Kaplan USMLE Step 3 prep: Woman has double vision, feels weak

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If you’re preparing for the United States Medical Licensing Examination® (USMLE®) Step 3 exam, you might want to know which questions are most often missed by test-prep takers. Check out this example from Kaplan Medical, and read an expert explanation of the answer. Also check out all posts in this series.

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This month’s stumper

A 36-year-old woman comes to the office complaining of double vision. She says that for the last few weeks she has been feeling "weak all over," especially at the end of the day. This is also when she thinks her double vision is most noticeable. She reports that she experienced similar symptoms one year ago that persisted for several weeks.

However, she did not seek a medical opinion at the time because she thought that it was "just stress." She has no other complaints. She has no past medical history. Her mother has Graves disease, her father has rheumatoid arthritis, and her older sister was recently diagnosed with systemic lupus erythematosus.

On examination, the patient is a slim woman who appears in good health. Her vital signs are normal. She has normal heart and lung sounds. She has mild bilateral ptosis and complains of diplopia when her extraocular muscles are tested. She has normal strength at maximal effort, but her proximal muscles are fatigable.

URL: https://www.ama-assn.org/residents-students/usmle/kaplan-usmle-step-3-prep-woman-has-double-vision-feels-weak
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Complete blood count, electrolytes and thyroid-stimulating hormone levels are unremarkable. Antinuclear antigen, anti-DNA antibody, and rheumatoid factor are negative. Acetylcholine receptor antibody test is positive. You arrange for an electromyelogram, which shows a decremental response to repeated nerve stimulation.

The most appropriate next step is to order which of the following?

A. CT scan of the chest.
B. Lumbar puncture.
C. MRI of the brain.
D. Muscle biopsy.
E. Tensilon test.
The correct answer is A.

Kaplan Medical explains why

This patient has myasthenia gravis (MG), which is characterized by fluctuating weakness in a characteristic distribution, usually causing diplopia, ptosis, and proximal muscle weakness. It is caused by an autoimmune response that produces an antibody to acetylcholine receptor.

The diagnosis is based on clinical suspicion and is confirmed by the acetylcholine receptor antibody test, or an electromyogram (EMG) that shows a decremental response to repetitive stimulation. A single-fiber EMG can also be performed, which is possibly the most specific test but is not required for the diagnosis.

In patients with confirmed MG, it is important to look for other autoimmune diseases such as rheumatoid arthritis, systemic lupus erythematosus, thyroiditis and Graves disease. These have a higher incidence in patients with MG and in their first-degree relatives.

After the diagnosis is confirmed, it is important to look for evidence of thymoma via a chest CT, especially in patients younger than age 60. If present a thymectomy is recommended for most patients with MG with the best responses in young patients. The response to thymectomy is variable and may not be noticed until two to five years after the surgery.

Why the other answers are wrong

Choice B: There is no role for examining this patient's cerebrospinal fluid.

Choice C: MG does not affect the central nervous system and therefore there is no role for MRI.

Choice D: Muscle biopsy would be used if myopathy were being considered. However, muscle biopsy should be performed only after serum CK and aldolase levels have been measured.

Choice E: A Tensilon test is a simple but subjective test that may be performed in the office or at the bedside. It may be used to clinically corroborate a suspected diagnosis of MG but may be positive in diseases other than MG, such as motor neuron disease. It does not replace the acetylcholine receptor antibody test or the EMG in the diagnosis of MG. Furthermore, in the present case, MG has already been diagnosed by the previous tests and no additional information will be obtained by doing a Tensilon test.
Tips to remember

Patients diagnosed with myasthenia gravis, should be evaluated for evidence of thymoma (CT scan of the chest), especially in those younger than 60 years of age. Patients should also be tested for other autoimmune diseases such as rheumatoid arthritis, systemic lupus erythematosus, thyroiditis and Graves disease.

For more prep questions on USMLE Steps 1, 2 and 3, view other posts in this series.