Case Report

CT imaging helps differentiate carcinoid from Crohn's disease: A case report

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SUMMARY

We describe a patient who was treated for mis-dignosed Crohn's disease for six years prior to presenting with an abdominal crisis. Computer tomography (CT) imaging then demonstrated classical features of a mesenteric carcinoid tumour. At laparotomy, infarcted small bowel secondary to a carcinoid tumour with mesenteric extension around the terminal ileum was found. We propose that where no histological diagnosis has been made, early CT scanning should be considered to differentiate between Crohn's disease and other possible diagnoses, specifically carcinoid.

Key words: Carcinoid tumour. Crohn disease. Ischaemia. Laparotomy.

CASE REPORT

A 39-year-old man was referred with a 1-year history of intermittent abdominal colic associated with vomiting and 13 kg weight loss. Abdominal ultrasound scan, gastroscopy and routine blood tests were all normal. No ileocolonoscopy was performed or any other imaging studies other than a barium follow-through which showed a strictured segment of terminal ileum consistent with Crohn's disease. He was therefore started on budesonide and mesalazine with some initial symptomatic improvement. For three years he continued to have regular 'flare-ups' lasting several days with abdominal pain, anorexia and vomiting before prednisolone was commenced, providing some symptomatic relief. Within three months he developed back pain and diarrhoea. Throughout this period his bloods were monitored with his albumin, C-reactive protein, platelet count and haemoglobin all being within normal limits with a marginally elevated ESR and white cell count (WCC). Although a test for anti-TTG- antibodies was performed (and was negative) no other auto-antibody profiles were carried out. After a further 3 years, another barium study was performed demonstrating a distorted and narrowed terminal ileum with a contracted caecum suggestive of Crohn's disease (see figure 1).

An abdominal CT scan was performed which showed a mesenteric mass with calcification, typical of carcinoid tumour, with no liver metastases. There had been no symptoms suggesting carcinoid syndrome and no 5-hydroxy-indole acetic acid (5-HIAA) urine test was ever performed. After multi-disciplinary discussion, it was decided that a diagnostic laparotomy and biopsy was necessary.

Prior to the planned surgery, he presented as an emergency with acute onset of severe abdominal pain. He underwent an emergency laparotomy which revealed infarcted small bowel with thickened small bowel mesentery. A resection of more than half of the small bowel and the right colon was performed with formation of an end-ileostomy and mucous fistula. The remaining small bowel was dusky. The histology showed a primary small bowel carcinoid tumour proximal to the ileocaecal valve with mesenteric extension and tumour extending into the blood vessels. There was also extensive perineural invasion with lymph node metastasis (see figure 2). There was no evidence of Crohn's disease on histology.

Post-operatively he was fed with total parenteral nutrition and the remaining small bowel became progressively more gangrenous. Repeat CT imaging showed ischaemia of residual small bowel with malignant carcinoid deposits in the uncinate process of the pancreas and para-aortic lymphadenopathy. After discussion with the patient and family members, a palliative approach was adopted at this point. He was admitted to a local hospice and died 12 days post-operatively.

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DISCUSSION

The development of the carcinoid syndrome (flushing, diarrhoea and bronchconstriction) may make diagnosis of carcinoid tumours easier but occurs only in approximately 5% of cases and almost exclusively following hepatic metastasis.[1] Carcinoid tumours most commonly arise in the appendix and terminal ileum; the majority of which are diagnosed incidentally, following appendicectomy.[2] Symptomatic cases may elude diagnosis due to the non-specific nature of the symptoms. Carcinoid tumours may present with bowel ischaemia or infarction and two thirds of such cases are associated with a periadventitial deposition of elastic tissue termed "elastic vascular sclerosis" (EVS).[3] In our case, the ileal arteries were seen to be thickened with obliteration of their lumens due to elastic proliferation of tissue confined to the intimal internal elastic lamina with elaboration of elastic tissues in the adventitia. This was first described as "EVS" by Anthony and Drury as a finding peculiar to ileal carcinoid tumours. It is unclear whether EVS is due to the secretion of substances from the tumour or a direct effect of the tumour on the smooth muscles cells and fibroblasts.[4]

Crohn's disease also commonly presents with episodic obstructive symptoms with or without diarrhoea. It is therefore perhaps not surprising that symptomatic small bowel carcinoid tumours may be incorrectly diagnosed as Crohn's disease.[5] A summary of 14 published cases of ileal carcinoid masquerading as Crohn's disease revealed that chronic recurrent symptoms were common. The difficulty in the differentiation from Crohn's disease is complicated further by the frequent presence of ileal stricturing on barium studies and reported transient symptomatic improvement with corticosteroid therapy.[5] Interestingly, there is also an increased incidence of carcinoid tumours developing in patients with Crohn's disease.[6,7]

The prognosis of small bowel carcinoid is poorer than their appendiceal counterparts, likely due to a combination of late development of symptoms and misdiagnosis of symptoms.[8]

In our patient, CT images demonstrated the characteristic findings of a carcinoid tumour infiltrating the mesentery with a mass of radiating soft tissue bands in a stellate pattern and calcification[9] (See Figure 3).

In patients with terminal ileal stricturing, the most likely diagnosis *is* Crohn's disease[10] but we would recommend that failure to obtain histological confirmation should prompt early CT scanning which can differentiate carcinoid tumours from Crohn's disease. CT may not be able to detect small primary tumours even despite improved resolution with newer multidetector scanners.[11] It is effective however at demonstrating mesenteric extension of tumour and metastases. Early CT is also important to provide baseline imaging information that can then be compared with later investigations. Similarly, a small bowel stricture on CT images should not be attributed to Crohn's disease with-

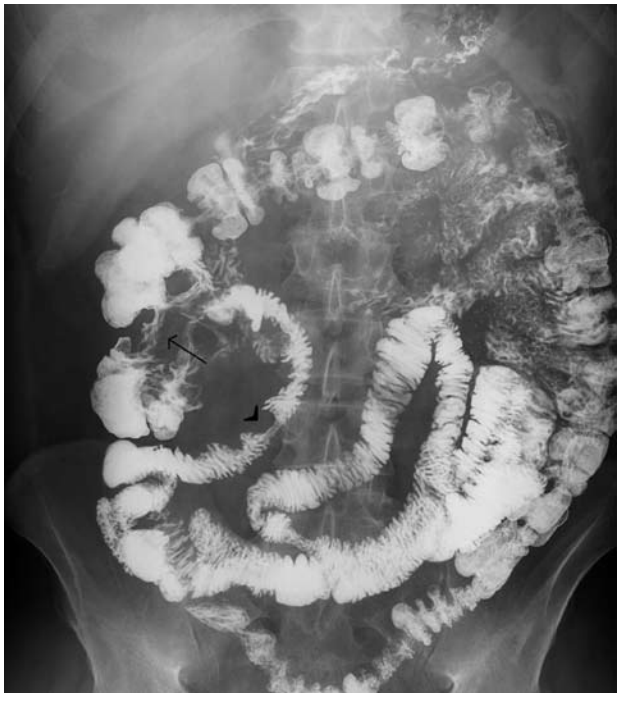

Figure 1. This contrast-enhanced radiograph displays a grossly distorted terminal ileum (arrowhead) with a markedly contracted caecum (arrow).

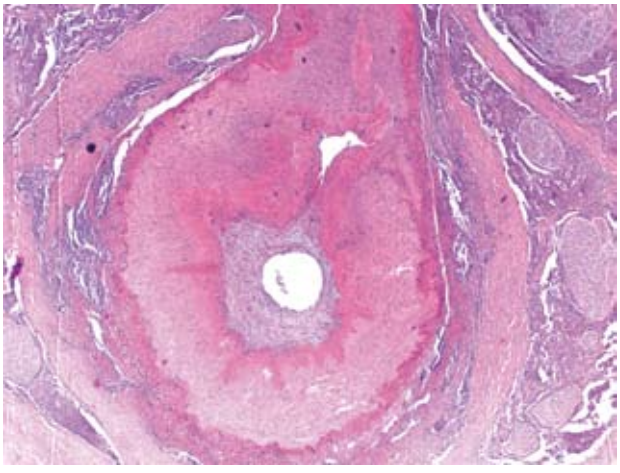

Figure 2. This low power view shows the superior mesenteric artery with periadventitial deposition of elastic tissue (elastic vascular sclerosis) and perineural and intraneural invasion.

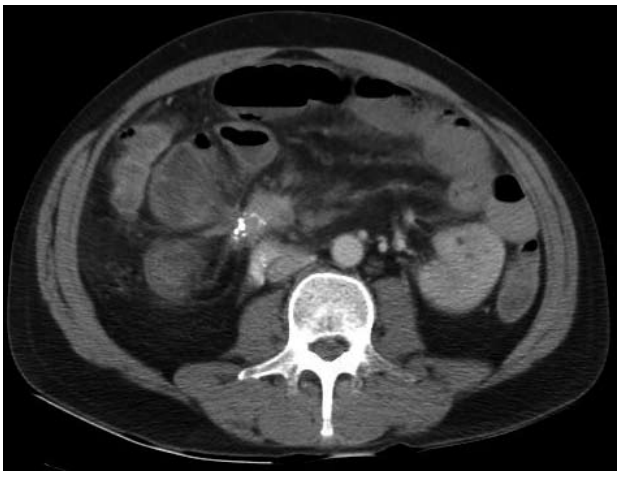

Figure 3. This image shows the classical small bowel carcinoid CT findings of a mesenteric mass with radiating soft tissue bands forming a stellate pattern with calcification.

out histological confirmation. It is important to diagnose symptomatic small bowel carcinoid tumours early as resection can prevent intestinal complications.[12]

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