Nursing Case Study: Muscle Weakness
Chief Complaint: A 26-year-old woman with muscle weakness in the face.

Patient Presentation:
A 26-year-old woman with muscle weakness in the face.

Patient History:
Jill Rothman, a 26-year-old gymnastics instructor, presents with complaints of muscle weakness in her face that comes and goes, and has been getting worse over the past two months. Her symptoms get worse by the end of an active day. Most notably, she complains that her "jaw gets tired" as she chews and that swallowing has become difficult.

She also notes diplopia ("double vision") which seems to come on late in the evening, particularly after reading for a few minutes. At work, it has become increasingly difficult to "spot" her gymnasts during acrobatic moves because of upper arm weakness.

Physical Exam:
- she has ptosis ("drooping") of both eyelids after repeated blinking exercises.
- When smiling, she appears to be snarling – indicating asymmetry in contraction of facial muscles.

Tests:
- Single fiber electromyography (EMG or muscle test) testing revealed progressive muscle weakness, and decreased strength of contraction, of the distal arm flexor muscles upon repeated mild shocks (5 shocks per second) of the ulnar and median nerves.
- Her symptoms and EMG findings were reversed within 40 seconds of intravenous administration of edrophonium (Tensilon) - an acetylcholinesterase inhibitor (ACh-EI).
- A CT scan of Jill’s chest reveals thymus hyperplasia.
- Blood testing also revealed high levels of an ACh receptor antibody in her plasma.

Instructions: Get together in small groups of 4 students and take 5 minutes to discuss Jill’s symptoms, and findings from the physical exam and tests. Use what you’ve learned in physiology to come up with:

A) A reasonable diagnosis for Jill’s condition:
Diagnosis? ____________________________________________________________

and

B) A reasonable course of treatment based on the diagnosis:
Treatment(s)? __________________________________________________________

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Instructions: Stay in your groups and work together to answer the following questions:

Questions:

1. Why is this young woman experiencing difficulty chewing and double vision?

Answer 1.
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2. How are the anti-acetylcholine receptor antibodies interfering with her normal skeletal muscle activity? (Why are ACh receptors important for muscles to work correctly? What happens to muscle function when antibodies block ACh receptors?)

Answer 2.
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3. What is the significance of Jill’s distal arm flexor muscles not responding well to relatively low frequency stimulation? Why does repetitive nerve stimulation result in decreased strength of the muscle contractions?

Answer 3.
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4. How do the anticholinesterase drugs act to improve Jill's skeletal muscle function?

Answer 4.

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5. Why are nausea, abdominal cramps, diarrhea, and excessive salivation all side effects of the anticholinesterase drug she is taking?

Answer 5.

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6. Why is atropine beneficial in treating the gastrointestinal side effects mentioned in question #5?

Answer 6. ____________________________________________________________________________

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7. What is the significance of the enlarged thymus gland in diagnosing Jill with Myasthenia gravis? What is the thymus gland (what is its function)?

Answer 7.

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8. How will the corticosteroid prednisone benefit this patient?

Answer 8.

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9. Why must Jill undergo “plasmapheresis” when her symptoms become especially severe?

Answer 9.

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10. Jill’s doctor advises her that she is at increased risk for respiratory failure. Explain why this is so.

Answer 10.

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11. In addition to being aware of respiratory problems, Jill’s doctor also advises her to take her time when eating, especially when swallowing food, to avoid aspiration pneumonia. Why is this?

Answer 11.

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12. Jill’s doctor recommends that she stay on treatment for 6 months and then come back in for a re-check of her thymus with another CT scan of her chest. Why is this?

Answer 12.

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