

# An unusual electroencephalogram pattern in anti-Glutamic Acid Decarboxylase encephalitis

## A case report and review from the literature

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### INTRODUCTION:

GAD antibody-related disorders are autoimmune diseases associated with intracellular neuronal antigens and correlates with heterogenous clinical syndromes.

### CASE REPORT:

A 28 years-old-female born prematurely and affected by mild tetraparesis as a complication of post-anoxic encephalopathy, in January 2025 was hospitalized for sudden lethargy and recurrent seizures. She underwent:

- Brain CT scan (Fig.1) **A diagnosis of unknown origin hemorrhage was performed**
- Brain MRI (Fig.2)
- Electroencephalogram (EEG) (Fig. 3)
- Anti SNC serum antibodies (abs)
- Lumbar puncture: no elevated cell count, high titer of anti GAD abs
- Total body CT scan



Fig.1 Axial Brain scan: right fronto-parieto-temporal and peri-mesencephalic subarachnoid hemorrhage.

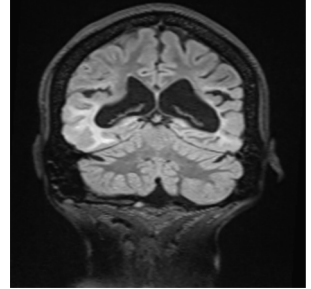


Fig.2 Coronal T2-Flair Brain MRI: hyperintensities of temporal lobes particularly right mesial limbic structures

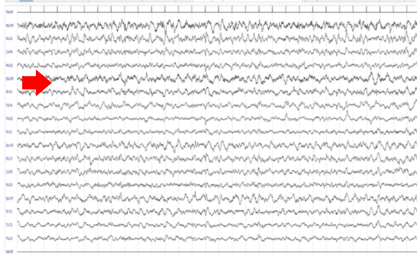


Fig.3 EEG: showed a rhythmic delta activity (2-3 Hz) with superimposed bursts of faster beta activity on each wave, a pattern known as **extreme delta brush**.



Fig.5 Relevant patient's EEG tracings

### DISCUSSION AND CONCLUSIONS:

MRI revealed limbic and extra-limbic involvement, suggesting a possible overlap with anti-NMDA receptor encephalitis, further supported by a pathognomonic EEG despite anti-GAD positivity. We aim to explore this unknown association.

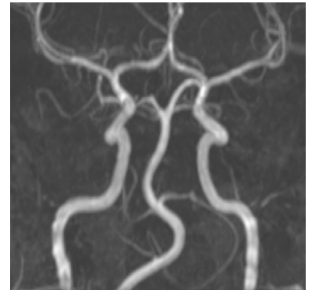


Fig.4 cerebral post-processing MR angiography: no aneurysms or arteriovenous malformations

### References

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- Smith Sarah E. Extreme delta brush A unique pattern in adults with anti NMDA receptor encephalitis *Neurology* August 29, 2012; 79 (11) 1094-1100



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