

Myasthenia Gravis

Overview

Myasthenia gravis (MG), the most common neuromuscular transmission disorder, is an antibody-mediated autoimmune disease that stems from a loss of acetylcholine receptors (AChR) at neuromuscular junctions.¹ This deficiency leads to muscle fatigue and impaired neuromuscular junction transmission.^{1,2} MG affects ~1 in 10,000-20,000 people.³

AChR autoantibodies are diagnostic of MG, and are found in 85-90% of MG patients.¹⁻⁴ AChR binding autoantibodies provide the most reliable information for diagnostic screening. If AChR binding autoantibodies are absent in a patient with weakness or ocular symptoms consistent with MG, AChR modulating autoantibodies should be considered. AChR blocking autoantibodies are

directed against the neurotransmitter-binding site, and are rarely found in patients without MG. Ocular MG patients constitute ~50% of AChR autoantibody-negative MG patients.¹

MG can develop during pregnancy or postnatally, where ~10% of babies born to MG-positive mothers demonstrate high concentrations of AChR autoantibodies.⁵ Thymic tumors are also present in 10% of MG patients; striational autoantibodies are found in >90% of patients with both MG and thymoma, and are seldom found in MG without thymoma.^{6,7} Both AChR and voltage-gated calcium channel autoantibodies are diagnostic for MG and Lambert-Eaton myasthenic syndrome (LEMS).^{1,8}

Clinical Utility

- The presence of AChR autoantibodies (either binding, blocking, or modulating) is 90% MG-specific¹⁻⁴
- AChR binding autoantibodies are present in 80% of all MG patients³
- The absence of striational autoantibodies virtually rules out the diagnosis of thymoma⁴
- P/Q type voltage-gated calcium channel autoantibodies are 90% sensitive and specific for LEMS²

Ordering Information & Specimen Requirements

Test Code	Test Name	Specimen Requirements
1026	Myasthenia Gravis Evaluation Plus <ul style="list-style-type: none"> • AChR Binding Autoantibodies • AChR Blocking Autoantibodies • AChR Modulating Autoantibodies • Striational Autoantibodies <i>Note: Assays are available individually, see reverse.</i>	4 mL Serum; Ambient, Refrigerated or Frozen.
4834	Voltage-Gated Calcium Channel IgG Autoantibodies	2 mL Serum; Ambient, Refrigerated or Frozen.

Methodology

1026 Myasthenia Gravis Evaluation Plus

AChR Binding Autoantibodies, Radioimmunoassay

AChR Blocking Autoantibodies, Radioimmunoassay

AChR Modulating Autoantibodies, Radioimmunoassay

Striational Autoantibodies, Indirect Fluorescent Antibody

4834 Voltage-gated Calcium Channel IgG Autoantibodies, Radioimmunoassay

Related Tests

1410 Acetylcholine Receptor Binding Autoantibodies

1412 Acetylcholine Receptor Blocking Autoantibodies

1413 Acetylcholine Receptor Modulating Autoantibodies

1107 Striational Autoantibodies

1025 Myasthenia Gravis Evaluation

AChR Binding Autoantibodies

Striational Autoantibodies

References

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3. Pascuzzi RM. Pearls and pitfalls in the diagnosis and management of neuromuscular junction disorders. *Semin Neurol* 2001;21:425-40.
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5. Gardnerova MD, Eymard B, Morel E, et al. The fetal/adult acetylcholine receptor antibody ratio in mothers with myasthenia gravis as a marker for transfer of the disease to the newborn. *Neurology* 1997;48:50-4.
6. Marx A, Wilisch A, Schultz A, et al. Expression of neurofilaments and of a titin epitope in thymic epithelial tumors. Implications for the pathogenesis of myasthenia gravis. *Am J Pathol* 1996;148:1839-50.
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8. Voltz R, Carpentier AF, Rosenfeld MR, Posner JB, Dalmau J. P/Q-type voltage-gated calcium channel antibodies in paraneoplastic disorders of the central nervous system. *Muscle Nerve* 1999;22:119-22.

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