

Clinical Testing for Titin and Ryanodine Receptor Autoantibodies in Myasthenia Gravis Patients

Background

- Myasthenia gravis (MG) is an autoimmune disease caused by defective transmission of nerve impulses to muscle cells.
- Many MG patients test positive for autoantibodies to the striated muscle proteins titin and ryanodine receptor (RyR).¹
- These autoantibodies are often found in MG patients with late-onset disease and with thymoma. They are also associated with more severe disease.¹ Detection of autoantibodies to titin and RyR may help assess prognosis and monitor therapeutic response in MG patients.
- **Objective:** The investigators of this study developed clinical assays for autoantibodies against titin and RyR and determined frequencies of these antibodies among MG patients predicted to have high levels of both.

Methods

- **Study population:** Populations of MG patients predicted to have high levels of titin and RyR autoantibodies were selected.
- **Titin autoantibodies:** An enzyme-linked immunosorbent assay (ELISA) was developed and used to analyze serum samples from patients with the following MG subtypes, as well as from 95 healthy control subjects:
 - Muscle-specific receptor tyrosine kinase (MuSK) antibody-negative (n=133)
 - Acetylcholine receptor (AChR) antibody-positive (n=17)
 - Late-onset (n=8)
- **RyR autoantibodies:** Western blots were used to analyze serum samples from patients with the following MG subtypes, as well as from 36 healthy control subjects:
 - AChR antibody-positive (n=115)
 - Titin antibody-positive (n=7)
 - Late-onset (n=8 with thymoma; n=3 without thymoma)

Results

- Titin antibodies were detected in
 - 27 (18%) of the combined AChR antibody-positive and MuSK antibody-negative samples
 - 5 (63%) of the samples from patients with late-onset MG
- RyR antibodies were detected in
 - 29 (25%) of the AChR antibody-positive samples
 - 5 (71%) of the titin antibody-positive samples
 - 1 patient with late-onset MG without thymoma
 - 2 patients with late-onset MG and thymoma
- No samples from healthy controls were positive for either antibody.

Conclusions

- Clinical assays were developed for detection of autoantibodies against titin and RyR and used to determine frequencies of these antibodies in a study population.
- Testing for these antibodies may be useful for assessing prognosis, monitoring therapeutic response, and screening for thymoma in MG patients.

Poster Presentation at American Academy of Neurology Annual Meeting

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American Academy of Neurology Annual Meeting

April 22-28, 2017

Boston, MA

Poster date and time: Sunday, April 23, 8:30 AM–5:30 PM

Webpage

<http://submissions.mirasmart.com/Verify/AAN2017/submission/temp/rad56DC4.pdf>

Reference

1. Suzuki S, Utsugisawa K, Nagane Y, Suzuki N. *Autoimmune Dis.* 2011;2011:740583.