

Unusual bleeding gastric ulcer

In March 2003, a 72-year-old man presented with a history of vomiting coffee grounds, recent weight loss but no abdominal discomfort. Physical examination did not reveal an abdominal mass. An upper endoscopy found a gastric ulcer with active bleeding (Fig 1). A biopsy was taken and pathological examination demonstrated a malignant stromal tumour (Fig 2). A computed tomographic (CT) scan was then performed. It showed a large cavitating mass lesion in the upper part of the stomach with no evidence of liver and intraperitoneal metastases (Fig 3). A subtotal gastrectomy was subsequently performed with a clear resection margin. The patient did not receive adjuvant therapy and had no recurrence 1 year after the operation.

Discussion

Gastrointestinal stromal tumour (GIST) is a rare mesenchymal tumour of the gastrointestinal tract. With the recent development of immunohistological studies, it has become a distinct disease entity. It is a KIT-expressing and KIT-signalling driven mesenchymal tumour. CD117/c-kit protein is positive in most stromal tumours. In view of this unique biological characteristic, a tyrosine kinase inhibitor, STI-571 (imatinib mesylate; Gleevec, Novartis, East Hanover [NJ], US) has been developed to treat the disease. It is difficult to predict the clinical behaviour of stromal tumours. Larger tumours and those with higher mitotic activity are associated with clinical aggressiveness. The liver and the intraperitoneal spaces are the most common site for secondaries. Gastrointestinal stromal tumours are found in all parts of the gastrointestinal tract, occurring most frequently in the stomach and small bowel. A local study found a similar distribution for stromal tumours.¹ Outside of the gastrointestinal tract, stromal tumours are also found

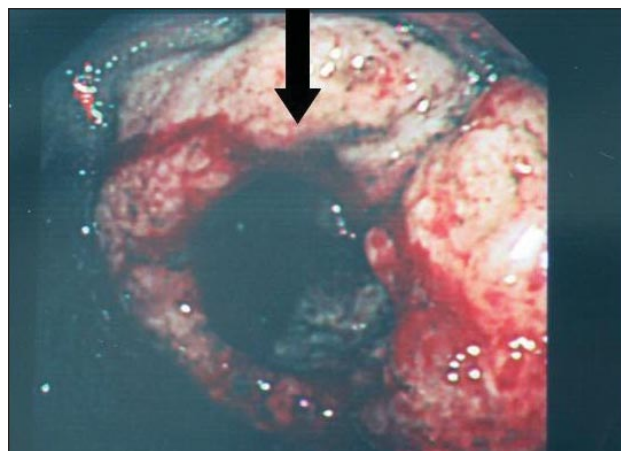


Fig 1. Endoscopic view of the large bleeding ulcer (arrow)

in the mesentery, omentum, and retroperitoneum. Gastrointestinal stromal tumours are commonly seen in patients older than 40 years,² but they have also been reported in children. Prakash et al³ suggest that this is a separate clinicopathologic and molecular subset. An increased GIST prevalence has also been noted in patients with neurofibromatosis type I.⁴ Common presentations include abdominal pain and gastrointestinal bleeding. Our patient presented with gastrointestinal bleeding and a gastric ulcer and the preliminary diagnosis was a malignant gastric ulcer. The correct diagnosis could be made only after the biopsy result was positive for GIST. A number of cases are diagnosed incidentally during imaging, endoscopy, and surgery for other causes. Interestingly, bowel obstruction is rare in patients with GIST. This could be related to exophytic growth of the tumour with no significant intraluminal extension.

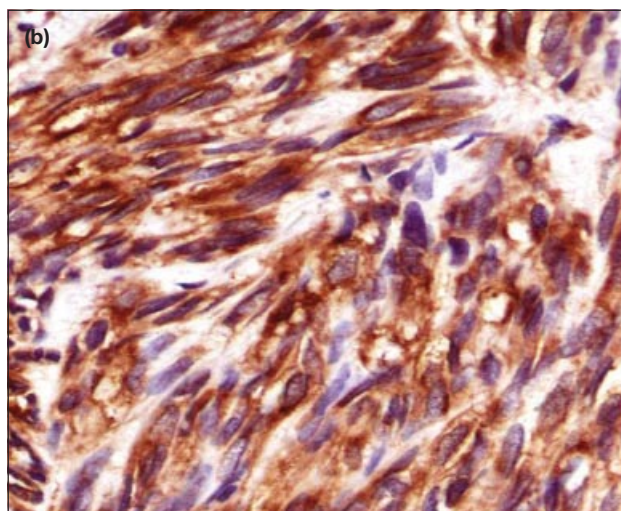
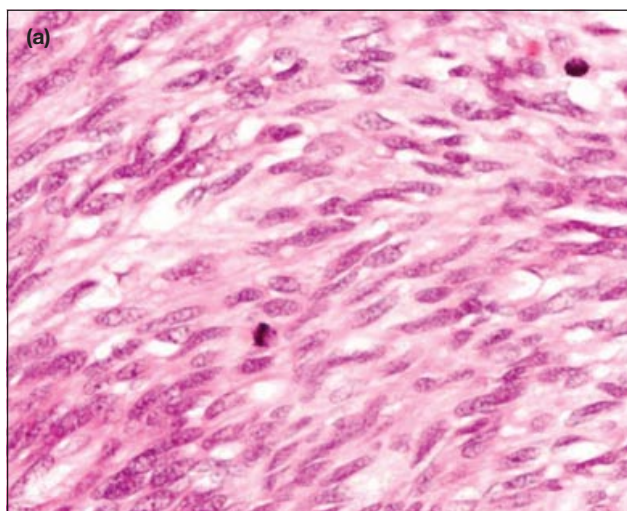


Fig 2. (a) Photomicrograph (H&E stain) of the tumour composing of fascicles of spindle cells with a few mitotic activities, and (b) photomicrograph with immunohistochemical staining for c-kit (CD117) shows diffuse and strong cytoplasmic positivity within the tumour cells

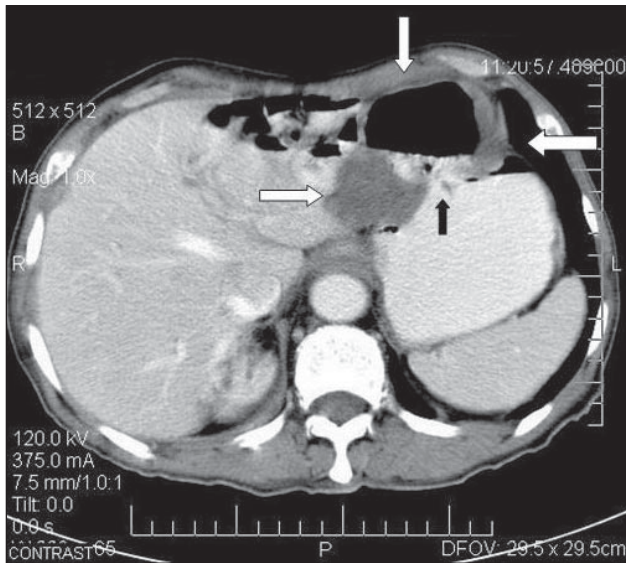


Fig 3. Axial section of a computed tomographic scan with contrast shows the large exophytic cavitating tumour mass (white arrows). Air and oral contrast opacification is seen in the cavity of the lesion and the communication to the lumen of stomach is readily demonstrated (black arrow)

Plain radiographs are not useful for making the diagnosis, though displacement or compression of the adjacent bowel structure may be seen. Barium examination may show the characteristic submucosal lesion. Transabdominal ultrasound is readily available and involves no radiation to the patient but may fail to delineate the full extent of a larger tumour or detect a small lesion deep inside the body. Endoscopic ultrasound can give a detailed assessment of the local involvement of the tumour with its ability to differentiate between the layers of the intestinal wall, but cannot be performed in much of the small bowel inaccessible to endoscopy. The recent introduction of capsule endoscopy may be helpful for the assessment of small bowel GIST. Recent studies suggest this is a promising examination for deep small bowel lesions. Computed tomographic scans can demonstrate the local extent of the tumour and liver or intraperitoneal metastases. Gastrointestinal stromal tumours are usually well-defined exophytic mass lesions. While small lesions are usually homogeneously enhancing on contrast injection, larger lesions are often heterogeneously enhanced with central necrosis and haemorrhage. Cavitating mass lesions, as in the present case, can be seen with air and oral contrast inside the cavity. Computed tomographic scanning is also helpful to monitor and detect recurrence of the stromal tumour. With selective tyrosine kinase inhibitor treatment of GIST, the response to therapy can be monitored using CT scanning. Magnetic resonance imaging (MRI) yields similar imaging findings to CT scanning, but is less readily available and more expensive. In patients with contra-indications to CT, such as a history of hypersensitivity to water-soluble contrast, MRI can be a good alternative. Angiography can demonstrate the stromal tumour as a hypervascular tumour. Intense tumour staining at the capillary phase with a prominent arterial supply and venous drainage can be seen.⁵ Being an invasive

examination requiring arterial catheterization; angiography is mostly reserved for patients with acute gastrointestinal bleeding who may require embolisation, though it may be performed as a preoperative assessment to define the origin of a large lesion. A positron emission tomography scan can demonstrate the tumour as a hypermetabolic lesion. It provides functional information needed to predict and assess the response to medical treatment.

The definitive treatment for GIST is resection of the tumour with a clear margin. In cases where there are metastases or where the patient is unfit for surgery, medical treatment with tyrosine kinase inhibitors has shown encouraging results.

Conclusion

Gastrointestinal stromal tumour is a rare mesenchymal tumour of the gastrointestinal tract that has become a distinct disease entity with the recent development of immunohistological studies. Imaging, especially CT scanning, helps to define the local extent and to detect metastases of the tumour. Surgical removal is the treatment of choice. Medical treatment with a tyrosine kinase inhibitor has achieved encouraging results.

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