underlying condition that in diabetics may include prokinetic agents [6].

To our knowledge, AGD due to Salmonella diarrhoea in a diabetic patient has not been previously reported. In elderly, diabetics with infection and presenting with non-specific abdominal symptoms and distention, AGD should be considered in the differential diagnosis.

**Key points**

- Acute gastric distension is a medical emergency.
- Elderly may have an atypical presentation with acute gastric distension.
- Infection can cause acute gastric distension in an already susceptible patient.
- Nasogastric decompression with appropriate antibiotics reverses the condition.

**Conflicts of interest**

None declared.

**References**


**Carcinoid syndrome from small bowel endocrine carcinoma in the absence of hepatic metastasis**

**Sayan Datta**¹, **Nigel Williams**², **Sari Suortamo**³, **Asif Mahmood**⁴, **Colin Oliver**⁵, **Nicholas Hedley**⁵, **Pijush Ray**⁶

¹University Hospitals Coventry and Warwickshire, Clifford Bridge Road, Coventry CV2 2DX, UK
²Colorectal Surgery, University Hospitals Coventry and Warwickshire, Coventry, UK
³Pathology, University Hospitals Coventry and Warwickshire, Coventry, UK
⁴Vascular Surgery, University Hospitals Coventry and Warwickshire, Coventry, UK
⁵Clinical Radiology, University Hospitals Coventry and Warwickshire, Coventry, UK
⁶Care of Elderly and Stroke, University Hospitals Coventry and Warwickshire, Coventry, UK

Address correspondence to: S. Datta. Tel: (+44) 2476 965720; Fax: (+44) 2476 966271. Email: Andrea.Lovell@uhcw.nhs.uk
Abstract

An 80-year-old male patient presented with abdominal pain, paroxysmal diaphoresis, diarrhoea and vomiting. CT scan revealed a small bowel endocrine carcinoma (or ‘carcinoid’ tumour), but the absence of hepatic disease. The lesion was excised ‘en-bloc’. Intra-operatively, there was wide fluctuation in blood pressure associated with tumour manipulation, with hyper- and hypotension. Carcinoid syndrome usually occurs from gastrointestinal tumours when hepatic metastases occur, causing flushing, diarrhoea, bronchoconstriction and murmurs from cardiac valvular lesions. This patient did not have radiological evidence of hepatic metastasis, but the syndrome could still occur with midgut tumours via local invasion of the retroperitoneal circulation, or by action of substances other than serotonin that do not undergo hepatic metabolism.

Keywords: carcinoid tumour, malignant carcinoid syndrome, carcinoma, neuroendocrine, elderly

An 80-year-old male patient presented to the Emergency Department with abdominal pain, severe diaphoresis, diarrhoea and vomiting. Symptoms were occurring intermittently over the last year. Prior to admission, these symptoms worsened with a near syncopal episode. There was a background of vascular risk factors (triple vessel coronary bypass grafting, type 2 diabetes, hypertension, paroxysmal atrial fibrillation) and also Barrett’s oesophagus. Examination findings included a systolic murmur and a soft abdomen, with pain on deep palpation of the right iliac fossa.

The next morning, abdominal pain and diarrhoea were already resolving, with unremarkable abdominal X-ray and faecal studies. Blood tests showed a worsening microcytic anaemia. On the background of Barrett’s oesophagus, this raised suspicion of co-morbid gastrointestinal cancer, therefore, an urgent oesophago-gastro-duodenoscopy (OGD) was organised.

OGD showed stable appearances. The patient’s symptoms resolved spontaneously and he was discharged with an outpatient abdominal CT scan arranged. This CT scan revealed a 3 × 2 cm ileal mesenteric mass, highly suggestive of small bowel carcinoid tumour (see Figure 1). One area of local mesenteric adenopathy was detected, but no hepatic disease. Seventy-two hour urinary 5-hydroxyindoleacetic acid (5-HIAA) was not raised.

Multi-disciplinary team planning supported open small bowel resection. A right transverse incision revealed three loops of small bowel tethered to the mass by a scirrhous reaction. The lesion was excised ‘en-bloc’. Intra-operatively, there was wide fluctuation in blood pressure associated with tumour manipulation, with systolic pressures ranging from 110 to 180. The patient had an uneventful post-operative recovery. Pathology revealed well differentiated endocrine carcinoma with complete excision surgical margins; classified as grade G1 with subserosal, vascular and perineural invasion, staged at pT3, N1, Mx.

Discussion

Carcinoid tumours are rare, slow-growing, neuroendocrine tumours. They can be classified into tumours of the foregut (bronchus, stomach, proximal duodenum, pancreas), midgut (distal duodenum, jejunum, ileum, right colon) and hindgut (distal large bowel and rectum). They rarely occur in other organs such as ovary, kidney and prostate [1–3].

Small bowel tumours are uncommon (less than 0.1 per 100,000 globally) but carcinoid tumours are attributed to 35–42% of these [4, 5]. Ileal and jejunal tumours are multicentric from 26 to 30% of cases [6]. Small bowel carcinoids may be detected late from local effects of the tumour itself: obstruction (from luminal strictures), bleeding, ischaemic pain, and can also present via manifestation of carcinoid syndrome [7].

Carcinoid syndrome relates to tumour release of substances such as serotonin or kallikrein causing symptoms, classically flushing, diarrhoea, bronchoconstriction and murmurs from cardiac valvular lesions [8, 9]. These substances undergo hepatic metabolisation, so carcinoid syndrome occurs with gastrointestinal tumours with hepatic metastasis. This can occur from 20 to 30% of mid-gut carcinoids [10, 11]. Local release of these substances can cause mesenteric fibrosis and desmoplasia seen as soft-tissue

Figure 1. 3 × 2 centimetre mass in the ileal mesentery with desmoplastic reaction suggestive of a small bowel neuroendocrine (carcinoid) tumour.
stranding on CT images (see Figure 1) [7]. Urinary 5-HIAA (a serotonin metabolite) may not always be raised, and serum chromogranin A (a neurosecretory protein) is a sensitive, but less specific test [12].

Further evidence of carcinoid syndrome in this case was the labile blood pressure during surgery associated with tumour manipulation. Surgery and anaesthesia can trigger carcinoid crises that can cause hypo- or hypertension, bronchoconstriction and cardiac arrhythmias [8, 13].

This case is interesting as the patient had good clinical symptoms for carcinoid syndrome, yet did not have CT evidence of hepatic metastasis. This has been reported in a limited case series [14]. One explanation is that the tumour had caused local invasion of the retroperitoneal circulation, thereby bypassing the portal vein circulation and allowing the tumour-produced hormones to have a clinical effect [15]. Another possibility is that the liver may breakdown serotonin via monoamine oxidase, but other substances (kallikrein, histamine, tachikinins) that may not be metabolised could still produce clinical symptoms [14, 16].

Key points

• Carcinoid tumours are rare, slow growing neuroendocrine tumours that typically arise from the gastrointestinal tract and lung.
• Surgical resection can be complicated by blood pressure changes associated with tumour manipulation.
• Carcinoid syndrome can rarely occur in the absence of hepatic metastasis.

Conflicts of interest

None declared.

References


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