CASE REPORT

Splenic rupture due to metastatic disease: a rare complication

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SUMMARY

We report a case of splenic rupture in an 83-year-old woman presenting with symptoms concerning for upper gastrointestinal malignancy. CT imaging revealed marked gastric thickening and a 33×33 mm splenic metastasis, with subsequent gastroscopy demonstrating a large lesion at the gastro-oesophageal junction. While awaiting further investigation, the patient developed acute onset left upper quadrant pain, peritonism and hypovolaemic shock. Urgent CT imaging demonstrated a ruptured spleen with extensive haemoperitoneum, necessitating emergency splenectomy.

BACKGROUND

Splenic rupture secondary to metastasis is rare and as such may not always be considered as a differential diagnosis in the assessment of a patient with a known (or indeed unknown) malignancy presenting with an acute abdomen. Since a delay in diagnosis could be life-threatening, we wish to present this case to enhance awareness of this unusual but important presentation.

CASE PRESENTATION

An 83-year-old woman presented to the emergency department with a 10-week history of dysphagia to solids, early satiety and 4 kg weight loss. The patient also reported several episodes of passing dark red blood through her ileostomy. She had undergone prophylactic colectomy for familial adenomatous polyposis at the age of 35. Initial examination was unremarkable, with a soft non-tender abdomen and no palpable masses.

INVESTIGATIONS

Blood tests revealed iron deficiency anaemia with a haemoglobin of 8.1 g/dL, a mean corpuscular volume of 72.1 fL and a ferritin of 14.8 ng/mL. Remaining blood tests were unremarkable. CT imaging demonstrated marked gastric thickening, concerning for malignancy, and a complex splenic lesion 33×33 mm in diameter that was thought to represent a splenic metastasis (figure 1). An 8 mm metastatic nodule was also identified in the peritoneum.

In view of this imaging, and the dark blood passed through the ileostomy, the patient underwent gastroscopy. This showed a carpet of fundal gland polyps extending into the gastro-oesophageal junction (GOJ) and a large, actively bleeding GOJ lesion (figure 2). A biopsy of the lesion was taken, which surprisingly did not show evidence of malignancy.

A second biopsy was deemed appropriate. However, in the interim, the patient developed acute onset severe abdominal pain. Examination demonstrated significant left upper quadrant tenderness with peritonism and abdominal distension. The patient was hypotensive with a blood pressure of 100/51 mm Hg and was clinically in shock. Venous blood gas testing revealed a lactate of 5.4 mmol/L with a fall in haemoglobin from 92 g/L to 68 g/L. Urgent CT imaging revealed a ruptured spleen with extensive haemoperitoneum and evidence of gastric and hepatic ischaemia.

TREATMENT

The patient underwent emergency laparoscopic splenectomy. Over 1.8 L of blood was found in the abdomen and the spleen was found to be grossly abnormal with a dense white plaque visualised over the capsular surface. A similar white plaque was also seen over the surface of the proximal stomach.

OUTCOME AND FOLLOW-UP

Histological examination of the spleen showed a region of capsular disruption with associated haemorrhage measuring approximately 70×35 mm. Adjacent to the haemorrhage was a white region of the capsular surface, which, on sectioning, revealed a well-circumscribed white mass within the spleen measuring 44×45×32 mm.

The tumour within the spleen was composed of small cystically dilated glandular spaces with focal pseudo-papillary tufting. Many of these glandular spaces contained numerous neutrophils, which

Figure 1 Contrast CT demonstrating 33×33 mm splenic metastasis.

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Figure 2 Gastroscopy revealing a bleeding gastro-oesophageal junction lesion within a carpet of fundal gland polyps.

were also seen within the intervening fibrous tissue. The glands were lined by columnar epithelium with focal cuboidal areas. The cells had abundant pale eosinophilic cytoplasm and irregular round to elongated nuclei, many of which were pale, with clumped chromatin, occasional small nucleoli and focal pleomorphism. The histological features of the spleen were those of metastatic adenocarcinoma. The immunohistochemical profile of the tumour cells was in keeping with an upper gastrointestinal malignancy, making the GOJ lesion seen on gastroscopy the likely primary tumour.

The patient recovered well from her emergency splenectomy thereafter. The case was discussed at the upper gastrointestinal multi-disciplinary team meeting. In view of the peritoneal metastasis on CT imaging, the outcome of 'best supportive care' was given. The patient underwent oesophageal stenting due to ongoing dysphagia, with the stent deployed across the tumour at the GOJ. The patient was discharged home with a care package and was referred to the community palliative care team. She died peacefully at home 4 weeks later.

DISCUSSION

Splenic metastases are generally asymptomatic¹ and as such usually represent a radiological diagnosis rather than a clinical one. Patients that do experience symptoms may report generalised left upper quadrant pain, or even early satiety or shortness of breath secondary to the compression of surrounding organs.²

Rupture of the spleen secondary to metastatic disease is a rare phenomenon, with only 30 cases currently reported in the literature (Medline, English language).^{2–31} The range of malignancies associated with metastatic splenic rupture is vast, with metastatic choriocarcinoma and malignant melanoma representing the most common primary lesions seen in cases of rupture (13.3% and 10%, respectively).^{2–8} Metastatic gastric adenocarcinoma accounts for 6.7% of cases.^{9–10}

Berge's large postmortem series identified malignant melanoma and carcinomas of the breast, lung, bowel and ovary as the most common primary lesions to metastasise to the spleen. Splenic metastases were identified in 7.1% of carcinoma cases, making the spleen the 10th most frequent site of metastasis.³² While cases of solitary splenic metastasis have been reported, most splenic metastases occur in the setting of

multi-visceral disseminated disease³³ and consequently are often accompanied with a poor prognosis.

Several theories regarding the mechanism of splenic rupture in the context of malignancy have been proposed. The first is a direct mechanism by which the neoplastic cells invade the splenic capsule, destroying the architecture of the capsule and thus leading to rupture.³⁴ Remaining theories are based around pressure mechanisms whereby necrosis of the malignant splenic tumour can lead to bleeding within the tumour, which again can lead to capsule rupture. Similarly, the prothrombotic nature of malignancy can lead to splenic infarctions, again causing subcapsular bleeding and rupture.³⁴

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Learning points

- ▶ Splenic rupture secondary to metastatic disease is an important differential diagnosis in patients known to have splenic metastasis who present with an acute abdomen. Although rare, the consideration of this differential may be life saving.
- ▶ Splenic rupture may be the first presentation of an unknown malignancy, in which case a thorough history, examination and investigations are needed to identify the primary lesion.
- ▶ When the clinical presentation and imaging are suggestive of malignancy, it is important to question negative biopsy results and look for alternative sites to biopsy in order to confirm the definitive diagnosis.

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