

Non-paraneoplastic Autoantibody-negative Limbic Encephalitis Characterized by Mild Memory Impairment

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Background and Objectives

Limbic encephalitis is an inflammatory disorder of the medial temporal lobes, typically presenting with subacute short-term memory impairment, disorientation, psychiatric symptoms, seizures, hallucinations, and sleep disturbances. Since its first description in the 1960s, limbic encephalitis has been recognized to have various etiologies, including infectious, paraneoplastic, and autoimmune causes. Many cases are associated with antineuronal antibodies and underlying malignancies; however, autoantibody-negative and non-paraneoplastic cases have also been reported. We present a case of non-paraneoplastic, autoantibody-negative limbic encephalitis presenting with isolated acute memory impairment.

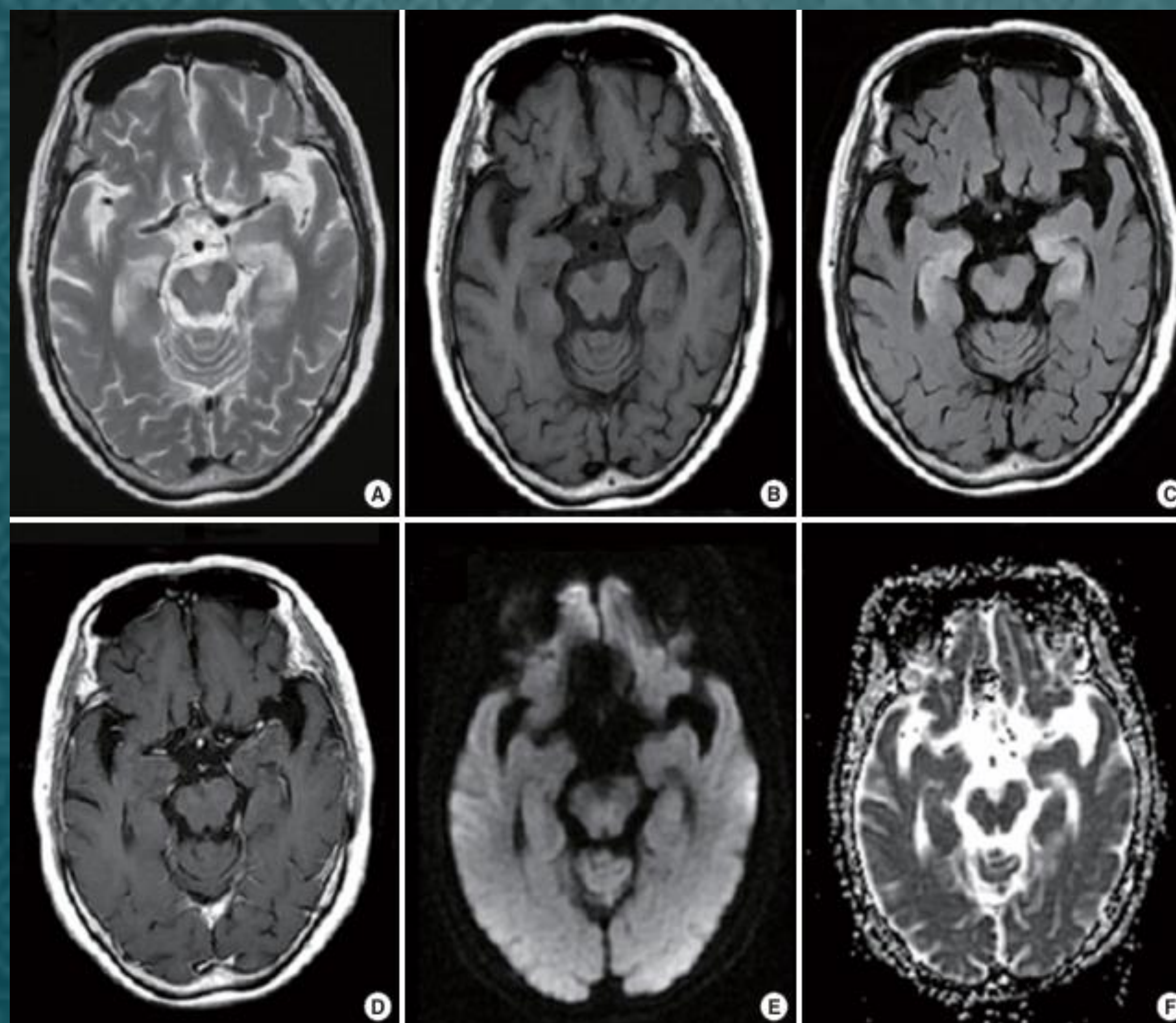


Fig. 1. Axial brain MR T2-weighted image (T2WI) and fluid-attenuated inversion recovery (FLAIR) image show increased signal intensity in both medial temporal lobe (A, C). T1-weighted image (T1WI), Gadolinium (Gd)-enhanced T1-weighted MRI and DWI study shows no hyperintensity on bilateral temporal lobes with isointensities on ADC map (B, D, E, F).

Case Presentation

A 79-year-old woman with no prior cognitive impairment presented with a 20-day history of acute short-term memory disturbance. Comprehensive neurological examination, neuropsychological testing, laboratory studies, cerebrospinal fluid analysis, brain magnetic resonance imaging (MRI), positron emission tomography (PET), electroencephalography, extensive serum and CSF autoantibody panels, and malignancy screening were performed. Neurological examination revealed isolated impairment of recent memory with preserved general cognitive function. Laboratory and cerebrospinal fluid analyses showed no evidence of infection. Brain MRI demonstrated high signal intensity lesions in the medial temporal lobe, and PET imaging revealed hypermetabolism predominantly in the left medial temporal region. Autoantibodies associated with paraneoplastic and autoimmune encephalitis, including anti-Hu, anti-Yo, anti-Ri, CV2/CRMP5, NMDAR, AMPAR, LGI1, GABAB, and Caspr2 antibodies, were all negative in both serum and CSF. No malignancy was detected on tumor marker assays or imaging studies. The patient was diagnosed with non-paraneoplastic, autoantibody-negative limbic encephalitis and treated with high-dose steroid therapy, resulting in marked clinical and radiological improvement.

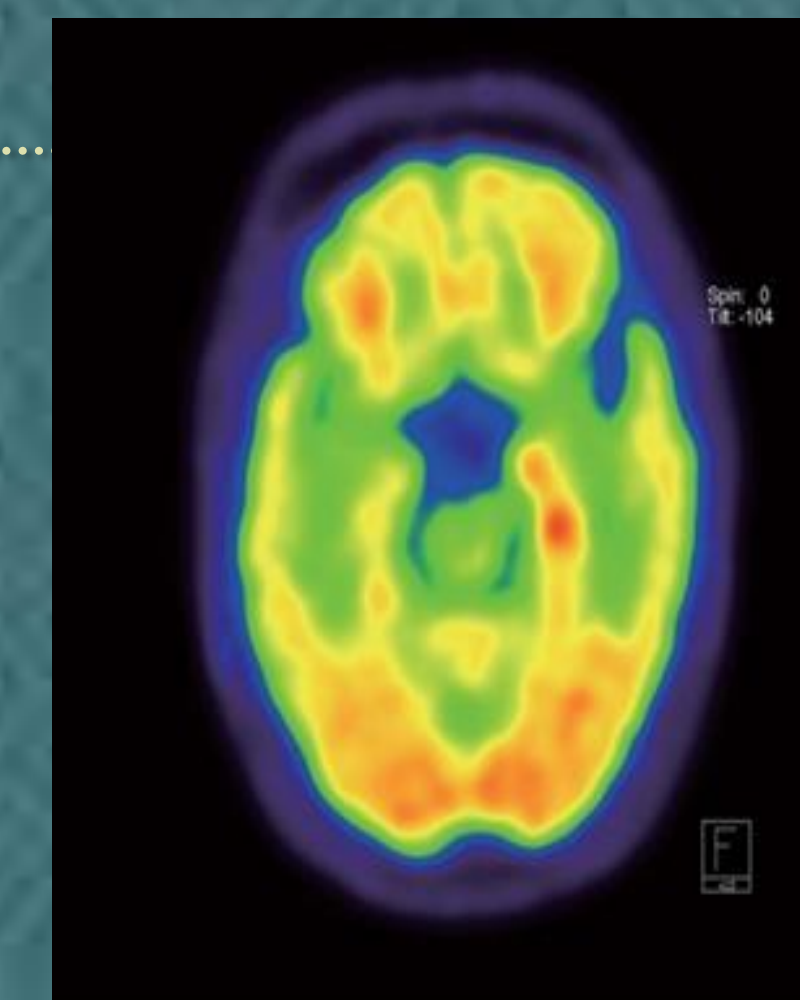


Fig. 2. Brain FDG PET shows increased FDG uptake in the both medial

temporal lobes, which is much worse on the left side

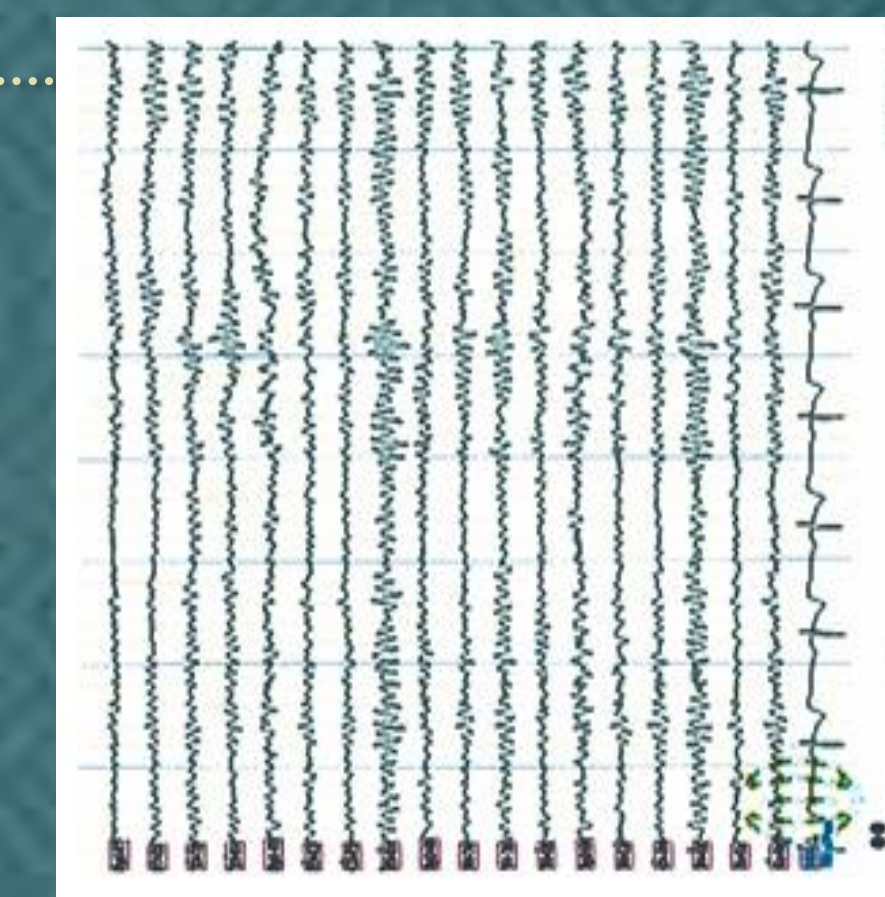


Fig. 3. EEG monitoring shows no epileptiform discharge.

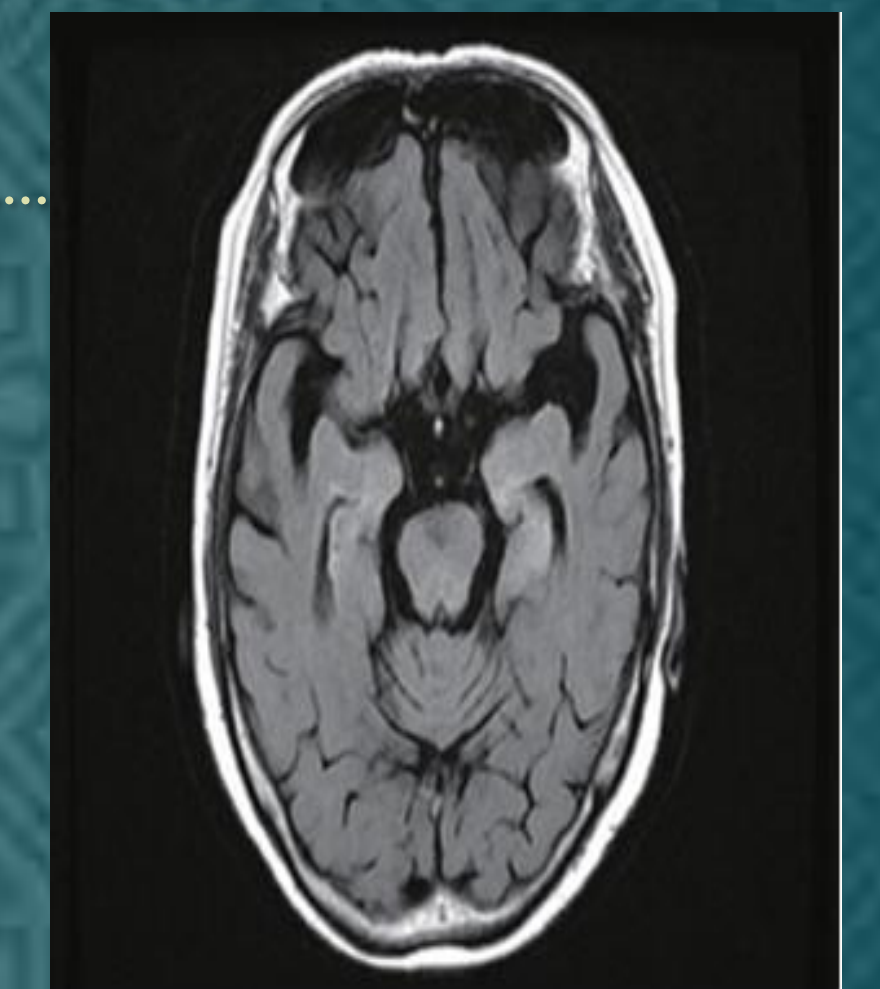


Fig. 4. Follow-up MRI after 2 weeks. FLAIR image shows some improvement compared to the previous study.

Conclusions

This case demonstrates that non-paraneoplastic, autoantibody-negative limbic encephalitis may present with isolated, mild acute memory impairment and show a favorable response to steroid therapy. Even in elderly patients with subtle and acute cognitive changes, limbic encephalitis should be considered, and brain imaging should be performed to exclude reversible organic causes. Long-term follow-up remains necessary due to the potential for delayed tumor detection.