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Tremor and Other Hyperkinetic Movements

Case Reports

Isolated Chorea Associated with LGI1 Antibody

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Abstract

Background: Leucine-rich glioma inactivated 1 (LGI1) antibody produces a syndrome of limbic encephalitis, hyponatremia, and facio-brachial dystonic seizures that is non-paraneoplastic and responsive to corticosteroids. Parkinsonism, tremor, and generalized chorea are rare manifestations of LGI1, but, when present, commonly accompany other signs of limbic encephalitis.

Case Report: We present a case of LGI1-related isolated chorea in a 53-year-old Japanese male. His chorea responded to high-dose steroids, suggesting a potential role for this synaptic antibody in triggering chorea.

Discussion: This case highlights a new treatable etiology of chorea.

Keywords: LGI1 antibody, chorea, pulse steroids, reversible

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Introduction

Leucine-rich, glioma inactivated 1 (LGI1) is one of the synaptic autoantigens targeted in voltage-gated potassium channel limbic encephalitis (LE).[1] Antibodies to LGI1 produce a syndrome of LE (e.g., amnesia, confusion, hallucinations, and sleep disturbances), hyponatremia, and facio-brachial dystonic seizures.[2] This autoimmune condition is non-paraneoplastic[3] and highly responsive to corticosteroids.[1,2,4,5] Movement disorders related to LGI1 are rare but include parkinsonism,[6] tremor,[6] and generalized chorea[7] but they uniformly accompany other signs of LE. Here, we present a case of steroid-responsive LGI1 with isolated chorea.

Case report

A 53-year-old Japanese healthy male developed involuntary right arm and leg movements 5 months prior to presentation. On examination (Video 1), there was mild chorea of the right arm, hand, and foot as well as slight involvement of the left arm that increased with distraction. A right milkmaid's grip was present. There was no chorea of the face or impersistence of tongue protrusion. Muscle tone, reflexes, and coordination were intact. Walking activated his right-hand chorea.

Cranial magnetic resonance images, serum electrolytes, complete blood count, hemoglobin A1C, antinuclear antibody, thyroid function tests, and anti-cardiolipin antibody were normal. A serum paraneoplastic panel revealed a positive LGI1 antibody. Computed tomography scans of the neck, chest, abdomen, and pelvis did not reveal an underlying tumor and his cerebrospinal fluid analysis showed only a mildly elevated protein. An electroencephalogram (EEG) was not indicated as the patient did not have facio-bracial dystonic seizures or

Video 1. **Pre-treatment State.** At rest, patient has mild chorea of the right hand and foot as well as of the fingers and toes on the left side, which enhance during distraction. Right-hand chorea increases when walking.

Video 2. **One Month Post Steroid Treatment.** There are subtle choreiform movements of the fingers and toes when distracted. There is no chorea at rest or when walking.

altered consciousness. After 5 days of intravenous pulse steroids (1000 mg of methylprednisolone daily) with a rapid oral taper, subtle choreiform movements of the fingers and toes were observed only with distractive maneuvers. This benefit continued to be sustained 1 month post steroid infusion (Video 2).

Discussion

Chorea has been reported as a feature of LGI1 primarily in the setting of limbic encephalitis.[7] To our knowledge, this is the first report of LGI1-associated chorea devoid of other classic features such as LE, hyponatremia, and seizures. Like most LGI1-related LE, our patient did not have a tumor and responded robustly to pulse steroid infusions.

Our patient's primary asymmetric symptomatology parallels with other patients with facio-brachial dystonic seizures (FBDS) from LGI1. Irani et al.[2] reported that 26 of 29 patients with FBDS developed it prior to the onset of LE, with a median delay of 36 days. Neither amnesia nor confusion developed in our patient 7 months from the onset of his symptoms as he continued to work and perform all activities of daily living independently. This suggests that chorea is unlikely antecedent to LE. Positron emission tomography and single photon emission computed tomography imaging in this cohort revealed abnormalities in the basal ganglia. Though the pathophysiology of chorea in LGI1 remains unclear, it is known that LGI1 binds to proteins associated with Kv1 potassium channels[8] and modulates synaptic excitability.[9,10] Therefore, we postulate that the synaptic antibodies may directly bind to potassium channel elements in the indirect pathway altering the circuitry. The response to steroid therapy is further supportive of this possibility.

This case highlights a new, treatable etiology of chorea, which should be considered when a clear structural or metabolic abnormality is not found.

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