MAYO CLINIC LABORATORIES

Test Definition: GQ1ES

Ganglioside GQ1b Antibody, IgG, ELISA, Serum

Overview

Useful For

Evaluating patients with an underlying demyelinating neuropathy

Supporting the diagnosis of a ganglioside GQ1b IgG-related disorder

Special Instructions

- Acquired Neuropathy Diagnostic Algorithm

Method Name

Enzyme-Linked Immunosorbent Assay (ELISA)

NY State Available

Yes

Specimen

Specimen Type

Serum

Necessary Information

Provide the following information:

1. Relevant clinical information
2. Ordering provider name, phone number, mailing address, and email address

Specimen Required

Patient Preparation: For optimal antibody detection, specimen collection is recommended to occur prior to initiation of immunosuppressant medication or intravenous immunoglobulin treatment.

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)

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

Ganglioside GQ1b antibody (GQ1b IgG) is a biomarker for a group of related disorders that includes Miller Fisher syndrome (MFS), Bickerstaff brainstem encephalitis (BBE), and classic Guillain–Barre syndrome (GBS) with ophthalmoplegia. Collectively, these are referred to GQ1b IgG-related syndromes. The prevalence of GQ1b IgG in this population of patients is high and has been reported to be greater than 80% in well-defined clinical cohorts. In classic GBS, the prevalence of GQ1b IgG positivity is low but has been reported in the literature. Patients with GQ1b IgG-related disorders may not require immunotherapy, presumably because they have a good prognosis and spontaneous recovery. In severe cases, both intravenous immunoglobulin (IVIG) and plasma exchange are effective treatments for MFS and BBE. In patients with a clinical suspicion of MFS and related disorders, positivity for GQ1b IgG supports the specific clinical diagnosis and may also provide prognostic information. Although the diagnosis of these disorders is dependent on clinical evaluation and electrophysiologic studies, assessment of GQ1b IgG can further support the diagnosis.

Reference Values

Negative

Interpretation

A positive result is consistent with an immune-mediated demyelinating neuropathy and correlation with clinical electrodiagnostic features is recommended.

Ganglioside GQ1b (GQ1b) IgG antibodies occur in Miller Fisher syndrome, Bickerstaff brainstem encephalitis, and atypical Guillain-Barre syndromes having variably present demyelinating neuropathy, ophthalmoplegia, ataxia, brainstem features with encephalitis and, less commonly, other neurogenic conditions.

A negative result does not exclude an immune-mediated demyelinating neuropathy nor a GQ1b IgG syndrome.

Cautions

A negative result does not exclude the presence of disease. The use of immunotherapy prior to specimen collection may negatively impact the sensitivity of this assay.

Testing for ganglioside GQ1b antibodies should be performed near the onset of disease.

This test should be interpreted in the appropriate clinical context.

Clinical Reference

1. Nishimoto Y, Odaka M, Hirata K, Yuki N. Usefulness of anti-GQ1b IgG antibody testing in Fisher syndrome compared with cerebrospinal fluid examination. J Neuroimmunol. 2004;148(1-2):200-205
2. Odaka M, Yuki N, Hirata K. Anti-GQ1b IgG antibody syndrome: clinical and immunological range. J Neurol Neurosurg Psychiatry. 2001;70(1):50-55
3. Shahrizaila N, Yuki N. Bickerstaff brainstem encephalitis and Fisher syndrome: anti-GQ1b antibody syndrome. J Neurol Neurosurg Psychiatry. 2013;84(5):576-583
4. Gwathmey KG, Smith AG. Immune-Mediated Neuropathies. Neurol Clin. 2020;38(3):711-735

Performance

Method Description

Microwells are precoated with ganglioside GQ1b antigen. The calibrator, controls, and diluted patient samples are added to the wells, and autoantibodies recognizing GQ1b bind during the first incubation. After washing the wells to remove all unbound proteins, purified horseradish peroxidase-labeled anti-human IgG conjugate is added. The conjugated IgG binds to the captured human autoantibody, and the excess unbound conjugated IgG is removed by a further wash step. The bound conjugated IgG 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-product color, which is read at 450 nm. Patient results are calculated as a cutoff index (COI) by dividing the optical density (OD) of patient sera or controls by the average OD of the calibrator. Any sample with a COI greater than or equal to 1.0 is considered positive. Any sample with a COI less than 1.0 is considered negative. Results are reported qualitatively as positive or negative.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday, Wednesday, Friday

Report Available

5 to 8 days

Specimen Retention Time

2 days

Test Definition: GQ1ES

Ganglioside GQ1b Antibody, IgG, ELISA, Serum

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

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

83516

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
GQ1ES	GQ1b-IgG ELISA, S	63254-7

Result ID	Test Result Name	Result LOINC® Value
621107	GQ1b-IgG ELISA, S	63254-7