CASE REPORT

Solitary jejunal metastasis from renal cell carcinoma presenting as small bowel obstruction 19 years after nephrectomy

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SUMMARY

Metachronous metastatic disease may develop in up to 50% of patients with renal cell carcinoma (RCC) who have undergone a presumably curative radical nephrectomy. We describe a case of small bowel obstruction secondary to a solitary jejunal RCC metastasis affecting a 66-year-old man with a history of RCC, which was treated 19 years earlier by right radical nephrectomy. The patient underwent successful laparotomy and wide margin resection of the affected small bowel with end-to-end anastomosis. A subsequent staging CT revealed no other metastases. To our knowledge, only eight cases of isolated small bowel metastasis from RCC have been reported. Of these, only one previous report referred to a longer time interval to small bowel metastasis than our case. The case highlights that isolated bowel metastasis should be considered as a possible aetiology of small bowel obstruction, even in patients with a distant history of presumably curative cancer treatment.

BACKGROUND

The natural history of renal cell carcinoma (RCC) can be highly unpredictable, posing diagnostic and management challenges. Because of this, RCC often presents at advanced stages with metastases to a wide variety of organs via haematogenous spread. Despite this, synchronous or late metastasis to the small bowel has been reported only in a limited number of cases.¹ Solitary RCC metastases are uncommon, with an incidence of approximately 1–2%.² To the best of our knowledge, this is only the ninth reported case of isolated small bowel metastasis from RCC. With a metastasis onset 19 years after curative treatment, this case is also unique, as it is the second longest interval reported between a radical nephrectomy and isolated metastasis occurring in the small bowel. Most cases with small bowel metastases published in the literature also had metastases in other organs.³

Metastatic RCC to the small bowel usually presents with melaena, symptomatic anaemia, obstruction or perforation (table 1). Many of the reported cases of obstruction from metastatic RCC in the small bowel are secondary to intussusception. In contrast, in this case, there was no evidence of any intussusception on imaging or during surgery. Therefore, this case highlights the potential for recurrence of RCC many years after initial diagnosis and the presentation of metastatic disease in the form of bowel obstruction.

CASE PRESENTATION

A 66-year-old Caucasian man with end-stage renal disease treated with ambulatory peritoneal dialysis was admitted with a 2-day history of vomiting and abdominal pain. He had normal bowel habits. His medical history was significant for membranous nephropathy diagnosed 20 years earlier. The following year, he was diagnosed with localised clear-cell type RCC 4 cm in greatest dimension and isolated to the renal parenchyma (T1aN0M0), for which he underwent right radical nephrectomy. Other background history included gout, hypertension, dyslipidaemia and chronic obstructive pulmonary disease. He was an active long-term smoker of 40 pack-years and consumed less than one standard drink of alcohol per day. There was no significant family history.

On examination at the emergency department, he was afebrile but had mild tachycardia, with a pulse of 110 bpm. There was significant generalised abdominal tenderness on palpation but no signs of peritonism, and the bowel sounds were diminished. The peritoneal dialysis site appeared clean with no signs of infection.

INVESTIGATIONS

Bacterial peritonitis was initially suspected, but was excluded in view of clear effluent with a normal white cell count, microscopy and culture. The patient's biochemical profile was consistent with his baseline end-stage kidney disease, with no derangement in liver function tests, bilirubin or elevated serum amylase or lipase. Abdominal radiograph was performed on presentation, which was suggestive of small bowel obstruction, with dilated loops of small bowel and multiple air-fluid levels (figure 1). Following surgical review, a Gastrografin (diatrizoate sodium and diatrizoate meglumine solution, Bracco Diagnostics, Princeton, New Jersey, USA) small bowel series was also performed, and it confirmed the small bowel pathology with dilated loops of small bowel and contrast medium retention in the small bowel (figure 2).

Histological examination of the mass confirmed the diagnosis of metastatic RCC. The final histology report indicated the following findings:

Macroscopic: Fungating polypoid mass measuring up to 48 mm in length and 38 mm in width on a broad sessile base (figure 3). The tumour occupied approximately 30–40% of the circumference but occluded the lumen. The mass was clear of the mesenteric fat margin and appeared to involve the

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Table 1 Case reports of isolated small bowel metastasis after presumably curative radical nephrectomy for renal cell carcinoma

Author	Year	Age	Gender	Stage	Location	Interval to recurrence (years)	Clinical presentation	Treatment
Vazquez <i>et al</i> ⁴	2011	68	Male	Not reported	Proximal jejunum	1	Anaemia and melaena	Not reported
Toh and Hale ⁵	1995	59	Female	1	Duodenum	10	Abdominal pain, anorexia and weight loss	Duodenotomy
Starr and Miller ⁶	1952	52	Female	Isolated to renal parenchymal	Mid jejunum	20	Symptomatic anaemia	Resection of affected segment of jejunum and anastomosis
Vashi <i>et al</i> ⁷	2011	53	Male	Renal vein and perinephric adipose metastasis	Multiple polyps throughout small bowel	2 weeks	Symptomatic anaemia	Laparotomy, intraoperative endoscopy and snare polypectomy
Bahli and Panesar ⁸	2007	65	Female	T2G4	Jejunum	1	Small bowel obstruction	Resection of affected segment of jejunum and anastomosis
Aissa <i>et al</i> ⁹	2012	64	Male	Not reported	Multiple areas of small bowel	1	Intermittent epigastric pain and intussusception	Resection of affected segments of small bowel and anastomosis
Venugopal <i>et al</i> ¹⁰	2007	54	Male	Isolated to renal parenchymal	Mid ileum (mesenteric nodes involved)	6	Melena and intussusception	Segmental resection of ileum and end to end anastomosis

full thickness with some adjacent fat involvement. The mesenteric fat was unremarkable in appearance with no abnormal lymph nodes located.

Microscopic: The appearance was in line with polypoid metastatic RCC, with high power magnification showing polygonal cells with intervening vascular network. The tumour was separated from the fat resection by normal adipose tissue and excision was complete with clear margins. No mesenteric lymph nodes were detected. Immunoperoxidase studies showed moderate to strong membrane positivity for epithelial membrane antigen and negative for CK7 and CK20 (figure 4).

Subsequently, the patient underwent a staging CT scan of his chest and repeat abdominal scans, which did not show any other metastatic deposits.

DIFFERENTIAL DIAGNOSIS

Bacterial peritonitis was ruled out after microbiological evaluations, including negative peritoneal dialysate fluid cell count, Gram stain and culture. Hepatobiliary disease was considered less likely due to the absence of focal tenderness on abdominal examination, and normal liver function tests and bilirubin. Pancreatitis was also thought to be unlikely with normal serum amylase and lipase levels. The initial abdominal radiograph

showed multiple air-fluid levels and the small bowel was distended. No obvious cause for the small bowel obstruction could be appreciated on the radiograph. A diagnosis of bowel obstruction was confirmed following Gastrografin small bowel series, but it was thought that adhesions were likely to be the underlying aetiology due to the history of previous abdominal surgery.

TREATMENT

The patient was initially managed conservatively with intravenous fluid resuscitation, antiemetics and insertion of a nasogastric tube for gastric decompression during the first 48 h. In view of further clinical deterioration, he underwent an exploratory laparoscopy.

The laparoscopy was converted to exploratory laparotomy, revealing a 4 cm intraluminal jejunal mass nearly occluding the entire lumen and causing proximal bowel dilation. There were no other masses or deposits noted elsewhere. A standard 10 cm wide margin resection of the affected small bowel with attached mesentery up to 30 mm in depth was performed with end-to-end anastomosis. A wide mesenteric resection was not performed because of the anatomical difficulty in performing this resection at the jejunum due to the short length of mesentery and close proximity of vessels to the superior mesenteric

Figure 1 Plain abdominal radiographs at presentation. Supine, where there is gas outlined distended loops of small bowel (A). Erect, showing multiple fluid levels, in keeping with distal small bowel obstruction (B).

Figure 2 Small bowel series with barium swallow. Immediately (A). Six hours postadministration of contrast, which fills dilated proximal small bowel loops (B). There is no filling of ilial loops or of the colon, indicating significant hold up of contrast.

Figure 3 Fungating polypoid mass measuring up to 48 mm in length and 38 mm in width on a broad sessile base, which was resected during surgery.

artery. The patient's postoperative recovery was uneventful, and he was discharged on day 10 after surgery.

OUTCOME AND FOLLOW-UP

In the postoperative period, the patient underwent haemodialysis as renal replacement therapy. There was considerable discussion with the patient regarding histology results, the recurrence of RCC and absence of metastatic disease on CT. The patient expressed his preference for quality of life over additional treatment such as chemotherapy because of his end-stage renal failure. It was the view of the medical oncologists that, given the patient's limited tumour burden with complete resection of metastatic disease, absence of symptoms and very distant history of primary RCC, a period of observation rather than adjuvant chemotherapy was reasonable, especially given the patient's preferences. There is limited data on the survival benefit, safety and tolerability of targeted therapy in patients with end-stage renal failure. In particular, there are no dosage recommendations for sorafenib in patients with end-stage renal failure. After discussions with the patient, no targeted therapies were administered and a period of close observation and follow-up was agreed on. After 18 months, the patient was discharged from medical

oncology with no further restaging scans, as per the patient's wishes.

The patient has since resumed peritoneal dialysis and, after 18 months, remains free of disease, with ongoing follow-up in the urology and nephrology departments.

DISCUSSION

RCC is a relatively uncommon adult malignancy, accounting for approximately 3% of all adult malignancies. One-third of patients with RCC have metastases at the time of the initial diagnosis,¹¹ and 30–50% of patients develop metastases during the course of the disease.¹² Although improved imaging modalities have made the incidental detection of renal tumours more common, patients continue to present with systemic disease and may display a wide variety of symptoms, most commonly haematuria and/or loin pain.¹³ Conventional (clear cell and granular) RCCs make up approximately 80% of RCCs and have a highly variable clinical course. Thus, they represent a rather heterogeneous group of tumours instead of a single biological entity.¹

RCC can metastasise to a wide variety of sites through lymphatic, haematogenous or transcoelomic spread, and by direct invasion.¹⁴ The most common sites of metastasis of RCC are the lungs (75%) and lymph nodes (36%), followed by the bones (20%) and liver (18%).¹⁵ Primary malignancies of the lungs, head and neck, breast and oesophagus are known to metastasise to the small bowel.^{16–20} In contrast, intraluminal small-bowel metastases from metastatic renal cancer are uncommon, developing in only 2–4% of RCC cases.²¹ A comprehensive PubMed search identified 52 published case reports of metastatic RCC to the small bowel, of which 8 were solitary metastases similar to that seen in our patient (table 1).

In these cases, melaena, symptomatic anaemia and abdominal pain were the most common presenting symptoms. In several cases, the small bowel metastasis resulted in intussusception leading to obstruction, whereas this was not the case in our patient. Most cases with intestinal RCC metastases also had pulmonary metastases, suggesting that the lung, via the pulmonary circulation, may be a key site of dissemination of RCC metastases.^{11 18 22–34}

The risk of recurrence following resection of RCC is higher during the first 3–5 years.³⁵ The interval from initial nephrectomy to presentation of intestinal metastases is reported to range from 3 months to 20 years, and appears to correlate with the overall disease-specific survival.⁴ The median time before a relapse after nephrectomy is 15 months, and 85% of relapses occur within 3 years.³⁶ However, it is important to consider the potential for recurrence many years after 'curative' nephrectomy, as demonstrated in this case.

Diagnosis of metastatic RCC to the small bowel can be challenging. Inflammation and oedema owing to malignancy may be observed as thumb-printing on an abdominal radiograph and segmental wall thickening on a CT scan, none of which were evident in this patient. Intestinal metastases are usually discovered as a result of a specific clinical manifestation, such as nausea, abdominal pain, haemorrhage, melaena or obstruction, as in this case. Additionally, the small bowel is not accessible to standard endoscopic examination, and lesions are often not detectable on barium examinations.³⁷

In recent years, with the advent of target therapies, the prognosis of patients with metastatic RCC has improved.¹⁷ However, in the absence of dramatic results, surgical excisions of isolated metastasis continue to play a role in the treatment of metastatic RCC.^{38–41}

Figure 4 Low power magnification histology specimen showing surface ulceration and necrosis with stroma containing islands and cords of clear cell carcinoma (A–C). High power magnification showing polygonal cells with intervening vascular network (D).

Learning points

- ▶ Metastatic renal cell carcinoma (RCC) can have a varied presentation, including a very indolent and unpredictable natural history.
- ▶ In patients with a history of a primary malignancy, consideration of isolated bowel metastasis is important in those presenting with unexplained abdominal symptoms; thus, thorough investigation of the gastrointestinal tract is required.
- ▶ Early detection of organ RCC metastasis, while the lesion is still surgically treatable, can result in satisfactory clinical outcomes.

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