Overview

Useful For

- Diagnosis of inflammatory demyelinating diseases (IDD) with similar phenotype to neuromyelitis optica spectrum disorder (NMOSD), including optic neuritis (single or bilateral) and transverse myelitis
- Diagnosis of autoimmune myelin oligodendrocyte glycoprotein (MOG)-opathy
- Diagnosis of neuromyelitis optica (NMO)
- Distinguishing NMOSD, acute disseminated encephalomyelitis (ADEM), optic neuritis, and transverse myelitis from multiple sclerosis early in the course of disease
- Diagnosis of ADEM
- Prediction of a relapsing disease course

Highlights

- Myelin oligodendrocyte glycoprotein (MOG)-IgG with an NMO spectrum disorder like phenotype is now recognized as a sensitive and specific diagnostic antibody biomarker of inflammatory demyelinating disorders (IDDs).

Approximately 80% of patients fulfilling 2006 Wingerchuk criteria for neuromyelitis optica are seropositive for aquaporin-4 (AQP4)-IgG. Of the remaining 20%, one-third harbor MOG-IgG. Seropositivity predicts a relapsing phenotype and warrants immunosuppressive therapy. Patients only rarely harbor both antibodies.

There is currently no biomarker specific for MS (multiple sclerosis). Patients seropositive for MOG-IgG are commonly misdiagnosed as MS. Detection of MOG-IgG implies an inflammatory demyelinating disorder distinct from MS. MS therapies may worsen MOG-IgG associated IDDs, so correct diagnosis is important.

Seropositivity for MOG-IgG, in NMOSD like disorders, including optic neuritis (OT), transverse myelitis (TM), and acute disseminated encephalomyelitis (ADEM), predicts relapse and warrants consideration for maintenance immunosuppression.

Seropositivity for MOG-IgG in the setting of a severe relapse of central nervous system (CNS) demyelination warrants aggressive therapy with intravenous methylprednisolone or plasmapheresis.

Reflex Tests

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Reporting Name</th>
<th>Available Separately</th>
<th>Always Performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOGTS</td>
<td>MOG FACS Titer, S</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Testing Algorithm

When the results of this assay require further evaluation, the reflex titer test will be performed at an additional charge.

Method Name

Flow Cytometry
Test Definition: MOGFS
MOG FACS, S

NY State Available
Yes

Specimen

Specimen Type
Serum

Specimen Required

Patient Preparation: For optimal antibody detection, we recommend drawing the specimen before initiation of immunosuppressant medication.

Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Specimen Volume: 2 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>
</tr>
</thead>
<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>
</tr>
</tbody>
</table>

Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum</td>
<td>Refrigerated (preferred)</td>
<td>28 days</td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>28 days</td>
</tr>
<tr>
<td></td>
<td>Ambient</td>
<td>72 hours</td>
</tr>
</tbody>
</table>

Clinical and Interpretive

Clinical Information

Neuromyelitis optica (NMO), sometimes called Devic disease or opticospinal multiple sclerosis (MS) is a severe, relapsing, autoimmune, inflammatory and demyelinating central nervous system disease (IDD) that predominantly
A positive value for myelin oligodendrocyte glycoprotein (MOG)-IgG is consistent with an neuromyelitis optica (NMO)-like phenotype, and in the setting of acute disseminated encephalomyelitis (ADEM), optic neuritis and
transverse myelitis indicates an autoimmune oligodendrogliopathy with potential for relapsing course. Identification of MOG-IgG allows distinction from MS and may justify initiation of appropriate immunosuppressive therapy (not MS disease-modifying agents) at the earliest possible time. This allows early initiation and maintenance of optimal therapy. Recommend follow-up in 3 to 6 months as persistence of MOG-IgG seropositivity predicts a relapsing course.

This autoantibody is not found in healthy subjects.

Cautions

Myelin oligodendrocyte glycoprotein (MOG)-IgG, specifically MOG-IgG1, may drop below detectable levels in setting of therapies for acute attack (IV methylprednisolone or plasmapheresis) or attack prevention (immunosuppressants).

Clinical Reference

Test Definition: MOGFS  
MOG FACS, S


Performance

Method Description
MOG-IgG1 Fluorescence-Activated Cell Sorting Assay (FACS)

Human embryonic kidney cells (HEK 293) are transfected transiently with a DNA plasmid that allows coexpression of both a reporter fluorescent protein (green fluorescent protein [AcGFP]) and full-length MOG. After 36 hours, a mixed population of cells (transfected expressing MOG on the surface and AcGFP in the cytoplasm and nontransfected lacking MOG and AcGFP) are lifted and resuspended in live cell-binding buffer. Cells are incubated with patient serum and an AlexaFluor 647-labeled secondary antibody is added. Two populations are gated on the basis of AcGFP expression: positive (high MOG expression) and negative (low or no MOG expression). Positivity is based on the ratio (Positive >2.5) of the median fluorescence intensity (MFI) of each cell population (MFI GFP positive:MFI GFP negative).(Unpublished Mayo method)

If MOG-IgG1 cell based flow cytometry (FACS) assay is positive at screening dilution, the MOG-IgG1 flow cytometry titer assay is performed at an additional charge.(Unpublished Mayo method)

PDF Report
No

Day(s) and Time(s) Test Performed
Monday, Tuesday, Thursday; 6 p.m.

Analytic Time
5 days

Maximum Laboratory Time
8 days

Specimen Retention Time
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
Test Definition: MOGFS
MOG FACS, S

86255
86256 (if appropriate)

LOINC® Information

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Test Order Name</th>
<th>Order LOINC Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOGFS</td>
<td>MOG FACS, S</td>
<td>90248-6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Result ID</th>
<th>Test Result Name</th>
<th>Result LOINC Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>65563</td>
<td>MOG FACS, S</td>
<td>90248-6</td>
</tr>
</tbody>
</table>