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Case Report

Central nervous system fungal infection in a young male with a history of intravenous drug abuse and hepatitis C

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ABSTRACT

A young male, with a known history of hepatitis C and heroin abuse, was admitted to the emergency department with altered sensorium, left-sided weakness, and no meningeal signs. Initial computed tomography imaging showed hypodensity involving right basal ganglia with mass effect but no hemorrhage. Magnetic resonance imaging revealed multiple nonenhancing small foci of restricted diffusion involving the right basal ganglia, T2 and FLAIR hyperintensity within the right basal ganglia, and internal capsule with mild surrounding edema. The patient was treated for encephalitis and atypical stroke given the history of intravenous drug abuse. Follow-up imaging showed worsening of the brain lesions, with involvement of the contralateral basal ganglia with necrosis and peripheral enhancement. Brain biopsy was ultimately performed and suggested infection with *Aspergillus* species and associated parenchymal infarction. The patient was treated with voriconazole with subsequent significant clinical improvement.

Introduction

Serious life-threatening infections related to *Aspergillus* are often seen in patients who have undergone bone marrow transplant and chemotherapy, reflecting a lack of cellular immunity [1]. However, patients with other predisposing factors, including drug addiction and hepatic failure, have also been shown to have increased susceptibility to cerebral aspergillosis [2]. Early suspicion and diagnosis of this potentially rapidly fatal infection is essential. With the availability of newer, potentially curable treatments for fungal infections, morbidity and mortality can be reduced. Although the imaging features can have a varied spectrum, certain characteristics can help narrow the differential diagnoses. This article discusses the computed tomography and magnetic resonance imaging (MRI) features of central nervous system (CNS) fungal infection.

Case report

A 19-year-old man was admitted to the emergency department from an outside hospital with a history of altered mental status. He had been found minimally responsive in his motor home by his father. The patient was known to be hepatitis C positive with a history of intravenous drug abuse (heroin). There was no history of other underlying systemic disease.

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The patient was febrile and intermittently responsive in the emergency department with a Glascow Coma Scale of 10 and was intubated for airway protection. Physical examination demonstrated weakness of left upper and lower limbs, with the strength graded as 2/5 and 3/5, respectively. No meningeal signs were noted. Vitals were stable. Urine was positive for benzodiazepines and opiates. Initial computed tomography imaging showed hypodensity involving right basal ganglia with mass effect but no evidence of hemorrhage (Fig. 1A). MRI revealed scattered small foci of restricted diffusion involving the right basal ganglia as well as T2 and FLAIR hyperintensity within the right basal ganglia and internal capsule with mild surrounding edema (Figs 1B-E). There was no enhancement on post-contrast imaging (Fig. 1F). Susceptibility-weighted images showed subtle, punctate foci of blooming (Fig. 1D). Transthoracic echocardiogram was negative for cardiac valve vegetation. The patient's blood workup revealed increasing leukocytosis (outside hospital,

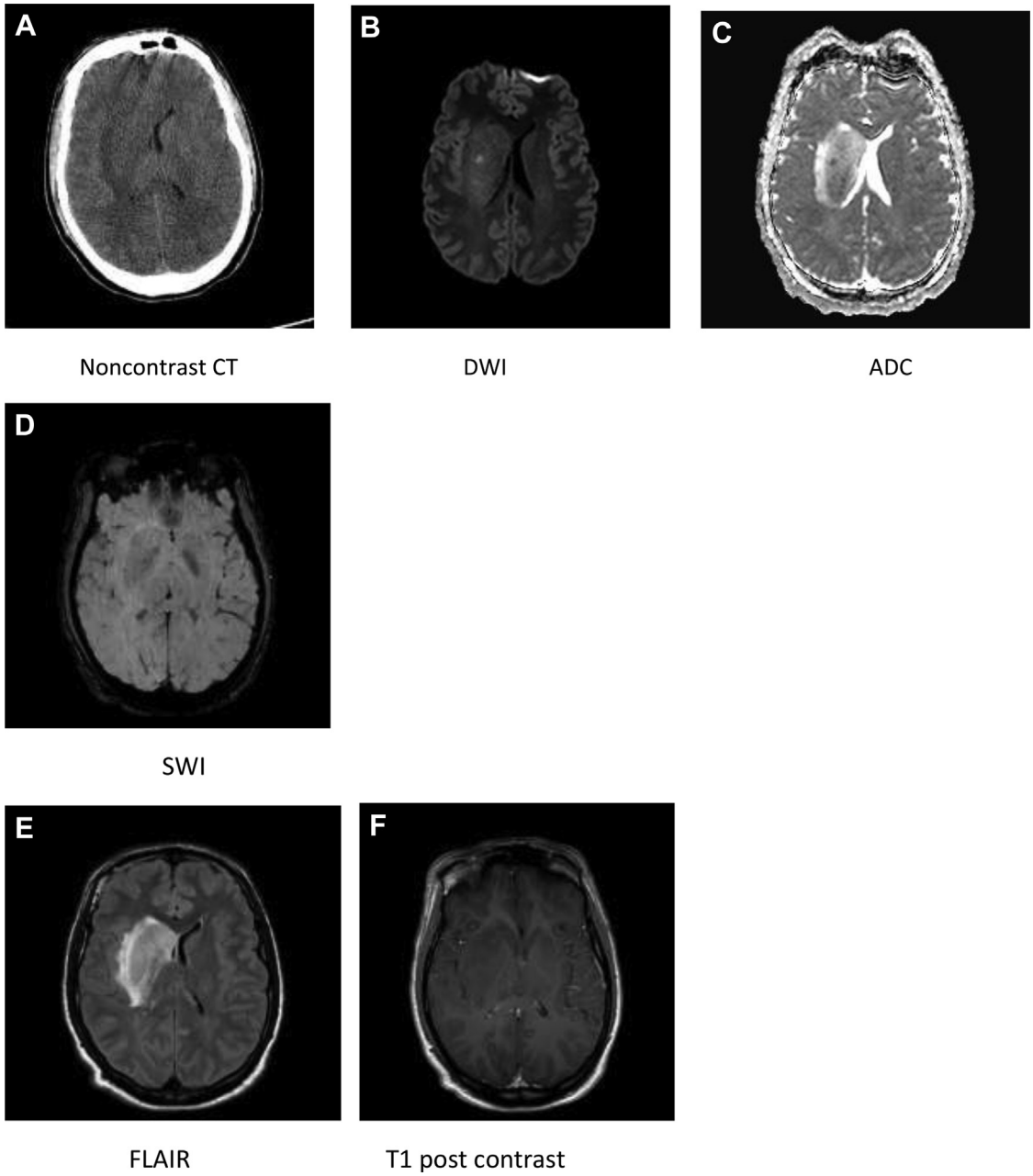

Fig. 1 – On admission. (A) Noncontrast CT shows hypodensity with mass effect involving right basal ganglia and no evidence of hemorrhage. (B and C) Foci of restricted diffusion with corresponding low intensity on ADC map are seen in the right basal ganglia. (D) Punctate foci of "blooming" seen on susceptibility-weighted imaging involving right putamen and globus pallidus. (E) FLAIR image showing abnormal hyperintensity in the right basal ganglia nuclei with mass effect and effacement of right lateral ventricle. (F) No enhancement is seen on post-gadolinium axial T1-weighted image. CT, computed tomography; ADC, apparent diffusion coefficient; DWI, diffusion weighted imaging; SWI, susceptibility weighted imaging; FLAIR, fluid attenuation inversion recovery.