromised patient positive for HIV/AIDS.*

MATERIALS & METHODS: A 42 year old HIV/AIDS male patient presented with complaints of headache and aphasia. Patient had low CD4 count of 4.Patient underwent MRI brain (P&C) & CT brain.

RESULT: MRI (P&C) revealed clusters of T2 and FLAIR hyperintense, T1 isointense, non-enhancing lesions in bilateral basal ganglia ,thalamus, midbrain and dentate nucleus. Tiny cystic areas in bilateral basal ganglia and along the ependymal lining of the lateral ventricles. No evidence of haemorrhage, necrosis, perilesional edema or calcification within the affected areas.

Subacute infarcts were also present in the bilateral basal ganglia.

CT brain plain revealed hypodense areas in the above mentioned areas.

CONCLUSION: Fungal infections can be life-threatening in immunocompromised patients, especially those with HIV/AIDS. While many different fungi can cause CNS infection, the most common fungi to affect patients with HIV/AIDS are Candida albicans, Aspergillus species, and Cryptococcus neoformans (crypto). Cryptococcus neoformans is an infectious agent causing central nervous system (CNS) infections in immunocompromised patients. Patients with CNS cryptococcosis commonly present with non-specific manifestations such as headache, fever, seizure and conscious disturbance.

Cryptococcosis is the third most common CNS infectious agent in HIV/AIDS patients, after HIV and T. gondii.

Prior to HAART, crypto CNS infections occurred in 10% of HIV patients, but it is now relatively rare in developed countries.

It manifests as Meningitis, gelatinous pseudocysts and cryptococcomas in the brain.

It is confirmed on the India ink stain test.

INTRODUCTION:

Cryptococcus neoformans is a yeast that most commonly infects the central nervous system (CNS). Most initial cryptococcal infections occur through inhalation of the yeast from the environment. Cryptococci have large polysaccharide capsules that strongly resist phagocytosis; the inflammatory reaction to the inhaled organisms produces a primary pulmonary-lymph node complex, which usually limits spread of the yeast from this site. C neoformans spreads from the lung and intrathoracic lymph nodes to circulate in the blood, especially if the host is immunocompromised.

Dissemination may occur during primary infection or during reactivation of the infection years later. The most commonly involved site is the CNS. In cases of cryptococcalmeningoencephalitis that are not associated with human immunodeficiency virus (HIV) infection, the infection is often confined to the subarachnoid and perivascular Virchow-Robin spaces.

We present a case of cryptococcosis in an immunocompromised patient who later tested positive for india ink stain test.

RESULTS

A 42 year old male patient with deteriorating medical condition since 6 months came with complaints of headache ,aphasia for past one week.

Patient was a known Retroviral disease + with a CD4 count of 4.

Imaging:

There are seen clusters of T2 and FLAIR hyperintense,T1 isointense lesions in bilateral basal ganglia (appear swollen),thalamus,midbrain and dentate nucleus.

Tiny cystic areas noted in bilateral basal ganglia and along the ependymal lining of the lateral ventricles.

On contrast , there is lack of enhancement of the lesions.

No evidence of hemorrhage , necrosis, perilesional edema or calcification within the affected areas.

Few areas show restricted diffusion with reversion on ADC in bilateral basal ganglia suggestive of infarcts involving the lenticulostriate arterial territory.

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On plain ct scan , the psueudocyst appeared as hypodense areas relative to the brain parenchyma

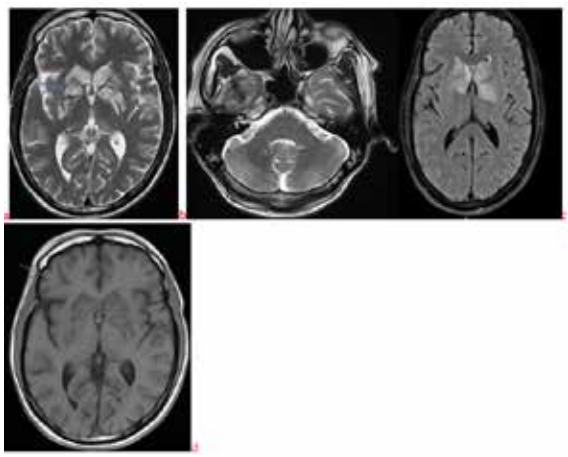

Fig 1a,b,c)T2 and FLAIR weighted axial images show bilateral hyperintense pseudocysts (arrows) in basal ganglia and dentate nucleus d)T1 weighted axial images show the pseudocysts as iso to hypointense areas in the basal ganglia

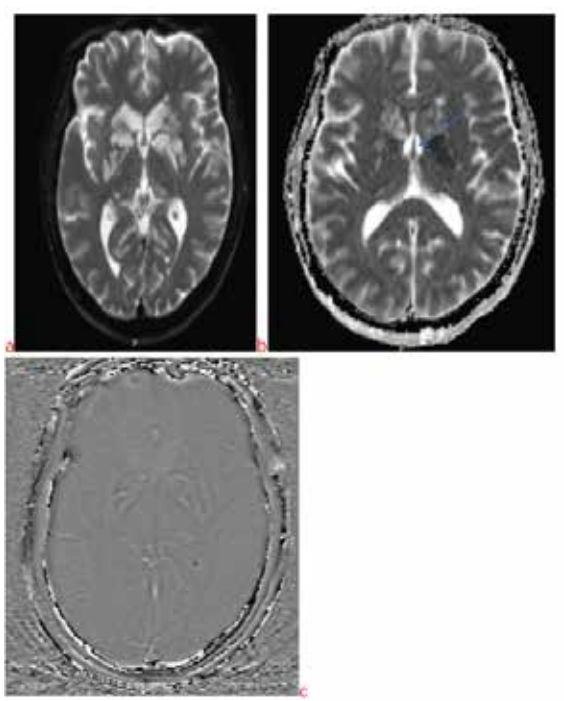

Fig 2a,b) axial Diffusion Weighted and ADC sequences show cyts to be hyperintense with few areas of reversion (arrows) on ADC suggestive of infarcts.c) SWI axial images reveal no areas of haemorrhage.

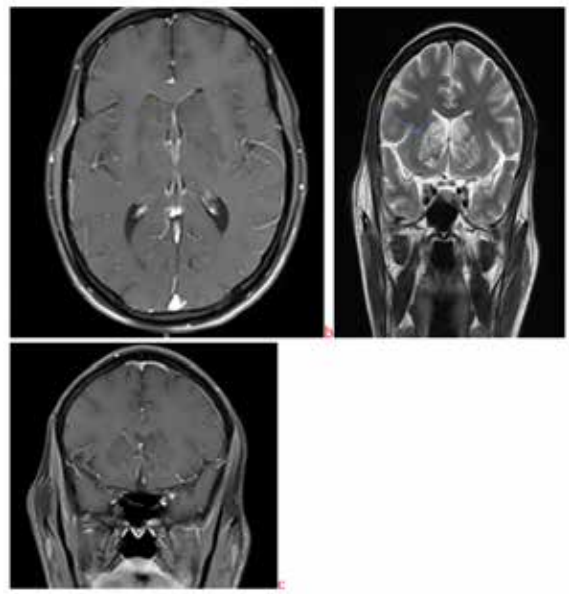

Fig 3a,b) T1W contrast images show lack of enhancement (arrows). c) T2 coronal image shows pseudocysts in the basal ganglia (arrows)

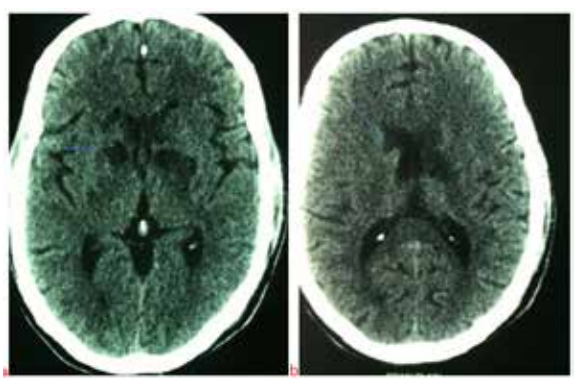

Fig 4a,b) CT plain axial images show the psuedocysts to be hypodense areas (arrows)

DISCUSSION :

Etiology and Epidemology

Cryptococcus neoformans is excreted in mammal and bird faeces and is found in soil and dust.

The lungs are usually the primary infection site.

CNS infection occurs when organisms circulating in the blood are deposited in the subarachnoid cisterns and perivascular spaces.

Pathology

Crypto is the third most common CNS infectious agent in HIV/AIDS patients, after HIV and T. gondii.

Prior to HAART, crypto CNS infections occurred in 10% of HIV patients, but it is now relatively rare in developed countries.

Crypto usually occurs when CD4 counts drop below 50 cells/μL.

Three main forms:

Meningitis, gelatinous pseudocysts and focal mass lesions called cryptococcomas.

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1) Cryptococcomas and meningitis - immunocompetent patients
2) Meningitis and gelatinous pseudocysts - immunocompromised patients.

In crypto meningitis , the meninges become thickened and cloudy. Gelatinous mucoid-like cryptococcal capsular polysaccharides and budding yeast accumulate within dilated perivascular spaces.

Multiple gelatinous pseudocysts occur in the basal ganglia, midbrain, dentate nuclei, and subcortical white matter

Imaging
NECT scans often show hypodensity in the basal ganglia .

Enhancement varies with immune status.

CECT scans in immunocompromised patients typically show no enhancement.

MRI -Cryptococcal gelatinous pseudocysts are hypointense to brain on T1WI and very hyperintense on T2WI .

Perilesional edema is generally absent.

Lack of enhancement on T1 C+ is typical although mild pial enhancement is sometimes observed.

CONCLUSION :
Though cryptococcosis is one of the most common fungal infections affecting a patient with HIV positive status , due to the use of HAART therapy the incidence has fallen to less than 10 % and is rarely seen now.

We must keep other differentials such as toxoplasmosis, tuberculosis, lymphomas and enlarged perivascular spaces while reporting as case of cryptococcosis and know the immunocompromised status of the patient s the disease manifests in two different forms based on the immunocompromised status.

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