CLINICAL VIGNETTE

Amoebic Colitis

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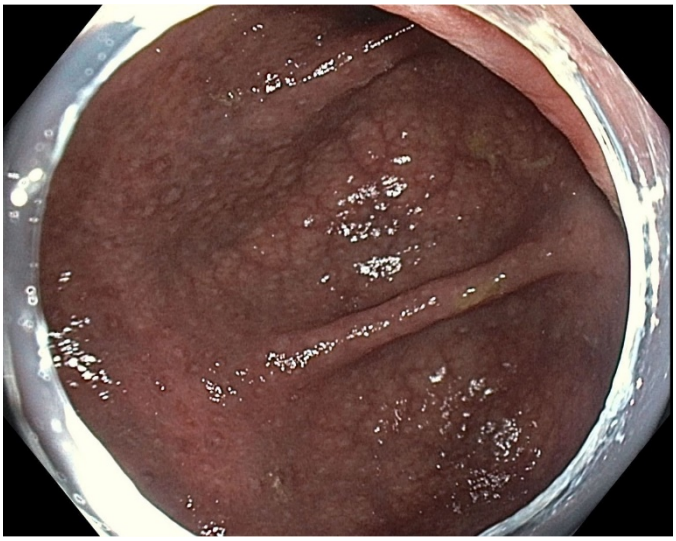
Case

A 53-year-old woman presented to gastroenterology for constipation. She reported one month of constipation with associated perianal pruritus. Her stools have become hard and painful despite daily use of over-the-counter polyethylene glycol. She also reported occasional rectal bleeding with scant red blood on toilet paper. Patient had colonoscopy three years prior with two tubular adenomas resected. The larger polyp was pedunculated and 10mm in size. She denied narcotic use, or new medications and had no family history of colon cancer.

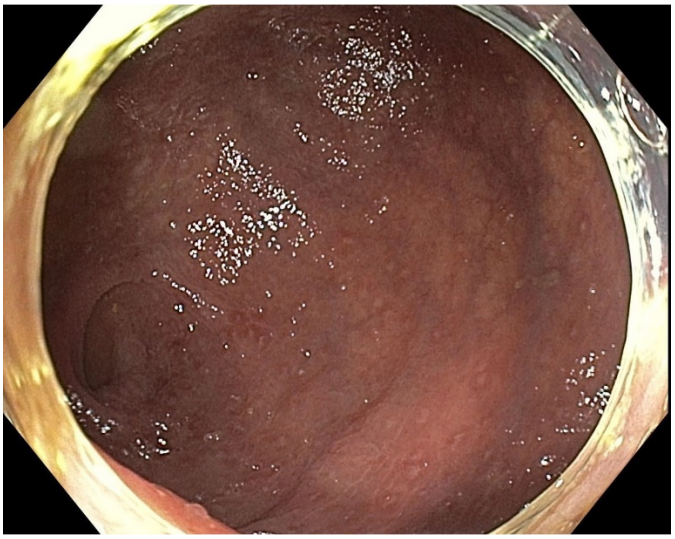
The abdominal exam was normal. Rectal exam revealed very small external hemorrhoids without erythema, edema or tenderness. Digital exam was normal. Complete blood count and complete metabolic panels were normal.

Colonoscopy was scheduled. Erythematous spots were seen throughout the colon from cecum to sigmoid colon. Two small colon tubular adenomas were resected. No erythema noted in the rectum. (Figure 1 shows images of cecum and ascending colon.) The terminal ileum was normal. Two small adenomas were resected and biopsies taken in each segment of the colon from cecum to sigmoid. Biopsies revealed mildly active colitis without granulomas. The rectum biopsies were normal. After colonoscopy stool studies for infections were obtained. Stool ova and parasite test revealed *Entamoeba histolytica.*

Figure 1.



Ascending colon.



Cecum.

Discussion

Entamoeba histolytica (E. histolytica) is a single-cellular parasitic protozoa that infects the human large intestine. The World Health Organization estimates 500,000 people worldwide carrying *Entoemeba* with only 10% of these are infected with the infectious *E. histolytica* species. Amoebiasis is endemic in developing countries. Three species have been reported to cause asymptomatic amoebiasis: *E. dispar*, *E moshkovskii* and *E. bangladeshi.*[1]

E. histolytica is considered a human pathogen. It has also been isolated in non-human primates. It does not require a vector for transmission, which is typically through ingestion of water or food contaminated with feces.[2] Trophozoites (amoebae) are formed from excystation that occurs in the terminal ileum. The amoebae proliferate and accumulate as polypoid cells, which then adhere to and invade intestinal mucosal surfaces.[1] Amoebae can travel through the portal system and reach the liver to cause liver abscesses that can be fatal.[2] Amoebic colitis was first described in medical literature for 2000 years, as early as Hippocrates. The organism was identified in 1875 by a Russian physician, Fedor Aleksandrovich Lösch, who identified amoebae in feces of dysentery patients.[2] *E. histolytica* cysts are not motile. They survive gastric acidity and travel to the terminal ileum. In the terminal ileum, excystation occurs that results in the release of highly motile trophozoites, with varying

diameter from 10 to 50 micrometers.[2] The constant motion of trophozoites is fueled by the anaerobic conversion of glucose and pyruvate to ethanol.[3]

Amoebic colitis can have a range of gross appearances, including mucosal edema, multiple ulcers separated by normal mucosa to necrosis and perforation.[2] Findings can mimic appearance of inflammatory bowel disease. In early microscopic changes, trophozoites cause mucosal thickening due to glandular hyperplasia and stromal edema with intact epithelium. Earlier stages have a mild to moderate neutrophil infiltration and small number of amoebae in the surface exudate. The deep classic "flask-shaped" ulcers are seen in late invasive lesions with deep ulceration into the submucosa. The base of the ulcer contains acellular proteinaceous material with groups of amoebae and strands of fibrin.[4,5]

The mechanism of immune tolerance is responsible for approximately 90% of trophozoite colonization to be cleared by the immune system. Mucosal barrier integrity is maintained by IL-10. The IgA response with anti-Gal-lectin sIgA prevents trophozoite adherence to mucosa. Not as much is known about what breaks down this response to allow trophozoite invasion, but it is a topic of current research.[6]

Intestinal amoebiasis symptoms often include bloody diarrhea with abdominal tenderness and pain. Due to invasive nature of amoebiasis, stool is often either grossly bloody or heme-positive if no gross bleeding is seen. Bleeding can be present with diarrhea in some individuals but is more common in children. Fulminant colitis can present with leukocytosis, bloody diarrhea, fevers and peritoneal signs. Of individuals with fulminant colitis, 75% can progress to intestinal perforation. Toxic megacolon can develop with inappropriate corticosteroid use. Obstructive symptoms can result from amoebomas, which are localized inflammatory masses in the cecum or ascending colon that can appear like carcinomas.[2]

Amoebic liver abscesses were fatal prior to development of current treatment. The spread of trophozoites from intestines to liver occurs via the portal circulation. Liver abscesses can develop months to years after initial infection. Symptoms include fever, right upper quadrant pain and tenderness. Cough may also be present with dullness with rales in the right lung base. Jaundice is rare. Laboratory findings include leukocytosis without eosinophilia, elevated alkaline phosphatase and a high erythrocyte sedimentation rate.[2,6] Amoebic liver abscesses can be solitary, but multiple lesions have also been reported. Laboratory abnormalities include hypoalbuminemia and anemia which can distinguish them from pyogenic liver abscesses.[6]

Lung amoebiasis is the second most common location of extra-intestinal amoebiasis. It usually is concurrent with liver abscesses and develops due to direct extension. The right lower or right middle lobes are the most common sites of infection. Presentation can include cough, hemoptysis and referred pain to the right shoulder or scapula.[6] Complications can occur with liver abscess rupture into the pleural space.

Diagnosis is most specific using PCR to identify *E. histolytica* specific nucleic acids. Identifying trophozoites or cysts in stool is not sufficient as *E. histolytica*, *E dispar*, *E. bangladeshi* and *E. moshkovskii* are morphologically identical. These three species are considered non-pathologic, although, there have been reports of symptomatic infections with *E. dispar*.[1,6]

Therapy of invasive amoebic disease aims to eradicate intestinal carriage of the organisms. The targets of amoebicides are the bowel lumen, tissue and the liver. The drug of choice for invasive amoebiasis is metronidazole per the World Health Organization. Luminal agents (paramomycin, iodoquinol and diloxanide furoate) have very limited availability and often must be purchased from specific pharmaceutical companies or from government agencies.[7]

Conclusion

Invasive amoebiasis, which is more common in developing countries, occurs in up to 10% of infected individuals. *E. histolytica* is considered the invasive species. Diagnosis should be confirmed with PCR to distinguish from non-pathologic strains. Main treatment worldwide is metronidazole, which is affordable and widely available. Additional luminal agents may be preferred but are rarely available.

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