If you’re preparing for the United States Medical Licensing Examination® (USMLE®) Step 1 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 46-year-old woman comes to the physician for a routine follow up appointment. Her past medical history is significant for hypertension and diabetes mellitus. Her surgical history includes a Roux-en-Y gastric bypass surgery. She denies any complaints.

She reports a balanced diet and continues to have regular menstrual cycles. Her medications include a daily multivitamin and oral iron supplementation since her surgery. Physical examination shows conjunctival pallor. Laboratory values show:

- Hemoglobin, blood: 8.6 g/dL.
- Mean corpuscular volume: 72 ?m\(^3\).
- Platelet count: 475,000 mm\(^3\).
- Ferritin: 7 ng/mL.
- Total iron-binding capacity: 493 ?g/dL (normal: 250-425 ?g/dL).

A peripheral blood smear shows microcytic and hypochromic red blood cells.
Which of the following is the best treatment option for this patient?

A. B12 injections.

B. Erythropoietin.

C. Increased oral iron supplementation.

D. Intravenous iron.

E. Observation.

The correct answer is D.
Kaplan Medical explains why

This patient likely has iron deficiency as evidenced by the low ferritin level in combination with elevated total iron-binding capacity (TIBC) and low mean corpuscular volume (MCV). The platelet count is often elevated, and peripheral smear shows microcytosis and hypochromia.

Roux-en-Y gastric bypass surgery is a procedure in which the distal stomach, duodenum, and proximal jejunum is bypassed, thereby impairing the absorption of iron. Women, particularly those who continue to menstruate, are at increased risk of iron deficiency after this surgery. Therefore, she still has an iron deficiency and requires intravenous iron for replacement.

Why the other answers are wrong

Choice A: B12 injections are often needed in patients with vitamin B12 deficiency due to gastric bypass. However, these patients usually have elevated MCV and hypersegmented neutrophils on peripheral smear. They often require subcutaneous replacement.

Choice B: Erythropoietin is used for patients with anemia of chronic disease. These patients have an iron panel that consists of normal TIBC and MCV as well as low iron and normal to elevated ferritin levels. These are not consistent with the findings in this patient.

Choice C: Increased oral iron supplementation is unlikely to be useful in this patient due to impaired absorption of oral iron. Increasing the dose of iron supplementation is unlikely to overcome the effects of the anatomic and physiologic alterations of the bypass surgery.

Choice E: Observation is not ideal in this patient as she has significant anemia due to her iron deficiency and will eventually become symptomatic.

Tips to remember

- Iron is absorbed in the duodenum, which is bypassed during Roux-en-Y surgery.
- Iron deficiency is characterized by low iron, low ferritin, low MCV, and elevated TIBC.
- Patients with Roux-en-Y gastric bypass surgery commonly have iron deficiency and require IV iron replacement.

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

URL: https://www.ama-assn.org/residents-students/usmle/kaplan-usmle-step-1-patient-exam-shows-conjunctival-pallor

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