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

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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
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

| Gross hemolysis   | Reject |
| Gross lipemia    | Reject |
| Gross icterus    | Reject |

Specimen Stability Information

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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 a 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**


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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**

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