Fulminant amebic colitis: An unusual postoperative complication of intraabdominal malignancy

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ABSTRACT

Amebiasis caused by Entamoeba histolytica (EH) is the third leading parasitic cause of human mortality. Although amebiasis is endemic in India, only about 10% of the infected individuals manifest disease. Clinical spectrum of amebiasis ranges from asymptomatic colonization to amebic colitis to hemorrhagic and fulminant colitis. Factors causing an invasive infection are not completely understood. Pathogen virulence, host immunity, and ability of the pathogen to evade host immune response play vital role in determining the disease course. Host factors such as immunocompromised states may make an individual susceptible to develop symptomatic infection. Malignancies usually result in chronic debilitation which may make the individual prone to develop invasive amebiasis with rapid progression. We report two cases of invasive amebiasis which developed a fulminant course in the immediate postoperative period after abdominal surgeries for visceral malignancies.

KEY WORDS: Entamoeba histolytica, fulminant colitis, gastrointestinal pathology, invasive amebiasis

Introduction

Amebiasis caused by Entamoeba histolytica (EH) is the third leading parasitic cause of human mortality after malaria and schistosomiasis, causing up to 100,000 deaths annually.[1] Amebiasis is endemic in India, affecting about 15% of the population.[2] However, only about 10% of the infected individuals manifest disease.[2] Clinical spectrum of amebiasis ranges from asymptomatic colonization to invasive amebiasis.

Although invasive amebiasis is quite common in endemic regions, fulminant progression is rare, carrying a grave prognosis with over 40% mortality.[2] Fulminant amebic colitis (FAC) presents as acute abdomen requiring prompt surgical intervention. Since FAC may not have the typical history of diarrhea with bloody mucous and mimics other conditions such as ischemic bowel disease, inflammatory bowel disease (IBD), and colonic malignancy, a high index of suspicion is needed for a correct preoperative diagnosis.[9] We report two cases of FAC developing post-surgery for abdominal malignancies.

Case Presentation

Case 1
A 48-year-old male underwent pancreateo-duodenectomy for carcinoma head of pancreas. Antibiotic prophylaxis for anaerobic coverage (injectable metronidazole, 500 mg thrice daily) was given in the postoperative period. Patient developed high-grade fever 2 weeks post-surgery along with abdominal pain; he presented with abdominal distension, tenderness, and rebound tenderness. Physical examination revealed a peritonitic abdomen with positive fecal occult blood test. Intraoperative findings revealed peritonitis with diffuse perforation of the mesentery. Pancreatic stump was sutured and a subtotal colectomy was performed. Histopathology reports revealed amebic colitis with microabscesses. Postoperative course was uneventful and patient was discharged on the 14th postoperative day.

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to the emergency with vomiting and abdominal distension on postoperative day 18. Computed tomography (CT) abdomen revealed dilated terminal ileum and colonic loops [Figure 1a] and patient was taken up for emergency laparotomy. Laboratory parameters revealed mild anemia, neutrophilic leukocytosis, and raised erythrocyte sedimentation rate (hemoglobin of 9 g/dl, TLC of 17,000/cu.mm with 50% neutrophils). Intraoperatively, there was hemorrhagic fluid in the peritoneal cavity. Ascending colon was gangrenous with perforations; anastomotic site of pancreatico-duodenectomy was healthy. A right hemicolectomy with ileostomy was performed. Grossly, the ileal mucosa was viable while cecum and ascending colon were gangrenous with serosal exudates [Figure 1b]. Microscopy of involved segments revealed transmural necrosis with numerous amebic trophozoites within the granulation tissue [Figure 2a]. Few mesenteric veins showed occlusion by fibrin thrombi and collections of amebic trophozoites [Figure 2b]. A diagnosis of FAC with venous thrombi was given. Patient was started on intravenous metronidazole (800 mg thrice daily) for 2 weeks. Patient’s condition improved; he was taken out of ventilator support and extubated on day 7 of treatment.

Case 2
A 61-year-old female underwent radical cholecystectomy with distal gastrectomy for carcinoma gallbladder with duodenal involvement. Patient was started on injectable metronidazole (500 mg) for anaerobic coverage. On postoperative day 4, she developed septicemia. CT abdomen showed evidence of gangrenous changes in the right colon for which exploratory laparotomy was performed. Intraoperatively, the ascending colon was gangrenous; patient underwent a right hemicolecction and ileostomy for the same. Microscopic examination revealed transmural hemorrhagic necrosis of the entire colonic segment [Figure 3a]. Aggregates of amebic trophozoites were noted within the necrotic mucosa and serosal exudates [Figure 3b]. A diagnosis of FAC was rendered. Patient was restarted on injectable metronidazole (800 mg thrice daily); however, she expired two days post colectomy.

Discussion
FAC is life-threatening, resulting in massive bowel necrosis with perforation and peritonitis or toxic megacolon. A fatal outcome might occur due to both parasite and host-related factors. More virulent strains effectively evade host immunity by inhibiting T-regulatory cells and pro-inflammatory cytokines and produce greater amount of proteases to disrupt the protective intestinal mucous barrier. Gut microbiota is altered (enriched in Prevotella copri) in individuals manifesting IAC with aggressive course. Host-related factors include co-morbidities like IBD with corticosteroid therapy, HIV, co-infection with cytomegalovirus or clostridium difficile, prior surgeries, transplant, and use of immunosuppressive drugs. Infant age more than 60 years, male gender, pregnancy, diabetes mellitus, alcoholism, and immunosuppressed states are factors associated with higher mortality in FAC. Clinical and biochemical parameters including signs of peritonitis, low leucocyte count (<1.5 × 10³/µl), hypokalemia, hyponatremia, and hypoalbuminemia have been indicated to be high-risk factors in one study, although only hypokalemia has been verified to be significant. Conservative surgery and nonsurgical medical management have shown poor survival rates in FAC. Nisheena et al. reported a definite preoperative diagnosis of FAC in only 1 out of 6 cases, while in the study by Chaturvedi et al., 5 out of 30 cases were diagnosed before surgery. Gross findings include mucosal ulceration, bowel
necrosis, and serosal exudates; classic flask shape ulcers are usually not identified. Mesenteric vessel thromboses were noted in 3 cases by Chaturvedi et al. FAC is rare and may not present with classic symptoms of IAC; thus, definite preoperative diagnosis is seldom made. The presence of abundant eosinophilic necrosis with nuclear debris and paucity of inflammatory cells should raise suspicion for amebiasis and prompt the pathologist to hunt for amebic trophozoites. Special stains like Periodic acid Schiff (PAS) or phosphotungstic acid hematoxylin (PTAH) and multiple deeper serial cuts may be employed, if necessary. Histological evidence of transmural invasion of EH trophozoites, abundant tissue necrosis, intestinal perforation, and mesenteric vessel thrombosis are associated with increased mortality; these features were seen in both of our cases. Complex host-pathogen interactions lead to the varied clinical spectrum of amebiasis. The cause for the development of fulminant progression is attributed to both amebic virulence factors and impaired host immune response. Malignancy leads to chronic debilitation and lowered immunity. Major intraabdominal surgery for visceral malignancy can further diminish immune functioning, making the individual susceptible to develop IAC with rapid progression. Incidence of FAC is higher in endemic countries due to high frequency of asymptomatic intestinal carriage; latent infections are also known to become invasive in a setting of impaired host immunity. Both case 1 and 2 developed FAC in the immediate postoperative period. Therefore, it is possible that in both cases, the symptoms of amebiasis were masked by that of the malignancies or they had a quiescent infection which got activated with the additional stress of surgery leading to a fulminant course. Although prophylactic antibiotic coverage in the form of injectable metronidazole was given to both patients in the initial postoperative period, yet they developed FAC. In endemic regions, it might be important to workup patients preoperatively for amebiasis (both amebic serology and stool microscopy) to avoid fatality in such cases. Clinical studies are needed to establish the correct dose of anti-amebic cover (in addition to the routine antibiotic prophylaxis before major intraabdominal surgery) in susceptible individuals.

Declarations of patient consent
The authors certify that appropriate patient consent was obtained.

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Conflicts of interest
There are no conflicts of interest.

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