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Congestive ischemic colitis successfully treated with anti-inflammatory therapy: A case report

Anti-inflammatory therapy for congestive ischemic colitis

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Abstract

BACKGROUND

Congestive ischemic colitis is a rare subtype of ischemic colitis with an uncertain pathophysiology. Apart from conservative management, such as fasting, there is no established treatment; in some cases, surgical intervention should be considered if symptoms worsen. Current literature suggests that anti-inflammatory agents may effectively treat congestive ischemic colitis.

CASE SUMMARY

We present the case of a 68-year-old woman who underwent laparoscopic left hemicolectomy for transverse colon cancer three years ago. After surgery, follow-up included an annual colonoscopy and abdominal CT at a local clinic. However, one year after surgery, progressive erythema and edema of the sigmoid colon were observed. Upon admission to our hospital, she complained of abdominal pain and diarrhea. Abdominal CT showed thickening of the sigmoid colon walls, and colonoscopy revealed erythema, edema, and multiple ulcers with exudate in the sigmoid colon. Additionally, CT angiography showed engorgement of the sigmoid vasa recta without any vascular abnormalities. The diagnosis was congestive ischemic colitis, and we

treated the patient with anti-inflammatory agents. After 2 months of glucocorticoid therapy (20 mg once daily) and 7 months of 5-aminosalicylate therapy (1 g twice daily), the ulcers completely healed. She has not experienced any recurrence for 2 years.

CONCLUSION

Anti-inflammatory therapy, specifically glucocorticoids and 5-aminosalicylate, demonstrated promising efficacy and introduces potential novel treatment options for congestive ischemic colitis.

Key Words: Ischemic colitis; Glucocorticoids; 5-aminosalicylate; Colon cancer; Colectomy; Case report

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Core Tip: Congestive ischemic colitis is a rare type of ischemic colitis, and its diagnosis requires a comprehensive assessment. As there are no clear treatment guidelines, surgical treatment should be considered if symptoms worsen during bowel rest. We report, for the first time, the successful treatment of congestive ischemic colitis occurring after left hemicolectomy with glucocorticoids and 5-aminosalicylate. Follow-up revealed complete healing of the sigmoid ulcers, with no recurrences in the past 2 years.

INTRODUCTION

Ischemic colitis involves mucosal inflammation and ulcers that occur when blood flow to the colon is reduced to a level that is insufficient for maintaining cellular metabolic function^[1, 2]. There are various causes of ischemia, including vascular factors such as atherosclerosis or thrombus formation; intestinal factors that increase intestinal

pressure, such as constipation; and factors related to congestion caused by venous return dysfunction^[2-4]. A rare type of ischemic colitis, congestive ischemic colitis, has no clear pathophysiology or consensus for optimal treatment. The condition is typically treated with conservative management, such as fasting, although surgical intervention should be considered if symptoms worsen. However, recent reports suggest that anti-inflammatory agents may be effective for treating congestive ischemic colitis.

Herein, we present an uncommon case of congestive ischemic colitis caused by inadequate venous return after left hemicolectomy. Conservative treatment and antibiotics were not effective, and surgical treatment was considered; however, the patient was successfully treated with anti-inflammatory agents, namely glucocorticoids and 5-aminosalicylate, without the need for additional surgery.

7

CASE PRESENTATION

Chief complaints

A 68-year-old woman visited our hospital with abdominal pain and diarrhea.

History of present illness

The patient had experienced persistent abdominal pain and diarrhea over the past month, compelling her to visit a local clinic. After undergoing colonoscopy and abdominal CT, infectious colitis was suspected; accordingly, the patient was treated with antibiotics. However, symptoms did not improve, and the patient was subsequently referred to our hospital.

History of past illness

The patient had hypertension and type 2 diabetes. Three years previously, she underwent extended cholecystectomy for gallbladder cancer and laparoscopic left hemicolectomy with low ligation of the inferior mesenteric artery (IMA) (IMA preservation and left colic artery ligation) and ligation of the inferior mesenteric vein (IMV) for transverse colon cancer. Postsurgical follow-up included an annual

colonoscopy and abdominal CT at a local clinic. However, one year after surgery, progressive erythema and edema were observed below the anastomosis site in the sigmoid colon.

Personal and family history

The patient had no family history of gastrointestinal disease or tumors.

Physical examination

Abdominal examination revealed tenderness around the umbilicus and lower abdomen.

Laboratory examinations

Peripheral blood tests showed a white blood cell count of $1.06 \times 10^9/\text{L}$ (neutrophils, 83%), hemoglobin level of 12.3 g/dL, and a platelet count of $3.24 \times 10^9/\text{L}$. Serum biochemistry tests indicated normal levels of total bilirubin (0.7 mg/dL), aspartate transaminase (14 IU/L), and alanine transaminase (9 IU/L) and an elevated C-reactive protein level (4.49 mg/dL). Stool culture, fecal *Clostridium difficile* toxin, and glutamate dehydrogenase tests were negative.

Imaging examinations

Abdominal CT revealed thickening of the sigmoid colon walls, abnormal attenuation of pericolic fat, and a small amount of ascites (**Figure 1A**). During colonoscopy, an anastomosis site was observed 45 cm from the anus, and erythema and swelling of the mucosa were observed approximately 20–35 cm from the anus. Multiple ulcerations and erosions were also observed (**Figure 1B**). CT angiography showed diffuse wall thickening and fat infiltration in the sigmoid colon, extending from the anastomosis site to the distal portion of the sigmoid colon. Engorgement of the sigmoid vasa recta was also observed (**Figure 2A**). Vascular abnormalities were not observed, and blood flow in

the inferior mesenteric, sigmoid colic, and superior rectal arteries was preserved (**Figure 2B**).

FINAL DIAGNOSIS

Based on the patient's worsening medical history beginning one year after left hemicolectomy with IMA low ligation and IMV ligation and the abdominal CT, colonoscopy, and CT angiography findings, the final diagnosis was congestive ischemic colitis.

TREATMENT

Conservative treatment, including fasting, high-calorie fluid administration, and antibiotic therapy, was administered. On day 8 of hospitalization, her abdominal pain and diarrhea significantly improved, and a liquid diet was commenced. However, after starting the diet, abdominal pain and diarrhea recurred; thus, fasting was resumed, and sigmoidoscopy was performed. Sigmoidoscopy revealed active ulcers, severe erythema, and swelling in the sigmoid colon but not in the rectum; severe mucosal injury was present due to ischemic damage. Despite conservative treatment, her condition did not improve. Therefore, we decided to cautiously administer an anti-inflammatory agent; if no improvements were observed, surgical intervention was planned. After starting prednisolone 20 mg once daily and 5-aminosalicylate 1 g twice daily, her abdominal pain and diarrhea rapidly improved. The patient was discharged on day 16 of hospitalization. At the outpatient clinic, she did not complain of any specific symptoms thereafter, and the steroid dose was discontinued after tapering over a two-month period; 5-aminosalicylate (1 g twice daily) was maintained.

OUTCOME AND FOLLOW-UP

Two months after discharge, a follow-up abdominal CT and colonoscopy were performed. Abdominal CT revealed improvements in the diffuse wall thickening of the sigmoid colon and the engorgement of the sigmoid vasa recta. Additionally, ascites was

not observed. On colonoscopy, the exudate-covered ulcers, erythema, and swelling had improved but were still present. After maintaining 5-aminosalicylate at 1 g twice daily for 7 months, colonoscopy was repeated, and no abnormal findings were observed (**Figure 3**). Consequently, 5-aminosalicylate was discontinued, and no adverse effects from the anti-inflammatory agents occurred. The patient was happy to recover without surgical treatment and has been symptom-free without medication for 2 years.

DISCUSSION

1 Congestive ischemic colitis is a rare type of ischemic colitis. Fuji *et al.* reported that after left-sided colectomy in which the arterial branch (superior rectal artery) was preserved and the IMV was cut near the root, congestive ischemic colitis occurred in 4 of 191 patients (2.1%)^[2]. Similarly, Suh *et al.* reported an incidence of 2.25% (3/133 patients)^[5]. Congestive ischemic colitis is believed to be caused by venous congestion resulting from an imbalance between the arterial supply and venous return of the remnant colon after colectomy for left colon cancer^[2, 5]. The descending and sigmoid colons receive blood from the left colic, sigmoid, and superior rectal arteries, which arise from the IMA. Venous drainage occurs through the left colic, sigmoid, and superior rectal veins, which ultimately drain into the IMV. When the arterial blood supply is maintained and venous drainage through the IMV is disrupted due to IMV ligation at the inferior margin of the pancreas during surgery, congestion can develop in the descending and sigmoid colons. In contrast, the rectum receives blood from the upper, middle, and lower rectal arteries and is drained by the upper, middle, and lower rectal veins; thus, IMV ligation typically does not result in rectal congestion. Congestion is more likely to occur when the remnant distal colon is lengthy. In that case, preservation of the IMV during surgery might be considered to prevent venous congestion and subsequent congestive ischemic colitis^[5].

The diagnosis of congestive ischemic colitis requires a comprehensive assessment, including the patient's symptoms, medical history, and imaging examinations. The patient's medical history reveals characteristic symptoms, such as abdominal pain and

diarrhea, occurring several months after undergoing a left-sided colectomy with low ligation of the IMA and ligation of the IMV^[1, 2, 6]. Abdominal CT shows continuous bowel wall thickening below the anastomosis site, and the rectum is unaffected in most cases. CT angiography shows engorgement of the sigmoid vasa recta without any vascular abnormalities such as stenosis or obstruction^[2, 5]. Additionally, colonoscopy reveals edema, erythema, and ulceration consistent with the findings of ischemic colitis^[1, 6].

The pathophysiology of congestive ischemic colitis may involve venous ischemia and subsequent reperfusion injury^[3, 7]. Ischemia leads to anaerobic metabolism, resulting in reduced ATP production and the impairment of cellular ⁴ ion-exchange channels. This leads to cell swelling and impaired enzymatic activity in the cytoplasm. During the reperfusion state, reactive oxygen species (ROS) cause oxidative stress and local inflammation, leading to endothelial dysfunction, DNA damage, and cell death^[7]. Consequently, mucosal integrity may be compromised, leading to bacterial translocation and bacteremia^[8].

The most effective treatment for congestive ischemic colitis is fasting, which reduces colonic oxygen demand, thereby alleviating the imbalance between arterial supply and venous return^[2, 9]. However, recovery may be protracted with bowel rest alone, and surgical intervention may be necessary in some severe cases. Kruis *et al.* reported that, in cases of moderate-to-severe ischemic colitis, combination therapy with intravenous antibiotics and intravenous prednisolone showed promising therapeutic effects with no safety concerns^[10]. Antimicrobial therapy can effectively reduce pathogenic bacteria, bacterial translocation, ⁵ and inflammatory responses to ischemic injury^[1, 8]. Glucocorticoids inhibit the activation, migration, and proliferation of immune cells in both the innate and adaptive immune systems, resulting in anti-inflammatory and immunoregulatory actions^[11]. While the American College of Gastroenterology does not recommend the use of glucocorticoids for the treatment of ischemic colitis, limited use of therapeutic agents for inflammatory bowel disease, such as local or systemic

glucocorticoids, sulfasalazine, and 5-aminosalicylate, may be considered in cases of chronic ischemic colitis^[1].

In this case, the patient had chronic and severe ischemic colitis. Therefore, in addition to bowel rest and antimicrobial therapy, we administered glucocorticoids and 5-aminosalicylate. Owing to concerns regarding the potentially harmful side effects of glucocorticoids, such as infection, hypertension, hyperglycemia, and Cushing's syndrome, we administered a 2-month course of low dose of glucocorticoids (20 mg once daily) concurrently with 5-aminosalicylate (1 g twice daily). An anti-inflammatory agent, 5-aminosalicylate, exhibits a wide range of activities, such as inhibiting cell- and antibody-mediated immune processes and acting as a potent free radical scavenger and antioxidant. The beneficial effects of 5-aminosalicylate can be attributed to its ability to inhibit activation of nuclear factor-kB (NF-kB)^[12,13]. The activation of NF-kB is an important factor of inflammatory injury to ischemia-reperfusion and inactivation of NF-kB signaling pathway to control inflammation has been well studied^[14-16]. Therefore, 5-aminosalicylate has been suggested to be beneficial in the treatment of congestive ischemic colitis.

CONCLUSION

There is currently no consensus on an effective treatment strategy for congestive ischemic colitis. Management of this condition has been challenging owing to its complex pathophysiology and lack of specific therapeutic options. However, as reported in this case, the use of anti-inflammatory agents such as glucocorticoids and 5-aminosalicylate shows promise and may lead to new effective therapies. Further research and clinical trials are necessary to validate and optimize the efficacy and safety of these treatment options for congestive ischemic colitis.

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