

# Myasthenia Gravis With Schizophrenia: A Rare Combination With Long-term Treatment Challenges



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## INTRODUCTION

Myasthenia gravis (MG) is a rare autoimmune disorder caused by autoantibodies targeting the neuromuscular junction. The prevalence of MG is less than 10 per 100,000 persons per year and the mean lifetime prevalence of schizophrenia is around 1%. The combination of MG with schizophrenia is very rare. So far less than 10 cases of this rare combination have been reported in the literature<sup>1</sup>. The data shows the age of onset of MG ranges from 4 years old to 69 years old, two thirds of these patients being women. We present clinical course and treatment challenges in a patient with the diagnosis of schizophrenia and MG managed in a community mental health clinic (CMHC) for more than two decades.

## CASE PRESENTATION

We present a 45-year old African American male first diagnosed with MG at birth, who was treated with pyridostigmine, on and off during the first few decades of his life. He first presented to our CMHC at the age of 26 years. His family history is significant as his mother and grandmother also had MG, which lead to early detection of MG in this patient.

At the baseline patient presents with disorganized speech and behavior, with an acute exacerbation outlined by agitation, grandiose delusions and speech difficulty. In terms of MG, at baseline without treatment, patient has only ptosis. Patient has not been admitted medically for MG since being involved in our CMHC. Over his lifetime, this patient had numerous inpatient psychiatric hospitalizations, mainly due to not taking care of his basic needs due to being quite disorganized. His first psychiatric hospitalization was when he was 8 years old. Over the course of his psychiatric treatment, patient was treated with various antipsychotic medications. As a youth, he did fairly well on oral risperidone but later was maintained on haldol decanoate for several years. Other psychotropic medications used over time included fluphenazine, aripiprazole, and sertraline. Per records, he did not do well on atypical antipsychotics reason is not very clear. However during recent years we have found that the main reason for his agitation is dysarthria and word finding difficulties, especially when he is not taking his pyridostigmine. He was treated with long acting injections due to poor adherence of oral medication. His clinical course, both psychiatric and physical, fluctuated greatly due to non-adherence to antipsychotics and pyridostigmine.

During his entire course of management he has been on only on antipsychotics and at times with a combinations of an antipsychotic with pyridostigmine. It is only recently for almost a year he has been mainly on pyridostigmine, since he was enrolled in assertive community treatment program. It is noted that currently, the patient has had less outburst and is more cooperative, with significantly reduced his inpatient psychiatric hospitalizations.

## OVERVIEW OF MYSTHENIA GRAVIS

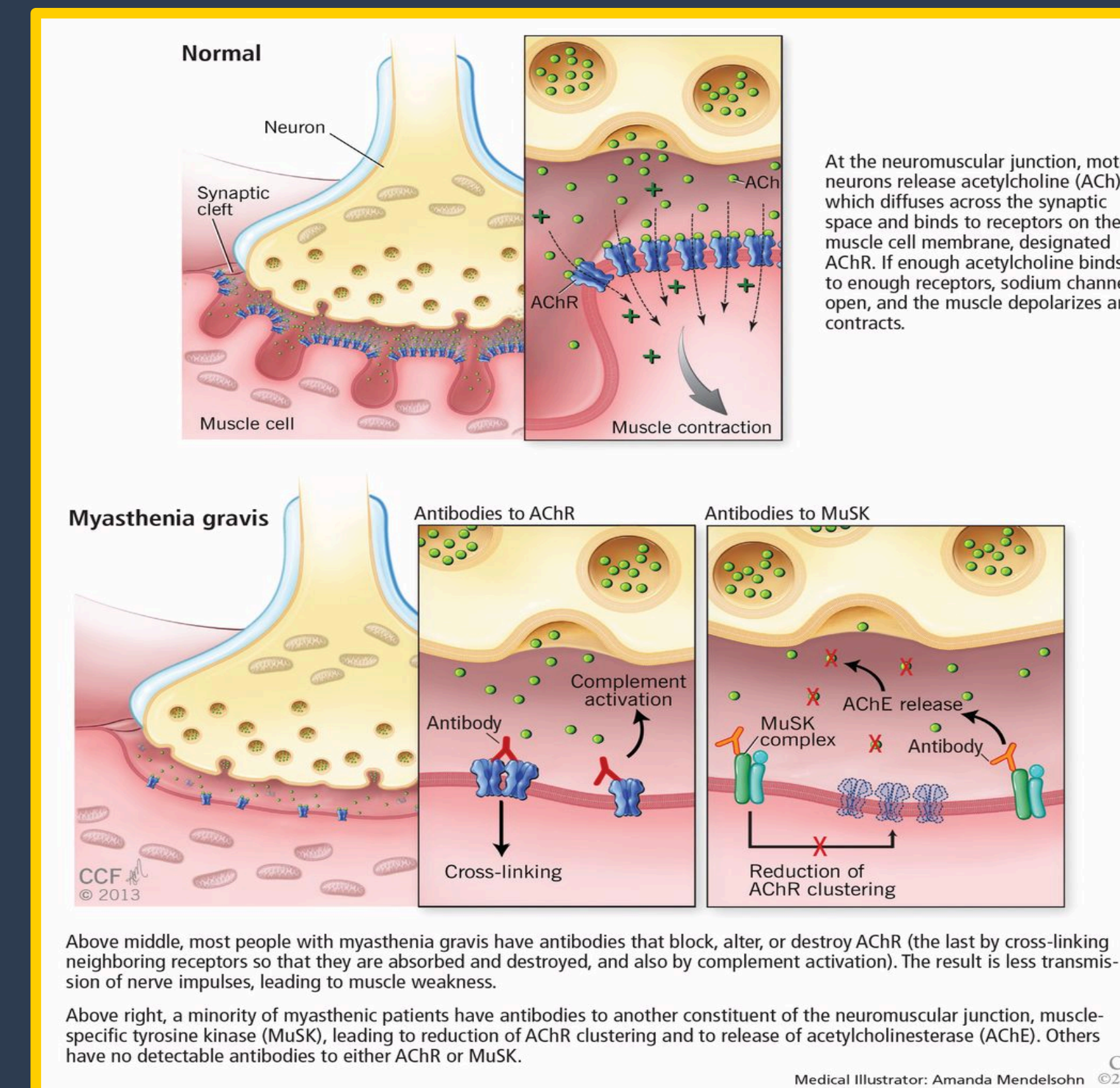
### SYMPTOMS OF MG

- EYE (USUALLY FIRST SYMPTOMS)**
  - Ptosis of one or both eyelids
  - Double vision (Diplopia)
- FACE AND THROAT**
  - Dysarthria- slurred or hoarse
  - Dysphagia- may lead to aspiration
  - Limited facial expressions
- NECK AND LIMBS**
  - Weakness in arms, legs, neck and fingers etc that is usually worse at the end of the day
  - Weakness in chest muscles (Crisis)

### TREATMENT OF MG

- LONG ACTING ANTICHOLINESTERASE**
  - Pyridostigmine bromide
  - Neostigmine bromide
- IMMUNOSUPPRESSIVES**
  - Systemic steroids
  - Azathioprine
  - Cyclosporine A
  - Methotrexate
- SYRGICAL THYMECTOMY**
- PLASMAPHARESIS**
- INTRAVENOUS IMMUNOGLOBULIN**

### PATHOPHYSIOLOGY OF MG



### MG SYMPTOMS TAKEN AS PSYCHITRIC ILLNESSES

1. Weakness, hoarseness of voice, dysphagia, dysarthria etc taken as EPS
2. Respiratory distress taken as anxiety
3. Worsening symptoms of above at night taken as medication wearing off or fluctuation of mental status

### TREATMENT CHALLENGES IN A PATIENT WITH SCHIZOPHRENIA AND MG

1. Misdiagnosis of MG as symptoms are taken as psychotropic medication adverse reactions
2. Starting or switching psychotropic medications can make MG symptoms worse
3. Limited evidence that treatment with anticholinesterase inhibitors make schizophrenia worse

### PSYCHOTROPIC MEDICATIONS TOBE USED JUDICIOUSLY

1. **ANTIPSYCHOTICS**-These medications are anticholinergic, although most cholinergic agents have a high affinity for muscarinic receptors, they also cause a small but significant blockade of the nicotinic receptors, the site where MG occurs. Keep long acting antipsychotic medications in mind.
2. **BENZODIAZAPINES**- This group of medications especially lorazepam and diazepam may worsen symptoms of MG and can lead to further respiratory distress/ depression.
3. **ANTICHOLINERGICS**- e.g. Benztropine, Amitriptyline, Doxepin, Paroxetine, Diphenhydramine

## DISCUSSION

Although schizophrenia is associated with nearly 50% higher lifetime prevalence of one or more autoimmune disorder, it is rare to have both schizophrenia and MG together and so far less than 10 cases have been discussed in the literature. It is noted that most of those who had MG in schizophrenia had the general type and only one case was associated with a thymoma. These cases were diagnosed due to exacerbation of MG during the treatment with antipsychotics. In our patient there was no known history of thymoma. Unlike previously reported cases, MG was diagnosed before the schizophrenia in our patient. Currently, our patient is maintained only on pyridostigmine with no antipsychotics without worsening of his psychosis. His agitation, which was due to his speech difficulty which in turn lead to his inpatient admissions in the past, have reduced considerably. Anticholinergic medications or antipsychotic agents with strong anticholinergic effects should be avoided in patients with MG as they worsen symptoms of MG. In the literature, antipsychotic medications that are safer in MG are predominately dopaminergic medications for e.g. haloperidol, paliperidone, and amisulpride. On review of the medical records, our patient was on haloperidol deaconate and did fairly well for some years.

Due to the significant overlap of symptoms of MG and with the side effects of antipsychotics diagnosis of MG can be delayed. However, when patients develop unexpected respiratory distress, after the psychotropic medications, MG should be suspected.

## CONCLUSIONS

Even though the combination of MG and schizophrenia is rare it is still necessary for a psychiatrist to recognize and address MG in patients diagnosed with schizophrenia. It is difficult to recognize symptoms of MG in a patient with schizophrenia due to overlap of clinical symptoms with adverse drug effects and antipsychotic medications potentially worsen MG. High index of suspicion is needed when if a patient presents with respiratory distress or ptosis when starting, switching or increasing a dose of a psychotropic medication.

## REFERENCES

1. She S, Yi W, Zhang B, Zheng Y. Worsening of Myasthenia Gravis After Administration of Antipsychotics for Treatment of Schizophrenia: A Case Report and Review of Literature. J Clin Psychopharmacol. 2017
2. Al-Hashel JY, Ismail II, John JK, Ibrahim M, Ali M. Worsening of myasthenia gravis after administration of injectable long-acting risperidone for treatment of schizophrenia; first case report and a call for caution. Neuromuscul Disord. 2016 Apr-May;26(4-5):309-11.
3. Gittleson NL, Richardson TD. Myasthenia gravis and schizophrenia--a rare combination. Br J Psychiatry. 1973 Mar;122(568):343-4. PubMed PMID: 4696457.