

An unusual case of acute lower gastrointestinal bleeding due to fungal infection

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Abstract

A 63-year-old woman was admitted to our hospital with herpes zoster viral infection and intermittent disorder of consciousness. On day 13 of hospitalization for glucocorticoid treatment, the patient experienced seven episodes of hematochezia. She had a 2-year history of systemic lupus erythematosus and had undergone splenectomy at 40 years of age. Computed tomography and electronic endoscopy revealed bleeding and contrast agent leakage into the splenic flexure of the colon. The patient underwent an emergency exploratory laparotomy and left hemicolectomy for suspected active hemorrhaging into the digestive tract. Pathological examination revealed that the bleeding had been caused by a fungal infection. No further hemorrhaging occurred after the surgery, suggesting that intestinal fungal infection might be a potential differential diagnosis for gastrointestinal bleeding in compromised hosts.

Keywords

Gastrointestinal bleeding, low immunity, fungal infection, exploratory laparotomy, differential diagnosis, case report

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Introduction

Lower gastrointestinal bleeding (LGIB) refers to gastrointestinal bleeding distal to the ligament of Treitz. Most cases of LGIB are caused by digestive tract-related disease; however, a few cases may be caused by local bleeding associated with systemic disease. The main etiologies are anatomical,

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vascular, and inflammatory diseases and tumors. In one large-scale retrospective analysis, the proportion of LGIB caused by infectious colitis ranged from 3% to 29%.¹ Patients with severe LGIB may develop anemia and blood volume reduction, which can become life-threatening. The causes of bleeding include a diverticulum, intussusception, inflammatory bowel disease, ischemic bowel disease, and other conditions. This report describes a rare case of LGIB due to fungal infection.

Case report

A 63-year-old woman was admitted to our hospital with banded unilateral pain in the skin over her chest, and the involved areas were distributed along the nerves. Clusters of millet- to soybean-sized herpes lesions were present on the skin over the area of pain. The patient was diagnosed with herpes zoster by a dermatologist of our hospital. She also had a 2-year history of systemic lupus erythematosus (SLE) and had developed an intermittent consciousness disorder due to the accumulated effects of SLE on her nervous system. After admission to our hospital, the patient received analgesic treatment and oral glucocorticoid treatment for SLE (prednisone, 50 mg/day). As a result, she experienced symptom remission and improvement in her consciousness state. However, on day 13 of hospitalization, she experienced seven episodes of painless hematochezia.

She reported no history of hematochezia, melena, or other gastrointestinal disease. She had a 12-year history of hypertension, 2-year history of diabetes, and 2-year history of SLE and had undergone a splenectomy at 40 years of age. The patient had received medical treatments for all conditions.

Blood tests on the day before the onset of hematochezia showed a platelet count of $116 \times 10^9/L$, white blood cell count of $12.03 \times 10^9/L$, and hemoglobin concentration

of 71 g/L. Enhanced abdominal and pelvic computed tomography showed contrast agent leakage into the splenic flexure of the colon (Figure 1). The patient underwent emergency intraoperative endoscopy and laparoscopic left hemicolectomy for suspected active hemorrhaging into the digestive tract. Intraoperative endoscopy revealed a 1-cm ulcer extending one-third of the circumference of the intestinal canal near the colonic splenic flexure. We performed colonoscopy before laparotomy, and the lesion is shown in Figure 2. The resected intestine (Figure 3) contained a 0.5-cm-deep ulcer measuring 4.5×1.5 cm. Before and after the surgery, the results of a serum (1,3) β -d-glucan (BG) assay and galactomannan (GM) test were negative.

The specimens were sent for microbial culture, and the results were positive for *Aspergillus* and *Candida albicans*. Pathological examination of the resected intestine indicated chronic inflammation of the colonic mucosa with necrosis, ulceration, and visible fungi with pleomorphic and irregularly branched hyphae (Figure 4). The presence of fungal mycelia within ulcers is strongly indicative of a fungal infection. Periodic acid–Schiff staining (Figure 5)

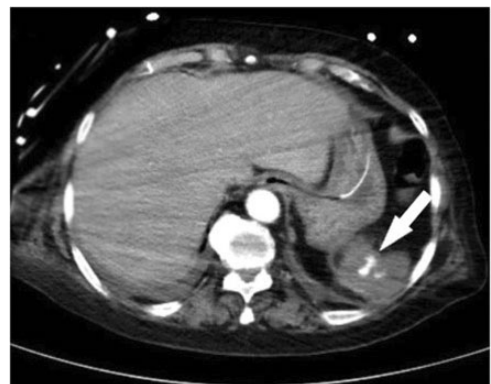


Figure 1. Computed tomography showed contrast agent leakage into the splenic flexure of the colon (arrow). (a) Cross-sectional view. (b) Coronal view.



Figure 2. Intraoperative enteroscopy revealed bleeding on the mucosal surface (area within circle).

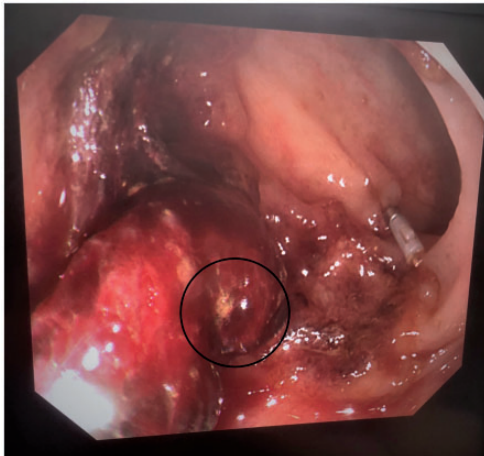


Figure 3. Resected intestine with ulcer (area within circle).

and Gomori methenamine silver staining (Figure 6) were positive, which was also consistent with a fungal infection. According to the pathological examination, the infective fungal species was *Aspergillus*. The final diagnosis was intestinal fungal infection with acute hemorrhage. The patient recovered well after surgery and developed no abdominal pain, abdominal distention,



Figure 4. Pathological examination of the resected intestine (hematoxylin and eosin staining) showed chronic mucosal inflammation, necrosis, ulceration, and pleomorphic and irregularly branched fungal hyphae.

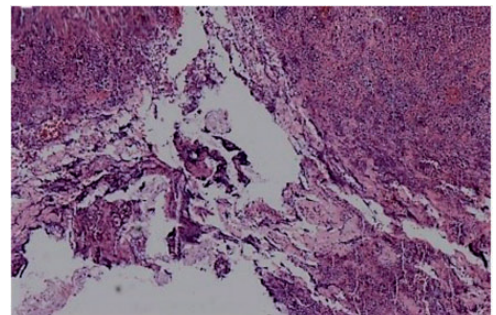


Figure 5. Periodic acid–Schiff staining (positive).

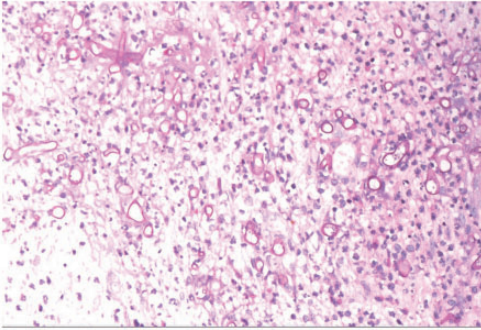


Figure 6. Gomori methenamine silver staining (positive).

hematochezia, or other complications. She was regularly followed up for her SLE in the immunology department. No digestive system-related symptoms were found during follow-up.

Discussion

Fungi are resident flora of the human intestines, accounting for <1% of all intestinal colonies. The main causes of intestinal fungal infections include decreased immune function, use of immunosuppressive agents, and use of antibiotic therapy.^{2,3} The clinical characteristics of intestinal infections vary according to the causative fungus. Aspergillosis can involve the gastrointestinal tract, leading to local invasion of the primary site and resulting in enterocolitis, appendicitis, colonic ulceration, abdominal pain, and gastrointestinal bleeding.⁴⁻⁶ The clinical manifestations of *Candida albicans* infection include local mucosal infection or extensive spread with multisystem organ failure. At present, *C. albicans* is considered part of the normal flora of the human gastrointestinal tract, making it necessary to further analyze the intestinal infection after excluding other pathogens.^{2,7} *Talaromyces marneffei* (formerly called *Penicillium marneffei*) is mainly found in patients with HIV and other immunosuppressive conditions. This infection

can cause systemic symptoms, and about one-third of patients will have gastrointestinal symptoms such as diarrhea or abdominal pain; intestinal bleeding symptoms are rare.⁸ Identification of various fungal infections requires assessment of the clinical manifestations, organs involved, epidemiology, and other comprehensive analyses; a BG assay, GM test, and other auxiliary discriminatory tests; and thorough microbial culture and pathologic examination. Despite previous detailed analyses of intestinal fungal infections, no comprehensive description of intestinal bleeding caused by *Aspergillus* has been published. Therefore, we have reported the present case to increase the consideration of fungal infection as a differential diagnosis for intestinal bleeding, especially in patients with immunosuppression.

A review of this patient's medical history revealed that she had received cyclophosphamide and methotrexate to treat SLE. She had also undergone a splenectomy. These factors caused a serious decline in the patient's immunity, predisposing her to the development of a fungal infection.

Common symptoms of fungal infections are diarrhea, abdominal distention, and mild abdominal pain; however, acute intestinal bleeding is rare. Intestinal fungal infections are difficult to diagnose because affected patients exhibit atypical symptoms. In many cases, the foci of the fungal infection are not found until autopsy. Treatment of SLE requires glucocorticoids, and sulfanilamide and other antibiotics are sometimes also needed to prevent respiratory tract infection. Although the incidence of intestinal infection is relatively low, specific preventive measures are lacking. Clinicians should mainly monitor patients' symptoms and signs and administer timely symptomatic treatment.

Intestinal fungal colony formation is rare and seldom seen in living people. This report has described a rare case of acute intestinal bleeding due to fungal infection.

Gastrointestinal bleeding has many causes, and intestinal fungal infection might be a potential differential diagnosis for gastrointestinal bleeding in compromised hosts.

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Declaration of conflicting interest

The authors declare that there is no conflict of interest.

Ethical statement and informed consent

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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References

1. Strate LL. Lower GI bleeding: epidemiology and diagnosis. *Gastroenterol Clin North Am* 2005; 34: 643–664.
2. Lichtenstein GR, Rutgeerts P, Sandborn WJ, et al. A pooled analysis of infections, malignancy, and mortality in infliximab-and immunomodulator-treated adult patients with inflammatory bowel disease. *Am J Gastroenterol* 2012; 107: 1051–1063.
3. Baron EJ, Miller JM, Weinstein MP, et al. A guide to utilization of the microbiology laboratory for diagnosis of infectious diseases: 2013 recommendations by the Infectious Diseases Society of America (IDSA) and the American Society for Microbiology (ASM) (a). *Clin Infect Dis* 2013; 57: e22–e121.
4. Musher DM and Musher BL. Contagious acute gastrointestinal infections. *N Engl J Med* 2004; 351: 2417–2427.
5. Eggimann P, Chevrolet JC, Starobinski M, et al. Primary invasive aspergillosis of the digestive tract: report of two cases and review of the literature. *Infection* 2006; 34: 333–338.
6. González-Vicent M, Díaz MA, Colmenero I, et al. Primary gastrointestinal aspergillosis after autologous peripheral blood progenitor cell transplantation: an unusual presentation of invasive aspergillosis. *Transpl Infect Dis* 2008; 10: 193–196.
7. Naglik JR, Challacombe SJ and Hube B. *Candida albicans* secreted aspartyl proteinases in virulence and pathogenesis. *Microbiol Mol Biol Rev* 2003; 67: 400–428.
8. Ukarapol N, Sirisanthana V and Wongsawasdi L. *Penicillium marneffeii* mesenteric lymphadenitis in human immunodeficiency virus-infected children. *J Med Assoc Thai* 1998; 81: 637–640.