Take-Home Points

Myasthenia gravis is an autoimmune disease in which excessive anti-acetylcholine receptor (anti-AchR) antibody blocks the Ach receptors at the myoneural junction, causing a progressive loss of muscle strength with repeated use (fatigability). The condition typically is recurrent, with fluctuating episodes of weakness, followed by periods of remission. A severe episode is termed a myasthenic crisis, which can involve life-threatening respiratory muscle weakness. Triggers include viral infections, surgery, childbirth and certain drugs.

Key pointers in the assessment and treatment of patients with myasthenia gravis include the following:

Assessment/Information Gathering

- History and Physical
  - History of painless muscle weakness that worsens with repeated use
  - Descending and often episodic muscle weakness/paralysis
  - Ptosis (drooping eyelids)
  - Ophthalmoplegia/diplopia (weakness of eye muscles, double vision)
  - Dysphagia (indicating bulbar muscle involvement), loss of gag reflex
  - Normal deep tendon reflexes
  - Breath sounds - normal unless aspiration and/or pneumonia due to loss of upper airway reflexes (indicated by basilar crackles and wheezes)
  - Respiratory distress (advanced/untreated)

- Diagnostic Tests
  - + Tensilon test – rapid increase in muscle strength within 1 min (further weakening indicates cholinergic crisis due to excessive anticholinesterase drugs)
  - Antibody tests - ↑ anti-acetylcholine receptor (anti-AchR) antibody
  - EMG/NCS - decrease in amplitude of muscle action potential with repeated stimulation
  - CT or MRI scan - may show presence of a thymoma (thymus gland tumor) or thymic hyperplasia.
  - Spirometry - ↓ VC, ↓ MIP/NIF, ↓ MEP
  - Blood gases - if respiratory involvement, acute respiratory acidosis; hypoxemia only if aspiration and/or pneumonia due to loss of upper airway reflexes
  - Chest X-ray - normal unless aspiration and/or pneumonia

Treatment/Decision-Making

- General Medical/Surgical Treatment to Recommend
  - Vital signs and SpO2 monitoring; close observation if myasthenic crisis
  - Acetylcholinesterase inhibitor therapy, e.g., pyridostigmine (Mestinon)
  - Immunosuppressant therapy, e.g., prednisone or azathioprine (Imuran)
  - Plasmapheresis (plasma exchange)
  - IV immunoglobulin therapy
  - Thymectomy (especially if thymoma or thymic hyperplasia)
  - DVT prophylaxis for immobility
  - Physical rehabilitation during recovery stage
• Respiratory Management to Implement/Recommend
  o Implement VC, NIF, MEP monitoring every 8 hours
  o Provide O2 therapy as needed to keep SpO2 > 90%
  o Recommend intubation and mechanical ventilation if:
    ▪ VC < 15 mL/kg
    ▪ MIP/NIF < -25 cm H2O, MEP < 40 cm H2O
    ▪ Inability to cough, swallow and protect the airway
    ▪ ABG evidence of respiratory failure
    ▪ Aspiration pneumonia with severe hypoxemia (P/F < 200)
  o Recommend trach if:
    ▪ Severe weakness, especially if bulbar involvement
    ▪ Likely need for mechanical ventilation > 10 days
• Implement rigorous infection control/VAP protocol

Follow-up Resources:

Standard Text Resources:


Useful Web Links:


