CASE REPORT

Duodenal metastasis: an uncommon cause of occult small intestinal bleeding

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ABSTRACT

Duodenal metastases are a very uncommon and peculiar cause of upper gastrointestinal bleeding. However, they should be considered in a patient presenting with upper gastrointestinal bleeding and a previous history of malignancy. The importance of recognising the unusual presentation of duodenal metastasis has to be emphasised. We describe two patients with upper gastrointestinal bleeding due to duodenal metastases. In the first patient a periampullary bleeding due to a metastasis of a renal cell carcinoma was detected five years after nephrectomy of the right kidney. In the second patient an occult bleeding caused by a duodenal metastasis of a melanoma was diagnosed. The first manifestation of this melanoma was eight years earlier.

INTRODUCTION

Upper gastrointestinal bleeding is a case of emergency and is generally diagnosed and treated by upper endoscopy or by surgical intervention. We describe a rare cause of upper gastrointestinal bleeding in two patients who presented with occult upper gastrointestinal bleeding from duodenal metastases. Duodenal metastases are a very uncommon and peculiar cause of upper gastrointestinal bleeding. The purpose of this paper is to present the clinical entity of metastatic malignancy of the duodenum and to discuss the pathogenesis, clinical presentation, diagnosis, management, and prognosis of duodenal metastasis.

CASE REPORT 1

A 76-year-old man was admitted in November 2001 with symptoms of weakness, dizziness and exertional dyspnoea. He had no epigastric discomfort. His medical history revealed removal of the right kidney because of renal cell carcinoma five years previously. The resected lymph nodes were all free of tumour localisation and there was no evidence of renal vein or perirenal capsular invasion. No adjuvant radiation or immunotherapy had been administered. In August 1999 he developed a right radicular syndrome with a peroneus paresis possibly due to an epidural metastasis at the 5th lumbar vertebra seen on magnetic resonance imaging. No biopsy was taken. He received radiotherapeutic treatment (22 cGy on L3 to S1 in five fractions) and recovered without sequelae. He was also known to have hypertension, dyslipidaemia and a mild aortic valve stenosis with insufficiency. He had no history of peptic ulcer disease. He was taking acetylsalicylic acid (80 mg/day), lercanidipine (20 mg/day), chlorthalidone (25 mg/day), metoprolol (50 mg/day) and lisinopril (10 mg/day). Because of anaemia the family doctor subscribed ferrofumarate (600 mg/day).

On physical examination he appeared to be in good general health and nutritional condition. He did not look anaemic. His blood pressure was 180/90 mmHg with a pulse of 72 beats/min, regular and aequal. There was no lymphadenopathy or organomegaly. Apart from a systolic heart murmur there were no other cardiopulmonary abnormalities. The abdomen was soft and not tender. There was no evidence of melaena.
The laboratory investigation showed a normocytic, hypo-

chromic anaemia with iron deficiency, which was diagnosed with a bone marrow examination (no iron pigment seen). The haemoglobin concentration was 4.7 mmol/l (8.7-10.9 10^9 mmol/l) with an MCV of 82 fl (80-100 fl), normal values of thrombocytes and leucocytes with normal differentiation. Urea was 8.6 mmol/l (2.5-7.0 mmol/l), and creatinine 119 μmol/l (65-110 μmol/l). Liver enzymes were normal. Further investigation into the cause of the anaemia with iron deficiency revealed no abnormalities in the colon. Subsequently an oesophagogastroduodenoscopy was performed which demonstrated a lobular mass involving the periampullary area in the pars descendens of the duodenum (3 x 5 cm) (*figure 1a*). Microscopic investigation of a biopsy showed consistency with the diagnosis of metastatic renal carcinoma of the clear cell type (*figure 1b*). Acetylsalicylic acid was discontinued and palliative radiotherapy was initiated. On follow-up the patient remained in a good clinical condition and had a stable haemoglobin concentration (6.3 mmol/l) with iron suppletion and a proton pomp inhibitor. He is still alive.
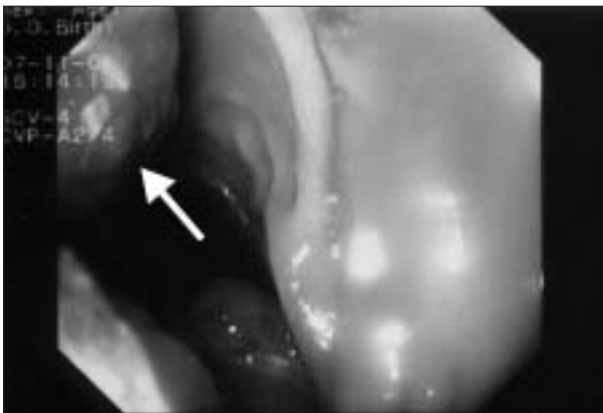
Figure 1a
Lobular mass (arrow) involving the periampullary area in the pars descendens of the duodenum
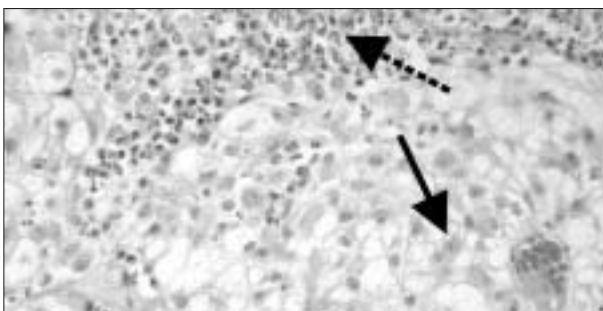
Figure 1b
Renal cell carcinoma in duodenal biopsy. Large tumour (arrow) cells with conspicuous pale and vacuolated cytoplasm and large nuclei with prominent nucleolus. The ulcerated surface is covered with leucocytic debris (dotted arrow) (haematoxylin and eosin, 250x)

CASE REPORT 2

In February 2001, a 65-year-old man was admitted because of a collapse and anaemia. His medical history revealed a malignant melanoma Clark level II and Breslow thickness 0.6 mm (stage I melanoma) of the back in January 1993. Because of tumour localisation within the resection borders, a re-excision was successfully performed. In 1996 he developed lymph node metastases of the right axilla (stage II melanoma). He was not included in an Interferon study because of a possible cerebral metastasis. On follow-up the cerebral process was stable and was compatible with a benign tumour. In 1997, a second malignant melanoma of the back (Clark level III and Breslow thickness 2.63 mm) was diagnosed and radically resected. Endobronchial, intrapulmonary and intrahepatic metastases manifested eight years after the first manifestation of the melanoma (stage III melanoma). At the request of the patient no systemic therapy was given.

On admission his physical examination was unremarkable except for pallor. His blood pressure was 132/66 mmHg with a pulse of 70 beats/min, regular and aequal. There were no lymphadenopathy or cardiopulmonary abnormalities. He had no palpable intra-abdominal masses. The abdomen was soft and not tender. There was no evidence of melaena.

The laboratory investigation showed a microcytic hypochromic anaemia. The haemoglobin concentration was 4.6 mmol/l and the MCV was 79 fl. There were normal values of leucocytes and thrombocytes with normal differentiation, urea 9.5 mmol/l and creatinine 65 μmol/l.

An oesophagogastroduodenoscopy showed a mass involving the pars descendens duodeni (5 x 7 cm) (*figure 2a*). Histological examination of the biopsy confirmed the presence of a melanoma with a similar morphological appearance to the original specimen from 1993 (*figures 2b* and *2c*). This was consistent with the earlier diagnosed melanoma. He received blood transfusions and palliative care and was discharged. He died thirteen months later.

DISCUSSION

Chronic blood loss from the gastrointestinal tract can be a challenging problem for physicians. We describe a rare cause of occult upper gastrointestinal bleeding in two patients who presented with occult upper gastrointestinal haemorrhage from duodenal metastases of a renal cell carcinoma and a melanoma.
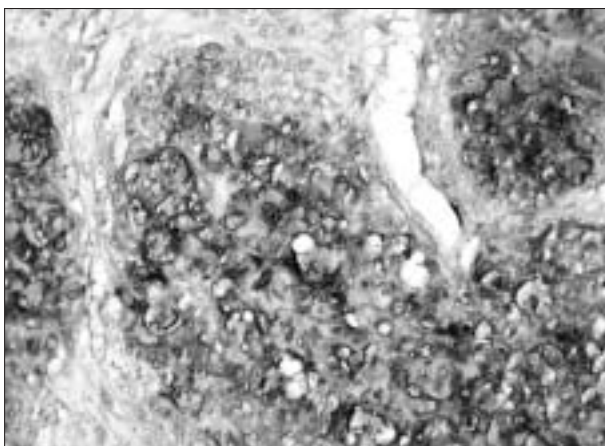The most common causes of upper gastrointestinal bleeding are mentioned in *table 1*. Various other causes,
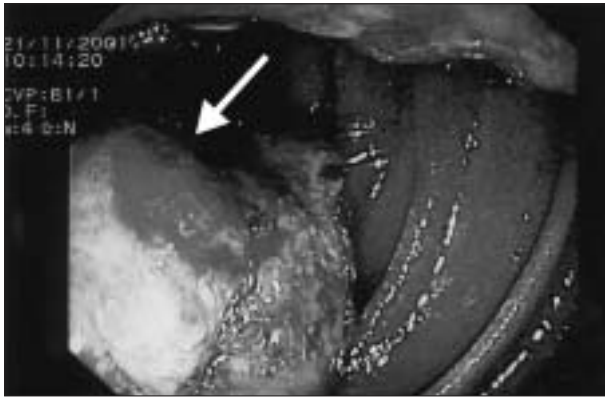
Figure 2a

Mass (arrow) involving the pars descendens duodeni
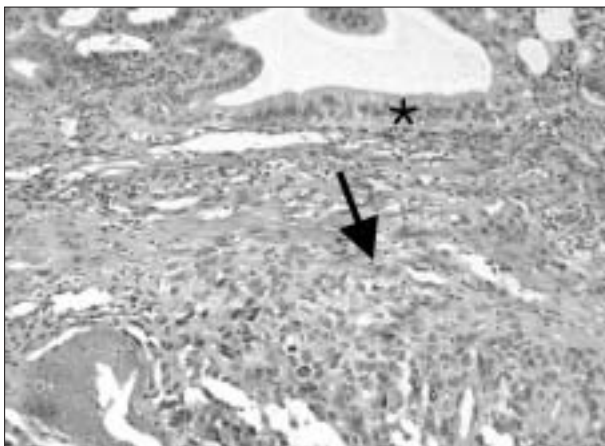
Figure 2b

Duodenal metastasis of melanoma. The cellular tumour (lower half of the picture, arrow) is covered with intact mucosa (asterix) with duodenal epithelium on top (haematoxylin and eosin, 100x)

Figure 2c

Immunohistochemical staining with the melanoma specific marker S100-protein (immunoperoxidase, 250x)

Table 1

Causes of upper gastrointestinal bleeding

SOURCES OF BLEEDING	PROPORTION OF PATIENTS (%)
Ulcers	35-62
Varices	4-31
Mallory-Weiss lesions	4-13
Gastroduodenal erosions	3-11
Erosive oesophagitis	2-8
Malignancy	1-4
No source identified	7-25

including neoplasms, account for only 10% of all cases. Identifying an upper gastrointestinal haemorrhage from the small bowel can be difficult. The most common causes of gastrointestinal bleeding of small bowel origin are angiodysplasia and tumours.[1] They account for 5 to 10% of all cases of chronic blood loss of obscure origin.[2]

Neoplasms of the small bowel are uncommonly encountered clinical entities, comprising less than 5% of all gastrointestinal tumours and 0.35% of all malignancies.[3-5] Approximately two-thirds of small bowel tumours are malignant; more than 95% of these are adenocarcinomas, carcinoids, lymphomas or sarcomas (*table 2*). Adenocarcinomas are the most common histological types in Western populations. They are predominantly located in the duodenum. Carcinoids and lymphomas are predominantly located in the jejunum or ileum in contrast to sarcomas which are seen throughout the whole small intestine.

Table 2

Classification of small benign or malignant intestine tumours and their percentual prevalence (between brackets)

BENIGN	MALIGNANT
Adenomas (25)	**Primary malignant**
Leiomyoma (50)	Adenocarcinomas (30-50)
Lipoma (10-20)	Leiomyosarcoma
Hamartomas/	
Peutz-Jeghers syndrome	Carcinoid tumors (5-24)
Neural tumours	Lymphoma (15-20)
Islet cell tumours	
Cavernous haemangiomas	
(<0.05)	
	Metastasis
	Malignant melanoma
	Carcinoma of the lung
	Genitourinary cancers
	Breast cancer
	Kaposi's sarcoma
	Colonic cancer
	Renal cell carcinoma

Metastatic lesions of the small intestine are more frequent than primary tumours. Duodenal metastases are most frequently located in the periampullary region, followed by the duodenal bulb. Common manifestations are gastrointestinal bleeding and anaemia.[6,7] Melanomas are the most common metastatic lesion of the intestine and have the greatest predilection for metastasis to the small bowel,[7,8] followed by lung cancer,[9] cervix carcinoma and hypernephroma, thyroid carcinoma, hepatoma and Merkel cell carcinoma.[10,11] Breast carcinomas metastasise predominantly to the stomach or oesophagus.[7] In immunocompromised patients Kaposi's sarcoma is the most common metastatic neoplasm to the small bowel.[12]

Males have higher incidence rates of small bowel cancer than females (1.5:1) and the incidence increases with age. There is a higher incidence of adenocarcinomas and malignant carcinoid tumours in blacks than in whites.[13] In recent years the overall incidence rates are rising. The main age at diagnosis is about 60 years.

Possible factors for the low incidence of neoplasms of the small bowel are:
- High turn-over of the intestinal mucosal cells which can prevent tumour growth:[14] it has been postulated that every 16 minutes 1 g of intestinal mucosa is replaced.
- Sparseness of bacterial flora in a normal small bowel:[15] the much lower bacterial load may result in minimising the exposure to potential carcinogenic bacterial breakdown products.
- Rapid transit of nutrients through the small bowel, which may also provide shorter exposure of its mucosa to carcinogens.[5]
- Liquefied chyme, which may reduce mechanical trauma and protect the small bowel from damaging effects of carcinogens and may cause less mucosal irritation than the more solid contents of the colon.[5,16]
- Intraluminal alkalinity of the small bowel:[16] this prevents formation of nitrosamines that may be carcinogenic in the acid environment of the stomach.
- Well-developed protective local secretory IgA expression, which may also be protective.[14]

Recent reports suggest that gastrointestinal metastases are more frequent than was previously thought.[17] They often present insidiously with nonspecific abdominal complaints. Signs and symptoms of appendicitis, malabsorption and protein-loosing enteropathy could be present.[18,19] They should also be considered in patients presenting with intermittent, vague abdominal pain of unclear cause, duodenal intussusception, unexplained weight loss and intermittent occult gastrointestinal haemorrhage. Intestinal obstruction and jaundice could be also presenting symptoms.

Secondary tumours involving the duodenum can arise by: (i) peritoneal dissemination, (ii) direct spread from an intra-abdominal malignancy, (iii) haematogenous and (iv) lymphatic spread.[20] Any of these mechanisms could be responsible for the metastases in the cases we reported.

The diagnosis of metastatic lesions of the duodenum may be a vexing experience. Duodenal lesions may be apparent on barium studies. Abdominal computer tomography may demonstrate thickening of the wall and folds in the involved segment of the bowel.[18] Identification of a bleeding metastasis between multiple small bowel lesions can be difficult. Lesions in the duodenum may be diagnosed by using a standard upper endoscopy with tissue sampling. A push upper endoscopy can also diagnose proximal jejunal abnormalities. Sonde enteroscopy and intraoperative or laparoscopically assisted enteroscopy are also good diagnostics.[21-23] Recently, video capsule endoscopy, which allows direct visual access of the entire bowel, has expanded the diagnostic yield.[24] In case of massive gastrointestinal bleeding or ileus, diagnosis is usually made by angiography or at surgery. There is no distinguishing endoscopic feature characteristic of a specific metastasis. The frequency of endoscopic diagnosis of small bowel metastasis is extremely low, approximately 25 per 100,000 upper endoscopies.[7]

Treatment is mainly supportive and palliative. Endoscopic sclerotherapy and radiotherapy of the metastatic lesions could be successful and may improve quality of life. Data on local endoscopic therapy of bleeding from small bowel lesions are limited. Endoscopic haemostasis can be reached by using injection, bipolar or heater probe coagulation. If the patient is still in a good general condition and the primary tumour is known to be chemoresistant, a surgical approach should be attempted. Intractable haemorrhage can also be treated with arterial embolisation of tumour-supplying arteries.[25] The overall long-term prognosis remains extremely poor.

CONCLUSION

The cases presented in this report represent clearly the peculiarity of duodenal metastasis as a cause of occult upper gastrointestinal bleeding. It could be one of the most vexing problems confronting physicians. With the advent of improved diagnostic tests, timely endoscopic diagnosis of this rare entity has become possible, enabling the clinician to make better therapeutic decisions. Physicians should be aware of this clinical entity, especially in patients with a previous history of malignancy. Treatment is mainly supportive and palliative in case of chemoresistant tumours.

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... maybe because your eye
is so close
to your mouth ...

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