Overview

Useful For
Evaluation of cases of chorea, vision loss, cranial neuropathy and myelopathy

Method Name
Western Blot

NY State Available
Yes

Specimen

Specimen Type
Serum

Additional Testing Requirements
It is recommended that PAVAL / Paraneoplastic, Autoantibody Evaluation, Serum be ordered in conjunction with this test if not previously performed.

Necessary Information
Provide the following information:

- Relevant clinical information

- Ordering provider name, phone number, mailing address, and e-mail address

Specimen Required

Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Specimen Volume: 1.5 mL

Forms
If not ordering electronically, complete, print, and send a Neurology Specialty Testing Client Test Request (T732) with the specimen.

Specimen Minimum Volume
1 mL

Reject Due To

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
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<tbody>
<tr>
<td>Gross hemolysis</td>
<td>Reject</td>
</tr>
<tr>
<td>Gross lipemia</td>
<td>Reject</td>
</tr>
<tr>
<td>Gross icterus</td>
<td>Reject</td>
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</tbody>
</table>
Test Definition: CRMWS
CRMP-5-IgG Western Blot, S

Specimen Stability Information

<table>
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<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<tbody>
<tr>
<td>Serum</td>
<td>Refrigerated (preferred)</td>
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<tr>
<td></td>
<td>Frozen</td>
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<tr>
<td></td>
<td>Ambient</td>
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Clinical and Interpretive

Clinical Information

Autoantibodies specific for neurons and muscle are important serological markers of neurological autoimmunity. Most are highly predictive of specific neoplasms that are metastatic when diagnosed, but usually limited in spread to regional lymph nodes and adjacent structures.(1-4)

Collapsin response-mediator protein-5 (CRMP-5) is highly expressed in small-cell lung carcinomas (SCLC), in neurons throughout the adult central and peripheral nervous systems, and in a subset of glial cells.(1) In Western blot analyses the native antigen is a 62-kDa protein (recombinant human CRMP-5 is 68-kDa).(1) CRMP-5-IgG (also known as anti-CV-2)(4,5) is a more common autoantibody accompaniment of SCLC than antineuronal nuclear antibodies-1 (ANNA-1; anti-Hu) and sometimes occurs with thymoma.

The neurological presentation of CRMP-5 seropositive patients is usually multifocal, and can affect any level of the neuraxis. Neurological presentations that suggest a CRMP-5-IgG-related syndrome include subacute chorea or cranial neuropathy (particularly loss of vision, taste, or smell), dementia, myelopathy and gastrointestinal dystomotility in a patient with risk factors for lung cancer, or encephalopathy or neuromuscular hyperexcitability in a patient with serological or clinical evidence of myasthenia gravis.(1) Fourteen percent of patients have thromboembolic phenomena. Seropositive patients who have thymoma usually present with other myasthenia gravis neurological manifestations (eg, encephalopathy, disorders of continuous muscle fiber activity).(3)

CRMP-5-IgG is defined in serum or spinal fluid (CSF) by its characteristic immunofluorescence (IF) staining pattern on a mixed tissue substrate of adult mouse central and peripheral neurons. However, CRMP-5-IgG is not detectable by standard IF screening if the titer is low (serum <1:240; CSF <1:2) or if coexisting autoantibodies, either neuron-specific or nonorgan-specific antinuclear and antimitochondrial antibodies, preclude identification of CRMP-5-IgG with certainty. In these situations, CRMP-5-IgG may be detected by Western blot analysis.

Reference Values

Negative

Interpretation

A positive result confirms that a patient's subacute neurological disorder has an autoimmune basis, and is likely to be associated with a small-cell lung carcinoma (SCLC) or thymoma, which may be occult.(1,2) A positive result has a predictive value of 90% for neoplasm (77% SCLC, 6% thymoma).(1) Seropositivity is found in approximately 3% of patients who have SCLC with limited metastasis without evidence of neurological autoimmunity.(6)

Clinical-serological correlations have not yet been established for children.

Western blot analysis is indicated when interfering nonorgan-specific or coexisting neuron-specific autoantibodies in serum or spinal fluid preclude unambiguous detection of CRMP-5-IgG by indirect immunofluorescence assay, or
when the immunofluorescence assay is negative in a patient whose neurological presentation suggests a CRMP-5-IgG-related syndrome.

**Cautions**
Seronegativity does not exclude the presence of a neoplasm.

**Supportive Data**
In the Neuroimmunology Laboratory's current clinical service activity, the frequency of collapsin response-mediator protein-5-IgG (CRMP-5-IgG) detection is approximately 2 per 1,000 sera tested, approximating that of the Purkinje cell cytoplasmic autoantibody-type 1 (PCA-1, or anti-Yo). A lung carcinoma was found in 77% of 116 patients, mostly limited small cell type; 6% had thymoma, and 7% had miscellaneous neoplasms.

**Clinical Reference**

**Performance**

**Method Description**

**PDF Report**
No

**Day(s) and Time(s) Test Performed**
Monday through Thursday; 8 a.m.

**Analytic Time**
5 days

**Maximum Laboratory Time**
10 days

**Specimen Retention Time**
Test Definition: CRMWS
CRMP-5-IgG Western Blot, S

28 days

Performing Laboratory Location
Rochester

Fees and Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

Test Classification
This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information
84182

LOINC® Information

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<td>CRMP-5-IgG Western Blot, S</td>
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