

High signal intensity of both putamina in patients with HIV infection

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Summary. We report two patients with HIV infection whose MR imaging showed abnormal high signal intensity confined to both putamina on T2-weighted spin echo (SE) images. We assume that they may represent the early manifestations of HIV encephalitis.

Key words: Human immunodeficiency virus (HIV) – Encephalitis – Magnetic resonance imaging – AIDS

Patients with acquired immunodeficiency syndrome (AIDS) or human immunodeficiency virus (HIV) infection show a high incidence of central nervous system (CNS) disease [1]. We observed two patients with HIV infection whose MR imaging showed abnormal high signal intensity confined to both putamina on T2-weighted spin echo (SE) images.

Case reports

Case 1

A 22-year-old man with HIV infection was admitted because of alteration of mental status and fever. No focal neurological deficits were encountered. Cerebrospinal fluid (CSF) study was normal, and cultures of CSF and blood showed no organisms. Cranial CT revealed no abnormality. T1-weighted SE images using 500/17/2 (TR/TE/excitations) at 1.5 T (Siemens, Iselin, New Jersey) with and without Gd-DTPA showed no abnormalities. However, on T2-weighted images (2500/90/1) with a 192×256 matrix, there was symmetric homogeneous high signal intensity confined to the putamina (Fig. 1). The white matter, other parts of the basal ganglia and thalami were normal. The patient was discharged after the fever abated. Follow up MR imaging was not obtained.

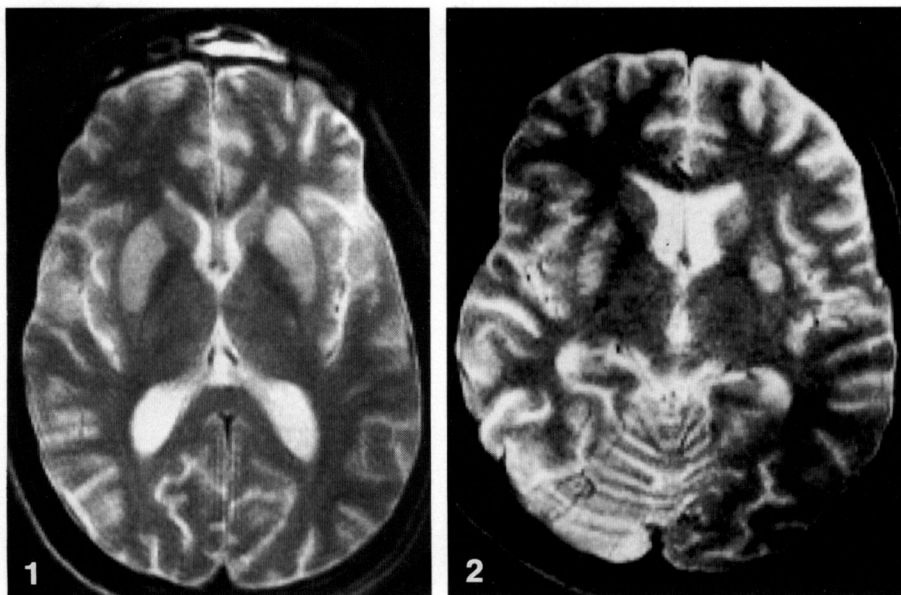


Fig. 1. Case 1. On the T2-weighted MR image, SE 2500/90/1 (TR/TE/excitation), the signal intensity of both putamina is diffusely high compared with that of the caudate nuclei

Fig. 2. Case 2. The T2-weighted MR image (2500/90/1) shows slightly heterogeneous increased signal intensity confined to both putamina

Case 2

A 25-year-old female intravenous drug abuser with HIV infection was admitted with a diagnosis of pneumonia. She had been suffering from chronic renal failure which required hemodialysis. Although no focal neurological deficits were observed, cranial MR imaging at 1.5 T was obtained because of the recent change in her mental status. T2-weighted images (2500/90/1) with a 192 × 256 matrix showed slightly heterogenous increased signal intensity confined to the putamina (Fig. 2). These lesions were absent on T1-weighted images, and did not enhance using Gd-DTPA. The patient presented with a new onset of seizure 3 weeks after the initial MR imaging. Cranial CT at that time showed no apparent abnormalities and follow up MR was not obtained. CSF study revealed only slightly increased protein content. The patient was free from seizures while hospitalized and subsequently was discharged.

Discussion

Neurological complications of AIDS are common and include opportunistic infections such as toxoplasmosis and cryptococcosis, progressive multifocal leukoencephalopathy and neoplasms especially lymphomas [1]. Attention has recently been directed to primary CNS involvement in HIV positive patients [1, 2]. Atrophy and abnormal signal intensity of the white matter tracts are well demonstrated as MR findings of HIV encephalitis [2–5].

Pathologically, these findings correspond to demyelination or vacuolation of white matter tracts by HIV. Several reports describe the neuroradiological manifestations of AIDS in the basal ganglia [4–8].

Calcification and contrast enhancement in the basal ganglia have been noted on CT in children with AIDS [6, 7]. Belman et al. [6] further reported a child in whom T2-weighted SE images showed high signal intensity in the basal ganglia with involvement of the nearby white matter. These findings were thought to represent vasculopathy due to HIV encephalitis [1, 6, 7].

In adult patients, the basal ganglia involvement has been radiologically described as forming part of more extensive white and gray matter changes in HIV encephalitis [4, 5]. To our knowledge there are no previous radiological reports of abnormalities confined to (and involving the whole of) both putamina as shown in this communication. Chrysikopoulos et al. [4], describing the radiological manifestations of HIV encephalitis, included a patient in

whom MR imaging showed generalized atrophy and focal putaminal lesions. However neither detailed description nor radiological images of this case were provided.

Pathologically, the diffuse presence of microglial nodules with multinucleated giant cells is considered to be a characteristic feature of HIV encephalitis [1, 4, 5]. These changes are seen predominantly in deep white matter and gray matter. However radiological imaging such as MR or CT has been considered to be insensitive for the detection of such lesions [4, 5]. Though there is no pathological proof, we assume that the circumscribed putaminal abnormality in our patients may represent the early manifestations of HIV encephalitis.

Focal lesions in both basal ganglia were also reported in patients with cryptococcal meningitis associated with AIDS [8]. These lesions, however, follow the Virchow-Robin spaces and show patchy or nodular appearance not confined to the putamina on MR imaging. Though ischemic or hypotensive events can cause abnormal signal intensity in the basal ganglia, both of our patients denied any history of cerebrovascular attack or hypotension.

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