

Anti-MAG and Anti-SGPG, IgM

SERODIAGNOSIS OF AUTOIMMUNE NEUROPATHIES

Test Highlights

- New semi-quantitative enzyme immunoassays for the evaluation of autoimmune neuropathies.
- Increased sensitivity using human MAG (100 kD).

Clinical Background

- An association between a monoclonal gammopathy of undetermined significance (MGUS) and neuropathy
- is suggested by the high prevalence of IgG (5 percent), IgA (10–15 percent), and IgM (30–50 percent) paraproteins. 5–10 percent of patients investigated for neuropathy may also have a paraprotein.
- The IgM monoclonal protein binds to the myelin-associated glycoprotein (MAG) in about 50 percent of patients with MGUS.
- Autoantibodies against various neural glycoconjugates have been associated with acute and chronic peripheral neuropathies, which can involve axonal degeneration or demyelination.
- Anti-MAG antibodies have been reported to recognize the HNK-1 epitope that is also found on other myelin-associated glycoproteins, including peripheral myelin protein 22 (PMP-22) and protein zero (P0), and on peripheral nerve glycolipids such as sulfate-3-glucuronyl paragloboside (SGPG) and sulfate-3-glucuronyl lactosaminyl paragloboside (SGLPG).
- Autoantibodies to SGPG that do not cross-react with MAG may be associated with multi-focal motor neuropathies with conduction block.

Indications for Ordering

These assays may be used to aid in the diagnosis of patients suspected of having a peripheral neuropathy involving nerve demyelination or a multi-focal motor neuropathy with conduction block, with or without paraprotein involvement.

Interpretation

- Detection of IgM autoantibody against MAG suggests active demyelination in a peripheral neuropathy. Since the HNK-1 epitope is also found on SGPG, the majority of MAG IgM-positive sera will show reactivity against SGPG.
- Approximately 50 percent of patients with IgM paraproteinemia and neuropathy may have anti-MAG IgM autoantibodies.
- Patients who are MAG IgM-negative but SGPG IgM-positive may have a multi-focal motor neuropathy with conduction block.

Limitations

Test results alone are not diagnostic. Results should be used in conjunction with other clinical findings.

Methodology

- Both assays are performed by enzyme immunoassay (EIA).
- Myelin-Associated Glycoprotein (MAG) IgM by EIA (ARUP test code [0051285](#)) is more sensitive than the anti-MAG Western blot assay for the evaluation of autoimmune peripheral neuropathies.
- Sulfate-3-Glucuronyl Paragloboside (SGPG), IgM (ARUP test code [0051284](#)) utilizes highly-purified bovine SGPG.

Related Tests

- Myelin-Associated Glycoprotein (MAG), IgM ([0051285](#))
- Sulfate-3-Glucuronyl Paragloboside (SGPG), IgM ([0051284](#))
- Sensory Neuropathy Antibody Panel with Reflex to PCCA Titer, ANNA Titer and Neuronal Immunoblot ([0051222](#))
- Motor and Sensory Neuropathy Evaluation with Immunofixation Electrophoresis and Reflex to ANNA Titer and ANNA Immunoblot ([0051223](#))
- Motor and Sensory Neuropathy Evaluation with Reflex to ANNA Titer and ANNA Immunoblot ([0051224](#))
- Motor Neuropathy Panel ([0051225](#))

References

1. Rajabally YA. Neuropathy and paraproteins: review of a complex association. *Eur J Neurol* 2011;18(11): 1291–8.
2. Jaskowski TD, et al. Immunoglobulin (Ig) M antibody against myelin associated glycoprotein (MAG): A comparison of methods. *J Clin Lab Anal* 2004;18(4):247–50.
3. Vernino S, Wolfe GI. Antibody testing in peripheral neuropathies. *Neurol Clin* 2007; 25(1):29–46.
4. Kuijf ML, et al. Detection of anti-MAG antibodies in polyneuropathy associated with IgM monoclonal gammopathy. *Neurology* 2009;73(9):688–95.

Test Information

0051284 **Sulfate-3-Glucuronyl Paragloboside (SGPG) Antibody, IgM**

0051285 **Myelin-Associated Glycoprotein (MAG) Antibody, IgM**

For specific collection, transport, and testing information, refer to the ARUP website at www.aruplab.com.

For information on test selection, ordering, and interpretation, refer to ARUP Consult® at www.arupconsult.com.

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