CASE REPORT

Coexistent widespread small intestinal and colonic diverticular disease

Gerald P Duff,¹ Kah Hoong Chang,¹ Colin Peirce,¹ J Calvin Coffey^{1,2}

¹Department of Surgery, Limerick University Hospital, Limerick, Ireland
²Centre for Interventions in Infection, Inflammation and Immunity, Graduate Entry Medical School, University of Limerick, Limerick, Ireland

Correspondence to
 Dr Kah Hoong Chang,
 kahhoong_chang@yahoo.co.uk

SUMMARY

A 73-year-old woman with a history of multiple abdominal surgery and sigmoid diverticulosis presented with severe constipation refractory to conservative management. As a result, she had developed food aversion and cachexia. Patient opted for laparotomy and defunctioning ileostomy to improve quality of life. At laparotomy, extensive diverticulae involving the small and large bowels were identified. Defunctioning ileostomy was performed. The patient regained her quality of life and reinstituted normal diet. Histology revealed marked serosal fibrosis and pulsion diverticulae.

BACKGROUND

This is a rare case of total bowel diverticulosis manifested with severe constipation which was symptomatically relieved by a defunctioning ileostomy.

CASE PRESENTATION

This case involves a 73-year-old woman with a longstanding history of constipation manifesting with intermittent colicky abdominal pain, excessive flatus, weight loss and small amount of loose, watery stools. At admission her bowels opened every 3–4 days only and she was classified as suffering with functional constipation (C3 as per the Rome III diagnostic criteria). She had been treated most recently with laxatives, glycerine suppositories, mannitol and prucalopride succinate with little or no symptomatic improvement. Because of her symptoms she had developed food aversion with avoidance and was consequently severely cachectic.

Her medical history revealed that she had been diagnosed with severe sigmoid diverticulosis at age 34 when she underwent a laparotomy for perforated sigmoid diverticulum. Her recovery following this was complicated by enterocutaneous fistula formation. She subsequently developed two episodes of adhesional subacute small bowel obstruction which were successfully treated conservatively. In recent years, she developed severe rheumatoid arthritis leading to considerable functional limitations. She had required intermittent steroids for arthritic flares and was on maintenance methotrexate. Her recent surgical history was also significant including open cholecystectomy, emergent laparotomy for adhesional subacute small bowel obstruction secondary to subphrenic abscess of unknown aetiology. This was followed by incisional hernia formation and mesh repair.

INVESTIGATIONS

The patient had been extensively investigated with an oesophagogastroduodenoscopy, colonoscopy and abdominal CT, none of which demonstrated a mechanical obstruction (figure 1).

DIFFERENTIAL DIAGNOSIS

Given the patient presentation and medical history, the cause of her complaints could have included

Figures 1 (A–C) CT of the abdomen. Serial axial CT slices of the abdomen demonstrating left-sided colonic diverticulosis without notable small bowel pathology.

To cite: Duff GP, Chang KH, Peirce C, *et al.* *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2012-008187

small bowel obstruction secondary to recurrent hernia or recurrent adhesions or because of a functional bowel disorder. CT and endoscopy found no mechanical obstruction and the diagnosis was reached at exploratory laparotomy. This is typical of total bowel diverticulosis.

TREATMENT

An escalating array of medical therapies was attempted including dietary modifications and laxatives (lactulose, isphaghula, manitol and prucalopride succinate). As none was successful the patient chose to proceed to a laparotomy and defunctioning ileostomy with the primary aim of reinstituting normal diet and thus improving her quality of life. At operation, the previous long midline incision was carefully reopened. The small bowel which was densely adherent to the mesh on the right side of the anterior abdominal wall was meticulously dissected free from the overlying mesh. The entire small bowel and colon were freed of adhesions to the level of the duodenojejunal flexure. Enteric diverticulae were noted distributed throughout both the longitudinal and circumferential axes of the small bowel from the duodenojejunal flexure to the ileocecal junction (figure 2A). There was gross faecalisation of enteric content within the small bowel to the level of the proximal jejunum. Following complete small bowel adhesiolysis, the colon was visualised and the presence of pancolonic diverticulosis noted.

Figure 2 (A) Macroscopic and (B) microscopic appearance of the affected small bowel. (A) Significant small bowel diverticulosis identified intraoperatively. Note the irregularly distributed diverticulae. (B) H&E staining of the resected small bowel revealed serosal fibrosis (arrow).

Deserosalisation of the distal jejunum (ie, the area attached to the overlying mesh) required a formal resection followed by a double-layered side/side ileojejunal anastomosis. Although the blood supply at the time of anastomosis was noted to be excellent the tension-free anastomosis became discoloured and it was felt further resection and reanastomosis were most prudent. Following this a loop ileostomy distal to the anastomosis was fashioned in the standard manner in the preoperatively marked site in the left iliac fossa.

OUTCOME AND FOLLOW-UP

The patient made an uneventful postoperative recovery transitioning from total parental nutrition to soft enteral diet and thereafter to full diet. Histological examination of the resected small bowel showed marked serosal fibrosis, pulsion diverticulae but with no evidence of significant inflammation or granuloma formation (figure 2B).

DISCUSSION

Colonic diverticulosis is a common bowel pathology in the Western world with a prevalence of approximately 30–50% in the population over 60 years of age. It typically affects the left colon, most commonly the sigmoid colon.¹ The condition is thought to occur because of the combination of a low-fibre diet (resulting in increased intraluminal pressures) and age-related loss of colonic tensile properties.² Diverticulosis of other parts of the bowel is considerably less common. Right-sided colonic diverticulosis is rare affecting only 1–2% of the population and often associated with ethnicity (Asians in particular), cultural background and diet.³ Similarly, small bowel diverticulosis is uncommon usually occurring on the mesenteric aspect of the small bowel. It has a prevalence of 0.1–5% with suggestions that the condition may be under-reported.^{4–5} While the overall incidence is lower than that of Meckel's diverticulum it increases with age peaking in the seventh and eighth decades of life.^{4–5} Small bowel diverticulae are pulsion mucosal herniations. These are proposed to arise as a result of intestinal dyskinesia caused by acquired defects in intestinal smooth muscle or the myenteric plexus.^{4–6} In terms of location, 80% are localised to the jejunum and are usually large, wide-mouthed and multiple; a further 15% are confined to the ileum and are usually small, narrow-mouthed and solitary; the remaining 5% are found in both jejunum and ileum.^{4–6}

Small bowel diverticulosis is a pathologically diverse condition. It may be asymptomatic or result in either chronic insidious or acute emergent presentations. Chronic symptoms include abdominal discomfort, bloating, nausea, diarrhoea, bacterial overgrowth and malabsorption leading to sequelae such as megaloblastic anaemia, steatorrhoea and dermatosis.^{7–8} Acute symptoms include inflammation, perforation and peritonitis, intestinal obstruction, haemorrhage, abscess formation and fistulation.⁹ Jejunal diverticulosis has also been linked to both acute and chronic pancreatitis as air tracts from the diverticulae to the pancreas have been demonstrated radiologically.¹⁰ The diagnosis is often unrecognised and ultimately made at the time of operation leading to increased morbidity and mortality.¹¹ Treatment of acute complications is with surgical resection of affected small bowel segments followed by primary anastomosis with or without temporary enterostomy.^{7,9}

The dual occurrence of pancolonic and wide-spread enteric diverticulosis is exceedingly rare. Liu *et al*¹² reported a case of total bowel diverticular disease in a 50-year-old lady who underwent emergent surgery for perforated diverticula. While surgical intervention is only advocated in patients with acute

complications, our patient opted for elective surgery for symptomatic control. Of the reports available that describe small bowel diverticulosis, diverticulae are always confined to the mesenteric side of the bowel.⁴ In the present case the diverticulae were distributed throughout both the longitudinal and circumferential axes of the small and large bowels.

A high index of suspicion and advanced imaging techniques are generally required in the non-operative diagnosis of small bowel diverticulosis. Double-balloon endoscopy (DBE) confers significantly higher diagnostic yield when compared with computerised axial tomography in these patients.¹³ DBE may permit therapeutic management of associated abnormalities.¹⁴ Capsule endoscopy is a further diagnostic that may be useful in identifying small bowel diverticulosis.¹⁵

Learning points

- ▶ Small bowel diverticulosis is a rare and pathologically diverse condition.
- ▶ It may be asymptomatic or result in either chronic insidious or acute emergent presentations.
- ▶ A high index of suspicion and advanced imaging techniques are generally required in the non-operative diagnosis of small bowel diverticulosis.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 West AB, Losada M. The pathology of diverticulosis coli. *J Clin Gastroenterol* 2004;38:S11–16.
- 2 Smith AN. Colonic muscle in diverticular disease. *Clin Gastroenterol* 1986;15:917–35.
- 3 Lin OS, Soon MS, Wu SS, *et al*. Dietary habits and right-sided colonic diverticulosis. *Dis Colon Rectum* 2000;43:1412–18.
- 4 Chow DC, Babaian M, Taubin HL. Jejunoileal diverticula. *Gastroenterologist* 1997;5:78–84.
- 5 Longo WE, Vernava AM. Clinical implications of jejunoileal diverticular disease. *Dis Colon Rectum* 1992;35:381–8.
- 6 Meagher AP, Porter AJ, Rowland R, *et al*. Jejunal diverticulosis. *Aust N Z J Surg* 1993;63:360–6.
- 7 Woods K, Williams E, Melvin W, *et al*. Acquired jejunoileal diverticulosis and its complications: a review of the literature. *Am Surg* 2008;74:849–54.
- 8 Putzki H, Student A. Diverticulosis of the jejunum and ileum. *Zentralbl Chir* 1987;112:696–702.
- 9 Sales JP, Berger A, Barbier JP, *et al*. Jejuno-ileal diverticula (Meckel excluded). Apropos of 10 cases. *J Chir (Paris)* 1992;129:73–7.
- 10 King A, Peters CJ, Shorvon P. Acute pancreatitis with pancreatic abscess secondary to sealed jejunal diverticular perforation. *BMJ Case Rep* Feb 25;2012. pii: bcr1120115255. doi: 10.1136/bcr.11.2011.5255.
- 11 Lempien M, Salmela K, Kempainen E. Jejunal diverticulosis: a potentially dangerous entity. *Scand J Gastroenterol* 2004;39:905–9.
- 12 Liu D, Chen L. Management of the total bowel diverticular disease. *Hepatogastroenterology* 2009;56:1679–82.
- 13 Chen LH, Cao HJ, Zhang H, *et al*. Diagnostic values of double-balloon enteroscopy and abdominal computed tomography in small bowel disease. *Zhonghua Yi Xue Za Zhi* 2008;88:3305–8.
- 14 Mensink PB, Kuipers EJ. Double-balloon enteroscopy of the small intestine. *Ned Tijdschr Geneesk* 2007;151:2087–93.
- 15 Alexander JA, Leighton JA. Capsule endoscopy and balloon-assisted endoscopy: competing or complementary technologies in the evaluation of small bowel disease? *Curr Opin Gastroenterol* 2009;25:433–7.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow