1. New England Medical Center Grand Rounds - Myasthenia Gravis...

New England Medical Center
Grand Rounds

Myasthenia Gravis (MG)

My Hanh T. Nguyen, M.D.
November 17, 2005

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2. Case Presentation

Case Presentation

- 49 year old man
- CC: “double vision and droopy lids”
- HPI:
  - Past 20 years
  - Diplopia
    - Intermittent, vertical, binocular, both near and distance
    - 2-3 episodes per year
    - 2-3 days each episode
    - Worse in early AM and late PM
  - Ptosis
    - Intermittent, alternating RUL & LUL droop
    - 5 episodes
    - 1-3 months each episode
    - Worse in early AM and late PM

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3. Case Presentation

Case Presentation

- **POHx:** No surgeries, trauma, or infections OU
- **PMHx:** MVA with LOC 30 years ago
- **Medications:** ASA
- **Allergies:** NKDA
- **Fam Hx:**
  - Glaucoma
  - DM
- **Soc Hx:**
  - Mechanic
  - Denies tobacco & ETOH use

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4. Office Examination

Office Examination

- **BCVA:** 20/15 OD, 20/15 OS
- **T:** 15 OU
- **Pupils:** 5 mm → 3 mm OU, no RAPD

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5. **External Exam**

![External Exam Image](image-source)

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6. **Office Examination**

![Office Examination Image](image-source)

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7. **Differential Diagnosis?**

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8. **Differential Diagnosis**

- Myasthenia gravis
- Third nerve palsy
  - Multiple sclerosis
  - Aneurysm
  - Ischemic vasculopathy
  - Pituitary adenoma and apoplexy
  - Other neoplasms
- Ophthalmoplegic migraines
- Viral illness
- Internuclear ophthalmoplegia
  - Multiple sclerosis
  - Brainstem ischemia
  - Brainstem neoplasms

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9. **What would you do next?**

![Image of a question page](image1)

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10. **Myasthenia Gravis - In the Office**

![Image of Myasthenia Gravis page](image2)

- **Edrophonium chloride**
  - Competitive inhibitor of acetylcholinesterase
  - 2 mg IV, additional 8 mg if the first dose has no effect
  - **Side effects**
    - Lacrimation, diaphoresis, abdominal cramping, nausea, salivation, vomiting, diarrhea, urination, bradycardia, respiratory arrest, syncopal episodes
    - 0.4 - 0.6 mg IV atropine co-administered or available
  - False positives rare
  - Negative does not exclude diagnosis
- **Neostigmine methylsulfate**
- **Sleep test**
- **Ice-pack test**

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11. Myasthenia Gravis

Myasthenia Gravis

- Neuromuscular disease
- Autoimmune mechanism: antibodies block acetylcholine receptors
- Prevalence: 85 - 125 per million
- Incidence: 2 - 4 million per year
- Age of onset:
  - 20 - 40 (women)
  - 60 - 80 (men = women)
- Females 3:2
- Symptoms:
  - Muscle weakness
  - Marked fatigability of skeletal muscles
  - Improves with rest

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12. Myasthenia Gravis

Myasthenia Gravis

- Involved muscles
  - Eyes
  - Oropharynx (dysphagia, hoarseness, dysarthria)
  - Neck extensors (pain, weakness)
  - Limbs (grip, proximal legs)
  - Trunk (dyspnea, respiratory failure)
- Spontaneous remissions
- Relapses
  - 90% in early stages
  - "Symptom free": months to years
- Hallmark: fluctuation and fatigability

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13. **Myasthenia Gravis - Ocular Involvement**

**Myasthenia Gravis**

**Ocular Involvement**

- **Frequency**
  - 50 - 75% of initial presentation: ocular myasthenia gravis
  - 90% of cases

- **Findings**
  - Ptosis:
    - Unilateral or bilateral
    - Worsens with prolonged upgaze
  - Diplopia: simulate any cranial nerve paresis
    - Supranuclear motility disturbances (pseudo-INO, gaze palsies)
    - Isolated muscle palsy
    - Total ophthalmoplegia
  - Cogan’s lid twitch
  - Orbicularis oculi invariably weak

- **Ocular MG → systemic MG**
  - 80% within first year
  - 90% within three years

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14. **Myasthenia Gravis - Management**

**Myasthenia Gravis**

**Management**

- **Neurology**

- **Anti-Acetylcholine receptor antibodies**
  - Binding antibodies
    - 90% of generalized MG
    - 50-70% of ocular MG
  - Modulating antibodies: as frequent as binding antibodies
  - Blocking antibodies rare (1%) without binding antibodies

- **MRI or CT**
  - Thymic disease 75%
  - Thymic hyperplasia 85%
  - Thymomas 10%

- **Thyroid function test (5%)**

- **ANA: systemic lupus erythematosus**

- **Rheumatoid factor: rheumatoid arthritis**

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15. Myasthenia Gravis - Treatment Options

Myasthenia Gravis Treatment Options

- Long acting anticholinesterase
  - Pyridostigmine bromide
  - Neostigmine bromide
- Immunosuppressives
  - Systemic steroids
  - Azathioprine
  - Cyclosporine A
  - Methotrexate
  - Cyclophosphamide
- Surgical thymectomy
- Plasmapheresis
- Intravenous immunoglobulin

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16. Case Summary

Case Summary

- 49 year old man with diplopia and ptosis
- Intermittant, fluctuating, worsens with fatigue
- Positive Edrophonium chloride test
- Diagnosis: myasthenia gravis
- Follow up:
  - Neurology
  - TSH wnl
  - ANA wnl
  - Acetylcholine antibodies
    - AchR binding AB: high
    - AchR blocking AB: wnl
    - AchR modulating AB: wnl

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Sources

- Hamilton SR. Neuro-Ophthalmic Diagnosis: Myasthenia gravis and ocular myopathies. 34: 304-309.

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