Autoimmune Epilepsy Evaluation

VGKC  
CASPR2  
LGI1  
NMDA  
GAD65

New Tests for the Diagnosis of Epilepsy
Even though epilepsy is the most common neurological disorder affecting up to 3% of the population, the cause is unknown in up to one-third of patients.\textsuperscript{1,2}

**Could it be Autoimmune Epilepsy?**

Finding the cause of epilepsy and prescribing optimal treatment can present a real challenge for physicians, as patient symptoms often overlap and many different conditions—including structural, metabolic and genetic defects—can disrupt the brain’s neuronal network.

Even with advances in diagnostics, the causes of many epilepsies remain unknown, and despite appropriate antiepileptic drug (AED) assessments, seizures persist in one-third of patients.\textsuperscript{1,3}

Recent discoveries in autoimmune disease are offering new hope for physicians and their patients, especially those challenged with refractory or undiagnosed epilepsy.

A growing body of accumulating data now points to autoimmune causes in AED-resistant patients.\textsuperscript{1,3,4}

From a diagnostic standpoint, the good news is that testing is now available to detect pathogenic antibodies, and to help identify patients with autoimmune epilepsy. While patients with these pathogenic autoantibodies often experience heightened adverse effects and typically respond poorly to conventional AED treatment, they can respond very well to immunomodulatory therapy.\textsuperscript{1,3}

**Knowledge is Power**

Important research is offering insight into the origin of all epilepsies, and treatments that can help control seizures. Autoantibodies to surface proteins that influence neuronal excitability have been found in the serum and cerebral spinal fluid of well over 10% of patients with epilepsy—whether the epilepsy was newly-diagnosed or established.\textsuperscript{5,5}

In many cases, once identified, autoimmune epilepsy can be slowed, halted, or even reversed with adjunctive immunotherapy.\textsuperscript{3}

Testing to establish an accurate diagnosis is an important part of selecting an optimal treatment plan. In a recent study, 81% of adult patients diagnosed with autoimmune epilepsy experienced significant improvement in seizure status when immunotherapy was used in combination with AEDs; 67% achieved complete seizure freedom.\textsuperscript{3}
Autoimmune Epilepsy—A Guide to Testing

Consider an autoimmune cause in patients with an acute or subacute onset of seizures (< 12 weeks), especially when associated with cognitive decline and personality changes.\(^1\) Electromyogram (EMG) and magnetic resonance imaging (MRI) investigations can also help to direct the testing.\(^6\)

<table>
<thead>
<tr>
<th>CLINICAL SYNDROME</th>
<th>MORVAN’S SYNDROME</th>
<th>LIMBIC ENCEPHALITIS</th>
<th>FACIOBRACHIAL DYSTONIC SEIZURES (FBDS)</th>
<th>NMDA RECEPTOR ANTIBODY ENCEPHALITIS</th>
<th>GAD-ANTIBODY LIMBIC ENCEPHALITIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLINICAL FEATURES</td>
<td>Peripheral nerve hyperexcitability, autonomic dysfunction, insomnia and confusion, usually adult males</td>
<td>Amnesia, seizures, confusion or other psychological disturbance, usually older adults but some children</td>
<td>Brief dystonic movements of face and ipsilateral arm (+/-leg), can affect either side. Progresses to limbic encephalitis in most cases</td>
<td>Psychiatric disturbance, seizures, amnesia, confusion progressing to movement</td>
<td>Temporal lobe seizures with cognitive disturbance</td>
</tr>
<tr>
<td>ANTIBODY</td>
<td>VGKC complex, predominantly CASPR2</td>
<td>VGKC complex, predominantly LGI1</td>
<td>VGKC-complex, almost always LGI1</td>
<td>NMDA receptor, NR1 subunit</td>
<td>GAD</td>
</tr>
<tr>
<td>TEST CODE/NAME</td>
<td>5103, CASPR2 Autoantibody Test (Epilepsy)</td>
<td>5104, LGI1 Autoantibody Test (Epilepsy)</td>
<td>5104, LGI1 Autoantibody Test (Epilepsy)</td>
<td>5105, NMDA Receptor Autoantibody Test (Epilepsy)</td>
<td>5101, GAD65 Autoantibody Test (Epilepsy)</td>
</tr>
<tr>
<td>RESPONSE TO IMMUNOTHERAPY</td>
<td>Generally good</td>
<td>Generally very good; also expedites cognitive recovery</td>
<td>Very good. Prompt treatment may prevent subsequent progression to limbic encephalitis</td>
<td>Response may be slow and intensive care prolonged</td>
<td>Generally poor response, but a few exceptions</td>
</tr>
</tbody>
</table>


When to Suspect Autoimmune Epilepsy\(^3\)

Suspect autoimmune epilepsy when one or more of these conditions are present:*  
- Unusually high seizure frequency, predominantly partial seizures  
- Intra-individual seizure variability or multifocality  
- AED resistance  
- Personal or family history of autoimmunity  
- Recent or past neoplasia  
- Detection of a neural antibody  
- Inflammatory CSF  
- MRI characteristics suggesting inflammation

Appropriate Treatment Can Improve Patient Outcomes and Healthcare Costs

Prompt diagnosis can reduce:  
- ER visits for untreated seizures  
- Hospital stays for undiagnosed encephalitis or seizure syndromes  
- Unsuccessful anti-convulsant therapy  
- Unnecessary imaging and interpretation services required

*Other laboratory and radiological findings may be normal.
Autoimmune Epilepsy Testing from Athena Diagnostics

As important clinical discoveries are made, turn to Athena Diagnostics to bring you the latest, clinically relevant tests that can help pinpoint the cause of disease and help you treat your patients sooner. As the leader in epilepsy testing services, we continue to offer you diagnostic insight that goes beyond results.

**Innovation**

Select from a comprehensive menu for epilepsy - innovative new tests for autoimmune disorders and genetic testing including Next Generation Sequencing (NGS). NGS epilepsy evaluations are arranged by clinically relevant groups of phenotypes - making test selection easy, and avoiding costly and unnecessary testing. Therapeutic drug monitoring (TDM) is also available from Quest Diagnostics.

**Experience**

Confer with our physicians, genetic counselors or laboratory scientists to further interpret and understand test results.

**Access**

Order tests, view results, and access critical patient information 24/7 with Care360® EHR, our exclusive electronic health record system. Share practice-wide insight quickly and easily at any time from any location.

### Test Ordering Information for Autoimmune Epilepsy

<table>
<thead>
<tr>
<th>Test Code</th>
<th>Test Name</th>
<th>Tiered CPT Code(s)*</th>
<th>Specimen Volume (Serum, Red Top Tube Minimum Volume)</th>
<th>Turnaround Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>5100</td>
<td>Autoimmune Epilepsy Evaluation - (GAD65, VGKC, CASPR2, LGI1, NMDA Receptor)</td>
<td>83516(1), 83519(1), 86255(3)</td>
<td>2 mL</td>
<td>7 - 14 days</td>
</tr>
<tr>
<td>5101</td>
<td>GAD65 Autoantibody Test (Epilepsy)</td>
<td>83516(1)</td>
<td>2 mL</td>
<td>7 - 14 days</td>
</tr>
<tr>
<td>5102</td>
<td>VGKC Autoantibody Test (Epilepsy)</td>
<td>83519(1)</td>
<td>2 mL</td>
<td>7 - 14 days</td>
</tr>
<tr>
<td>5103</td>
<td>CASPR2 Autoantibody Test (Epilepsy)</td>
<td>86255(1)</td>
<td>2 mL</td>
<td>7 - 14 days</td>
</tr>
<tr>
<td>5104</td>
<td>LGI1 Autoantibody Test (Epilepsy)</td>
<td>86255(1)</td>
<td>2 mL</td>
<td>7 - 14 days</td>
</tr>
<tr>
<td>5105</td>
<td>NMDA Receptor Autoantibody Test (Epilepsy)</td>
<td>86255(1)</td>
<td>2 mL</td>
<td>7 - 14 days</td>
</tr>
</tbody>
</table>

*The CPT codes provided are based on AMA guidelines and are for informational purposes only. CPT coding is the sole responsibility of the billing party.

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