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**Teaching NeuroImage: Glucose Hhypermetabolism in the basal Basal gangliaGanglia:
The decisive Decisive clue Clue to the diagnosis Diagnosis of an unusual Unusual
antiAnti-LGI1 encephalitisEncephalitis**

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A 61-year-old woman presented with subacute excessive sweating, dizziness and cognitive impairment. Neurologic examination was unremarkable and MMSE score was 13 with disorientation and dyscalculia. Extensive workup revealed only mild hyponatremia (Na 132 mmol/L) and dysautonomia with hyperhidrosis and orthostatic hypotension. Brain MRI FLAIR revealed slight hyperintensities in medial temporal lobes, but FDG-PET showed hypermetabolism prominently in basal ganglia (SUVmax 10.57/ 9.83) and mildly in the right medial temporal lobe (SUVmax 5.64) (Figures 1, 2). CSF study showed no pleocytosis (WBC 4 cells/ μ L, glucose 92 mg/dL, protein 58.6 mg/dL) and anti-LGI1 antibody was detected. Her symptoms markedly improved with IV immunoglobulin.

Most cases of anti-LGI1 encephalitis present with cognitive dysfunction, psychiatric symptoms, or seizures. Autonomic dysfunction rarely triggers a timely diagnosis of anti-LGI1 encephalitis.¹ We conducted anti-LGI1 antibody testing, prompted by characteristic FDG-PET findings. This case illustrates that basal ganglia and medial temporal lobe hypermetabolism are two distinct targets of anti-LGI1 encephalitis, although similar findings can be found in other autoimmune encephalitis (e.g, anti-NMDA, anti-IgLON5) or autoimmune chorea.^{2,3}

Figure 1 title

Brain MRI FLAIR sequence and ^{18}F -FDG-PET

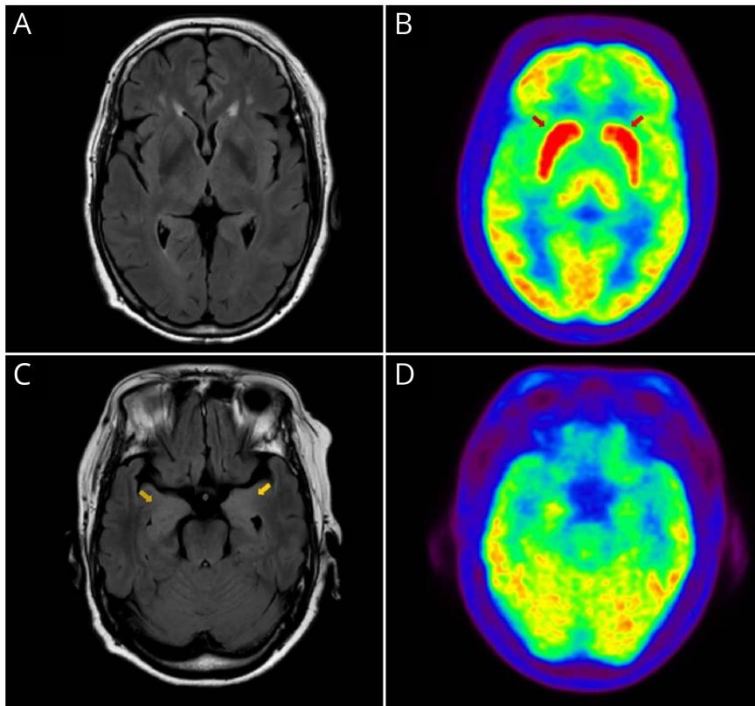


Figure 1 legend

We matched axial cuts showing the basal ganglia (A, B) and medial temporal lobes (C, D) of fluid-attenuated inversion recovery (FLAIR) MRI and ^{18}F -FDG-PET. FDG-PET image shows prominent glucose hypermetabolism in bilateral basal ganglia (B, red arrow). FLAIR image shows subtle hyperintensities in both medial temporal lobes (C, yellow arrow).

Figure 2 title

Brain MRI DWI and ADC sequence

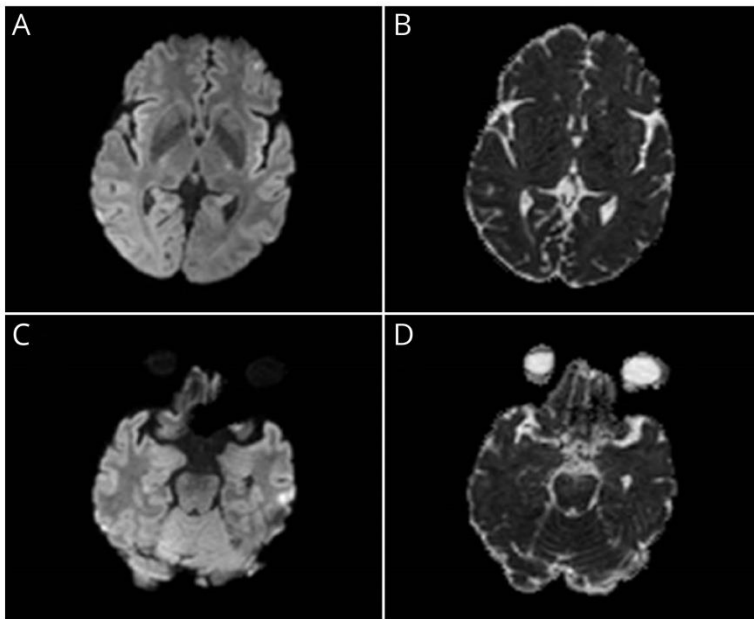


Figure 2 legend

We matched axial cuts showing the basal ganglia (A, B) and medial temporal lobes (C, D) of diffusion weighted imaging (DWI) and apparent diffusion coefficient (ADC) sequence of MRI. There was no diffusion restricted lesion.

Reference

1. Teng Y, Li T, Yang Z, et al. Clinical Features and Therapeutic Effects of Anti-leucine-rich Glioma Inactivated 1 Encephalitis: A Systematic Review. *Front Neurol.* 2022 Jan 12;12:791014. doi: 10.3389/fneur.2021.791014. eCollection 2021.
2. Li G, Liu X, Yu T, et al. Positron emission tomography in autoimmune encephalitis: Clinical implications and future directions. *Acta Neurol Scand.* 2022 Dec;146(6):708-715. doi: 10.1111/ane.13717. Epub 2022 Oct 19.
3. Ehrlich DJ, Walker RH. Functional neuroimaging and chorea: a systematic review. *J Clin Mov Disord.* 2017 Jun 21;4:8. doi: 10.1186/s40734-017-0056-0. eCollection 2017.

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