Unusual association of diseases/symptoms

Small bowel adenocarcinoma: a case of atypical CT scan appearance

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Summary

A 73-year-old man presented to the surgical assessment unit with recurrent episodes of central abdominal pain and vomiting for 18 months. He has the past medical history (PMH) of hypertension and has been using his denture for 35 years; he had no past surgical history; he drinks alcohol socially and not a smoker. This patient was investigated for iron deficiency anaemia with upper and lower gastrointestinal endoscopy, as the patient had positive faecal occult blood; rectal biopsy showed no sign of inflammation and no evidence of malignancy; blood investigation showed Hb 9.8 g/dl, white cell count 14.8, mean cell volume 86.3, mean cell haemoglobin 26.9 and C reactive protein 13. This patient underwent a CT scan of the chest, abdomen and pelvis; the latest one showed that there is a short segment of the middle part of the small bowel that looks thickened and within which there is a high-density calcified shadow which is reported as an ingested foreign body or a tooth fragment; the patient underwent laparotomy and the histology results revealed 30 mm well differentiated/moderately differentiated adenocarcinoma.

BACKGROUND

Cancer in adults is one of the five most common causes of death in different parts of the world; small bowel cancer is a rare malignant disease of the gastrointestinal tract (GIT). However, small bowel adenocarcinoma is one of the most common types of small bowel malignant tumour and yet accounts for only a small percentage, less than 5%, of all GIT cancers.¹ Radiological diagnosis of small bowel cancer is challenging.

CASE PRESENTATION

A 73-year-old man presented to the surgical assessment unit at Kettering General Hospital with recurrent episodes of central abdominal pain and vomiting for 18 months. The patient is hypertensive and has been using his denture for 35 years, has no past surgical history, drinks alcohol socially and is not a smoker. This patient was investigated for iron deficiency anaemia with upper and lower GI endoscopy as the patient had positive faecal occult blood; rectal biopsy showed no sign of inflammation and no evidence of malignancy; he was treated with ferrous sulphate. During the last hospital admission on 8 November 2010 with similar symptoms of central colicky abdominal pain and vomiting, a general examination of this patient was haemodynamically stable and afebrile, pale looking. The abdomen was soft with central and left iliac fossa tenderness, and digital rectal examination was empty rectum, no blood or melaena. The patient has denied any history of ingesting or swallowing a tooth or part of his denture and the denture was intact with no missing tooth; the patient has been using this denture for 35 years.

INVESTIGATIONS

Blood investigation showed Hb 9.8 g/dl, white cell count 14.8, mean cell volume 86.3, mean cell haemoglobin 26.9,

C reactive protein 13 and the rest of the biochemistry was satisfactory. Chest and abdominal x-ray showed no active lung lesion and normal bowel gas pattern. As the cause of his pain and anaemia was uncertain, the patient underwent a CT scan of the chest, abdomen and pelvis. The latest one showed that there is a short segment of the middle part of the small bowel that looks thickened and within which there is a high-density calcified shadow which is reported as an ingested foreign body or a tooth fragment (figure 1).

Figure 1 CT scan appearance of calcification within a thickened small bowel segment.

TREATMENT

The patient was informed about the scan result and the need for exploratory laparotomy. Intraoperatively, there was a thickened loop of small bowel with a small mass (figure 2); this segment was resected and primary anastomosis was performed. The patient recovered very well and was discharged home 5 days postoperative.

OUTCOME AND FOLLOW-UP

The histology result showed a mass of tissue on the outer edge of the specimen; slicing through this area revealed 30 mm well differentiated/moderately differentiated adenocarcinoma replacing the entire bowel wall; 30 mm to the resection margin, there was serosal tumour perforation and no extramural VI. TNM stage: pT4b pN0 pMx, lined within this point is a calcified fragment 15 × 10 × 10 mm. These findings have been discussed in the multidisciplinary meeting and the patient received adjuvant chemotherapy. Sixteen months after emergency small bowel resection and adjuvant chemotherapy, the patient is in good health and shows no signs or symptoms of recurrence. In conclusion, we present a calcified appearance of small bowel adenocarcinoma to the literature; this will add a new look to the radiological evaluation of a rare GIT neoplasm.

DISCUSSION

Small bowel tumours usually present late, are small in size and with non-specific symptoms of abdominal pain, anaemia and/or weight loss. In this case report, we present the unusual appearance of a small intestine adenocarcinoma on a CT scan, which is a calcified shadow within a thickened wall of the small bowel loop; the histological examination of this thickened loop confirmed the diagnosis of small bowel adenocarcinoma.

The small bowel tumours have different characteristic features at the CT scan; these features can help in making a diagnosis. The appearance of small bowel adenocarcinoma at the CT scan may look like annular narrowing with irregular edges, a discrete mass or ulcerative lesion and affects only short segments. Carcinoid tumours may well appear as an ill-defined, homogenous soft tissue mass, a satellite pattern of soft tissue stranding and the mesenteric calcification at the CT scan. Gastrointestinal stromal tumors (GISTs) may appear at the CT scan as a lobulated, irregular mass with central liquefactive necrosis; calcification; or direct extension and vascular encasement.

Figure 2 Small bowel mass before surgical resection (right side of the specimen).

GIST can also look like a sharply defined mass with calcification.¹

Turan *et al*² reported a case series of 13 cases; the most common symptoms for small bowel tumours include abdominal pain 75%, anaemia 30%, weight loss 38%, GI bleeding 30% and perforation 38%. Due to the liquid contents of the small bowel, intestinal obstruction is a late sign. The multidetector CT scan and MRI scan are very important in the preoperative diagnostic period.

Dudiak *et al*,³ in a case series of 63 patients, reported that small bowel tumours were detected on CT scan as soft tissue masses or other abnormalities in 73% of the patients (no=46); however, in 27% of the patients (no=17), tumours were not detected. The adenocarcinoma appeared as small bowel masses and was located in the proximal part of the small bowel; ulceration was apparent in 40% (no=6/15 adenocarcinoma).

Gahremani *et al*⁴ reported 23 primary tumours of digestive organs and demonstrated radiographically visible calcification; however, none of these were small bowel adenocarcinomas. The described calcified neoplasms in the small bowel were in two cases: leiomyosarcoma (numerous irregular densities 'popcorn-like' were found scattered throughout the abdomen in one case) and haemangioma (soft tissue mass containing the phleboliths). The colon was the most common location for calcified tumours (10 of the 23 calcified tumours), and mucinous adenocarcinoma was the case in six patients. Nevertheless, there were, in 5 out of the 23 cases, mucinous adenocarcinoma of the stomach and the appearance was fine, granular 'sand-like' calcification.

Woodard *et al*⁵ studied 52 patients' CT scan with midgut carcinoid tumours retrospectively; liver metastasis was seen in 34 cases, while in only one patient, the metastatic liver lesions showed calcification. Mesenteric masses were found in 25/52 patients; 10 of these masses contained calcification.

Brophy *et al*,⁶ in a study of 45 cases of primary small bowel tumours, reported that 29% of the cases had symptoms for more than a year. The most common symptom was abdominal pain 75%, nausea and/or vomiting 61% and weight loss 52%. The majority of these cases presented as a surgical emergencies 64% (n=29), 14 patients with obstruction, 11 as GI bleeding and four as perforation.

Korman *et al*⁷ showed that magnetic resonance, ultrasonography and CT are complementary to barium studies in the identification of small bowel tumours. Certain patterns at CT scan findings can differentiate between benign and malignant tumours. The radiological modality of choice in identifying the small intestine tumours should be enteroclysis 'small bowel enema', followed by contrast-enhanced CT scan abdominal examination.

Anzidel *et al*⁸ reported the atypical imaging appearance of small intestine adenocarcinoma as polypoid lesion with well-defined edges and surface using multidetector CT (MDCT) and MRI. However, there were larger calcifications visible in GI stromal tumour. Minordi *et al*⁹ assessed the diagnostic prospective of the MDCT in the evaluation of small intestine tumours. A total of 120 patients were suspected to have small bowel disease, investigated with either PEG-CT or CT-E; of these 120 patients, 15 were found to have SI neoplasms, while only one case was adenocarcinoma which appeared as intraluminal mass on CT enteroclysis.

In a multicentre Korean study carried out by Cheung *et al*,¹⁰ published in 2010, small intestine tumours were detected with CE in 57 patients out of 1332 cases. Of these 57 tumours, 30 (52.6%) were detected only by CE; the size of these tumours was as small as 2 mm, whereas tumours with the smallest size of 10 mm were detected by the use of other radiological methods. They showed that the CE can effectively identify small bowel tumours that are undetectable with conventional radiological methods (diagnostic impact=52.6%).¹⁰

Learning points

- ▶ Iron deficiency anaemia with positive faecal occult blood must be investigated thoroughly.
- ▶ If initial investigations were negative, the patient should be followed up and the investigations can be repeated.
- ▶ The use of conventional radiological methods, such as, CT scan, and any abnormal findings must be dealt with suspiciously.

Competing interests None.

Patient consent Obtained.

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