**Myasthenia Gravis Presentation after a Cervical Laminectomy with Fusion**

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**Abstract**

Myasthenia Gravis (MG) is a chronic autoimmune neuromuscular disorder that is classically presented as progressive muscle weakness, often with ocular, bulbar, neck, proximal limbs, and respiratory muscles. The classic presentation is typically observed with initial complaints of vision and bulbar symptomatology. However, this case study presents a non-typical presentation of an elderly man with a chief complaint of increasing upper extremity weakness, with complaints of worsening hand dexterity and intermittent episodes of expressive aphasia. Radiographic films showed cervical impingement. Mr. G, received a cervical laminectomy with fusion, and ultimately was admitted to the Medical Intensive Care Unit (MICU), in a complete myasthenia crisis.

**Pathophysiology**

- **Myasthenia gravis (MG)** - a neuromuscular junction disorder caused by the binding of autoantibodies to the acetylcholine receptor (AChR) sites located on the postsynaptic membrane.
- The binding of the immunoglobulin G, causes a block or a complement mediated loss of AChR sites.
- This decrease causes diminished or blocked nerve impulse transmissions across the neuromuscular junction, incomplete depolarization, and loss of muscle cell contraction.

- **Myasthenia crisis**
  - Extreme quadriparesis
  - Quadriplegia
  - Extreme difficulty in swallowing
  - Respiratory insufficiency
  - Shortness of breath that, if left untreated, can lead to respiratory arrest

**Manifestations & Diagnostics**

- **Admission to the MICU**
  - Laboratory testing
    - Considering MG-Differential Diagnosis
    - Muscle-Specific Receptor Tyrosine Kinase (MuSK) antibodies.
    - Ach-R antibody labs
  - Physical assessment
    - 3-month history of intermittent dysarthria
    - Coughing while eating
    - Experiencing facial weakness on cheek puff
    - Impairment of vertical eye movements (no ptosis)
    - Severe oropharyngeal dysphagia
    - Weight loss of 25 lbs. over the last several months
  - Tension test
    - Marked improvement with his strength of cough
  - Treatment
    - Therapeutic plasma exchange (TPE)
      - 5 to 7 days per pathology’s recommendation
    - Patient’s respiratory status improved after receiving 3 days of TPE successfully extubated on HD 10.
  - Post Extubation
    - Respiratory status showed improvement
      - Upward trend in NIF values from -25 to -35 cm H2O.
    - Neurology recommendations
      - AVOID Medications that can worsen MG symptoms
      - Steroids, Beta-blockers, Aminoglycosides, Fluoroquinolones.

- **HD 13**
  - Plasma exchange course of therapy was completed
    - AchR antibody assay results were negative
    - MuSK antibodies were still pending.
    - Magnetic resonance imaging of -C-spine was performed
    - Showed no additional pathology
    - Chest CT was performed to evaluate for possible thymoma
    - Examination result was negative
    - Complaints of muscle weakness to his arms
    - Neurology felt to be part of his recovering from his cervical laminectomy.
    - Trial of Mestinon 30 mg TID,

- **HD 16**
  - 3 doses of Mestinon,
    - Clinical improvement, decreased dysarthria,
    - Improvement in arm strength, no cholinergic side effects.
  - -Given the patient’s clinical improvement with the Mestinon, MG was diagnosed.

**Comparison of the Patient and Literature for MG Symptoms**

<table>
<thead>
<tr>
<th>Presenting Symptoms via Literature</th>
<th>Patient’s Presenting Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ocular (Diplopia, Ptosis)</td>
<td>Denied</td>
</tr>
<tr>
<td>Bulbar (Dysphonia, Dysphagia, Dystonia, hoarseness, cough)</td>
<td>Dysphonia, dystonia, and cough</td>
</tr>
<tr>
<td>Limb Weakness (Upper greater than lower extremities)</td>
<td>Upper extremity weakness greater than one month</td>
</tr>
<tr>
<td>Respiratory involvement</td>
<td>Admission complaint to MICU</td>
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**Conclusion**

Mr. G. presented with muscle weakness that was quickly and reasonably explained by radiographic exams for narrowing /impingement within his cervical spine. Perhaps further evaluation of the complaints of coughing, and dystonia, may have helped the care providers to initially consider an alternate secondary diagnosis. Mr. G who was eventually discharged to a rehabilitation unit showing very positive results to the Mestinon, and potential reversal of some of his other symptomatology The diagnosis of MG is frequently often delayed from the initial presentation of symptoms, because the symptoms can be quite benign and easily explained away by either the patient, or the health care provider. However when the complaints is “progressive muscle weakness” with difficulty in speech and swallowing, once must consider MG.