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Giant diverticulum of the transverse colon mimicking gastrocolic fistula: A case report

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ABSTRACT

INTRODUCTION: Giant transverse colonic diverticula are a rare case of giant colonic diverticulum (GCD). Instead of being asymptomatic, bleeding, inflammation, and perforation may result in fistula formation and require surgery. This type of diverticulum is thought to be closely related to the gastrocolic fistula (GCF).

PRESENTATION OF CASE: We report a 26-year-old female presenting severe abdominal pain accompanied by nausea and vomiting and a history of constipation since childhood. The patient felt a mass around the epigastric region and extends to the right hypochondrium. Enema contrast examination showed a large diverticulum in the transverse colon. CT scan revealed a 21.4 × 8.4 cm structure with air-filled structures visible from the transverse colon filled with contrast material, suggesting a possible gastrocolic fistula. Resection was performed on the diverticulum and 20 cm in length of the transverse colon, followed by side-to-side anastomosis. Histopathological findings were type III GCD. The patient was discharged without complications 1 week later.

DISCUSSION: Giant diverticulum is characterized by a diverticulum with 4 cm or more in length. Our case was a diverticulum from the central portion of the transverse colon with 25 × 9 × 3 cm in length and type III GCD. Resection was performed on the diverticulum and 20 cm in length of the transverse colon, followed by side-to-side anastomosis.

CONCLUSION: Differentiating GCD and GCF with similar clinical course may necessitate multiple investigation before establishing the correct diagnosis. We suggest colectomy followed by side-to-side anastomosis is the best option of treatment for GCD.

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1. Introduction

Colonic diverticulum is a common digestive disease with an incidence of 5–50% [1]. One of the rare complications is giant colonic diverticula (GCD) in the transverse colon because it is often found in the sigmoid colon (90%) [1]. This disorder is often asymptomatic. However, bleeding, inflammation, and perforation may result in fistula formation and often require surgery [2]. The transverse colonic diverticulum is thought to be closely related to gastrocolic fistula (GCF). Clinical features and radiological findings often exhibit similar symptoms and signs [3]. This research work has been reported in line with the SCARE checklist [4].

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2. Presentation of case

A 26-year-old female admitted to hospital due to severe abdominal pain accompanied by nausea and vomiting. These complaints had been felt in the last 4 years. The patient felt an abdominal mass which varies in size. The patient had a history of constipation and meteorism since childhood. No history of anorexia, dysphagia, weight loss, and gastrointestinal blood loss were noted. Her vital signs were within normal limit. Abdominal findings showed a well-defined and mobile mass from the epigastrium to the left hypochondrium. Pain was found on palpation in the epigastric region, but there were no signs of peritonitis.

Laboratory test showed the following results: white blood cell count 9510/μL; red blood cell count $4.99 \times 10^6/\mu\text{L}$; hemoglobin level 11.3 g/dL; hematocrit 37.3%; platelet count $352 \times 10^3/\mu\text{L}$; aspartate aminotransferase 14 U/L; alanine aminotransferase 9 U/L; blood urea nitrogen 16.7 mg/dL; creatinine 0.63 mg/dL, sodium 145 mmol/L, potassium 3.97 mmol/L; chloride 109 mmol/L; total

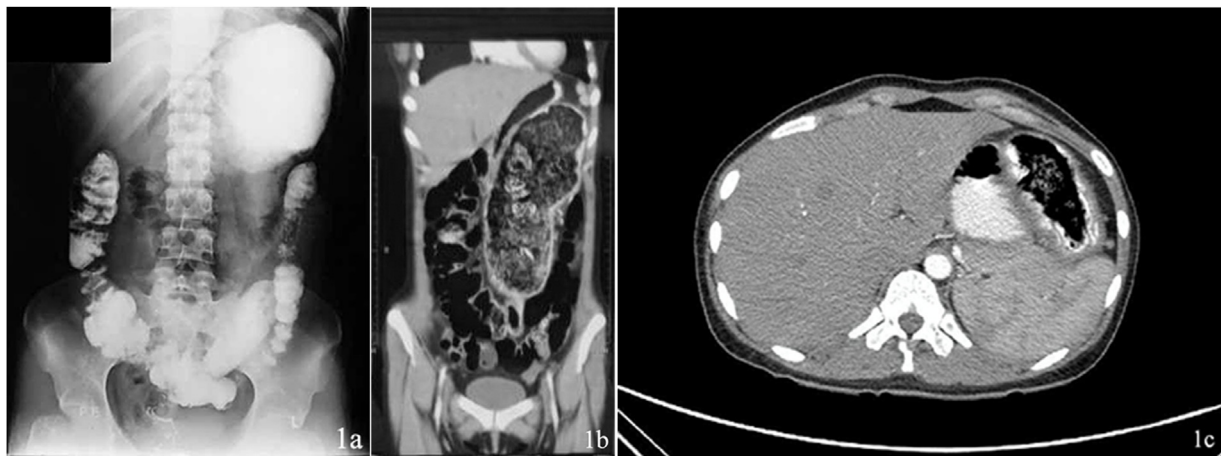


Fig. 1. (a) Contrast enema demonstrating a giant diverticulum of the transverse colon; (b) and (c) Abdominal CT-Scan revealing a giant diverticulum of the transverse colon and the filling of contrast material in the transverse colon mimicking a gastrocolic fistula.

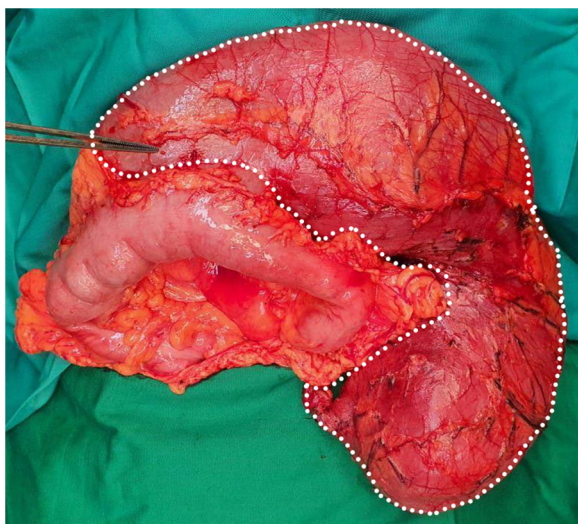


Fig. 2. Giant diverticulum of the transverse colon on laparotomy.

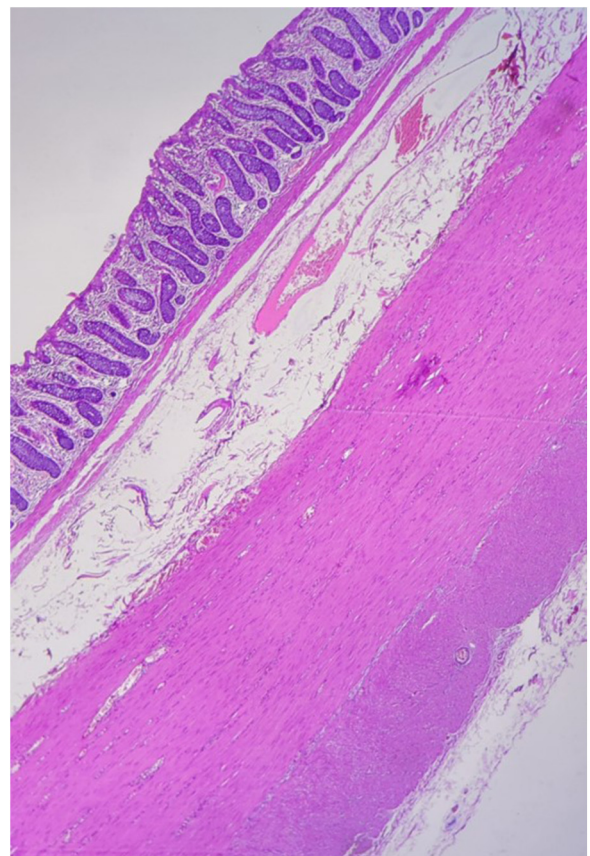


Fig. 3. Histopathological examination showing all four layers of the intestine suggesting a true giant diverticulum or type III GCD.

bilirubin 0.37 mg/dL; direct bilirubin 0.15 mg/dL; total protein 7.58 g/dL; and albumin 4.70 g/dL. Tumor markers, including CEA, Ca 19-9, Ca 125, and AFP, revealed no remarkable findings. A single, large diverticulum of the transverse colon was found by contrast enema (Fig. 1a). An abdominal computed tomography showed a 21.4 × 8.4-cm air-filled structure originating from the transverse colon that was filled with contrast material indicating the possibility of a fistulous tract between the stomach and transverse colon (Fig. 1b and c). However, due to COVID-19 pandemic, upper gastrointestinal (GI) endoscopy was not performed since this procedure carries a substantial risk of aerosol generation. Intraoperative findings were a giant diverticulum arising from the midportion of the transverse colon on the anti-mesenteric border with the size of 25 × 9 × 3 cm (Fig. 2). Resection of the giant diverticulum and 20-cm-long transverse colon was performed followed by primary side-to-side anastomosis of the transverse colon using a linear stapler. During laparotomy, inspection of the entire length of colon did not reveal any fistulous tract. Histopathological examination showed the presence of the entire lining of the intestine was consistent with type III GCD (Fig. 3).

The patient was discharged without complications 7 days after operation.

3. Discussion

Giant diverticulum is characterized by a diverticulum measuring 4 cm or more [1]. Some cases were found to be more than 25 cm and most of them were found in the sigmoid colon (90%) [1]. Originally this case was defined as a solitary air cyst; however, currently, the term giant colonic diverticulum (GCD) is preferred [2]. Unlike most of the left colonic diverticulum, GCD commonly originates from the anti-mesenteric border of the colon [5].

The pathogenesis of GCD is still being debated. There is a hypothesis that the neck of the diverticulum is occluded so

that gas-producing bacteria become trapped, causing diverticular enlargement. Another theory is the progressive dilatation of colonic inflammation and diverticular microperforation, leading to pseudocyst formation [5]. GCD is pathologically divided into three types, namely: Type 1 (22%), a pseudodiverticulum consisting of granulation and fibrous tissue, accompanied by residues of the mucous lining and chronic inflammatory cells; type II (66%), is an inflammatory diverticulum that results from a local perforation and is connected to the abscess cavity; and type III (12%), the true diverticulum that comprises of the entire intestinal lining and is a continuation of the intestinal lumen [6]. Only a few cases of transverse colonic diverticulum were reported. Study by Yoon et al. [7], described a case of a giant transverse colonic diverticulum accompanied by a right inguinal hernia and Olakowski et al., reported a type III giant transverse colonic diverticulum [8].

Patients might exhibit non-specific symptoms, including nausea and vomiting, diarrhea, abdominal pain, abdominal masses, abdominal distension, rectal bleeding, and constipation. Moreover, abdominal pain was the common symptom followed by constipation and vomiting [2]. Recommended investigations include plain abdominal radiograph, endoscopy, contrast enema, CT-scan, or MRI. Symptoms acquired from childhood may be associated with congenital etiology of an intestinal duplication [9].

There were a few reported cases associated with GCF and colonic diverticulum. Chronic abdominal pain, diarrhea, frequent nausea and vomiting are also symptoms of GCF patients. The classical feature of GCF is feculent vomiting due to the retrograde flow of large bowel content into the stomach [10]. The most common physical findings in GCF are abdominal tenderness and distention, and palpable masses that may also be reported in GCD patients. In a study by Okada et al., the patient was found to have a diverticulum located near the fistula, accompanied by evidence of *H. pylori* infection [3]. One of the causes of fistula is diverticulitis-related colonic diverticulum perforation with the diverticulum near the fistula was found to firmly adhere to the fistula wall [10]. In our case, the patient did not display the well-known triad of feculent vomiting, diarrhea, and weight loss found in GCF. Perforation, bowel obstruction, abscess formation, bleeding, fistulation, and stricture are the commonly reported complications [2].

Surgical procedures include diverticulectomy or partial colectomy with a diverticulum in non-complicating case. Two-stage colonic resection with Hartmann procedure is an option in more complicating cases [8]. Combination of diverticulectomy and colectomy should be the option of treatment for GCD to reduce the risk of colonic closure breakdown due to the wide neck of the diverticulum [11].

4. Conclusion

Differentiating giant colonic diverticulum (GCD) and gastrocolic fistula (GCF) with similar clinical course may necessitate multiple investigation before establishing the correct diagnosis. We suggest colectomy followed by side-to-side anastomosis is the best option of treatment for GCD.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

Sources of funding

The authors declare that this study had no funding source.

Ethical approval

The informed consent form was declared that patient data or samples will be used for educational or research purposes. Our institutional review board also do not provide an ethical approval in the form of case report.

Consent

Written informed consent was obtained from the patient's parent for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Imam Sofii conceived the study. Imam Sofii, Gunadi, and Amal Fathullah Pua drafted the manuscript. Imam Sofii and Gunadi revised the manuscript for intellectual contents. Imam Sofii, Gunadi, and Amal Fathullah Pua Upa facilitated all important tasks in the study.

Registration of research studies

The manuscript is a case report, not considered a formal research involving participants.

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Imam Sofii.

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