Hodgkin Lymphoma-Induced Autoimmune Encephalitis in a Child: A Case Report

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BACKGROUND

Anti-NMDA receptor encephalitis is an autoimmune neurologic disorder that is often debilitating and rapidly progressive. It primarily affects individuals up to 45 years old but predominantly presents in younger females. This condition may occur as a paraneoplastic syndrome, most commonly associated with ovarian teratoma and other germ cell tumors. However, rates of concomitant cancer is low in pediatric patients.

CASE REPORT

- Previously healthy 10-year-old female with acute on subacute change in mental status—new-onset oral automatisms and urinary retention for 3-4 weeks
- Impairments notable for agitation, gait instability, cognition, and regression
- Initial work-up (i.e. CBC, CMP, toxicology screen, brain imaging, infectious labs) was unremarkable
- Patient was initially referred to a psychiatric unit
- EEG showed slowed activity and increased risk for seizures, and lumbar puncture yielded CSF pleocytosis with oligoclonal bands
- CSF analysis subsequently confirmed the diagnosis of anti-NMDA receptor encephalitis
- Transferred to a tertiary pediatric hospital for higher level of care

Management

Upon admission, steroids were promptly initiated. To evaluate for presence of an inciting neoplasm, various imaging studies ultimately demonstrated a 5-cm anterior mediastinal mass with uptake. Subsequent pathology revealed nodular sclerosis classical Hodgkin lymphoma. Chemotherapy was initiated, and she received two out of five scheduled rounds of plasmapheresis in the PICU—this was prematurely discontinued when the patient pulled out her internal jugular catheter, requiring sedation with Precedex. After initial treatment, the patient was transferred to an acute rehabilitation facility. During her inpatient stay, she exhibited severe, violent aggression. Following unsuccessful redirection and refusal of oral Seroquel, intramuscular Ativan was administered followed by placement in an enclosure bed. Despite episodic agitation further exacerbated by steroids, the patient made significant functional gains toward baseline capacity while in rehabilitation.

FIGURES

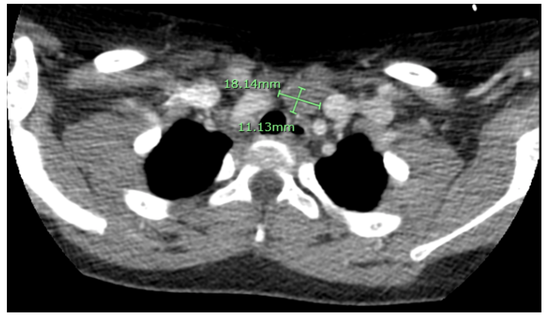

Figure 1
CT scan (axial view) showing the anterior mediastinal mass found in our patient—later confirmed by biopsy to be Hodgkin lymphoma

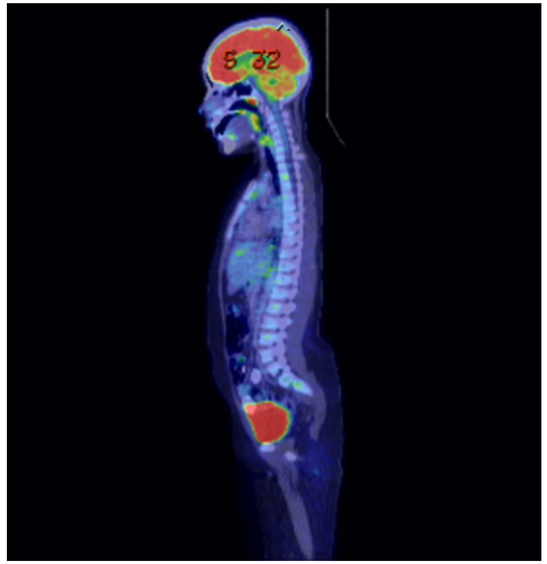

Figure 2
Whole-body PET scan of our patient showing mediastinal uptake of her tumor

Probable anti-NMDA receptor encephalitis* (all three criteria must be met)

1. Rapid onset (<3 months) of at least four of the six following major groups of symptoms**
   - Abnormal (psychiatric) behavior or cognitive dysfunction
   - Seizures
   - Decreased level of consciousness
   - Autonomic dysfunction
   - Dyskinesias
   - Speech dysfunction
2. At least one of the following laboratory results:
   - Abnormal EEG
   - CSF pleocytosis or oligoclonal bands
3. Reasonable exclusion of other disorders

Definitive anti-NMDA receptor encephalitis*

1. Positive detection of IgG antibodies to the NMDA receptor (NR1 subunit) in CSF, in the presence of one or more of the major groups of symptoms, after reasonable exclusion of other disorders

*** Patients with a history of herpes simplex virus encephalitis in the previous weeks might have relapsing immune-mediated neurologic symptoms (post-herpes simplex virus encephalitis)**

**** In the presence of a systemic teratoma, diagnosis can be made in the presence of three groups of symptoms**

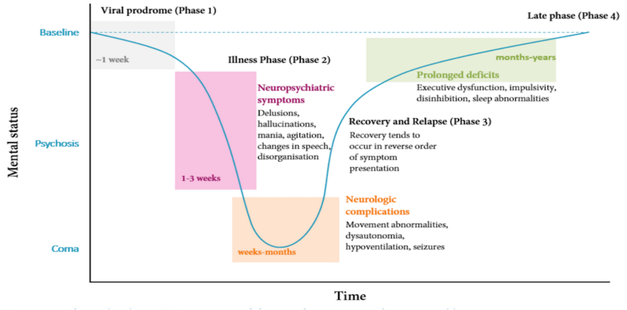

Figure 3
Phases of illness in anti-NMDA receptor encephalitis[4]

DISCUSSION

The differential diagnosis of anti-NMDA receptor encephalitis can be difficult to navigate through because of the overlap in clinical presentation with psychosis, infectious encephalitis and other inflammatory neurologic processes. There is an urgent need to recognize pediatric autoimmune encephalitis since delayed treatment worsens prognosis and increases the risk of permanent neurocognitive deficits. To our knowledge, this is the first reported case of Hodgkin lymphoma-induced anti-NMDA receptor encephalitis in a preadolescent child. This patient's complex course required fine-tuned coordination of inpatient rehabilitation with chemotherapy, IVIG, and contingency planning for agitation surrounding steroid administration.

CONCLUSION

- **A high index of suspicion for underlying malignancy in anti-NMDA receptor encephalitis should be maintained to ensure timely initiation of treatment.**
- **The presenting neurobehavioral symptoms of encephalitis may hinder appropriate chemotherapy, which can prove especially challenging in the acute rehab setting.**
- **The medical management of refractory agitation in a child is worth reviewing given the important pharmacologic considerations and resource limitations in a rehabilitation facility.**

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