

Cerebral Aspergillosis: A Rare presentation in immuno-competent patient

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ABSTRACT:

BACKGROUND AND IMPORTANCE

This case report is of a patient who presented to us with complain of weakness in right upper and lower limb secondary to a space occupying lesion seen on MRI brain, had a past history of pulmonary tuberculosis which was treated adequately. Patient was offered craniotomy for biopsy but patient refused so we started prophylactic anti-tuberculous medications respectively. Follow-up after 2 weeks showed worsening of the symptoms of the patients.

CLINICAL PRESENTATION:

A 44 year old male with no known co-morbid presented with weakness in right upper limb since 20 days and right lower limb since 4 days. The weakness is progressive and spread from distal to proximal in both limbs. There were no other symptoms. There is no history of seizures and no sign and symptoms of meningitis.

CONCLUSION:

The case report has scientific interest because the diagnosis of cerebral aspergillosis in a patient with history of TB who was otherwise healthy and immunocompetent, a finding that is rare in literature. In a nutshell, the diagnosis of aspergillus CNS infection should be suspected when the patient does not respond to treatment of the major differentials. In such cases, empiric treatment of aspergillus infection should be considered in favor of waiting for definite diagnosis.

Mesh Words: Cerebral, Aspergillosis, Rare, Presentation, Immuno-competent, Patient.

CASE REPORT

BACKGROUND AND IMPORTANCE

Aspergillus is a fungus that is dispersed in nature and may cause an invasive disease in immune-compromised patients such as transplant patients, HIV infected and neutron-penic patients and those undergoing chemotherapy or use corticosteroids¹. The most common type of organ affected is lung

whereas the most common extra-pulmonary manifestation is that of CNS². The fungus can reach the brain through hematogenous spread, optic nerves or vascular walls, direct implantation during neurosurgery or rarely via paranasal sinuses³. The most common symptoms of the infection include headache, altered mental status, weakness or paresthesia and seizures^{4,5}. The diagnosis and treatment of invasive CNS aspergillus infection is difficult and complex but early diagnosis is very important for successful treatment. Here we present a case of cerebral aspergillosis in a patient with history of pulmonary TB, who is otherwise healthy and immunocompetent.

CLINICAL PRESENTATION

A 44 year old male with no known co-morbid presented with weakness in right upper limb since 20 days and right lower limb since 4 days. The weakness is progressive and spread from distal to proximal in both limbs. There were no other symptoms. There is no history of seizures and no sign and symptoms of meningitis. On examination, right upper limb power was 0/5 and lower limb was 4/5. Rest of neurological examination was unremarkable. MRI showed irregular lesion on left **temporo-parietal** region, which was hyperintense on T2 and diffusely contrast enhancing [**Figure 1**]. Patients had a history of pulmonary tuberculosis 9 years back,

which was treated. Based on previous history and findings on MRI, a provisional diagnosis of CNS tuberculoma was made. The patient was offered craniotomy for biopsy of lesion but he refused so Anti Tuberculosis therapy (ATT) was initiated.

After 2 weeks, the patient again presented with headache, nausea, vomiting and complete right sided hemiplegia. Power was 0/5 on both right upper and lower limb. CT shows multifocal ill-defined lesions in left **temporo-parietal** region with significant perilesional edema, mass effect, and midline shift [**Figure 2**]. He was scheduled for left sided craniotomy for resection of lesion for histopathology. Alongside his AFB and Gene expert MTB were sent, which came back negative. The histopathology report show dense acute and chronic inflammation with extensive necrosis and many septate hyphae. There was no evidence of malignancy. The specimen cannot be sent for culture because it was insufficient. After which, patient was started on Amphotericin B and Voriconazole. Post-Operative CT shows [**Figure 3**]. Serum β -D-Glucan Assay and serum galactomannan antigen were also sent post operatively, which came back positive. Post-Operative MRI shows [**Figure 4**]. He had some fever spikes after initial treatment but he got better after few days. He was discharged on Voriconazole and was followed routinely.

FIGURE LEGEND

FIGURE 1

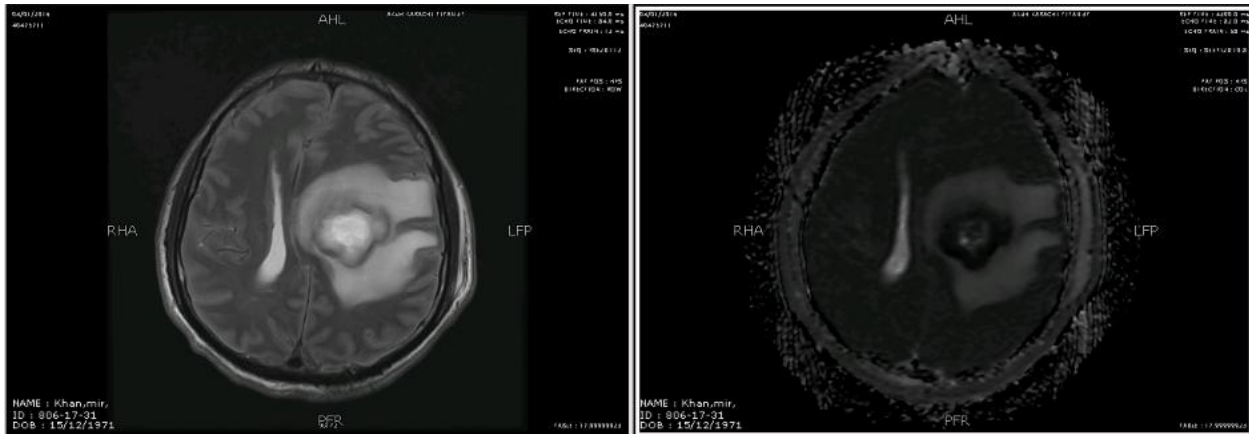


FIGURE 2

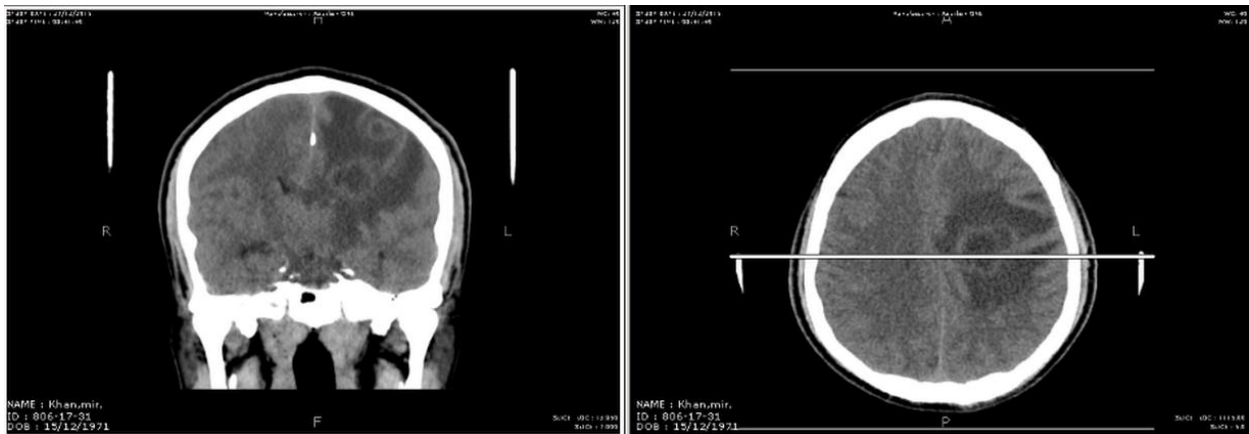


FIGURE 3



FIGURE 4



DISCUSSION:

The above case is exceptionally rare because according to a study conducted in this region, the most common intracranial Space-occupying lesions (SOL) are Gliomas (32.1%) followed by infective lesions (23%).¹ The sign, symptoms, and location of lesion in this case led the diagnosis towards these most common differentials diagnoses. Since patient had previous history of pulmonary Tuberculosis, the provisional diagnosis was tuberculoma of brain. Also, TB is very prevalent in this region that 5.5% cases of all SOL were tuberculoma so there should be always suspicion of tuberculosis⁶. Surprisingly the histopathology report indicated a fungal lesion, which is extremely rare, since only 3.1% of SOLs were caused by fungal lesion⁶. Also, it was extremely unusual location for a fungal lesion and without any history of immunosuppression or primary foci.

Aspergillus fungus is a part of normal flora of respiratory tract. Immune competent individuals are protected from infection and it only causes symptomatic infection in immunocompromised hosts. Respiratory tract

is main entry for infection and the most common sites affected are maxillary sinus and lungs⁷. Central nervous system (CNS) infection of Aspergillus is usually spread by hematogenous routes from primary pulmonary source of direct extension of sinus infection and usually occurs in immunocompromised individuals⁸. Major risk factor for aspergillus infection is immune-compromised state like patients with hematological malignancies or acquired immunodeficiency, whereas, transplant recipients are also at increased risk, but very rarely does Aspergillus infection occurs in an immune-competent individual, as in our case⁹.

The clinical presentation can be non-specific and mild, but the symptoms usually seen are headache, rhinorrhea, fever, weakness or paresthesia and altered mental status¹⁰. The diagnosis is cumbersome and usually made with the help of imaging studies like MRI or CT scan. These findings are correlated with clinical, histo-pathological and serological studies to give the definite diagnosis. Early diagnosis and management is very important for fungal infection of the CNS, with CT

and MRI being important adjuncts for detecting the infection and monitoring the course of disease and therapy. Galactomannan and 1,3- β -D-glucan antigens detected in the CSF or serum can assist in the diagnosis of cerebral aspergillosis, however, these antigens are not specific and can also be produced by other fungi¹¹. Hence the definitive diagnosis is made with histological tests showing septate hyphae with branching at 45 degrees being a typical and specific finding for aspergillus infection¹².

The patient in our case presented initially came with complaints of unilateral limb weakness and space occupying lesion on MRI. With previous history of pulmonary tuberculosis, the major differentials were CNS neoplasm, abscess, and CNS tuberculosis. But the diagnosis of cerebral aspergillosis came to light on the basis of classic histo-pathologic findings demonstrated on biopsy, which was done when the patient returned after 2 weeks of ATT and persistent symptoms.

Among the treatment options for cerebral aspergillosis, the preferred treatment is

Voriconazole, with Itraconazole and Liposomal Amphotericin B used in patients refractory or intolerant to Voriconazole. Medical therapy can also be combined with surgical resection when the fungal infection manifests as a mass, however there have been few descriptions of patients surviving after undergoing antifungal therapy and surgical resection¹¹. It should be emphasized that aspergillus infection not only affects immunocompromised individuals but can also present, rarely, in otherwise immunocompetent individuals as well and hence should be suspected with suggestive history.

CONCLUSION:

The case report has scientific interest because the diagnosis of cerebral aspergillosis in a patient with history of TB who was otherwise healthy and immunocompetent, is a finding that is rare in literature. In a nutshell, the diagnosis of aspergillus CNS infection should be suspected when the patient does not respond to treatment of the major differentials. In such cases, empiric treatment of aspergillus infection should be considered in favor of waiting for definite diagnosis.

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