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Stercoral perforation of a cecal diverticulum: A rare presentation

Natalie Quarmby, Janaka Balasooriya

ABSTRACT

Introduction: Right-sided diverticular disease, including cecal diverticulum, is a relatively uncommon occurrence when compared to left-sided diverticular disease, particularly in Western countries. Even more rare than this is the perforation of these diverticulum due to stercoral colitis.

Case Report: We report the case of an 83-year-old man who presented to the Emergency Department with a relatively brief history of periumbilical and right lower quadrant pain, associated with nausea and low-grade fevers, and a computed tomography (CT) scan demonstrating perforation of a large cecal diverticulum requiring acute surgical management.

Conclusion: Perforation of a cecal diverticulum is rare, particularly when due to stercoral colitis, and can be often misdiagnosed. It should be considered in the context of the systemically unwell older patient with a history of constipation.

Keywords: Cecal diverticulum, Right-sided diverticular disease, Stercoral perforation

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INTRODUCTION

Right-sided diverticular disease, including cecal diverticulum, is a relatively uncommon occurrence in Western cultures when compared to left-sided diverticular disease [1–3]. Even more rare than this is the perforation of these diverticulum due to stercoral colitis [4–6]. We report the case of an 83-year-old man who presented to the Emergency Department with a relatively brief history of periumbilical and right lower quadrant pain, associated with nausea and low-grade fevers, with a computer tomography (CT) scan demonstrating perforation of a large cecal diverticulum requiring acute surgical management, with positive patient outcomes.

CASE REPORT

An 83-year-old male with a known background history of asthma, chronic obstructive airways disease (COAD), gastroesophageal reflux disease (GORD), gout and osteoarthritis, was brought in by ambulance to the Emergency Department with a 30-hour history of worsening abdominal pain and bloating, associated with nausea and retching. He reported that his bowels were opening as "normal," however there was noted to have been a 2-week history of functional decline. On examination he was found to be tachycardic with a heart rate of 106 beats per minute, and febrile to 37.8°C; however, the rest of his observations were noted to be within normal limits. His abdomen was distended and tender in both the periumbilical region and the right lower quadrant with guarding and percussion tenderness. Chest and abdominal X-rays were performed which were normal in

appearance. Blood tests demonstrated a leukocytosis, an elevated C-reactive protein and a mild acute kidney injury (AKI). The remainder of the bloods were unremarkable. Computed tomography scan was then performed which demonstrated extensive inflammatory changes centered over the proximal ascending colon, with bowel wall thickening adjacent to the ileocecal valve, as well as within the caecum and ascending colon. There was noted to be a focal outpouching on the medial aspect of the involved ascending colon, likely a large diverticulum, which measured 41 × 33 mm and contained feculent material (Figure 1). There was extensive surrounding fat stranding and mesenteric congestion/edema. Multiple gas locules were present to suggest perforation (Figures 2 and 3). There was free fluid within the right iliac fossa and pelvis. The remaining small bowel, large bowel, and the appendix were normal.

The patient was taken to the operating theater on the day of admission where an exploratory laparotomy was undertaken through a midline laparotomy incision. The findings were a perforation of a wide mouthed large cecal diverticulum due to fecal impaction causing necrosis (Figure 4). There was localized fecal contamination and pus in the right iliac fossa and the pelvis. Another adjacent large diverticulum with evidence of fecal impaction was also noted, with features of wall necrosis without perforation (Figure 5). The small bowel was noted to be normal, with no obvious distal colonic obstruction. The right hemi-colon was mobilized, with ligation and division of the ileocolic vessels and a limited right hemicolectomy with a stapled ileo-ascending colon anastomosis between proximal margin, 8cm from the ileocolic junction and the mid-ascending colon was performed. A 19 French Blake drain was placed into the pelvis prior to closure.

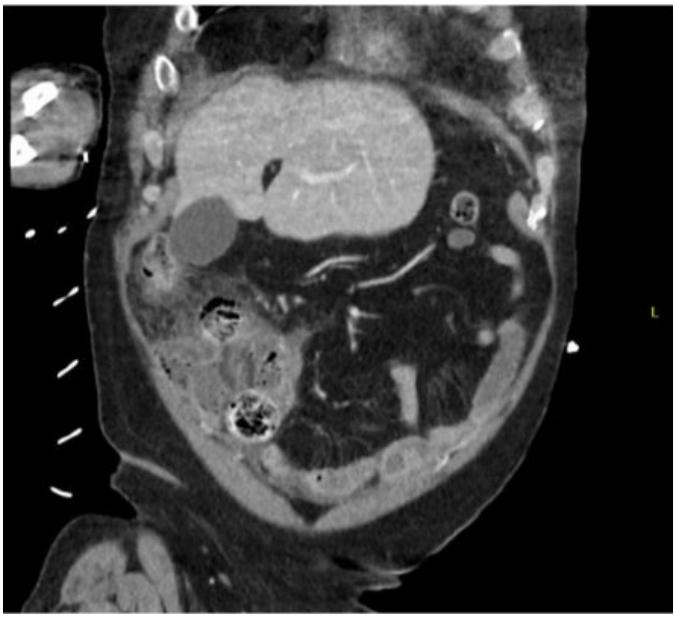

Figure 1: Coronal CT image demonstrating cecal diverticulum with feculent content and inflammation of the surrounding fat.

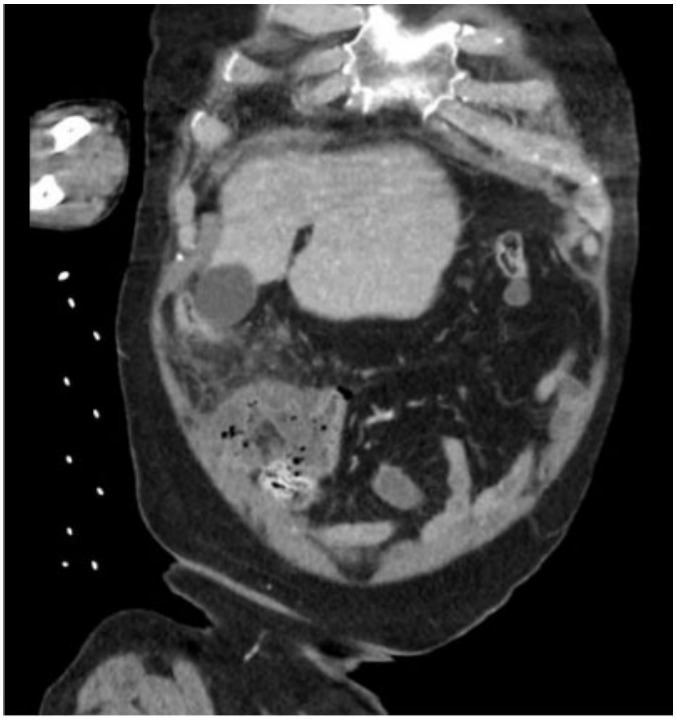

Figure 2: Coronal CT image demonstrating extraluminal gas locules adjacent to the cecal pathology.

Figure 3: Axial CT image demonstrating extraluminal gas locules adjacent to the cecal diverticulum containing feculent material.

The patient was admitted to the intensive care unit (ICU) for 48-hours post-operatively with an inotrope requirement that gradually improved. His recovery was complicated by a post-operative ileus which resolved on post-operative day 5, and he was managed with total parenteral nutrition (TPN) until his diet could be upgraded from clear fluids on post-operative day 6. Intra-abdominal swab grew *Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella pneumoniae*, and *Klebsiella*

Figure 4: Intraoperative photograph of perforated wide-mouthed diverticulum with features of necrosis.

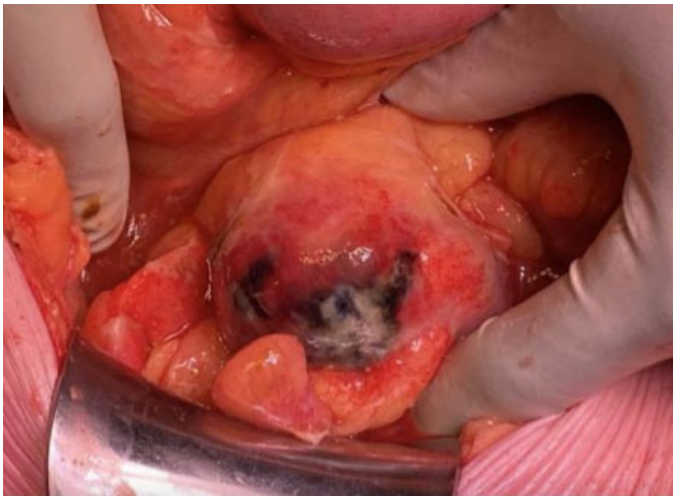

Figure 5: Intraoperative photograph of wide-mouthed diverticulum with features of necrosis, without perforation.

oxytoca, which was treated with antibiotics for seven days total. He was later discharged to an inpatient rehabilitation unit.

Surgical pathology demonstrated diverticular disease with perforated diverticulum and peritonitis with no evidence of malignancy. The diverticulum associated with perforation demonstrated mucosal/mural ischemia and transmural inflammation. The appendix and sampled lymph node were unremarkable.

DISCUSSION

Diverticula are outpouchings of bowel wall which may be congenital or may form in areas of weakness, usually due to increased intraluminal pressure or trauma where the vasa recta penetrate the bowel wall [7]. True diverticula involve all three layers of bowel wall, whereas pseudodiverticula typically do not involve the muscular layer and are more prone to inflammation and perforation, as seen with sigmoid diverticulitis [7]. While left-sided colonic diverticular disease is common in Western countries and is largely thought to be related to diet, right-sided disease is considered rare [1–3]. They represent approximately 3.6% of all colonic diverticula and are more common in Asian populations [8, 9]. The majority of cecal diverticula tend to arise from the anterior aspect of the caecum, and right-sided diverticulitis typically affects a younger population with the average age being 43.6 years and a male to female ratio of 3:2—most commonly being mistaken for acute appendicitis on presentation [9].

Stercoral colitis with perforation of the colon is uncommon (3.2% of all colonic perforations) and can be life-threatening, with delayed diagnosis often resulting in complications, including death [4, 5, 10]. Diverticular diseases and stercoral colitis share similar pathophysiology and may coexist, and it can be difficult to decide the cause of perforation in patients with both diverticulosis and stercoral colitis [4, 10]. Long-standing constipation is associated with the formation of fecalomas, such as that which occur in the aging population, which exerts persistent pressure directly on the bowel wall, leading to ischemic necrosis and subsequent stercoral perforation [4–6, 10]. The most commonly affected areas are the sigmoid and descending colon, as well as the rectum (up to 90% of cases). Stercoral perforation of the cecum is rare, accounting for only 5.9% of all stercoral perforation cases, with few case reports in the literature—particularly due to the more liquid nature of the stool passing through this area [4, 10–12].

Clinical presentation of cecal diverticulitis or perforation of a cecal diverticulum most commonly includes right lower quadrant pain (although can include more generalized peritonitis), low grade fevers, nausea, and vomiting [3, 10]. There may be the presence of a palpable abdominal mass where fecalomas are present [10]. Computed tomography is the imaging modality of choice in diagnosis of right-sided colonic diverticular disease with 98% sensitivity and specificity, particularly in differentiating the presentation from acute appendicitis [2, 7, 9]. Additionally, findings on CT scans which may indicate a stercoral perforation include the presence of free gas (including extraluminal gas locules), the presence of fecal impaction or fecaloma, thickening of the involved colonic wall, and surrounding fat-stranding [5, 10].

In cases of severe cecal diverticulitis or perforation of a cecal diverticulum from causes such as stercoral colitis, surgical treatment methods like the ileocecal

resection or right hemicolectomy may be required [2, 6, 9]. Where the underlying pathology is unclear, including when malignancy cannot be excluded, or when there is extensive inflammation, a right hemicolectomy is the suggested approach [8, 9]. Peritoneal fluid culture in stercoral perforation is typically positive for gram-negative and anaerobic organisms, so patients should be treated with antibiotics effective against these organisms, in addition to the definitive surgical intervention [10].

The intraoperative findings of stercoral perforation including of diverticulum comprise dilatation of the affected colon, presence of fecalomas or hard stool, edema of the bowel wall, and ulceration—typically on the antimesenteric border and peritonitis subsequent to the perforation [4, 10]. Histopathological findings are generally those of ischemic necrosis and general inflammatory changes [10]. In our case the fecalomas were confined to the large diverticula so there were no obvious colonic dilatation or ulcerations on the antimesenteric border noted. The appearance of the necrotic patches in the two wide mouthed large diverticula with the presence of firm stool favors stercoral perforation.

CONCLUSION

Cecal diverticular disease is rare in the Caucasian population, and it is often misdiagnosed on presentation as acute appendicitis; however, it can be readily distinguished on imaging such as CT scan. Perforation is rare, particularly when due to stercoral colitis, but should be considered in the context of the systemically unwell older patient with a history of constipation.

REFERENCES

1. Cristaudo A, Pillay P, Naidu S. Caecal diverticulitis: Presentation and management. Ann Med Surg (Lond) 2015;4(1):72–5.
2. Cole M, Ayantunde AA, Payne J. Caecal diverticulitis presenting as acute appendicitis: A case report. World J Emerg Surg 2009;4:29.
3. Sahoo R, Kunar BM, Padhi B, Samal D, Swain SS, Padhy RN. Perforated solitary cecal diverticulum: An etiological challenge at emergency. Journal of Acute Medicine 2016;6(2):49–51.
4. Murakami T, Katsura M, Le M, Kato T. Clinical features of sterocoral perforation of colon compared with perforated colon diverticulum: A single center experience. J Transl Sci 2020;7.
5. Chakravartty S, Chang A, Nunoo-Mensah J. A systematic review of sterocoral perforation. Colorectal Dis 2013;15(8):930–5.
6. Al-Balas H, Al-Balas M, Al-Wiswasy M. Idiopathic spontaneous cecal perforation: A rare pathology with high mortality. Ann Med Surg (Lond) 2020;60:518–21.
7. Tsetse C, Chaudhry SR, Jabi F, Taylor JN. Perforated cecal diverticulitis with CT diagnosis and medical management. Radiol Case Rep 2018;14(1):30–5.
8. Uhe I, Meyer J, Viviano M, et al. Caecal diverticulitis can be misdiagnosed as acute appendicitis: A systematic review of the literature. Colorectal Dis 2021;23(10):2515–26.
9. Mudatsakis N, Nikolaou M, Krithinakis K, Matalliotakis M, Politis N, Andreadakis E. Solitary cecal diverticulitis: An unusual cause of acute right iliac fossa pain—A case report and review of the literature. Case Rep Surg 2014;2014:131452.
10. Bhatt VR, Murukutla S, Dipoce J, et al. Perforation in a patient with stercoral colitis and diverticulosis: Who did it? J Community Hosp Intern Med Perspect 2014;4(1).
11. Velitchkov NG, Kjossev KT, Losanoff JE, Grigorov GI, Kavardjikova-Milanova VA. Stercoral perforation of the colon. Rozhl Chir 1995;74(3):145–6.
12. Lui RC, Herz B, Plantilla E, Davidson AL, Cunningham JN Jr. Sterocoral perforation of the colon: Report of a new location. Am J Gastroenterol 1988;83(4):457–9.

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Author Contributions

Natalie Quarmby – Conception of the work, Design of the work, Acquisition of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Janaka Balasooriya – Conception of the work, Design of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

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Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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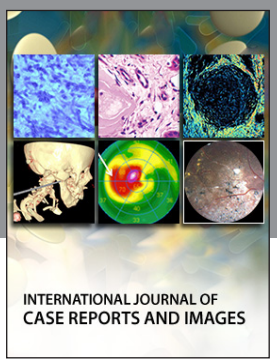

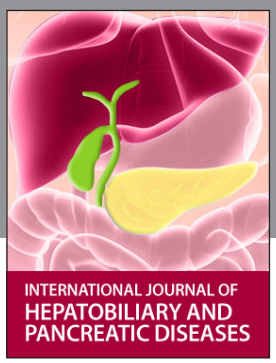

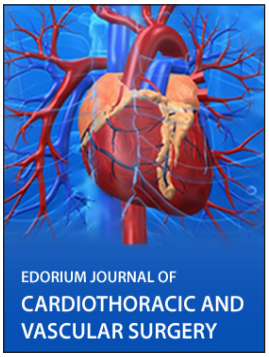

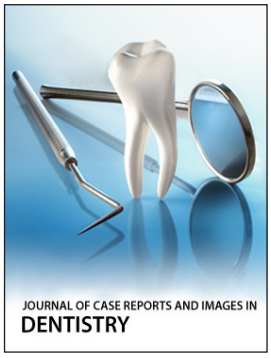

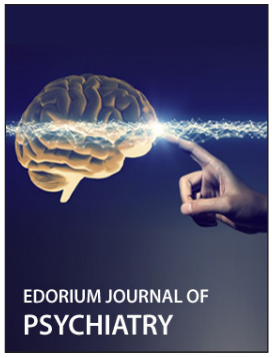

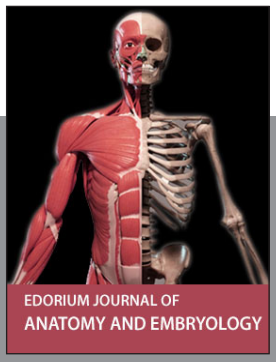

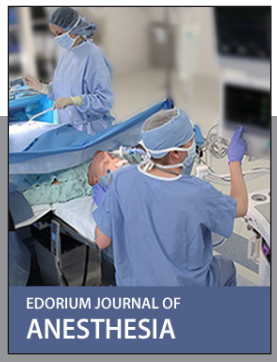

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