Restricted Diffusion MRI Lesions in HIV-Associated CMV Encephalitis

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Keywords

HIV, HIV-associated dementia, CMV encephalitis, MRI, DWI, contrast enhancement

Figure 1. (Figure 1-3) Figure 1. a-d: Magnetic resonance imaging (MRI) fluid-attenuated inversion recovery images reveal an extensive, confluent, and symmetric supratentorial and infratentorial white matter changes with severe cerebral atrophy. Figure 2. a and b: Magnetic resonance imaging (MRI) diffusion-weighted images show restricted diffusion with apparent diffusion coefficient correlate in bilateral frontal corona radiata. Figure 2. c and d: Posterior limb of the right internal capsule. Figure 3. a-d: T1 contrast enhancement in the posterior limb of bilateral internal capsules and medial cerebral peduncles.

Case Presentation

A 41-year-old man presented with 6 months of headache, progressive cognitive decline, weight loss, and encephalopathy. He disclosed a history of pneumonia with spontaneous pneumothorax. Neurological examination revealed significant

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cognitive impairment (Montreal Cognitive Assessment: 15) with mild left arm and leg weakness. Seborrheic dermatitis and gingival hyperplasia were also noted.

Magnetic resonance imaging revealed extensive white matter T2-weighted/fluid-attenuated inversion recovery (FLAIR) hyperintensity with cerebral atrophy and restricted diffusion in the posterior limb of the right internal capsule, bilateral frontal corona radiata, and centrum semiovale. Contrast enhancement was noted in the posterior limb of the internal capsule, genu of corpus callosum, and medial cerebral peduncle.

Serum workup included pancytopenia, positive HIV antibody, CD4 count of 24 cells/ μ L, HIV RNA viral load of 413 000, and positive cytomegalovirus (CMV) immunoglobulin M. Cerebrospinal fluid (CSF) workup included 1 red blood cells/ μ L, 1 white blood cells/ μ L (77% lymphocytes), 54 mg/dL protein, 60 mg/dL glucose, and positive CMV polymerase chain reaction (PCR). A new diagnosis of HIV and CMV encephalitis was made. Highly active antiretroviral therapy and ganciclovir were initiated.

The most common imaging finding of CMV encephalitis is nonspecific white matter T2/FLAIR hyperintensity, similar to HIV leukoencephalopathy. These 2 entities are often distinguished with positive CSF CMV PCR. The CMV has ventricle tropism, which can present with periventricular diffusion restriction and contrast enhancement with/without hydrocephalus.¹⁻³ Although T2/FLAIR basal ganglia lesions were described before,⁴ restricted diffusion in the posterior limb of internal capsule and contrast enhancing lesions in the cerebral peduncles, corpus callosum, and posterior limb of internal capsules are atypical findings, which have not been previously described in HIV-associated CMV encephalitis, to our knowledge.

Authors' Note

Drs Cho and Mays were directly involved with patient care and clinical decisions. Dr Cho was prepared the first draft. Dr Mays edited the manuscript. Dr Cho finalized the manuscript.

Declaration of Conflicting Interests

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