

ASPERGILLOMA MIMICKING AS MENINGIOMA- CASE REPORT

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ABSTRACT

Fungal infections are commonly found in immunocompromised individuals and rarely affect healthy beings. These in CNS are mostly imaged as ring enhancing lesions in brain, with differentials being tuberculomas, abscesses, meningitis and SOL. Aspergillomas in extra-axial location are quite rare, however if found may lead to grave prognosis. This 40 years old lady presented with headache and vertigo without any underlying co-morbid. On MRI, there appeared to be an extra-axial mass lesion having dural tail sign. Post-operatively, it proved to be aspergilloma on histopathology and culture. Even after surgical intervention, patient again had an episode of fits and vertigo. Our purpose of this case report is to highlight towards imaging features of SOL mimicking as meningioma which on biopsy turned out to be aspergilloma. Clinical and imaging features are discussed in this case, to help patients in future for early diagnosis of fungal etiology.

Keywords: Cranial aspergilloma, MRI, meningioma, extra-axial, central nervous system (CNS)

Introduction

With the advent of viral infections like human immunodeficiency virus (HIV), malignancies and renal transplant, with patients attributed to take immunosuppressive drugs, there is increased likelihood of CNS aspergillosis.^{1,2} CNS aspergillosis is a rare entity in immunocompetent individuals,³ this made our case of more importance. CNS infections are usually spread by hematogenous route, mostly from lungs. There is direct invasion of paranasal sinuses, middle ear and orbits. The clinical signs and symptoms hampers the clinical diagnosis usually.^{4,5} Clinical diagnosis is challenging due to non-specific presenting signs and symptoms.

Cranial aspergillosis can have varied presentations that may range from meningitis, encephalitis with cerebral abscess formation, cerebrovascular disease and very rarely as intracranial masses.^{5,6} Cerebrovascular event secondary to aspergillosis carries grave prognosis. Prompt diagnosis and early medical management with anti-fungal is essential to prevent any fatal outcome.

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Case Report

42 years old female patient presented with severe headache of gradual onset, vertigo, loss of consciousness and dizziness. She also had episodes of vomiting which were greenish and blackish in color. There was no history of fever, seizures, visual abnormality or limb weakness. There was no underlying co-morbid. No contact history of tuberculosis was present. Upon presenting to neurology clinic, she was investigated as a case of suspected space occupying lesion. MRI brain was advised urgently.

Investigations

Initial investigation of CBC showed raised TLC of 15.5. Chest X-ray was never performed. MRI brain was carried out at our hospital on 1.5 Tesla. Axial DWI, ADC map, Axial T2, Axial FLAIR, Axial T1, Axial T2*, Sagittal T1, Coronal T1, T1 post-contrast images were performed. MRI of brain exhibited a lobulated

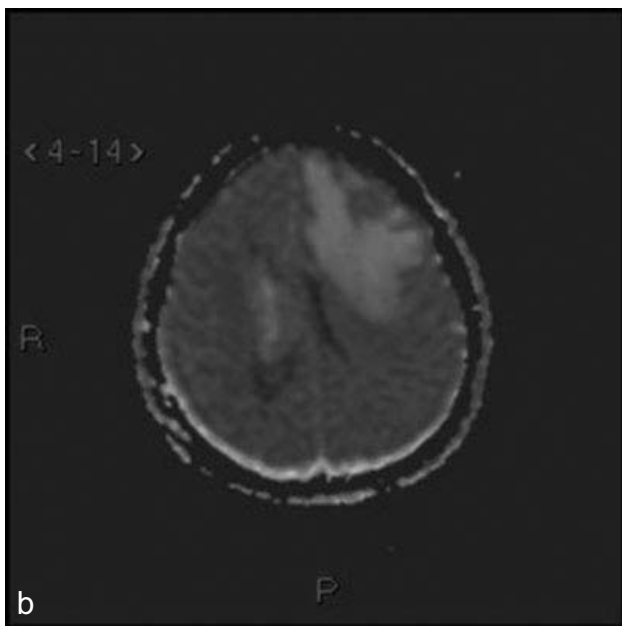
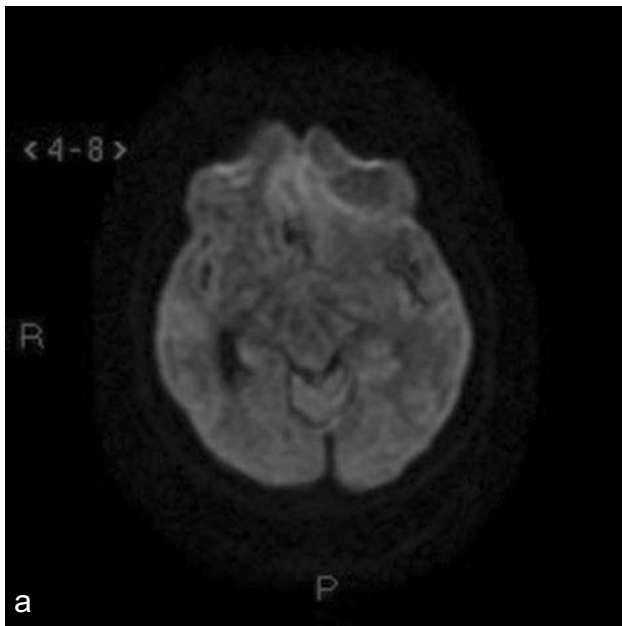


Figure 1a and b: DWI and ADC map image shows no restriction in left frontal region lesion.

extra-axial, broad-based T1 iso, T2 and FLAIR hypointense lesion measuring 4.6 x 3.3 cm (TR x AP) in left frontal region. There was no diffusion restriction and the lesion was low on ADC. Avid post contrast enhancement was noted. The lesion had associated perifocal edema with mass effect on adjacent brain parenchyma, compressing ipsilateral frontal horn of lateral ventricle. Midline shift of 1.5 cm was noted. Dural tail sign was noted, with no des-

truction of underlying bones. Mucosal opacification of bilateral maxillary and left ethmoid sinus was noted, with slightly indistinct margins of ethmoid air cells laterally, this remained non-enhancing on post contrast study. This was given as meningioma with possible differentials of metastatic disease process.

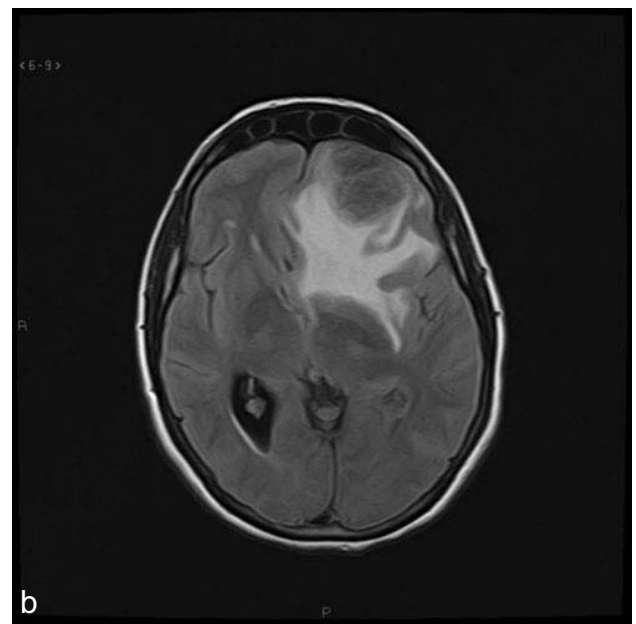


Figure 2a and b: T2 axial and FLAIR show surrounding vasogenic edema in left frontal region.

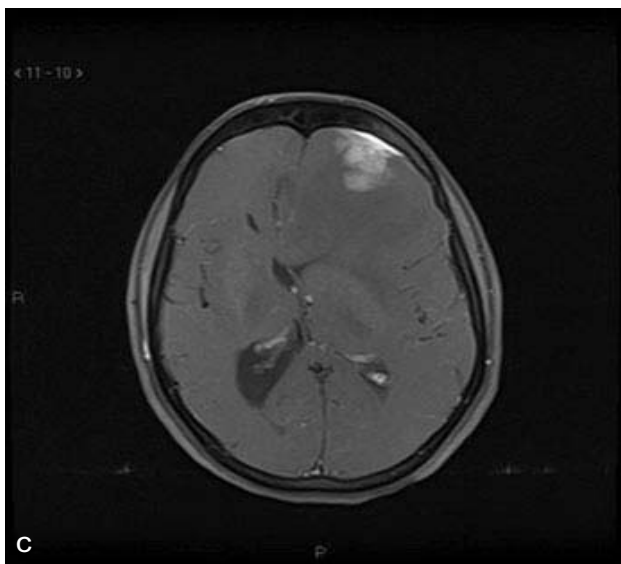
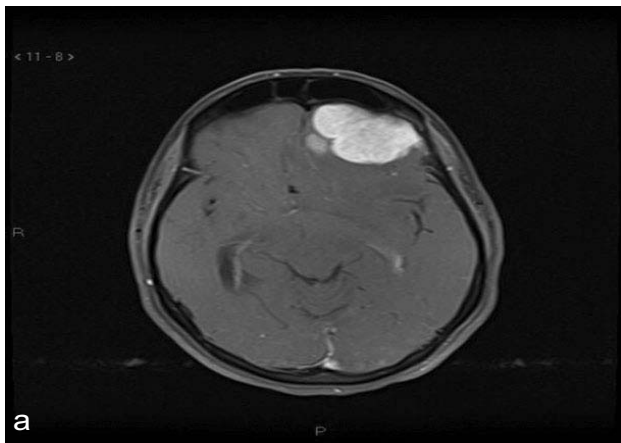


Figure 3: Post contrast images show broad-based avidly enhancing extra-axial mass lesion in left frontal region with dural tail sign and patchy dural enhancement.



Figure 4: T1WI shows isointense signals in left ethmoid lateral walls which remain non-enhancing on post contrast images.

PROVISIONAL DIAGNOSIS:

With characteristic imaging features of extra-axial mass lesion arising from left frontal region, initial diagnosis of meningioma was made.



Figure 5: Post surgical imaging and follow-up CT scan which showed persistent vasogenic edema.

TREATMENT:

Left frontal craniotomy was done to remove meningioma. Excisional biopsy showed multiple fragments of a fibrocollagenous tissue showing chronic granulomatous inflammation with necrosis and surrounded by multi-nucleated giant cells, lymphocytes and plasma cells. There are multiple septate broad fungal hyphae, highlighted on PAS stain. After having the biopsy

report, microbiology tests were sent which showed Galactomannan levels slightly raised and were 0.128. These are quite specific for *Aspergillus* and hence the diagnosis was made.

OUTCOME AND FOLLOW-UP:

Patient was sent home on anti-fungal and anti-epileptic. She remained stable for six months, then developed vertigo and headache again. Repeat CT scan was done which revealed only post-operative changes in left frontal region.

Discussion

The CNS spread of *Aspergillus* is usually by hematogenous spread from primary lung disease or either by direct intracranial spread from sinonasal disease by invading bones of skull base and producing osteomyelitis.^{7,8} According to a study conducted by Siddiqui et al., CNS Aspergillosis have typical imaging features on MRI, with a mass lesion appearing hypo-to-isointense on T1-weighted, while hypointense signals are seen on T2-weighted images. These imaging features maybe helpful in early diagnosis and medical treatment, particularly in immunocompetent hosts. CNS Aspergillosis carries a poor prognostic factor in immunocompromised patients, where the death rate can proceed to 100%.^{5,9} *Aspergillus* and other fungal infections are iso-to-hypointense on MRI because of higher iron content. Meningioma on the other hand appears hypointense on T1-weighted images and hyperintense on T2-weighted images.⁵ The angio-invasive nature of *Aspergillus* owes to the fact that it produces elastase which dissolves elastic tissue. The risk of vascular invasion thus increases because it causes micro-invasion and results in infarctions / hemorrhages, particularly in post-operative period.¹⁰

In our patient who is immunocompetent, most striking imaging feature on MRI Brain was avidly enhancing solid, extra-axial mass lesion in left frontal region. It was closely abutting the ethmoid sinuses, but main bulk of mass remained intracranially. The lesion appeared slightly hyperdense on CT scan (the films are not available) and appeared hyponintense on T2/FLAIR sequences. There was no cavernous sinus invasion, however mass effect upon adjacent brain

parenchyma and ventricles was seen. Due to similarity of our case with imaging features of Meningioma, diagnosis of Aspergillosis was difficult on imaging alone. Patient underwent frontal craniotomy and fungal hyphae were identified on histopathological slides.

Conclusion

Imaging features in immunocompromised patient with CNS Aspergillus will vary from immunocompetent patients. The infection carries high risk of morbidity and mortality, because of its invasive nature. Careful knowledge of MRI imaging features and immediate treatment with anti-fungals can prevent patient from having grave prognosis. Imaging of paranasal sinuses, orbital extension and angio-invasive nature of Aspergillus puts both immunocompetent and immunocompromised individuals in a danger-risk zone.

Conflict of Interest: None

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