Successful Treatment of Refractory LGI-1 Antibody Encephalitis with Cyclophosphamide

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Case Report

A 76-year-old Caucasian male with history of treated prostate cancer and renal cell carcinoma presented with subacute onset of memory loss, delusions, and faciobrachial dystonic seizures. He was found to be hyponatremic and had T2-hyperintensities in the bilateral medial temporal lobes (figure 1). Following return of a positive serum leucine-rich, glioma-inactivated 1 (LGI-1) antibody test (table 1), he underwent a course of intravenous immunoglobulin (2 g/kg) with concurrent intravenous methylprednisolone (1 g daily for 5 days) with minimal temporary improvement. As his clinical status worsened over the next month, he received PLEX and rituximab (1 g for two doses). One month later, he returned to the hospital in status epilepticus. At that time, he was started on cyclophosphamide (750 mg/m2) that led to resolution of status epilepticus. He underwent six infusions of cyclophosphamide monthly with significant improvement. Eighteen months after initial presentation, his modified Rankin scale has improved from 5 to 2, he remains on anti-epileptics, and is off immunotherapy. Ongoing evaluation for underlying malignancy with annual PET scan has been unremarkable.

For seizure control, he has required ongoing therapy with perampanel, lacosamide, and levetiracetam. He has continued to demonstrate intermittent left hemifacial spasm that has not had any epileptic correlates nor responded to changes in anti-epileptics.

Table 1. Serum and cerebrospinal fluid labs.

Neuronal (V-G) K+ Channel Ab, Serum	Value (normal)
4 months after symptom onset	0.5 nmol/L (</= 0.02)
22 months after symptom onset, status-post immunotherapy	0.36 nmol/L (</= 0.02)
CSF	**Value (normal)**
WBC	3/mm^3
Lymphs, CSF	95% (40-80)
14-3-3 Protein	4.3 ng/ml (</= 2)

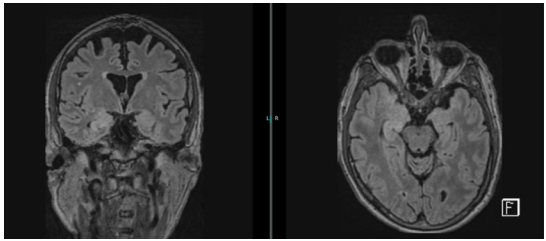

Figure 1. Coronal (left) and axial (right) T2 FLAIR magnetic resonance imaging demonstrating bilateral, right greater than left, anteromedial temporal T2 hyperintensities.

Discussion

Leucine-rich, glioma-inactivated 1 (LGI-1) antibody is a voltage-gated potassium channel antibody identified in 2010 as a cause of limbic encephalitis often characterized by subacute onset of seizures, neuropsychiatric disorders, and cognitive decline (Irani et al., 2010; Lai et al., 2010). Prior studies have demonstrated good response to immunotherapies (Shin et al., 2013). This case report details the success of cyclophosphamide as a fifth-line therapy in treating refractory LGI-1 limbic encephalitis.

Citations

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