

USMLE Step 2: Determine the cause of pain and weight loss

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If you're preparing for the United States Medical Licensing Examination® (USMLE®) Step 2 exam, you might want to know which questions are most often missed by those taking the practice test. Check out this example from Kaplan Medical, and view an expert video explanation of the answer. Also check out all posts in this series.

This month's stumper

A 43-year-old woman with HIV comes to the physician because of painful swallowing, substernal chest pain and weight loss for one month. She takes no medications. Her temperature is 37.8 °C (100 °F). Her CD4+ T-lymphocyte count is 41/mm³. Upper endoscopy shows inflammation and a large, deep ulceration of the distal esophagus. A biopsy specimen of the esophagus shows inflammation and small blood vessel endothelial cells with markedly enlarged, smudgy, eosinophilic nuclei. Which of the following is the most likely cause of this patient's symptoms?

- A. Acid reflux
- B. *Candida*
- C. Cytomegalovirus
- D. Herpes simplex
- E. Herpes zoster

The correct answer is C.

Kaplan Medical explains why

Patients who have AIDS and other profoundly immunosuppressed patients are vulnerable to infectious esophagitis. Endoscopy with biopsy is used to identify the causative agents, which are typically *Candida*, herpes simplex or cytomegalovirus. If an AIDS patient presents with odynophagia, treatment should initially be empiric against *Candida*. If empiric treatment fails, endoscopy is warranted to differentiate between herpes simplex and cytomegalovirus infection. Careful review of the biopsy specimen material is necessary, because these patients may actually be infected by more than one organism. In the case of cytomegalovirus infection, the distinctive histologic finding is the presence of small numbers of cells with markedly enlarged nuclei, which will show intranuclear viral inclusions. Manifestations of cytomegalovirus in HIV/AIDS patients are more common when patients have a CD4+ T-cell count less than 50/mm³. Cytomegalovirus infection can be treated with ganciclovir.

Diagnosis	Gross appearance	Morphology
<i>Candida</i> esophagitis	White plaques on the esophageal mucosa	Budding yeasts, hyphae and pseudohyphae seen on Gram stain
Herpes simplex esophagitis	Multiple small, shallow ulcers with a “volcano” appearance	Intranuclear inclusion bodies with a nucleus surrounded by a halo
Cytomegalovirus esophagitis	One or more deep, large ulcers	Cytoplasmic inclusion bodies with histologic changes

Why the other answers are wrong

Read these explanations to understand the important rationale for why each answer is incorrect.

Choice A: Acid reflux could produce inflammation, but it would be unlikely to show ulceration of the esophagus.

Choice B: *Candida* esophagitis causes large white plaques in the esophagus that show hyphal and yeast forms with microscopy.

Choice D: Herpes simplex causes multinucleated cells with nuclear viral inclusions.

Choice E: Herpes zoster infection resembles herpes simplex infection, but it much less commonly involves the esophagus.

Tips to remember

HIV patients who have cytomegalovirus esophagitis are most likely to have a CD4+ T-cell count less than 50/mm³. Cytomegalovirus esophagitis causes one or more deep, large ulcers and cells showing enlarged nuclei and eosinophilic intranuclear inclusions. *Candida* and herpes simplex are other common causes of esophagitis in severely immune-compromised individuals.

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