



Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

An unusual case of giant ileal diverticulum—A case report

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ARTICLE INFO

Article history:

Received 29 July 2017

Received in revised form 14 October 2017

Accepted 22 October 2017

Available online 6 November 2017

Keywords:

Enteroscopy

Gastrointestinal bleeding

Small bowel diverticula

Case report

ABSTRACT

Small bowel diverticulosis is rare with an incidence of 1–2% in the general population. It is an uncommon cause of gastrointestinal bleeding that ranges from obscure to overt bleeding. Large ileal diverticula are extremely rare and bleeding complications can result in high overall mortality.

A young gentleman presented with persistent per-rectal bleeding and drop in hemoglobin level. He was recently diagnosed with acute myeloid leukemia and was undergoing chemotherapy. A computed tomography scan of the abdomen and pelvis revealed a giant ileal diverticulum. In view of on-going bleeding, he underwent double balloon enteroscopy which revealed active bleeding from an ulcer within the giant ileal diverticulum and successful hemostasis was performed with hemostatic clips.

Small bowel diverticulosis though uncommon has to be considered during workup for gastrointestinal bleeding. Endoscopic treatment is a modern approach towards small bowel diverticular bleeding that is effective and less invasive.

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1. Introduction

Distal small bowel diverticulosis is an unusual finding and most are located in the duodenum and jejunum. Large ileal diverticula are extremely rare [1]. Small bowel diverticula may measure from few millimeters up to more than 3 cm. Bleeding complications from small intestinal diverticula are rare and affect only 5%–33% of cases, however, overall mortality from bleeding is high (14%–80%) [2,3].

Meckel's diverticulum arises from the incomplete involution of the omphalomesenteric duct during fetal development. In comparison, other small bowel diverticula are acquired. Bleeding in Meckel's diverticulum is commonly caused by the presence of ectopic gastric or pancreatic mucosa contained within it. In acquired small bowel diverticula, bleeding is usually a consequence of ulceration from diverticulitis.

In the past, radiological examination followed by surgical resection of the involved small bowel was the only recommended approach to treat this rare phenomenon. However, advancements in endoscopic techniques in recent years have changed the approach towards management of small bowel diverticular bleeding.

This case report highlights an unusual case of gastrointestinal bleeding from a giant ileal diverticulum and demonstrates the use of endoscopic intervention for successful hemostasis. This case report has been reported in line with the SCARE criteria [11].

2. Case presentation

A 44-year-old man, who was recently diagnosed with acute myeloid leukemia and undergoing high dose intermittent cytarabine and methotrexate, presented with two episodes of hematochezia and non-specific central abdominal pain. He was also in neutropenic sepsis complicated by *Klebsiella pneumoniae* bacteremia requiring antibiotics.

On clinical examination, he was hemodynamically stable. Abdominal examination revealed minimal central abdominal tenderness on deep palpation with no evidence of peritonitis. No palpable mass was found in the abdomen. Digital rectal examination revealed altered blood. Initial laboratory tests were as follows: hemoglobin, 6.9 g/dL (14.0–18.0); white blood cells, $2.29 \times 10^9/L$ (4.0–10.0); platelets, $17 \times 10^9/L$ (140–440); absolute neutrophil count, $1.91 \times 10^9/L$ (2.0–7.5). Coagulation profile was normal.

A computed tomography (CT) scan of the abdomen and pelvis demonstrated a focal outpouching of the small bowel intestinal wall in the distal ileum, suggestive of a diverticulum. The ileal diverticulum measured 4.5 cm \times 4.7 cm and contained high attenuation material suggestive of active hemorrhage (Fig. 1).

Despite transfusions of platelets, there was persistent bleeding with resultant drop in hemoglobin.

Surgery was also deemed risky at this point in time. The patient underwent emergency double balloon enteroscopy by Dr Khor, a gastroenterologist, which revealed a 2 cm ulcer at the edge of a giant ileal diverticulum, located about 45 cm from the ileocecal valve (Fig. 2). There were stigmata of recent hemorrhage from the ulcer

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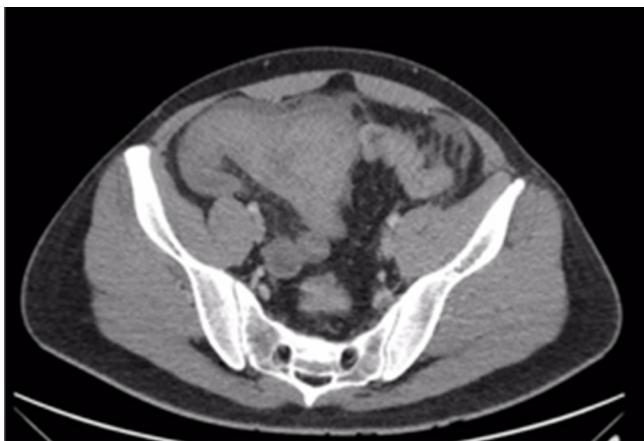


Fig. 1. The ileal diverticulum measured 4.5 cm × 4.7 cm and contained high attenuation material suggestive of active hemorrhage.

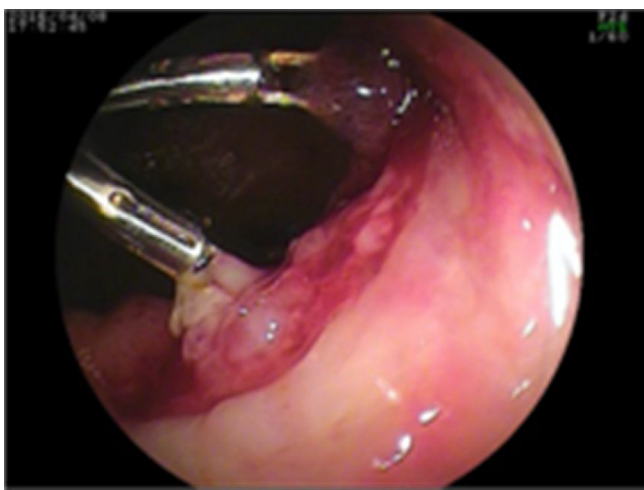


Fig. 2. The patient underwent emergency double balloon enteroscopy which revealed a 2 cm ulcer at the edge of a giant ileal diverticulum, located about 45 cm from the ileocecal valve.

and successful hemostasis was achieved using Instinct Endoscopic Hemoclip (Cook Medical) and EndoClot (Fleetwood) (Figs. 2 and 3).

Post-endoscopy, patient remained well with no subsequent drop in hemoglobin level or further per-rectal bleeding. He made an uneventful recovery.

Biopsies from edge of the ulcer were taken and final histology showed acute inflammatory material with no evidence of blastic infiltrate, ectopic gastric or pancreatic mucosa. He has been followed up for a year with no further recurrence of bleeding in one year.

3. Discussion

Congenital diverticula are true diverticula that consist of all layers of the intestinal wall, including the muscular layer. This is in contrast to false diverticula, which occur when only the mucous membrane and submucosa protrude through a weak point in the intestinal wall. Non-Meckel's small bowel diverticulosis is uncommon and is usually discovered incidentally during endoscopic or radiographic evaluation.

Diverticulosis is found less frequently in the jejunum and ileum, occurring in 0.3% to 1.3% of patients and of small bowel diverticula that occur distal to the duodenum, 80% are in the jejunum [4]. Giant ileal diverticula which are non-Meckel's are extremely rare and

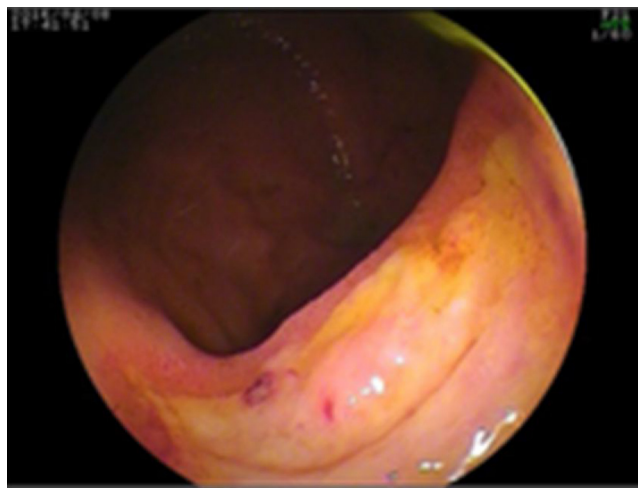


Fig. 3. Successful hemostasis was achieved using Instinct Endoscopic Hemoclip (Cook Medical) and EndoClot (Fleetwood).

there has been only one case report of a giant enterolith formation in ileal diverticulum following ileoplastic bladder augmentation.

Most duodenal diverticulum are asymptomatic. By contrast, up to 60% of non-Meckel's jejunoileal diverticula may result in symptoms such as hemorrhage, intestinal obstruction or abdominal pain secondary to recurrent diverticulitis [5]. Anemia has also often been reported and is commonly attributed to malabsorption due to non-synchronous peristaltic movement of the bowel, stasis of the intestinal content and bacterial overgrowth.

Hemorrhage and perforation are the consequences of progressive ulceration secondary to repeat episodes of diverticulitis. While perforation is the result of progressive ulceration, hemorrhage could be caused by other factors such as trauma, irritation or congenital arteriovenous malformations. Intestinal obstruction can occur secondary to inflammatory stenosis from recurrent diverticulitis, volvulus, intussusception or enterolith impaction secondary to biliary stasis within the diverticula.

Diagnosis of small bowel diverticulosis is difficult and is often missed or delayed. Abdominal CT with oral contrast can reveal inflammatory changes around small bowel loops, however, in the non-distended small bowel, diverticula often are not clearly visible and it may be impossible to discriminate between diverticula and extra-intestinal air due to localized perforation and abscess formation [6]. Various other methods such as wireless capsule endoscopy can be used to diagnose small bowel diverticular bleeding.

It is non-invasive and has a diagnostic rate of 55% but the false negative rate remains high [7]. These methods are mainly used for occult bleeds and are not suitable for large bleeds as it may be difficult to visualize pathology.

Diverticular bleeding of the small bowel is rare and occurs primarily in adults aged more than 60 years of age [8]. In a multicenter retrospective study from the Taiwan Association for the Study of Small Intestinal Diseases (TASSID), non-Meckel's small bowel diverticular bleeding was seen in 8% of patients with obscure gastrointestinal bleeding who underwent double balloon enteroscopy [9].

In the Taiwanese study, initial hemostasis for small bowel diverticular bleeding was achieved with endoscopic therapy in 86% of patients but re-bleeding was common [9]. In our case, hemostasis was achieved and surgery was avoided which would have been extremely high risk in view of the immunocompromised state. There are however limited alternate treatment modalities. One of it is angiography with selective embolization to the affected segment of small bowel but this requires significant bleeding to occur [10].

Acquired small bowel diverticula are rarely associated with serious complications. Surgical management is reserved for when complications such as intestinal obstruction, perforation or refractory bleeding occurs.

4. Conclusion

Small bowel diverticulosis though uncommon has to be considered during workup for obscure gastrointestinal bleeding. Endoscopic treatment for small bowel diverticular bleeding is an alternative approach that is effective and less invasive than surgery and should be considered especially in high-risk patients.

Conflict of interest

All the authors declare that they have no conflict of interest.

Funding

This article received no funding.

Ethical approval

No ethics approval sought as this was a case report with no direct impact on patient outcome.

Consent

Informed consent was taken from patient and patient anonymity was preserved.

Author contribution

Concept design and preparation of manuscript: Dr Khor Jen Lock and Dr Chew Min Hoe.

Literature search: Dr Beatrice Koh.

Preparation of draft manuscript: Dr Beatrice Koh and Dr Chew Min Hoe.

Guarantor

Dr Chew Min Hoe.

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