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Case Report: Anti-NMDA Receptor Autoimmune Encephalitis in a Young Female

Case Report

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Abstract

This case report describes a 23-year-old female who presented with progressive hypersomnolence, neuropsychiatric symptoms, and oro-mandibular dyskinesia. Diagnosis of anti-NMDA receptor autoimmune encephalitis was confirmed through cerebrospinal fluid (CSF) analysis, which revealed anti-NMDA receptor antibodies. Prompt immunotherapy and supportive care led to clinical improvement. This case underscores the importance of early recognition and intervention in autoimmune encephalitis, particularly in young patients with atypical neuropsychiatric features.

Introduction

Anti-N-methyl-D-aspartate (NMDA) receptor encephalitis is an autoimmune, antibody-mediated neurological disorder first described by Dalmau et al. in 2007 [1]. It is caused by autoantibodies targeting the GluN1 subunit of the NMDA receptor, a glutamate receptor essential for synaptic transmission and plasticity in the central nervous system. This disorder predominantly affects young women and often occurs in association with teratomas [2], though it can also be paraneoplastic or idiopathic in origin [3].

The clinical presentation typically evolves in stages, beginning with prodromal flu-like symptoms, followed by a spectrum of neuropsychiatric manifestations including acute behavioral changes, hallucinations, catatonia, seizures, and autonomic instability [4]. A hallmark of the disease is orofacial dyskinesia, which, along with other involuntary movements, can further confuse the diagnosis in psychiatric or neurological settings.

Due to its psychiatric-like onset, the disease is frequently misdiagnosed as primary psychiatric illness, leading to delays in appropriate treatment [5]. Anti-NMDA receptor encephalitis is now recognized as the most common cause of autoimmune encephalitis in young adults [6]. Diagnosis is confirmed by detecting IgG antibodies against NMDA receptors in the cerebrospinal fluid (CSF) or serum, with CSF testing being more sensitive and specific [7]. MRI is often normal or shows non-specific changes, and EEG typically reveals diffuse slowing [8].

Here, we present a case of a 23-year-old woman from South India with classical features of anti-NMDA receptor encephalitis, whose diagnosis was delayed due to the predominance of psychiatric symptoms. This case highlights the diagnostic challenge posed by this condition and the importance of early immunotherapy in achieving favorable outcomes.

Case Presentation

A 23-year-old unmarried woman, an IT professional from Thanjavur, was brought to the neurology outpatient clinic by her family with a three-month history of progressive neurobehavioral

changes. The illness began insidiously with hypersomnolence, where she was sleeping up to 18 hours per day, followed by auditory hallucinations, emotional lability, and aggressive behavior.

As her condition progressed, she exhibited marked oro-mandibular dyskinesia, characterized by repetitive involuntary movements of the tongue, lips, and jaw. These symptoms were initially mistaken for a functional or psychiatric disorder, and she was prescribed antipsychotics, including risperidone and olanzapine, with no significant improvement.

Her past medical history was unremarkable. She had no history of fever, seizures, focal neurological deficits, drug abuse, recent vaccination, or systemic illness. There was no family history of autoimmune or neuropsychiatric conditions.

Physical and Neurological Examination

On examination, the patient was conscious but confused, with episodes of agitation and paranoia. Speech was incoherent, with echolalia and occasional mutism. There were frequent stereotypic orolingual movements without apparent volitional control. No focal motor or sensory deficits were observed. Reflexes were brisk but symmetric. There was no neck rigidity, and cranial nerve examination was normal. Vital signs revealed occasional tachycardia, but no orthostatic hypotension or other signs of autonomic instability.

Investigations

Routine Laboratory Workup

- Hemoglobin: 9 g/dL

- CRP: Elevated

- Thyroid Profile: Positive anti-TPO antibodies (120 IU/mL), suggesting autoimmune thyroiditis.

Imaging

- Chest X-ray and abdominal/pelvic CT: Normal, ruling out underlying malignancies such as teratomas.

Electroencephalogram (EEG)

- Generalized slowing, consistent with encephalopathy.

Cerebrospinal Fluid (CSF) Analysis

- Cytology: <4 cells

- Protein: 30 mg/dL

- Glucose: 80 mg/dL

- Autoimmune Panel: Positive for anti-NMDA receptor antibodies; negative for other autoimmune markers (e.g., IgLON-5, CASPR2, LGI1).

Magnetic Resonance Imaging (MRI) of the Brain

- Normal, with no evidence of structural abnormalities.

Diagnosis

Based on the clinical presentation and positive anti-NMDA receptor antibodies in the CSF, the patient was diagnosed with anti-NMDA receptor autoimmune encephalitis. Alternative causes, including infectious and other autoimmune encephalitides, were excluded.

Management

1. Immunotherapy:

- Intravenous immunoglobulin (IVIG) at 2 g/kg over five days.
- Rituximab as a long-term immunomodulatory agent.

2. Supportive Care:

- Management of neuropsychiatric symptoms.

- Ensured adequate hydration and nutritional support.

3. Monitoring and Follow-Up:

- Close neurological and psychiatric monitoring was implemented to assess recovery and detect relapses.

Outcome

The patient demonstrated gradual clinical improvement over several weeks. Behavioral abnormalities resolved first, followed by significant reductions in movement disorders. Long-term follow-up will be required to monitor for residual symptoms or relapses, but her initial response to immunotherapy has been favorable.

Discussion

Anti-NMDA receptor encephalitis is an increasingly recognized cause of autoimmune encephalitis. It is critical to differentiate this condition from psychiatric disorders due to overlapping symptoms such as hallucinations, aggression, and behavioral changes. This case highlights the importance of considering autoimmune encephalitis in the differential diagnosis of young patients with atypical psychiatric presentations.

The clinical features in this patient, including hypersomnolence, auditory hallucinations, and oro-mandibular dyskinesia, align with the classical manifestations of the condition. Diagnosis requires a high degree of clinical suspicion, supported by confirmatory tests such as CSF antibody analysis.

Early treatment with immunotherapy, including IVIG and rituximab, has been shown to improve outcomes. Delayed diagnosis and treatment can lead to severe complications, including prolonged hospitalizations, cognitive deficits, or even death. A multidisciplinary approach involving neurologists, psychiatrists, and immunologists is essential for optimal management.

Conclusion

This case underscores the importance of recognizing anti-NMDA receptor autoimmune encephalitis in young patients with atypical psychiatric and neurological symptoms. Early diagnosis

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and timely immunotherapy are critical in reducing morbidity and improving patient outcomes.

References

1. Dalmau J, Tüzün E, Wu HY, Masjuan J, Rossi JE, et al. (2007) Paraneoplastic anti–N-methyl-D-aspartate receptor encephalitis associated with ovarian teratoma. Ann Neurol 61: 25-36.
2. Titulaer MJ, McCracken L, Gabilondo I, Armangue T, Glaser C, et al. (2013) Treatment and prognostic factors for long-term outcome in patients with anti-NMDA receptor encephalitis: an observational cohort study. Lancet Neurol 12: 157-165.
3. Dalmau J, Lancaster E, Martinez-Hernandez E, Rosenfeld MR, Balice-Gordon R, et al. (2011) Clinical experience and laboratory investigations in patients with anti–NMDAR encephalitis. Lancet Neurol 10: 63-74.
4. Armangue T, Spatola M, Vlagea A, Mattozi S, Carceles-Cordon M,et al. (2020) Frequency, symptoms, risk factors, and outcomes of autoimmune encephalitis in children and adolescents. JAMA Neurol 77: 1076-1087.
5. Barry H, Hardiman O, Healy DG,Moroney J, Molnar PP, et al. (2011) Anti-NMDA receptor encephalitis: an important differential diagnosis in psychosis. Br J Psychiatry 199: 508-509.
6. Graus F, Titulaer MJ, Balu R, Benseler G, Bien CG, et al. (2016) A clinical approach to diagnosis of autoimmune encephalitis. Lancet Neurol 15: 391-404.
7. Gresa-Arribas N, Titulaer MJ, Torrents A,Aguilar E, McCracken K, et al. (2014) Antibody titers in anti-NMDA receptor encephalitis correlate with clinical outcome. Neurology 82: 286-293.
8. Iizuka T, Sakai F, Ide T, Yoshii S, Ligaya M, et al. (2008) Anti-NMDA receptor encephalitis in Japan: long-term outcome without tumor removal. Neurology 70: 504-511.

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