

CASE REPORT

Radiological and Imaging Findings in Gastrointestinal Stromal Tumor: A Case Report

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ABSTRACT

Introduction: Gastrointestinal stromal tumors (GISTs) are nonepithelial tumors arising from the interstitial cells of Cajal, which express KIT protein-CD117 on immunohistochemistry. It represents a wide clinical spectrum of tumors with different clinical presentations, locations, histology, and prognosis. Gastrointestinal stromal tumors (GISTs) can arise anywhere in the GIT, including the mesentery, omentum, and retroperitoneum. Because most of these tumors are submucosal in location, they usually attain a large size without causing bowel obstruction at the time of diagnosis. This report presents a case of GIST in a 30-year-old male. The patient presented with acute abdomen without any symptoms of obstruction or perforation. He underwent ultrasonography in the radiology department which revealed a large mass along the small bowel with deposits along the mesentery and space occupying lesions (SOLs) in the liver. On contrast-enhanced computerised tomography (CECT), a possibility of GIST with deposits along the mesentery and liver was given, which was confirmed by histopathology.

Conclusion: Recognition and acquaintance with GISTs is primarily important for early detection which allows for more treatment options. These tumors are rare in people younger than 40 years of age, but can occur in people of any age.

Keywords: Contrast-enhanced CT, Gastrointestinal stromal tumor, Histopathology, Ultrasonography.

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INTRODUCTION

Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal malignancy of the GI tract.¹

Specific immunohistochemical properties of GISTs for KIT (CD117, a tyrosine kinase growth factor receptor) have allowed GISTs to be distinguished from other mesenchymal

tumors of the GI tract, such as leiomyomas, leiomyosarcomas, schwannomas, and neurofibromas.²

CASE REPORT

This is a report of a recent case of GIST of small intestinal origin. A 30-year-old male patient presented in the emergency department with complaints of acute abdomen and generalized tenderness over the abdomen. There were no complaints of constipation or diarrhea. On examination, the patient had marked guarding of the abdomen and tenderness to palpation. A myriad of provisional diagnoses for acute abdomen were considered.

The patient was referred to the Department of Radiodiagnosis for an X-ray of the abdomen erect and an ultrasound of the abdomen. No significant abnormality was detected at X-ray abdomen erect.

On ultrasonography of the abdomen, a large mass of an approximate size of 10 × 8 cm was visualized in relation to small bowel in the mid abdomen (Fig. 1).

Few hypoechoic space-occupying lesions were seen in the liver (Fig. 2).

Few deposits were seen scattered along the small bowel mesentery (Fig. 3).

The patient was then advised to take the contrast-enhanced CT (CECT) scan of the abdomen.

On CECT, there was a large exophytic heterogeneously enhancing soft tissue density lesion with large central cavitation and air fluid level noted along the anti-mesenteric border of the distal third and fourth parts of duodenum and proximal jejunum (Figs 4 and 5).

The arterial supply was found to be predominantly from superior mesenteric artery (SMA).

No evidence of any bowel obstruction was noted.

Multiple heterogeneously enhancing nodular omental and mesenteric deposits were seen, the largest of them in the right lumbar region with central areas of necrosis (Fig. 6).

Marked fat stranding was seen in the omentum.

Mild ascites was seen.

Few prominent sized lymph nodes were seen in the mesentery and para-aortic region, which was an unusual finding.

Few (at least 2) peripherally enhancing hypodense lesions were seen in segment VI of the liver (Figs 7 and 8).

On histopathological analysis, the tumor was confirmed to be GIST (Fig. 9).

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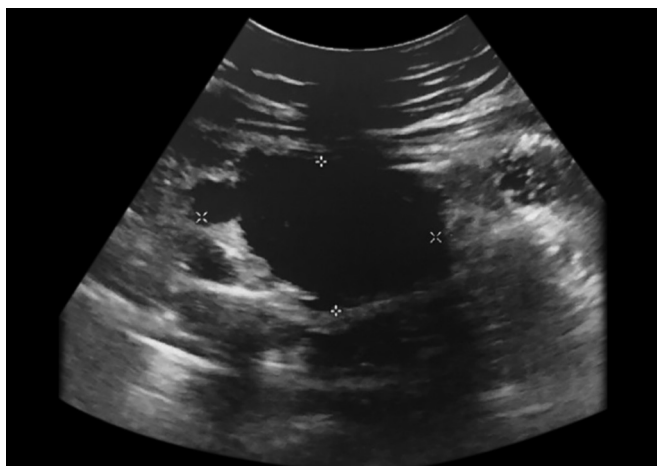


Fig. 1: Ultrasonography of abdomen shows a large mass of approximate size 10 × 8 cm in relation to small bowel in the mid abdomen



Fig. 2: Ultrasonography of abdomen shows hypoechoic space occupying lesions in the liver



Fig. 3: Ultrasonography of abdomen shows a few deposits scattered along the small bowel mesentery

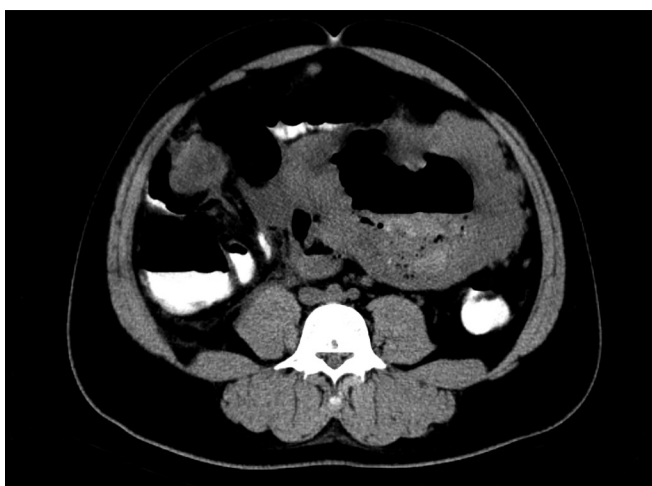


Fig. 4: On NECT of abdomen, a large exophytic mass is visualized with central cavitation and air-fluid level along the antimesenteric border of small bowel

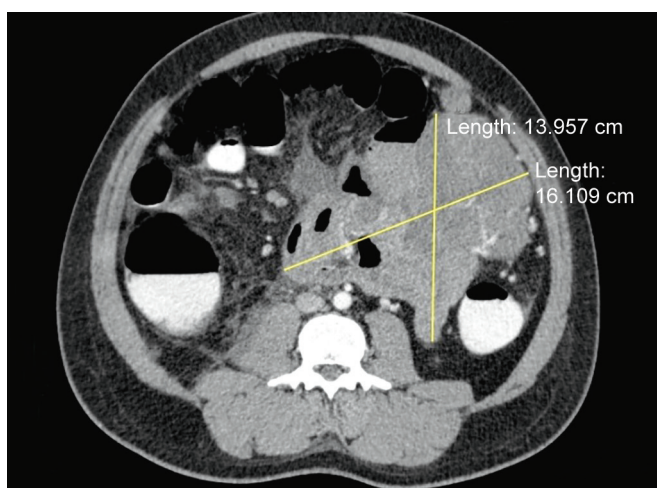


Fig. 5: On CECT of abdomen, the mass shows heterogeneous enhancement

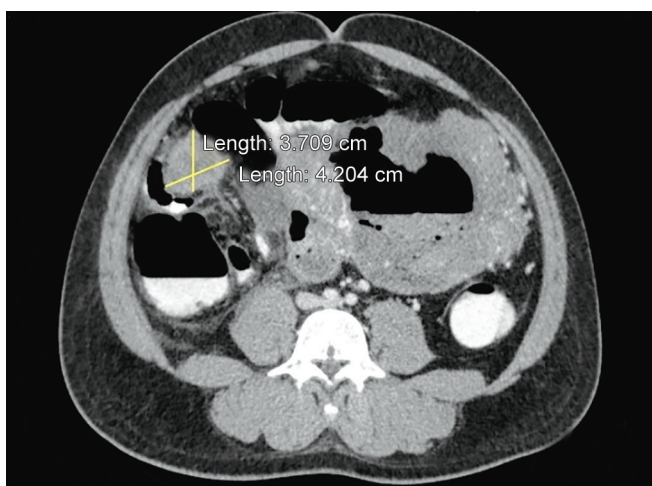


Fig. 6: CECT also reveals multiple heterogeneously enhancing nodular omental and mesenteric deposits, with central areas of necrosis

The spindle cells were found to be immunoreactive to CD117 (c-kit)/DOG1/CD34/smooth muscle actin and immunonegative to S100 protein.

DISCUSSION

Up to 94% of patients with GISTs express CD117 (KIT protein) and, thus, share similar markers with the interstitial cells of Cajal.³

Mutations in the KIT oncogene of GIST resulted in constitutive activation of KIT receptor tyrosine kinase in GISTs. Thus, KIT is not only the principal marker for diagnostic purposes, but also a specific target for systemic therapy.⁴

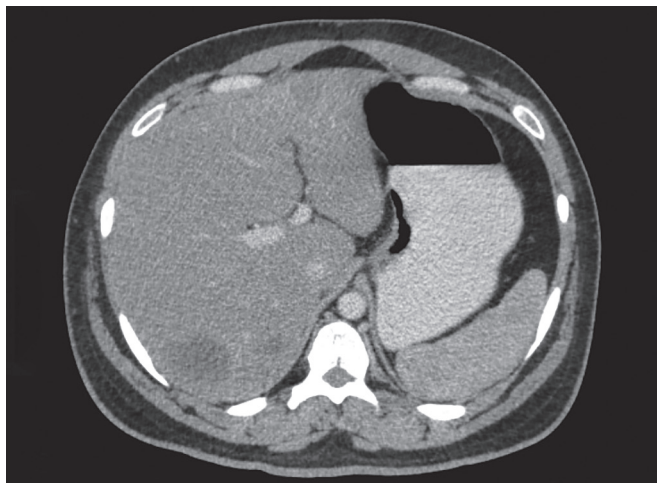


Fig. 7: NECT reveals two hypodense lesions in segment VI of liver

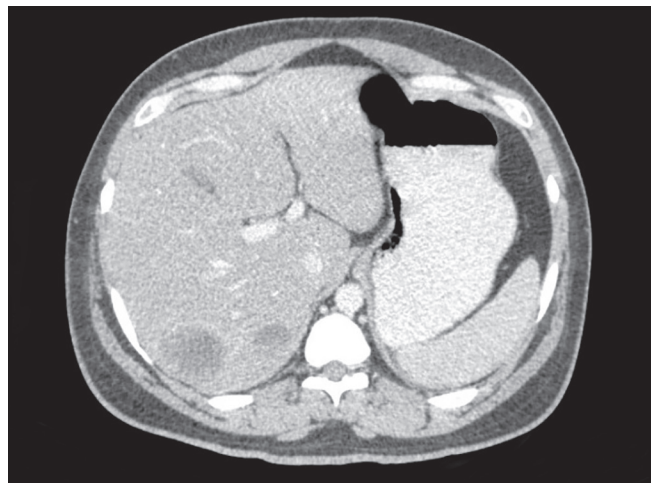


Fig. 8: CECT shows peripheral enhancement of the liver lesions

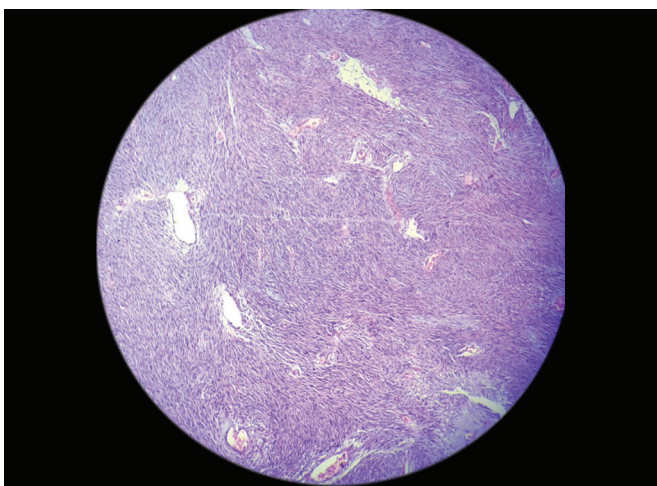


Fig. 9: Histopathological analysis shows multiple spindle cells as seen in gastrointestinal stromal tumor

On CT and magnetic resonance imaging (MRI), this tumor appears as a large heterogeneous mass with areas of low attenuation from hemorrhage, necrosis, or cyst formation and often grows in an exoenteric pattern with a large extraluminal component.⁵

Severe hemorrhage within the mass, which is associated with hypervascular stromal tumors, produces a fluid–fluid level. Calcification is occasionally demonstrated.⁶

Even in the presence of a large tumor, the incidence of bowel obstruction is rare. Some large cavity tumors may show aneurysmal dilatation of the lumen, which is regarded as a fairly specific finding of lymphoma.⁷

Lymphadenopathy is not a common finding.

Metastasis occurs by direct extension and the hematogenous route. However, intraperitoneal spread (peritoneal leiomyosarcomatosis) may occur by intraperitoneal seeding *via* ascitic fluid or by embolic metastases or rupture of the

primary tumor and it is more commonly seen in significantly larger or exophytically growing tumors.⁸

The most common CT manifestations of peritoneal tumor seeding include multiple well-defined peritoneal nodules or masses with or without a smudged or granular pattern of omental infiltration.⁸

Lymphadenopathy is rare, and ascites may be seen but usually in a small amount. These CT findings may simulate those of peritoneal carcinomatosis from GI or ovarian malignancies.⁸

REFERENCES

1. George S, Desai J. Management of gastrointestinal stromal tumors in the era of tyrosine kinase inhibitors. *Curr Treat Options Oncol* 2002;3:489-496.
2. Miettinen M, Viirolainen M, Maat Sarlomo R. Gastrointestinal stromal tumors—value of CD34 antigen in their identification and separation from true leiomyomas and schwannomas. *Am J Surg Pathol* 1995;19:207-216.
3. Miettinen M, Lasota J. Gastrointestinal stromal tumors—definition, clinical, histological, immunohistochemical, and molecular genetic features and differential diagnosis. *Virchows Arch* 2001;438:1-12.
4. Hirota S, Isozaki K, Moriyama Y, et al. Gain-of-function mutations of c-kit in human gastrointestinal stromal tumors. *Science* 1998;279:577-580.
5. Levy AD, Remotti HE, Thompson WM, et al. Gastrointestinal stromal tumors: radiologic features with pathologic correlation. *Radiographics* 2003;23:283-304.
6. Chun HJ, Byun JY, Chun KA, et al. Gastrointestinal leiomyoma and leiomyosarcoma: CT differentiation. *J Comput Assist Tomogr* 1998;22:69-74.
7. Sandrasegaran K, Rajesh A, Rushing DA, et al. Gastrointestinal stromal tumors: CT and MRI findings. *Eur Radiol* 2005;15:1407-1414.
8. Rha SE, Ha HK, Kim AY, et al. Peritoneal leiomyosarcomatosis originating from gastrointestinal leiomyosarcomas: CT features. *Radiology* 2003;227:385-390.