

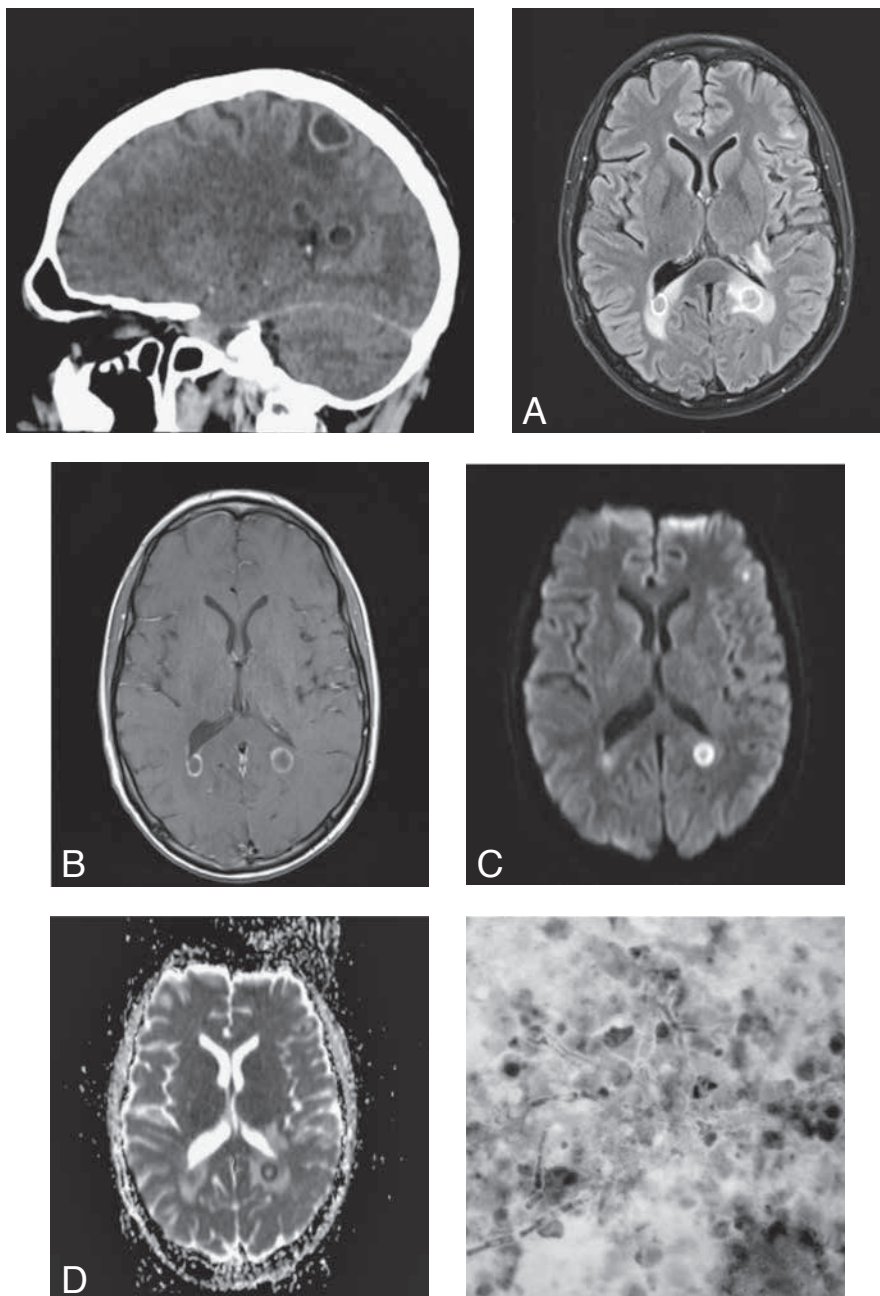
CEREBRAL ASPERGILLOSIS SIMULATING PYOGENIC ABSCESSSES

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Key-word: Aspergillosis

Background: A 29-year-old male patient with a history of HIV for approximately 4 years ago was admitted to the department of Internal Medicine for fever, with a headache resistant to analgesics. He also presented nausea without vomiting, and the fever persisted despite antibiotic treatment.

CT scan was carried out, followed by MRI in order to better characterize the lesions.



Work-up

On contrast-enhanced CT scan of the brain (Fig. 1) several lesions, localized at the grey-white junction and with peripheral enhancement, suggesting abscesses, are seen.

MRI of the brain (Fig. 2) includes axial FLAIR images (A) which show that all lesions are centrally hypointense and surrounded by a perilesional area of high signal intensity consistent with vasogenic edema. On axial gadolinium-enhanced T1-weighted images (B), the brain lesions show a thin peripheral rim of enhancement.

The diffusion-weighted image ($b=1000$) (C) shows high signal intensity at the periphery of the lesion.

The apparent diffusion coefficient (ADC) mapping (D) exhibits low signal intensity at the periphery of the lesion, and thus restricted diffusion.

Microphotograph of specimen obtained by fine needle aspiration biopsy (Fig. 3) demonstrates septate (square) hyphae (arrows) branching at 45°.

Radiological diagnosis

Initially, a diagnosis of pyogenic abscesses was made based on the medical history of the patient, but his symptoms did not resolve, while his fever persisted despite antibiotic therapy. The differential diagnosis included lymphoma, metastatic disease, septic emboli, toxoplasmosis, candidiasis, as well as aspergillosis. A definitive diagnosis was obtained by fine needle aspiration biopsy, which demonstrated the presence of septate (square) hyphae (arrows) branching at 45° typical for *aspergillosis*.

Discussion

Cerebral aspergillosis is a rare disease, generally affecting immunocompromised patients. Prognosis is poor, especially for immunocompromised individuals, with mortality rate approaching 100%. The brain is a common site for the dissemination of the *Aspergillus* infection, with an incidence of 10 to 40% in invasive aspergillosis.

Radiological assessment may be instrumental in facilitating earlier diagnosis of the disease, as clinical and microbiological diagnoses are difficult. On CT and MRI cerebral aspergillosis appears as multiple focal lesions with or without rounded hemorrhagic components or ring enhancement following the injection of contrast medium. These CT and MRI findings, however, are not specific. Diffusion imaging may present a more specific technique to contribute in early diagnosis.

The majority of cerebral fungal abscesses appear as a homogeneous hyperintense lesion with lower ADC values, given the restricted diffusion of water in the presence of coagulative necrosis. One particularity of the disease is the presence of a rim of high signal intensity and lower ADC values for some of the lesions, as observed in our patient.

Metastatic lesions do not present a restricted diffusion, while bacterial abscesses, lymphoma, or toxoplasmosis may exhibit it. In this case, poor enhancement and hemorrhage at the peripheral rim may be indicative of invasive aspergillosis.

In conclusion, as the morphological imaging of aspergillosis lesions is not very specific, an understanding of the different aspects of diffusion is essential for the differential diagnosis. Biopsy and anatomic-pathological examinations are necessary for a definitive diagnosis.

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