

Fistulating duodenal diverticulum with associated vitamin B₁₂ deficiency

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Summary

A 72-year-old man with severe megaloblastic anaemia due to a benign duodeno-colic fistula originating from an antimesenteric duodenal diverticulum is described. Previous reports of fistulae from duodenal diverticula are reviewed.

KEY WORDS: duodenal diverticula, duodeno-colic fistulae, B₁₂ deficiency.

Introduction

This report describes a patient with non-Addisonian megaloblastic anaemia related to duodenal diverticulosis and the formation of a duodeno-colic fistula. Such a rare complication of duodenal diverticulosis has, to our knowledge, not been previously documented.

Case report

A 72-year-old man was admitted with a 2-day history of angina. Apart from mild fat intolerance during the previous year, he enjoyed good health. Physical examination revealed a short man with considerable pallor: there was no glossitis, splenomegaly, retinopathy or neurologic deficit.

The haemoglobin was 5.8 g/dl: smear revealed macrocytosis (mean cell volume 117 μm^3 : normal 79-96) and hypersegmented polymorphonuclears. Iliac crest trephine biopsy revealed megaloblastosis with normal iron stores. Serum B₁₂ level was 25 ng/litre (normal 160-950); red cell folate 147 ng/litre (normal >120) and serum bilirubin 38 mmol/litre (normal <17). Pentagastrin stimulation tests revealed normal basal (0.37 mEq/hr) and peak (9.2 mEq/hr) gastric acid output. Serum antibodies were present at low titre to gastric parietal cells but not to intrinsic factor. Stools were negative on culture and microscopy for pathogens and parasites, and there was no blood. There was mild steatorrhoea (10 g/24 hr: normal <5g/24hr) and ¹⁴C-glycyl cholate breath test was markedly abnormal with high levels of ¹⁴CO₂ appearing within the first hour, suggesting bacterial

overgrowth high in the jejunum. Upper gastrointestinal series showed 2 duodenal diverticula in the descending portion of the duodenum, one on the mesenteric border and one on the anti-mesenteric border, and there was early filling of the transverse colon through a fistula arising from the anti-mesenteric diverticulum (Fig. 1). Gastroduodenoscopy revealed reddening of the mucosa in the descending duodenum but no ulcer or tumour; biopsies showed no granuloma or neoplasia. Colonoscopy did not show any mucosal abnormality in the transverse colon and methylene blue infused into this area did not apparently leak into the duodenum, which was immediately inspected during repeat fibreoptic trooduodenoscopy.

The anaemia responded promptly to regular vitamin B₁₂ injections and the patient remains asymptomatic almost 3 years later.

Discussion

The megaloblastic anaemia was assumed to be due to a duodenocolic fistula with colonization of the duodenum and upper jejunum by enteric organisms giving rise to vitamin B₁₂ deficiency and steatorrhoea. The abnormal breath test is more difficult to interpret, however, because some tracer could have entered directly into the colon and thus been subjected to early deconjugation. Despite the fistula, it is unlikely that the entire small bowel was short-circuited in view of the patient's good nutritional state. Since severe vitamin B₁₂ deficiency takes several years to develop, it is obvious that the fistula was present for a considerable time before symptoms developed. Although the patient was of small stature it is not thought that the fistula was congenital, thus excluding any possible effect on his growth. There was no evidence of neoplasm or Crohn's disease, and the fistula most likely developed from ulceration within the duodenal diverticulum.

Autopsy data indicate that duodenal diverticula occur in 2-2% (Nagel, 1925) to 15% (Baldwin, 1911) of the population although they are only demonstrated

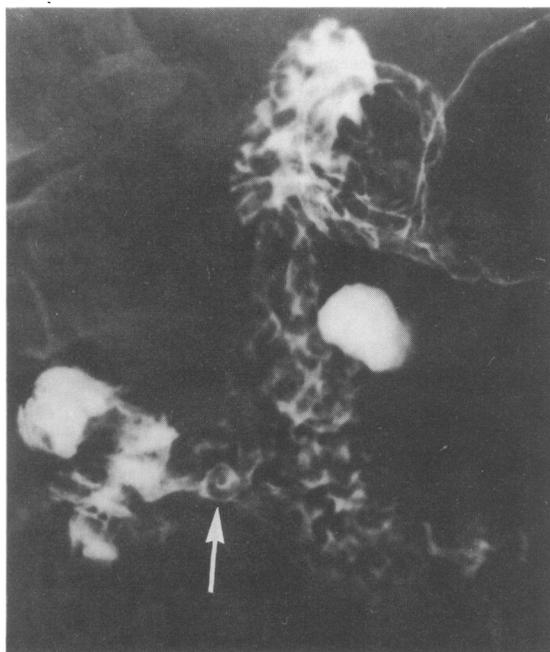


FIG. 1. Barium roentgenograph showing mesenteric and antimesenteric duodenal diverticula with a fistula from the antimesenteric diverticulum (arrowed).

radiologically in about 2% of patients (Cattell and Mudge, 1952). Such diverticula arise predominantly from the descending portion of the duodenum close to the Ampulla of Vater (Mahorner, 1951), 95% being located on the mesenteric duodenal wall; antimesenteric diverticula occur in only 4% of patients while bilateral diverticula (i.e. mesenteric and antimesenteric) are even rarer (Jones and Merendino, 1960). While the majority of duodenal diverticula are unrelated to gastrointestinal symptoms, several papers have drawn attention to various symptoms and specific complications that might result from their presence. Surgical resection in selected cases has been reported to relieve symptoms of recurrent upper epigastric, right upper quadrant or interscapular pain, vomiting or flatulence, (Jones and Merendino, 1960). Rarer complications may include haemorrhage, pancreatic abscess, duodenal obstruction and jaundice from bile duct occlusion.

Fistula formation appears to arise predominantly from antimesenteric diverticula (Sarris, 1960) and is therefore an extremely rare complication. In 1863, Sanderson first described duodeno-colic fistula resulting from a duodenal diverticulum (Sanderson, 1863) and Winter (1959) described a further case presenting with diarrhoea and weight loss. In reviewing benign duodeno-colic fistulae, he noted that diarrhoea and weight loss were the outstanding features of this complication. Sarris (1960) described

another patient, whose duodeno-colic fistula arose from an antimesenteric duodenal diverticulum and who presented with diarrhoea and malnutrition. Our patient had a fistula arising from an antimesenteric diverticulum associated with only mild biochemical steatorrhoea which presented with severe vitamin B₁₂ deficiency. Megaloblastic anaemia, together with steatorrhoea, has been recorded in elderly subjects with massive diverticulosis of the small intestine (Badenoch, Bedford and Evans, 1955) and Wilkinson (1955) referred to 3 cases of vitamin B₁₂ deficiency and subacute combined degeneration of the cord due to ileocolic fistulae following gangrenous appendicitis. This case report illustrates that severe vitamin B₁₂ deficiency due to a duodeno-colic fistula need not necessarily be associated with severe symptoms.

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