Varied presentations of gastrointestinal stromal tumour

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Abstract Gastrointestinal stromal tumours (GIST) are soft tissue tumours arising from the mesenchyma in the gastrointestinal tract. These are rare tumours. However, over the past few years with the better understanding of the pathogenesis of GIST and better imaging facilities, the diagnosis is made more frequently. The characteristic diagnostic feature of GIST is the expression of CD34 and receptor tyrosine kinase KIT, CD117 by these tumours. The use of tyrosine kinase inhibitor imatinib mesylate has led to improved outcome. The presentation of GIST however remains non-specific, and varies depending upon the size and the organ of origin. We present a series of four cases of GIST with varied presentation.

Keywords Mesenchymal tumours · GIST · KIT · Imatinib

Introduction

Over the past few years with the better understanding of the pathogenesis of GIST and better imaging facilities, the diagnosis is made more frequently. As a result, now a standard protocol is being followed for the management of GIST. The use of tyrosine kinase inhibitor imatinib mesylate has led to improved outcome. The presentation of GIST however remains non-specific, and varies depending upon the size and the organ of origin. We present a case series of varied presentations.

Case series

Case 1

A 55-year-old male presented with haemoperitoneum at a primary care centre. He was operated there on emergency basis, when they thought it to be haemangioma of left lobe of liver. Patient was closed after controlling of haemostasis, and referred to us for further management. CECT scan done at our centre revealed a mass arising from the greater curvature of the stomach (Fig. 1). Patient was re-explored when a cystic mass with solid component was found in relation to the greater curvature of stomach. A total gastrectomy was done. Histopathology and immunohistochemistry confirmed it as malignant GIST. On six month follow up patient was found to be doing well with no evidence of recurrence on CECT scan (Fig. 2).

Case 2

A 55-year-old male presented with progressive dysphagia. Endoscopy showed mass at the lower end of oesophagus (Fig. 3). Histopathology and immunohistochemistry of the endoscopic biopsy was suggestive of benign GIST. Patient successfully treated with transhiatal oesophagectomy. Its

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four years since the surgery and on follow up, the patient is asymptomatic. Periodic endoscopy and CECT scan are normal (Fig. 4).

Case 3

A 50-year-old female presented with fullness of abdomen. On clinical examination, a large mass occupying the peritoneal cavity was found. CECT scan confirmed the finding with evidence of intra-tumoural bleed (Fig. 5). USG guided biopsy of the lump was inconclusive. Patient was explored, when a large mass with solid and cystic component arising from posterior wall of stomach was found. It was involving almost the whole of abdominal cavity. There was also presence of intra-tumoural bleed. As the mass was fixed to retro peritoneum and involving major blood vessels, resection was deferred. Biopsy was taken. It revealed a spindle cell

tumour which on further immunohistochemistry investigation confirmed it to be malignant GIST. The patient was started on imatinib mesylate. In six months time the tumour has shrunk significantly and she is awaiting definitive surgery (Fig. 6).

Case 4

A 60-year-old female with neurofibromatosis - type I presented with chronic GI bleed and anaemia. Upper GI endoscopy revealed a small tumour arising from the lateral wall of second part of duodenum with bleeding ulcer on the surface. Endoscopic biopsy revealed it to be GIST (Fig. 7). Patient was taken up for surgery when a Wedge resection of tumour with duodeno-jejunostomy was done. Histopathology and immunohistochemistry confirmed it as GIST. It is

Fig. 1 Pre-operative image

Fig. 3 Pre-operative

Fig. 2 Post-operative image

Fig. 4 Post-operative

Fig. 5 Before imatinib mesylate

Fig. 6 6 months Post imatinib mesylate

one year since surgery and patient is asymptomatic with periodic endoscopy and CECT scan being normal.

Discussion

GISTs are soft tissue tumours arising from the mesenchyma in the GI tract, with a reported annual incidence of around 15 per million [1]. Malignant GIST are the most common mesenchymal malignancies of the GI tract [2]. They are rare tumours representing approximately 0.1% to 3% of all GI tumours and approximately 5% of all soft tissue sarcomas [2]. The characteristic diagnostic feature of GIST is the expression, by the majority, of CD34 [3, 4] and receptor tyrosine kinase KIT. CD117 [5, 6].

Fig. 7 Duodenal GIST

The immunophenotypic (CD117 positive) and ultra structural features suggest that GIST arise from the interstitial cell of cajal (ICC) precursor [6]. The principal function of the ICC is to serve as pacemaker cells controlling gut motility [7], coordinating waves of peristalsis.

GIST can occur anywhere in GIT beginning from oesophagus to rectum [8]. They usually occur around the age of 40 years and are rarely seen in children [9], with median age of presentation being 50–60 years [10]. The percentage occurrence of GIST at various sites are; stomach 60–70%, small intestine 20–30% and oesophagus, mesentery, omentum, colon and rectum collectively accounting for 10% [11, 12].

The clinical presentation of GIST is varied and usually non-specific. Symptoms depend on the site and the size of the lesion. It may present as GI bleeding (50%), abdominal pain (20–50%), GI obstruction (10–30%) [13]. Twenty percent (20%) of times it may be asymptomatic. While oesophageal GIST presents as dysphagia, gastric and small bowel GIST present with vague symptoms and are often detected on UGI endoscopy and imaging. Duodenal GIST usually occurs in the second part and either pushes or infiltrates the pancreas [14]. Colorectal GIST usually presents with lower GI bleeding or obstruction [14].

Due to increased awareness of the tumour type and the routine use of CD117-immunochemistry in routine pathological analysis, definitive diagnosis is easily achieved. However it is important that these cases should be reviewed by an experienced pathologist.

Surgery remains the mainstay of the treatment with the principle of surgery being complete macroscopic clearance of the disease with avoidance of the tumour rupture to prevent seeding. In case the tumour is not resectable, downsizing of the tumour mass is attempted by administration of imatinib mesylate [15]. Presently Phase 2 trials have shown promising results in this approach. However Phase 3 trials are yet to be done. Once the tumour shrinks, surgical resection of the tumour is done.

Follow up treatment comprises subjecting the patient to CECT scan after 3 months [16]. Thereafter depending upon the risk, repeat CECT scan is done at the end of 6 months (high risk), 9 months (intermediate risk) and 1 year (low risk). Currently there is no accepted adjuvant therapy regimen and no evidence that chemotherapy or radiotherapy reduces recurrence rate. However, imatinib has been used in the postoperative phase as well as for residual and metastatic disease [17].

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