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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