

## Case history

A 74 yo male presented with right lower quadrant tenderness. He denied nausea, vomiting, fevers, and abnormal bowel movements. CT scan revealed a 6 cm mass centered in the right colon. Colonoscopy was unremarkable, and the patient underwent surgical resection.

Histologic sections of the mass along with special stain are depicted below (Fig 1-6.)

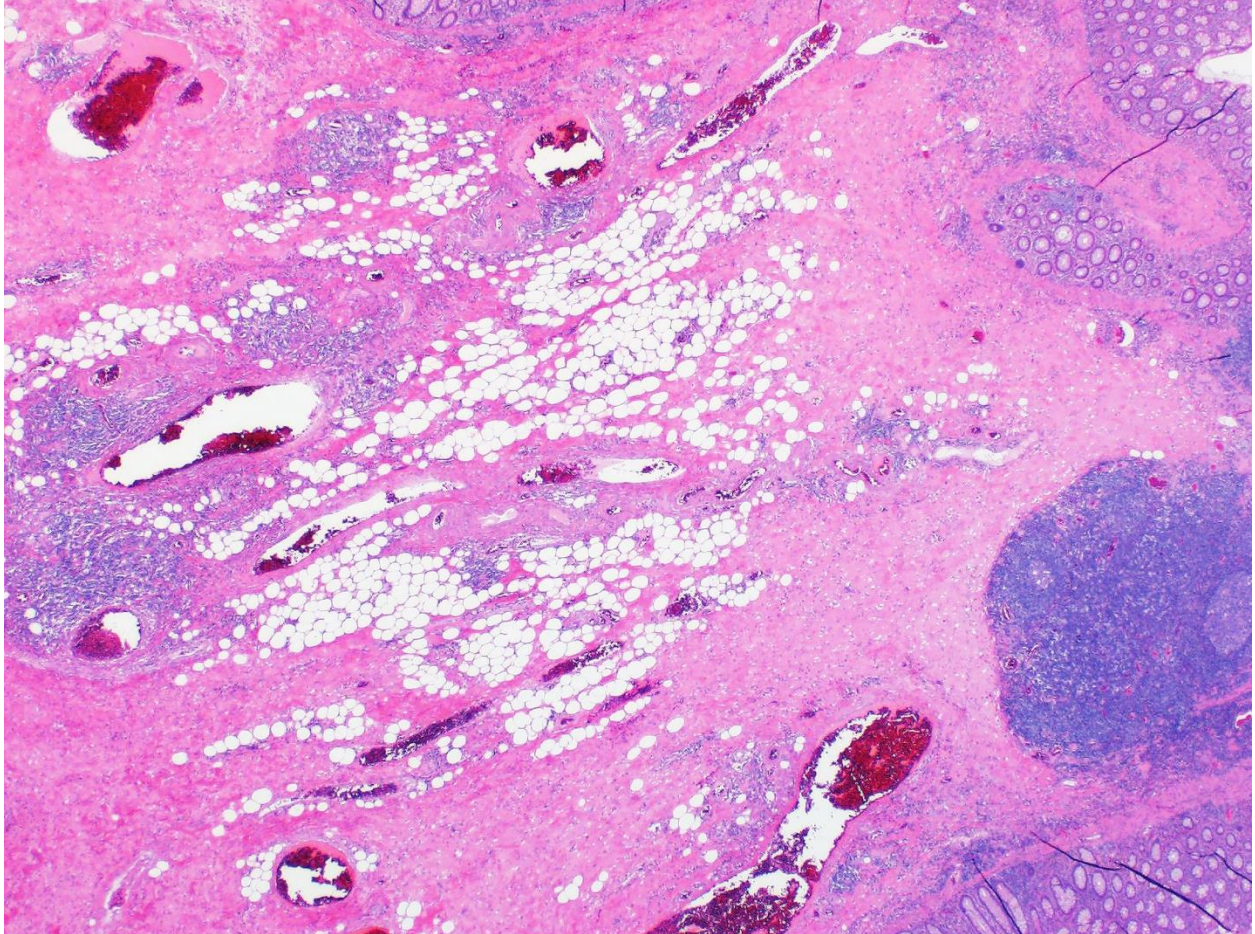


Figure 1. Hematoxylin and Eosin (20x)



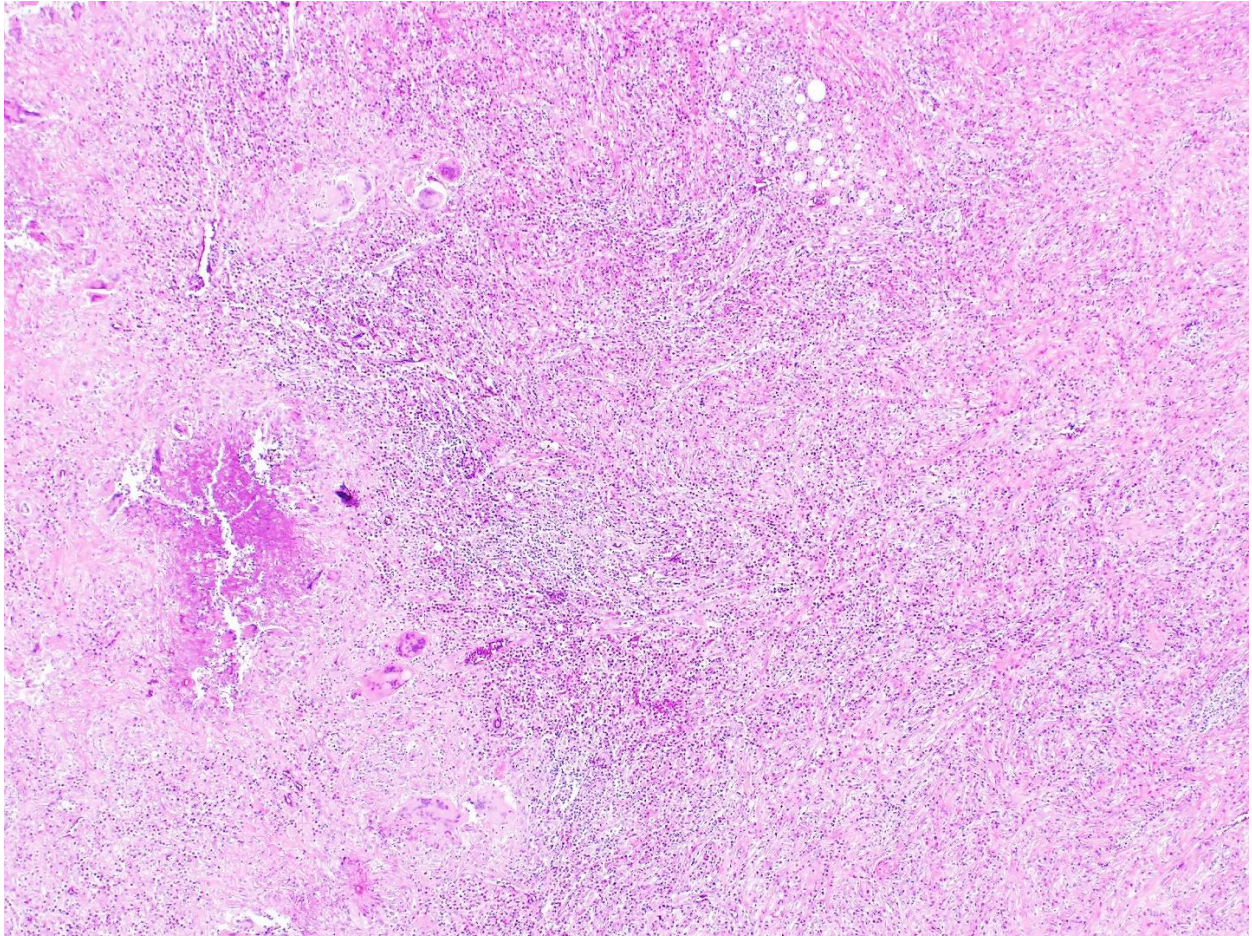


Figure 2. Hematoxylin and Eosin (20x)



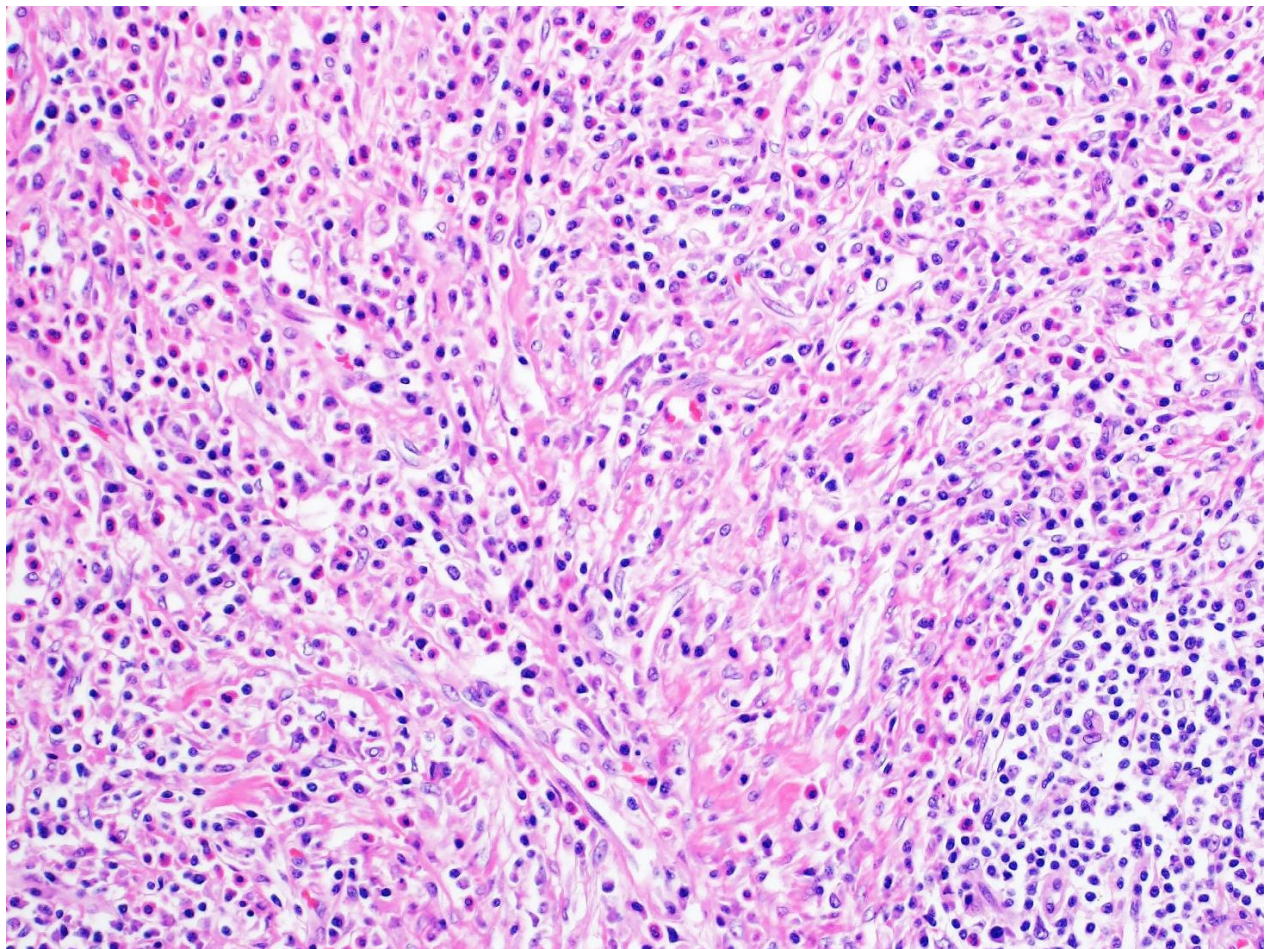


Figure 3. Hematoxylin and Eosin (200x)



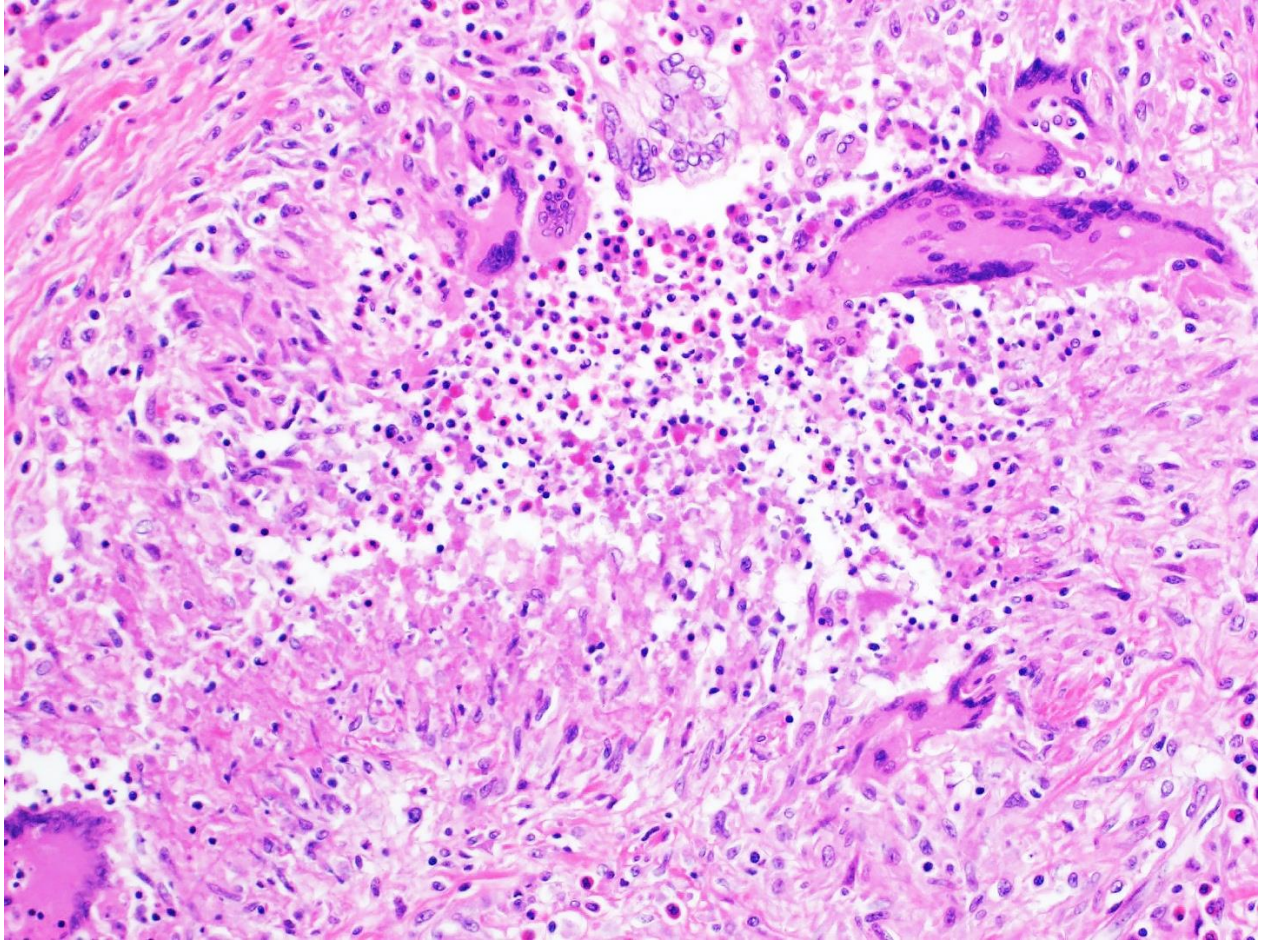


Figure 4. Hematoxylin and Eosin (200x)

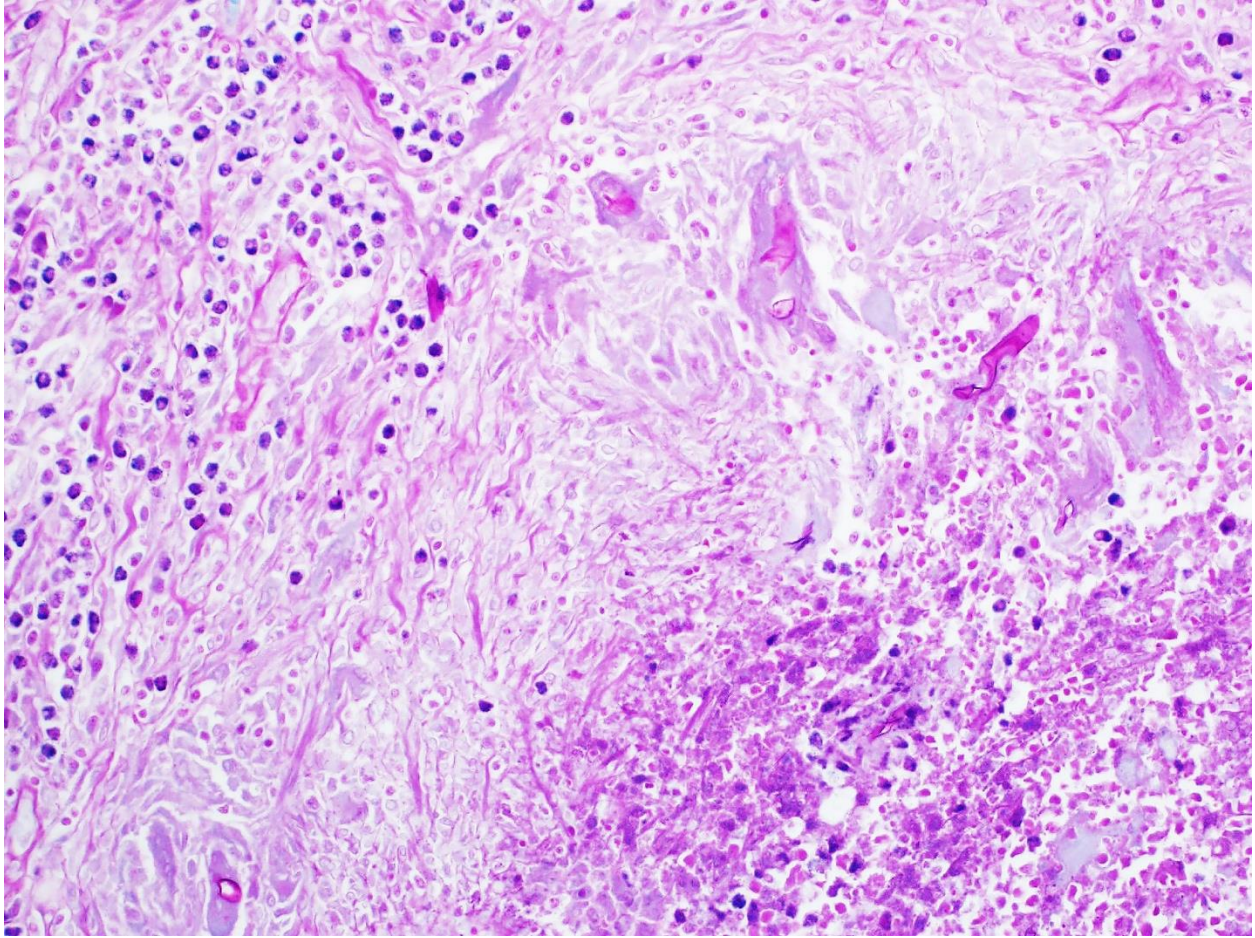


Figure 5. Periodic acid-Schiff with diastase (200x)



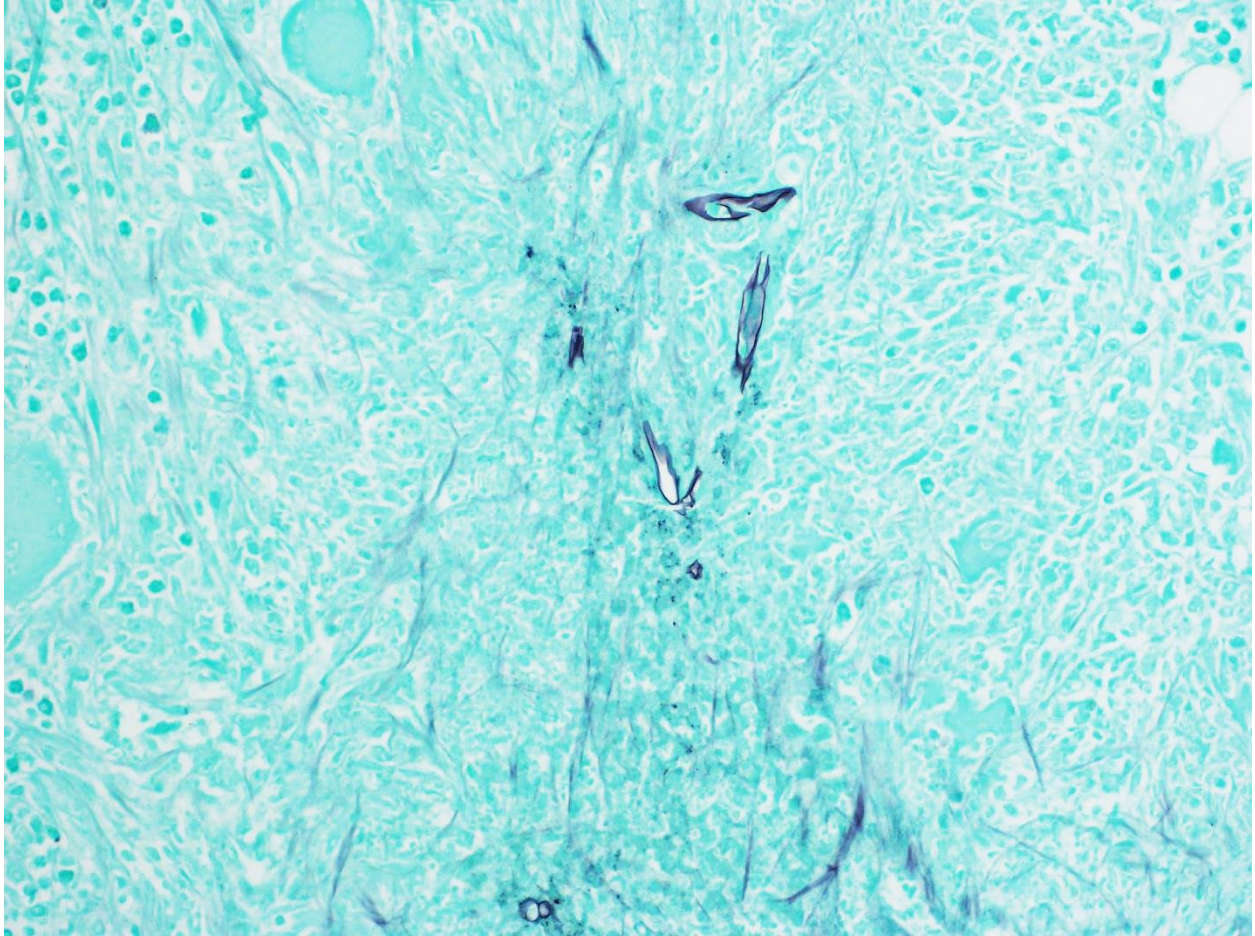


Figure 6. Gomori methenamine silver stain (200x)

**What is the most likely diagnosis?**

- A. Inflammatory fibroid polyp
- B. Crohn's disease
- C. Coccidioidomycosis
- D. Basidiobolomycosis
- E. Eosinophilic granulomatosis with polyangiitis

**Correct Diagnosis:** (D) Fungal infection due to basidiobolomycosis (*Basidiobolus ranarum*).

Basidiobolomycosis is a rare fungal infection that is a known causative agent of subcutaneous zygomycosis, a disease that is endemic to tropical climates of Africa and southeast Asia.<sup>1</sup> Subcutaneous infections usually occur through traumatic inoculation. Gastrointestinal involvement is extremely rare with less than 40 cases reported worldwide.<sup>2-7</sup> Prior reports of gastrointestinal involvement by *Basidiobolus ranarum* demonstrate that patients rarely present with systemic signs of infection. The most common presenting symptom is abdominal pain. Imaging studies usually demonstrate gastrointestinal tract masses which may occasionally involve multiple organs. Colon and stomach appear to be the most common sites of involvement and surgical resection is often necessary for the diagnosis. Pre-operative diagnoses for these masses included cancer, inflammatory bowel disease, and diverticulitis.

The mass lesions are usually centered in the deep layers of the bowel wall although the mucosa can be involved. All cases present with prominent tissue eosinophilia and granulomatous inflammation, which can be extensive. Necrosis is seen in the majority of cases. Splendore-Hoeppli (radiating, intensely eosinophilic granular material surrounding the fungal elements) phenomenon can be occasionally seen.<sup>8</sup> The diagnosis is supported by the presence of hyphae structures that occasionally have a beaklike protuberance. However, given the large morphologic overlap with other fungal organisms it is prudent to confirm infection with serologic studies or culture. *Basidiobolus ranarum* organisms are present in the soil of Arizona, but it is unclear how it enters the gastrointestinal tract. Most likely this occurs through ingestion of soil, animal feces, or contaminated food.

**Answer A is incorrect.** Inflammatory fibroid polyps can have prominent eosinophilic infiltrates that can obscure the neoplastic spindle cells.<sup>9</sup> However, IFPs usually originate in the submucosa and do not form a mass in the mesentery. Furthermore, granulomatous inflammation is not present.

**Answer B is incorrect.** Crohn's disease does enter the differential diagnosis when encountering any localized inflammatory lesion within the gastrointestinal tract. Clinically, basidiobolomycosis can be confused with Crohn's disease. However, the histologic features are not typical of Crohn's disease despite the presence of granulomatous inflammation. Furthermore, there was no mucosal involvement in this case, and the inflammation was limited to the deep submucosa, muscularis propria, and mesentery.

**Answer C is incorrect.** Coccidioidomycosis is a fungal infection caused by coccidioides organisms that results in valley fever in the desert southwest, characterized by fever, cough, and tiredness. The coccidioides organisms that cause infection are endemic to the southwest and infection occurs through inhalation of fungal spores that are aerosolized through anything that disrupts the soil. Histologically coccidioidomycosis is characterized by necrotic granulomatous inflammation rather than eosinophil rich inflammation. The infection is confirmed by the detection of coccidioidomycosis spherules. Some cases of basidiobolomycosis can have round structures reminiscent of empty coccidioidomycosis

spherules, which may lead to diagnostic confusion. However, gastrointestinal coccidioidomycosis is extremely rare.<sup>10</sup>

**Answer E is incorrect.** Eosinophilic granulomatosis with polyangiitis (Churg-Strauss syndrome) can have intense eosinophilia and granulomatous inflammation; however, the inflammation surrounds vessels and mass lesions are not characteristic.<sup>11</sup> Patients usually present with atopic disease, allergic rhinitis and asthma.

## References

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Case contributed by:  
Rish K. Pai, MD, PhD  
Mayo Clinic, Phoenix, AZ