Neuropsychiatric Approach of Autoimmune Encephalitis: A Case Series with Treatment Courses and Outcomes

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Background

Autoimmune encephalitis (AE) is a serious neuropsychiatric disorder that can be misperceived as a primary psychiatric illness. Symptoms can range from seizures, focal neurologic deficits, autonomic instability, psychosis, and catatonia. Sequela including cognitive dysfunction and residual psychiatric symptoms vary, highlighting the need for further prognostic data to stratify risk factors. For example, studies have supported that AE complicated by catatonia poses a greater risk for less optimal recovery. We present three cases that highlight the heterogeneity in which AE presents with catatonia and outcomes with the aim to expand data and prognosticate AE based on presenting clinical features.

Case 1

- 55-year-old male without significant medical history presented with 2-month onset of dysphagia, dysarthria, diplopia, and altered mental status. Workup significant for MRI hyperintensities suggesting inflammation of the left cerebral peduncle, thalamocapsular region, basal ganglia, and cranial nerves three and six. Seronegative including CSF. Patient developed profound agitation with posturing, gegenhalten, catalepsy, rigidity, staring, and mutism.
- Initial treatment included IV steroids and IVIG for AE, and lorazepam and electroconvulsive therapy (ECT) for catatonia. The catatonia resolved with marginal improvement in cognitive function.
- Ongoing work up for positive hepatitis antibodies (believed to be false positive from IVIG) delayed treatment with rituximab. Eventual dose of rituximab resulted in mild cognitive improvement.
- Patient endured a prolonged ICU course with profound agitation requiring significant antipsychotic and mood stabilizer regimen with poor recovery.

Case 2

- 22-year-old male with a remote history of herpes simplex encephalitis presented with seizures, behavioral changes, and cognitive dysfunction. CSF showed a lymphocytic-predominant pleocytosis and positive for anti-N-methyl-D-aspartate (NMDA) receptor antibodies. He was treated with methylprednisolone and IVIG without improvement.
- Three weeks after admission, the patient developed mood lability, disorganized behavior, and psychosis. Catatonia emerged during the fifth week and responded well to lorazepam and plasmapheresis, recovering to baseline functioning within 6 weeks.

Case 3

- 59-year-old female with a history significant for breast cancer (in remission) and gastric bypass surgery who was admitted for subacute alteration in mental status. Her serum AE panel was mildly elevated for anti-glutamic acid decarboxylase antibody (anti-GAD), but negative on the CSF panel, thus considered seronegative AE.
- Patient was treated with stress-dose steroids and IVIG without clinical improvement, and eventually ECT for catatonia with mild improvement. However, she remained mute without significant improvement in mentation thereafter.

Literature Review

Study	Highlights	Outcomes
Catatonia in adult anti-NMDAR encephalitis: an observational cohort study (PMID: 36750806)	25 catatonic patients vs 59 noncatatonic patients	24-month follow-up, 2 patients in the catatonia group did not achieve good outcomes. At the last follow-up, the catatonia group had more relapses (p = 0.014) and more neuropsychiatric problems (p = 0.035)
Case Report: Anti-NMDAR Encephalitis Presenting With Catatonic Symptoms in an Adolescent Female Patient With a History of Traumatic Exposure (PMID: 35153875)	14-year old female, immunotherapy started by day 11, IV methylprednisolone, IVIG, rituximab	Resolution of most neuropsychiatric symptoms
Adolescents and Young Adults With Anti-N-methyl-D-aspartate Receptor Encephalitis With Excited Catatonia: Literature Review and 2 Illustrative Cases (PMID: 35948253)	Anti-NMDA autoimmune encephalitis with catatonia in 15-year old male with BF 28 (IVIG, steroids, plasmapheresis, rituximab, lorazepam, ECT) and 26-year old female (IV steroids, plasmapheresis, rituximab, lorazepam, ECT)	Resolution of catatonia after 12 ECT sessions and 4 ECT sessions, respectively
Outcome and Sequelae of Autoimmune Encephalitis (PMID: 38179628)	Systematic Review surveyed 146 studies of autoimmune encephalitis	Poor prognosis observed when: • Delay in immunotherapy • Altered consciousness • Prolonged ICU admission

Discussion

- These cases represent the complex intersection within psychoneuroimmunology. Age of onset ranged from 22-60 years old and the literature reports pediatric age range (Eyre, 2020).
- AE etiologies varied with case 2 reflecting the most common auto-antibody (anti-NMDA), case 1 being seronegative, and case 3 likely being seronegative, as low anti-GAD65 titers are less associated with AE (Muñoz-Lopetegi, 2020). Each case derived benefit from a combination of immunosuppressive and psychiatric treatment modalities.
- The outcomes of our cases align with a cohort study demonstrating better outcomes in earlier age onset and antibody-positive AE (Lee, 2022).

Clinical Implications

- There remains limited evidence in stratified outcomes of autoimmune encephalitis (AE).
- The following clinical features are associated with a worse prognosis:
  - delay in immunotherapy initiation
  - seronegative auto-antibody status
  - severity of catatonia
  - greater age
- Clinical caution is needed for prompt recognition of the diverse neuropsychiatric symptoms and prognostic factors of AE.
- Adequate lines of immunosuppressive therapy are crucial to concurrent treatment of catatonia.

References

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