MAYO CLINIC LABORATORIES

Test Definition: MAGES

Myelin-Associated Glycoprotein Autoantibodies, IgM, Serum

Overview

Useful For

Evaluating peripheral neuropathy

Evaluating paraproteinemic neuropathy

Special Instructions

- Acquired Neuropathy Diagnostic Algorithm

Method Name

Enzyme-Linked Immunosorbent Assay (ELISA)

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Collection Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Submission Container/Tube: Plastic vial

Specimen Volume: 1 mL

Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Forms

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

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject

Gross icterus	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	28 days	
	Ambient	72 hours	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information
Autoantibodies directed against myelin-associated glycoprotein (MAG) are associated with sensory motor demyelinating peripheral neuropathy. A distal acquired demyelinating symmetric (DADS) neuropathy phenotype is the most commonly associated presentation. Patients typically have a slowly progressive symmetric sensory ataxia with/without distal weakness and an IgM monoclonal gammopathy of undetermined significance. Nerve conductions studies typically demonstrate a characteristic progressive sensory predominant mixed axonal and demyelinating neuropathy with reduced distal conduction velocities that are greater distally. In general, patients with a DADS neuropathy show limited treatment responses to intravenous immunoglobulin and more aggressive immunotherapy may be needed. MAG antibody titers do not correlate with disease severity nor treatment responses. The presence of MAG antibodies is not exclusively diagnostic of an acquired neuropathy and results must be interpreted in the correct clinical and electrophysiological context. MAG antibodies are present in approximately 50% to 70% of those with an IgM M-protein and a DADS neuropathy phenotype. However, MAG antibodies may also be identified in those with an IgM M-protein and a chronic inflammatory demyelinating polyneuropathy (CIDP) presentation as well as in other IgM paraproteinemic disorders that present with neuropathy including in myeloma, lymphoplasmacytic lymphoma (Waldenstrom macroglobulinemia) and amyloid light chain (AL)-IgM primary amyloidosis. Higher MAG antibody titers (>10,000 Buhlmann titer unit) are better predictors of an electrophysiological DADS phenotype whereas low titer MAG antibodies may be associated with a more diverse group of neuropathies. Detection of MAG IgM antibody by enzyme-linked immunosorbent assay based on human MAG (100 kDa) antigen is significantly more sensitive and specific than MAG western blot and immunofluorescence assays using primate antigen.

Reference Values
<1500 Buhlmann Titer Unit

Interpretation
A positive result is consistent with anti-myelin-associated glycoprotein neuropathy.

Cautions
This test is not diagnostic and should be interpreted in the correct clinical context. Myelin-associated glycoprotein antibodies may be found in those without neuropathy, IgM M-protein, or paraproteinemic neuropathy.

Clinical Reference
1. Kuijf ML, Eurelings M, Tio-Gillen AP, et al: Detection of anti-MAG antibodies in polyneuropathy associated with IgM

monoclonal gammopathy. Neurology. 2009 Sep;73(9):688-695. doi: 10.1212/WNL.0b013e3181b59a80
2. Katz JS, Saperstein DS, Gronseth G, Amato AA, Barohn RJ: Distal acquired demyelinating symmetric neuropathy. Neurology. 2000 Feb;54(3):615-620. doi: 10.1212/wnl.54.3.615
3. Magy L, Kabore R, Mathis S, et al: Heterogeneity of polyneuropathy associated with anti-MAG antibodies. J Immunol Res. 2015;2015:450391. doi: 10.1155/2015/450391

Performance

Method Description
Microwells are precoated with human myelin-associated glycoprotein (MAG) antigen. The calibrators, controls, and diluted patient samples are added to the wells, and autoantibodies recognizing the MAG antigen bind during the first incubation. After washing the wells to remove all unbound proteins, purified horseradish peroxidase-labeled anti-human IgM conjugate is added. The conjugate binds to the captured human autoantibody, and the excess unbound conjugate is removed by a further wash step. The bound conjugate is visualized with 3,3',5,5'-tetramethylbenzidine substrate, which gives a blue reaction product, the intensity of which is proportional to a concentration of autoantibody in the sample. Acid is added to each well to stop the reaction. This produces a yellow end-point color, which is read at 450 nm.(Package insert: anti-MAG Autoantibodies ELISA. Buhlmann Laboratories AG; 10/2018)

PDF Report
No

Day(s) Performed
Tuesday, Friday

Report Available
2 to 6 days

Specimen Retention Time
2 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Main Campus

Fees & 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 account representative. For assistance, contact Customer Service.

Test Classification

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Myelin-Associated Glycoprotein Autoantibodies, IgM, Serum

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

CPT Code Information

83520

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MAGES	MAG IgM, S	39087-2

Result ID	Test Result Name	Result LOINC® Value
607034	MAG IgM, S	39087-2