disease that often presents with a set of well-described clinical characteristics and other times manifests with more rare features. The heterogeneity of patient presentation can propose a diagnostic challenge to even the best clinical neurologist. Anti-NMDA receptor encephalitis should be considered for patients who possess an alternative existing diagnosis that shows atypical progression because early recognition and treatment of the disease can help reduce long-term complications.

Results

Case Report: We illustrate a 14 month-old previously healthy boy with anti-NMDA receptor encephalitis who first presented with focal seizures. Initial neurologic imaging revealed intracranial hemorrhage with underlying cavernous malformations. He responded well to a single antiseizure agent, but re-presented one week later with transient weakness that was ultimately attributed to worsening intracranial hemorrhage with surrounding edema. Upon his third presentation, he developed dyskinesias, sleep dysfunction, autonomic instability, cognitive changes, and motor regression, prompting further work-up with lumbar puncture. Cerebrospinal fluid analysis showed a positive NMDA antibody titer of 1:40. Treatment with intravenous steroids, plasma exchange (PLEX), and intravenous immune globulin (IVIg), followed by infusions of Rituximab and Cyclophosphamide resulted in gradual, marked clinical improvement.

Conclusions

This case study and literature review explores the relationship between cavernous malformations, intracranial hemorrhage, and anti-NMDA receptor encephalitis, and how these diagnoses respond to escalating immunomodulation therapies. Consideration of this entity should be made when the neurologic examination does not follow an expected course of a previously established diagnosis. With timely recognition and aggressive treatment approaches, patients can achieve substantial clinical improvement.

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Anti- DPPX Antibody Encephalitis With a Pan-Positive Review of Systems

Mustafa Donmez, Maria Mazzola, Wissam Deeb, Carolina Ionete

Objective

NA.

Background

Subacute encephalitides like anti-DDPX encephalitis are challenging diagnoses due to their unusual presentations. Anti-DPPX encephalitis usually involves gastrointestinal, nervous, and respiratory systems. Common symptoms include diarrhea, weight loss, cognitive dysfunction, amnesia, myoclonus, tremor, and exaggerated startle response.

Design/Methods

NA.

Results

A 48-year-old man with no significant past medical history was referred to the neurology clinic to evaluate his tremor. The patient's first symptoms included alternating diarrhea and constipation, weight loss, fatigue, generalized pain, chest pain, dyspnea, and leg cramps. Several emergency departments, primary care physicians, and specialty clinic visits did not yield a diagnosis. During the first neurology clinic visit, he reported new urinary symptoms, chills, insomnia, tremor, anxiety, and depression. His physical exam revealed exaggerated physiological tremor only. During the second neurology clinic visit and resultant urgent admission, he reported new symptoms of forgetfulness, inattention, muscle jerks, numbness in the extremities, and seizure-like episodes. His exam was remarkable for mild left-sided rigidity and MOCA of 23/30 with impairment in delayed recall. The patient's MRI brain with and without contrast and spot EEG were unremarkable. CSF studies were negative except for protein elevation with lymphocytic pleocytosis. The patient's autoimmune CSF panel was positive for anti-DPPX antibodies, though available only after discharge. The patient was urgently seen in the neuroimmunology clinic and received a steroid course and monthly rituximab. The patient is improved with the treatments. His repeat MOCA 28/30 and returned to working full-time.

Conclusions

Anti-DPPX antibody encephalitis has been reported in a handful of cases in the literature. It has a subacute presentation with often a delay to diagnosis–an average diagnosis time of 8 months after the onset of symptoms. We present the case to raise awareness about anti-DPPX encephalitis, especially its typical clinical triad of GI dysmotility, cognitive decline, and myoclonus/tremor.

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Acute Autoimmune Encephalitis With Features of Bickerstaff Brainstem Encephalitis (BBE) and Two Abnormal Autoantibodies Presenting With Prominent Cerebellar Abnormality on MRI–A Case Report

Osman Ozel, Eugene Lai, Maya Ramy, Joseph Masdeu, Christine Rizk, Meryim Pourshеykhi, Abdulmunaim Eid, Sanaa Karim, Sara Benitez, Belen Pascual, Timea Hodics

Objective

To present an unusual cerebellar imaging finding of a patient with clinical features of BBE

Background

BBE is characterized by progressive ataxia, ophthalmoplegia and impaired consciousness. Magnetic resonance imaging (MRI) of the brain is usually normal. However, rare T2 Flair changes have been reported. Scarcity of cerebellar findings on imaging led to the controversy of peripheral vs central etiology for the ataxia. Despite other modalities including positron emission tomography, magnetic resonance spectroscopy and molecular level evidence pointing towards involvement of the cerebellum, MRI is usually unrevealing.

Design/Methods

A 62-year-old woman presented with acute onset ataxia with multiple falls, dysarthria, diplopia, and blurred vision that started 3 days prior to presentation. She had left face angioedema couple days after her flu inoculation 6 weeks prior to presentation. Her exam revealed normal mental status, scanning speech, bilateral dysmetria and ataxia as well as left-sided facial palsy, square wave jerks and hyperreflexia. CSF showed 30 RBC, 17 WBC, normal glucose, and elevated protein of 68 mg/dl. No infectious etiologies were identified. MRI brain showed infratentorial leptomeningeal enhancement with T2 hyperintensities in the both cerebellar hemispheres. Anti-GQ1b antibodies were 51 IV (negative < 30 IV) and anti-GAD65 antibodies were also weakly positive only in serum, 0.12 nmol/L (negative < 0.02 nmol/L).

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Results

She was diagnosed with autoimmune encephalitis and treated with IV methylprednisolone and IVIG. She rapidly improved clinically, and her imaging findings resolved.

Conclusions

We demonstrated prominent cerebellar imaging findings and good recovery in a patient with anti-GQ1b and mild anti-GAD65 seropositive autoimmune encephalitis. Our case is the first reported double positive autoimmune encephalitis with features of BBE and direct cerebellar involvement

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Active Immunization Against NMDA NR1 Subunit as a Model of Autoimmune Encephalitis

Grace Jachimiec, Negin Jalali Motlagh, Chih-Chung Lin, Enrico Kuellenberg, Jesús Planagumà, Gregory Wojtkiewicz, John Chen, Jenny Linnoila

Objective

To identify and develop the optimal active immunization induction method for NMDAR encephalitis in rodents.

Background

Encephalitis is a devastating neurologic disorder with high morbidity and mortality. Many cases are autoimmune. N-Methyl-D-aspartic acid receptor (NMDAR) encephalitis (NMDARE), characterized by antibodies against the NMDAR in the blood and spinal fluid of patients, is the most common form of autoimmune encephalitis (AE). A translational rodent model of NMDARE would allow for in-depth studies into AE pathophysiology, leading to advances in the diagnosis and treatment of this debilitating neuropsychiatric disorder.

Design/Methods

7-week-old female C57BL/6J mice were injected subcutaneously with an emulsion of complete Freund's adjuvant, attenuated Mycobacterium tuberculosis (TB), and a 30 amino acid peptide flanking the NMDAR NR1 subunit N368/G369 residue targeted by antibodies in NMDARE patients. Three different induction methods were tested by varying the amount and injection method of pertussis toxin, subcutaneous injection sites, reimmunization, and amounts of TB. Mice were bled biweekly and sacrificed at 2, 4, 6, 8, and 14 weeks. Serum and CSF NMDAR antibody titer; mouse behavior; hippocampal NMDAR protein and cluster density; and brain immune cell entry and cytokine content were examined.

Results

Immunized mice had serum and CSF NMDAR antibodies. Mice exhibited behavioral changes, altered hippocampal NMDAR protein, brain immune cell entry, and elevated cytokines in their brains. Titers were higher and changes were sustained in reimmunized mice.

Conclusions

Active immunization against the portion of the NMDAR targeted in patients with NMDARE resulted in robust production of NMDAR antibodies in the blood and spinal fluid, changes in hippocampal NMDAR protein, elevations in brain immune cells and cytokines, and behavioral changes in mice. Reimmunization was needed to sustain the responses. Active immunization therefore holds potential as a translational model of NMDARE, allowing for the creation of a novel generation of diagnostics and therapeutics.

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The Texas Children's Hospital Experience With Pediatric Anti-NMDAR Encephalitis: 2010-2021

Alexander Sandweiss, Yike Jiang, Tim Erickson, Timothy Lotze, Eyal Muscal, Kristy Murray

Objective

Our objective was to characterize the patients with anti-NMDAR encephalitis and identify the most common presenting symptoms and etiologies.

Background

Anti N-methyl-d-aspartate receptor (NMDAR) encephalitis is a specific autoimmune CNS disorder that decouples electrochemical synapses from their neuronal network, causing seizures, neuropsychiatric symptoms, movement problems, and autonomic dysfunction. Although well studied in the adult population, the clinical characteristics and potential triggers in pediatric cases of anti-NMDAR encephalitis are not well understood.

Design/Methods

We retrospectively analyzed patients with anti-NMDAR at Texas Children's Hospital (TCH) between 2010 and 2021, characterizing the demographics, presenting symptoms, and underlying etiologies.

Results

Of the 65 pediatric cases at TCH, our cohort is 65% female and 62% Hispanic, which is 1.6 times higher than the demographics of our TCH patient population and that of the Houston Metropolitan area at large (Harris County, 39% Hispanic). The average age of onset in our pediatric cohort was 7.2 years (range 3 months to 17.9 years). Post-herpetic NMDAR encephalitis and ovarian teratoma associated encephalitis made

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