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CASE STUDY: PERFORATED CAECAL DIVERTICULITIS

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ABSTRACT
Caecal Diverticulitis with Perforation is a condition characterized by the inflammation and potential rupture of diverticula, which are small pouches that form in the wall of the caecum, the initial section of the large intestine. This rupture can lead to serious complications such as infection and peritonitis, necessitating prompt medical attention and often surgical intervention. Treatment typically involves segmental resection of the affected colon and diversion with a proximal end colostomy or a Hartmann's procedure (HP). The incidence of this condition ranges from 0.04% to 2.1%. A 45-year-old male was admitted with complaints of abdominal pain, vomiting, and fever persisting for three days. His medical history includes Type II Diabetes Mellitus (T2DM), Systemic Hypertension (HTN), and Dyslipidemia (DLP), all of which are currently being treated.

KEY WORDS: Caecal Diverticulitis, Hemicolectomy, Hinchey's Classification.

INTRODUCTION
Diverticula are small outpouchings that typically form in the walls of the large intestine, including the caecum. They arise in areas of relative weakness where the vasa recta penetrate the bowel wall. Increased intraluminal pressure or trauma from food particles can erode the wall, causing a localized micro perforation that is usually contained by adjacent fat. These are known as pulsion-type pseudodiverticula [1].

Pseudodiverticula often affect the distal and sigmoid colon because they do not involve the muscular layer. In contrast, right-sided cecal diverticula are considered congenital, forming in the sixth week of gestation and involving all three layers of the colon, making them true diverticula. The terms "diverticulosis" and "diverticular disease" refer to the presence of uninflamed diverticula [2].

Diverticulosis of the colon is common in Western societies. Although the exact prevalence is unknown, one study reported a prevalence of 27%, increasing with age. Some studies suggest that the prevalence may be as high as 60% in patients over 80 years old, with no sex predilection. Most patients with diverticulosis remain asymptomatic, with approximately 80% to 85% experiencing clinically quiescent disease [3].

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Acute diverticulitis is a painful condition resulting from sudden inflammation of one or more diverticula in the bowel wall. Right-sided acute diverticulitis, such as caecal diverticulitis, is an uncommon diagnosis that can easily be mistaken for acute appendicitis due to similar clinical presentations. Perforated caecal diverticulitis, a rare complication, requires different management than acute appendicitis. Therefore, definitive diagnosis through imaging is crucial for optimal management [4].

In 1978, Hinchey published a classification for acute diverticulitis, distinguishing four stages of perforated disease. In 1997, Sher introduced the first modification, differentiating between pericolic abscesses (stage I), distant abscesses amenable to percutaneous drainage (stage IIa), complex abscesses associated with a possible fistula (stage IIb), purulent peritonitis (presence of pus in the abdominal cavity) in Stage III, and feculent peritonitis (intestinal perforation allowing feces into the abdominal cavity) in Stage IV [5].

Hinchey classification	**Modified Hinchey classification**
I. Pericolic abscess or phlegmon	I. Pericolicabsces
II. Pelvic, intraabdominal, or retroperitoneal abscess	IIa. Distant abscess amendable to percutaneous drainage IIb. Complex abscess associated with fistula
III. Generalized purulent peritonitis	III. Generalized purulent peritonitis
IV. Generalized fecal peritonitis	IV. Fecal peritonitis

Clinical Presentation and Diagnosis

Clinical presentations of caecal diverticulitis perforation often mimic acute appendicitis, manifesting with right iliac fossa pain and tenderness, low-grade fever, nausea, vomiting, and leukocytosis [6].

Accurate diagnosis is crucial, as the primary treatment for right-colonic diverticulitis is typically medical rather than surgical. Historically, contrast enema was the preferred diagnostic procedure for right colonic diverticula [7]. Although accurate, this method is limited to asymptomatic patients due to the risk of perforation during an acute disease flare. Currently, CT scans, ultrasound (US), and magnetic resonance (MR) imaging are effective modalities for preoperative differentiation of right-sided diverticulitis from other intra-abdominal pathologies [8].

The treatment of right-sided diverticula varies based on the severity of presentation and the diagnostic modality used[9]. Asymptomatic diverticula incidentally found on imaging do not require intervention. Diverticula presenting as a GI bleed are initially managed conservatively with hemodynamic support, as 75% of episodes are self-limited. If bleeding persists, endoscopic intervention is recommended. In cases where endoscopic management fails, a right hemicolectomy may be necessary [10].

Patients with recurrent GI bleeding from right colon diverticula, requiring multiple transfusions or hospitalizations, may need an elective right hemicolectomy for definitive treatment [11].

CASE REPORT

A 45-year-old male patient was admitted to the General Surgery department with complaints of abdominal pain, vomiting, and fever for the past three days, along with a history of loose stools. He had a known history of Type II Diabetes Mellitus, Systemic Hypertension, and Dyslipidemia for the past 5-10 years and was on treatment for these conditions[12].

The patient was conscious, oriented, and febrile. On examination, his chest was clear, he could move all limbs, and his gastrointestinal (GI) system was distended with tenderness. At the time of admission, his vital signs were normal. Laboratory reports showed elevated parameters, including WBC (13,280 cells/cumm), Polymorphs (86.5%), ESR (63 mm/hr), FBS (306 mg/dL), Urea (Day 1: 83 mg/dL, Day 2: 76 mg/dL, Day 3: 53 mg/dL, Day 5: 38 mg/dL), Creatinine (Day 1: 1.4 mg/dL, Day 2: 1.2 mg/dL, Day 3: 0.8 mg/dL, Day 5: 0.6 mg/dL), Total bilirubin (2.50 mg/dL), and CRP (563.2 mg/L). A decreased parameter of Lymphocytes (9.2%) was also observed [13].

An ultrasound (USG) of the abdomen and pelvis revealed significant inflammatory changes in the right iliac fossa (RIF) with caecal and ileal wall thickening and a mass-like hyperechoic mesentery. A blind-ending structure with apposed lumen and wall thickening was noted, arising just superior to the ileocecal (IC) junction, suggesting diverticulitis. The appendix could not be separately visualized. There was a large irregular collection with air foci along the right paracolic gutter and RIF, as described. The distal ileum and a few large bowel loops showed sluggish peristalsis, possibly indicating ileus. The possibilities of appendicitis/diverticulitis with rupture and abscess formation were considered. A contrast-enhanced CT (CECT) scan of the abdomen was suggested for further evaluation. Additionally, Grade I fatty liver and a left renal calculus were observed [14].

DISCUSSION

Diverticulosis is a condition characterized by the development of multiple sac-like protrusions (diverticula) along the gastrointestinal tract. While diverticula can form at weak points in the walls of either the small or large intestines, they most commonly occur in the large intestine, particularly the sigmoid colon. Most individuals with diverticulosis are asymptomatic. However, diverticular disease occurs when diverticulosis becomes symptomatic, manifesting as diverticular bleeding, diverticulitis (acute or chronic inflammation that may be complicated by abscess formation, fistula formation, bowel obstruction, or perforation), or associated segmental colitis (inflammation in segments of the colon mucosa between diverticula).

A case report by Caleb Tsetse, Shazia Rahat Chaudhry, Feraas Jabi, and Jennifer Nicole Taylor presented a 43-year-old male with Hinchey stage 1 acute cecal diverticulitis. The patient arrived at the emergency room with a three-day history of severe right lower quadrant

abdominal pain, lack of appetite, fever, and nausea (but no vomiting). Physical examination revealed rebound tenderness in the right lower quadrant, and laboratory tests showed a WBC count of 19,800 cells/cumm with neutrophilia. Other hematology and biochemical parameters were unremarkable. Emergency CT scans revealed a normal appendix but multiple right-sided colonic diverticula with adjacent inflammatory fat stranding and locules of free gas, consistent with isolated Hinchey stage 1 acute cecal diverticulitis. The patient was successfully treated with intravenous antibiotics and rehydration, with resolution of symptoms, and scheduled for a follow-up colonoscopy in six weeks.

Another case report by Kesici Ugur et al described a 54-year-old male who underwent diverticulectomy due to a cecal diverticulum perforation that developed early postoperatively following an appendectomy. The patient was admitted to the hospital with increasing abdominal pain and swelling after the appendectomy. The initial surgery report indicated an appendectomy with a noted cecal diverticulum. Upon admission, the patient exhibited distension, extensive sensitivity, and rebound tenderness, with intra-abdominal drainage revealing bilious fluid. Examination findings included a body temperature of 38.6ºC, a leukocyte count of 14,680, and a CRP level of 263.2 mg/L. Laparoscopic exploration revealed severely dilated and edematous intestinal loops and extensive bilious fluid in the abdominal cavity. Due to the narrow operation area, a laparotomy was performed, revealing a perforated diverticulum in the cecum approximately 3-4 cm in size. The colonic wall at the base of the diverticulum was neither edematous nor inflamed. The diverticulectomy was performed using a linear stapler. Postoperative follow-up indicated no complications other than seroma and fat necrosis, and the patient was discharged on the 10th postoperative day. Histopathological evaluation reported diverticulitis measuring 5x5.5 cm.

CONCLUSION

Caecal diverticulitis with perforation presents a significant clinical challenge, often necessitating prompt surgical intervention to prevent complications such as peritonitis and sepsis. Management strategies typically involve a combination of antibiotic therapy, bowel rest, and surgical resection of the affected segment. Timely diagnosis and intervention are crucial to prevent further complications and reduce morbidity and mortality rates associated with this condition. Additionally, close monitoring for potential complications such as abscess formation and fistulae is essential during both the acute phase and follow-up care. A multidisciplinary approach and vigilant management are paramount in achieving favorable outcomes for patients with caecal diverticulitis and perforation.

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