

Case Study: Non - Embolistic Necrotizing Colitis - An Examination of Clinical Presentation and Management

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Abstract: *Colon necrosis is a gastrointestinal disease that is often difficult to diagnose and manage. Manifestations of colonic ischemia are subtle and varied. We introduce a case of progressive necrotic ischemia in a patient with multiple comorbidities with a relatively straightforward clinical presentation. Radiographic findings showed a left retroperitoneal abscess and did not suggest vascular embolism disease. Intestinal ischemia should be considered when a patient with an underlying coagulopathy and vascular disease presents with abdominal pain and bloody stool. Contrast Enhanced Multislice Computer Tomography is a powerful diagnostic tool that can suggest etiology in some situations. The retroperitoneal abscess presentation on CT showed that ischemia had progressed through the entire intestinal wall, causing perforation and infection that had spread to nearby organs. Indication for surgery was necessary and urgent.*

Keywords: Non - Embolistic Necrotizing Colitis, Clinical Presentation, Management Strategies, Case Study, Gastrointestinal Disease

1. Introduction

Colitis ischemia is one of the uncommon disorders in the elderly and is the most common form of intestinal ischemia [6], [13]. In 50% of cases, the course of the disease is transient and self - limiting, and the diverse clinical manifestations are the points that make the clinical diagnosis of ischemic colitis less than realistic or misdiagnosed with irritable bowel syndrome or infection of the digestive tract.

The pathophysiological feature is a self - limiting exacerbation of ischemia commensurate with the metabolic demands of the colon segment [12]. Colonic blood flow can be disrupted by changes in systemic circulation or local anatomy and function of the intestinal vascular system. The primary cause of anemia is often unidentifiable, but some standard features in these patients include systemic disease involving the capillary system and multiple underlying conditions. 90% of cases of ischemic colitis occur in people over 60 years of age; however, younger people can also develop it [5]. Ischemic colitis can be obstructive and nonobstructive. In most cases, the obstructive lesion is not explicitly identified on angiography, and often the patient will be diagnosed with the residual form.

This report aims to present a clinical case of nonobstructive left - sided ischemic colitis with progressive gangrene causing intestinal perforation presenting as a retroperitoneal cavity abscess.

2. Case Presentation

An 83 - year - old female patient with a history of hypertension and ischemic heart disease, which was taking clopidogrel, presented at the Emergency Department of Binh Dan hospital. She had suffered from severe left iliac fossa

pain accompanied by vomiting and bloody stools for two days without a fever. She denied experiencing unexplained weight loss or having similar symptoms before the present episode. Her family history was negative for inflammatory bowel disease and colorectal cancer. She had been a housewife for 40 years before taking a full - time break to look after her grandchildren. No alteration of dietary habits or inadequate hydration was recorded around the time the abdominal pain occurred.

Clinical examination upon admission revealed normal hemodynamic and respiratory parameters (heart rate 90 beats/min, blood pressure 120/70 mmHg), average temperature with abdominal rebound tenderness on the left hip and left iliac fossa.

Laboratory data revealed a white blood cell count (WBC) of 4 660/mm³, hemoglobin 13.4 g/dL, and hematocrit 39%. Stool culture and Clostridium difficile polymerase chain reaction (PCR) testing were negative. The SARS - Cov - 2 PCR was negative. Abdominal Ultrasound revealed a small amount of fluid between bowel loops and the left colonic fissure. The small bowel loops in the hyper gastric region were edematous, with surrounding fatty infiltrates. A colon endoscopy revealed ulcerative colitis causing minor bleeding. The patient was diagnosed with lower gastrointestinal bleeding, thought to be due to ulcerative colitis. Conservative management was indicated at the time. After 24 hours of monitoring, the patient's clinical condition worsened, with a heart rate of 110 beats/min and blood pressure of 80/50 mmHg. Along with her unstable vital signs, the patient's abdomen was more distended and painful.

The patient's MSCT showed gaseous inflammation in the left renal fossa and retroperitoneal space and spread to the left iliac fossa.

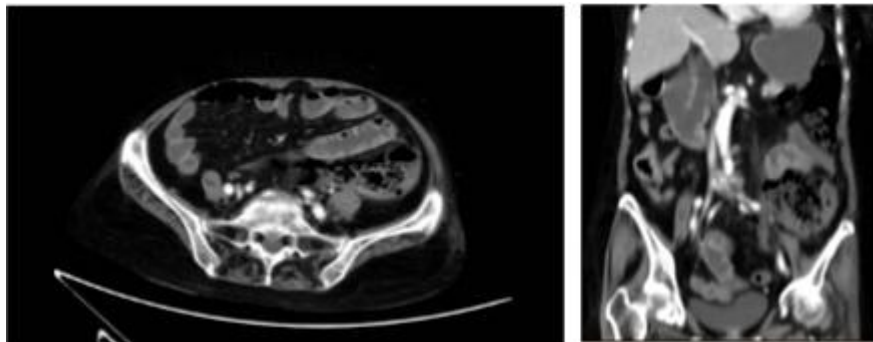


Figure 1: MSCT shows retroperitoneal gas collection in the left renal fossa spreading to the left iliac fossa

She was diagnosed with septic shock due to a left pararenal abscess and left - side colon necrosis. She was resuscitated and given broad - spectrum antibiotics before being rushed to the operating room for observation. The patient's abdomen was full of turbid fluid. 20 cm of the left and sigmoid colon was necrosis, and a perforation in the posterior colon was noted. Hartmann's procedure was

performed. The patient underwent left and sigmoid colectomy, abdominal lavage with drainage, endoscopic ureteroscopy to place left ureter JJ, and drainage of the left retroperitoneal space. The postoperative diagnosis was septic shock due to necrosis of the left and sigmoid colon. Pathology showed necrosis of the intestinal wall and mesentery.



Figure 2: Images illustrated the necrosis of the left and sigmoid colon

The patient was on mechanical ventilation, medical treatment, and intensive care at the intensive care unit. Laboratory data showed multi - organ failure with PLT 83 K/uL, WBC 2.33 K/uL, and eGFR 55 ml/min/1.73 m² skin. There was a metabolic acidosis with blood pH 7.313, HCO₃ 11.9 mmol/L, and pCO₂ 24 mmHg. Blood culture was negative. The peritoneal fluid culture showed Ertapenem - sensitive *E. coli*.

3. Discussion

Ischemic colitis is one of the most common forms of gastrointestinal ischemia and may present as occlusive or non - occlusive. It accounts for 1 in 1000 hospitalizations but is often overlooked because of the mild and transient inflammatory bowel disease. Intestinal ischemia has many forms but can be divided into gangrene and non - necrotizing.

Ischemic colitis of non - obstructive causes ischemic damage to the intestinal wall by a sudden decrease in blood flow supplied by small vessels, often secondary to low blood flow [7], [8]. Several risk factors are associated with ischemic colitis, such as atherosclerosis, arterial surgery, oral contraceptives, inherited blood clotting disorders, cocaine abuse, gastrointestinal infections caused by *Cytomegalovirus* (CMV), and *Escherichia coli* [2].

Based on the anatomical effect of ischemic colitis, the disorder is divided into left and right lesions. For left - sided lesions, the etiology is often related to decreased blood flow, coagulopathy, and prior arteriovenous surgery, whereas right - sided lesions are often associated with superior mesenteric artery occlusion. [18]. The present case is ischemic inflammation of the left and sigmoid colon; no surgical pathology or coagulopathy was recorded. The patient was on Clopidogrel. However, coagulation tests were regular on admission. Two quick tests for covid before and after surgery gave negative results. The patient was vaccinated against Covid and had no previous history of covid infection.

Ischemic colitis has a variety of clinical manifestations depending on the severity and spread of the disease. There are no specific symptoms. Most patients will present with abdominal cramps, loose stools, and a feeling of straining. Abdominal pain is usually mild at the site of the ischemic bowel. Usually, the left lower quadrant and hypogastrium, with minimal red hematuria within 24 hours. The blood may be bright red or dark red—massive hemolysis with hemodynamic compromise or the need for blood transfusion. Patients rarely have a fever and will usually not have leukocytosis. In cases of severe intestinal ischemia causing transmural infarction and necrosis, abdominal wall

resistance may be noted on abdominal examination and is often accompanied by metabolic acidosis and shock [21].

Infections of the retroperitoneal space caused by necrotic colitis have a mortality rate of about 20% [10]. There are many causes of colonic perforation, and the heterogeneous presentation makes a clinical diagnosis difficult. Two non-specific clinical signs associated with retroperitoneal perforation are subcutaneous pneumothorax with perineal gas and psoas muscle abscess [19]. The image in the case report shows gas - producing inflammation in the left renal fossa, spreading along the left retroperitoneum to the left pelvis; the condition of the left colon wall is challenging to assess. The image of multiple air masses in the left retroperitoneal space suggests a gas - producing infection and a simple colonic perforation due to a transmural infarction. In the presence of fasciitis, there is a rapid spread of disease and tissue gas, and the source of infection in such cases is aerobic and anaerobic [17].

Patients with suspected ischemic colitis should have stool cultures of *Salmonella*, *Shigella*, *Campylobacter*, and *Escherichia coli* [20]. The images that can be seen in non-necrotic ischemic colitis are intestinal wall thickening, thumb impressions, per colon fat infiltration, with or without peritoneal fluid. Computed tomography may suggest a vascular etiology; in the case of complete obstruction, the intestinal wall will be thin and non-enhanced, with dilatation of the lumen, possibly with thrombosis in the mesenteric vessels. However, it is not always possible to examine the condition of the bowel wall and find the cause. Continuous examination, monitoring of vital signs, and repeated biochemical and imaging studies are necessary. Emergency laparotomy was instituted when clinically suspected intestinal infarction in a patient unresponsive to medical treatment [3].

Approximately 20% of patients with ischemic colitis require surgery, and mortality in these patients can be as high as 60% [14]. The patient will be re-diagnosed at the operation, and the necrotic bowel will be resected. Some bowel segments may be ruddy during surgery because the serosa is not affected, despite severe mucosal ischemic bleeding. Cutting limits will be guided based on preoperative imaging and techniques such as Doppler ultrasound, intraoperative colonoscopy, pulse oximetry, and intravenous fluorescein [4], [16]. Often the resected bowel will be dissected and evaluated in the operating room to determine further bowel resection. The colostomy will be opened above the ischemic part; the lower end can be closed as a Hartmann pouch or brought together with the upper end in a double barrel fashion. Primary anastomosis in these patients is not usually applicable.

Most symptoms improve within 24 to 48 hours after surgery. However, the progression of the disease to sepsis in the background of many underlying conditions will be a significant factor in postoperative mortality in this patient.

4. Conclusion

Multiple causes, diverse clinical and laboratory manifestations, and unpredictable disease course are the

features of ischemic colitis. Clinical examination and a repeat of laboratory and imaging studies are necessary. Intestinal perfusion and vascular causes are not always evaluable on CT. The image of gastritis in the retroperitoneal space around the renal fossa may be caused by ischemic colitis, causing transmural infarction and bowel necrosis. The decision to have a laparotomy is based on many factors, of which the patient's condition is the most important. Intestinal specimens should be dissected in the operating room to determine the extent of infarct colectomy.

Availability of data and materials

The data sets generated and analyzed during the current study are available from the corresponding author on reasonable request.

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Ethics approval and consent to participate

The study protocol and data collection were approved by the Ethics Committee in Biomedical Research at the Binh Dan Hospital. Written patient informed consent was obtained for study participation.

Consent

Written informed consent for publication of their clinical details and/or clinical images was obtained from the patient.

Declaration of competing interest

The authors have no conflicts of interest to disclose.

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