Case Report

Gastrointestinal Stromal Tumor in a Roux en Y limb

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ABSTRACT

Our patient, a 54 year old male came with abdominal distension and pain for 5 months with on and off constipation. Per abdomen examination revealed a midline scar with an ill-defined mass in the epigastrium and right hypochondrium. Endoscopy revealed a bulge in the posterior wall of the stomach. Contrast enhanced CT scan suggested a lesion arising from the posterior wall of stomach. But, laparotomy showed the mass to be arising from the blind end of the jejunum, post roux-en-Y anastomosis. We received a globular mass measuring 14x8x7.5 cm attached to one end of the intestine. External surface was grey tan to grey brown with multiple nodules of varying sizes. Cut surface was variegated with solid and cystic areas filled with blood. Our initial differential diagnoses were leiomyosarcoma, angiosarcoma, inflammatory fibroid polyp and GIST.Microscopy revealed spindle cells showing mild to moderate pleomorphism admixed with lymphocytes and plasma cells with mitotic count of four per 50 high power fields. By immunohistochemistry the spindle cells were CD117 and DOG1 positive which prompted a diagnosis of gastrointestinal stromal tumor. We present this case for the uncommon location of GIST in a roux en Y limb.

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Introduction

Gastrointestinal stromal tumor (GIST) arises from the interstitial cell of Cajal. They are the commonest mesenchymal tumor of the gut. The median age of presentation is 60 years with no specific predilection. [1]GIST can arise anywhere from the wall of GIT most commonly from stomach, small intestine, colon and esophagus. [2]Omentum, mesentery, retroperitoneum and pelvis may also give rise to GIST. CD 117 and PDGFRA are the most common genes mutated in GIST. [3]Difficulty in their interpretation arises due to variation in their differentiation. Morphological variations include tumors with smooth muscle differentiation, with neural differentiation (GANT), both neural and smooth muscle like and those lacking differentiation. Other variants are those with prominent myxoid matrix, signet ring features, granular cell change, oncocytic, rhabdoid, crystalloid formation, heavy inflammatory infiltrate and tumor giant cells. [4]

Case Report

54 year old male presented with complaints of abdominal distension and pain for 5 months with on and off constipation. On inspection his vitals were stable. Per abdomen revealed a midline scar of length ten centimeters. The patient gave a history of surgery, the details of which were not available with him. An ill-defined mass was palpated in the epigastrium and hypochondrium. Endoscopy and CT scan suggested a tumor arising from posterior wall of stomach. But laparotomy revealed a globular mass arising from the jejunal limb of a previous Roux en Y anastomosis. The tumor was resected with the jejunal limb and a jejuno-jejunal anastomosis was done. We received irregular globular mass measuring 14x8x7.5 cm attached to one end of the intestine (Fig 1). External surface was grey-tan to grey-brown with multiple nodules of varying sizes. Cut surface was variegated with solid and cystic areas filled with blood. Our initial differential diagnoses were leiomyosarcoma, angiosarcoma, inflammatory fibroid polyp and GIST. Microscopy revealed spindle cells with mild to moderate pleomorphism admixed with plasma cells and lymphocytes with mitotic count of four per 50 high power fields (Figs 2, 3). By immunohistochemistry, the spindle cells were diffusely positive for CD117 (Fig 4), vimentin, and DOG 1 (Fig 5). In addition they were focally positive for SMA and hence a diagnosis of unifocal low grade gastrointestinal stromal tumor with focal smooth muscle differentiation was given.

Fig. 1: Gross- variegated lesion attached to one end of jejunum.

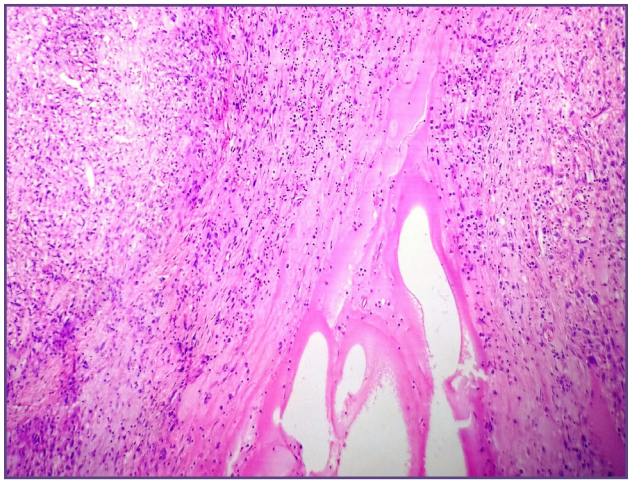

Fig. 2: Microscopy-100x- H&E- Spindle cells admixed with dilated spaces some of them filled with red blood cells.

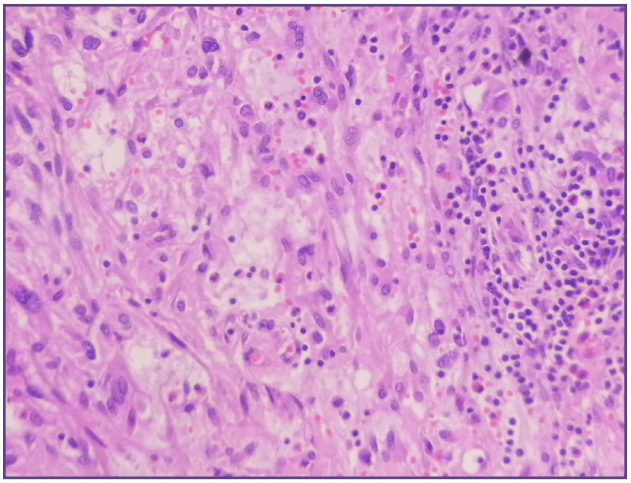

Fig. 3: H&E- 400x-spindle cells admixed with lymphocytes, plasma cells and red blood cells.

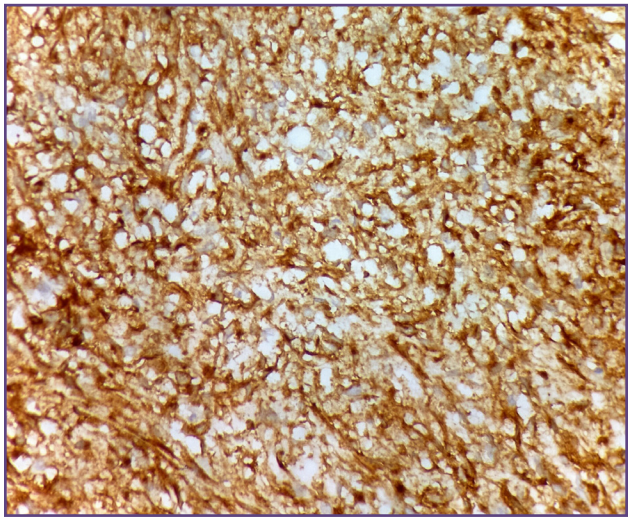

Fig. 4: Immunohistochemistry-400x-CD 117.

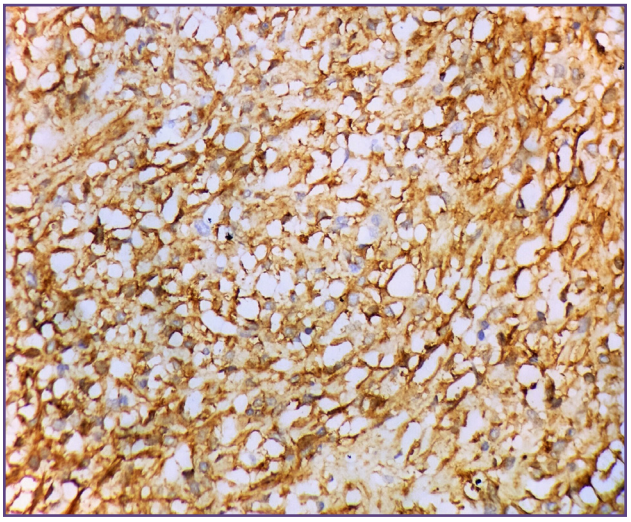

Fig. 5: Immunohistochemistry- 400x- DOG1.

Discussion

Gastrointestinal stromal tumors (GIST) are found to be the commonest mesenchymal neoplasm of gut. They have the ability to behave benign or malignant. Recent advances in the molecular characterization of GIST have helped revolutionizing targeted treatment. [5]The frequent clinical symptoms include anemia, gastrointestinal bleeding, abdominal distension and early satiety.[6]They may also be asymptomatic due to noninvasive behavior and sub mucosal location.[7]These tumors are most frequently seen in stomach followed by small intestine and colon. Extra gastrointestinal GISTs have also been reported.[8,9]

CD 117 and DOG1 positivity as in our case are useful in identification of GIST in 95% of adults. In addition PDGFRA, BRAF, NF1, HRAS, NRAS and succinate dehydrogenase complex mutations were also found in GIST. Though c-KIT inhibitors like imatinib perform well as an adjuvant therapy, resistance is emerging to be a problem in the management. Wild type GISTs that are negative for KIT and PDGFRA mutations are also imatinib resistant. Among the KIT mutations exon 11 is most frequent then follows mutations in exons 9, 13 and 17. Mutations in exons 11 and 13 are naive to imatinib while exon 9 mutations are associated with resistance. Autosomal dominant inheritance is well established in GIST occurring in young individuals.

Modified NIH risk stratification which includes size, location, mitosis and rupture is currently being followed for treatment.[10]Recent studies propose molecular studies to be included for risk stratification scoring, as certain mutations like exon 11 if present do not require additional treatment with KIT inhibitors while others like CDKN2A/B/C alteration leads to recurrence and treatment resistance.[11,12]

A meta-analysis done by Xiaofei Zhi et al from 12 studies concluded that, microscopic margin positive resections with or without rupture proved to be an adverse prognostic factor which improved with imatinib treatment.[5]GIST commonly metastasizes to liver and peritoneum followed by lymph nodes, bone, lung and soft tissue. Metastasis to heart has also been reported. [13]

In our case the patient presented with abdomen distension and pain with a previous history of surgery in the abdomen, the details of which were not known. Laparotomy revealed a globular mass arising from jejunal limb of a previous roux en Y anastomosis. Grossly the tumor was a 14 cm globular mass with variegated appearance on cut surface. Based on this, we had differential diagnosis of leiomyosarcoma, angiosarcoma and GIST. Microscopy showed predominantly spindle cells which were mildly pleomorphic, admixed with blood filled spaces, lymphocytes and plasma cells, so inflammatory fibroid polyp was added to our differentials. The mitotic count was low with no evidence of necrosis. Immunohistochemistry for CD 117, DOG1 and CD 34 was performed. Strong positivity for CD 117 and DOG1 favored a diagnosis of GIST. Leiomyosarcoma was ruled out in our case as the tumor had a low mitotic count and was positive for CD 117, DOG 1 and only focally for SMA which can happen if GIST has smooth muscle differentiation.[14]CD 34 negativity in the spindle cells ruled out the possibility of angiosarcoma and inflammatory fibroid polyp even though microscopy showed lymphocytes and plasma cells within the tumor.[15]

Epithelial malignancies have also been reported following post gastric bypass surgeries. A case of small bowel adenocarcinoma has been reported by Abraham Yacoub

in 2015 in a patient who underwent roux en y procedure for weight loss.[16]Around the same time Deepa Magge and Matthew P. Holtzman reported 2 cases of gastric adenocarcinoma in those who underwent gastric bypass surgery.[17]Adenocarcinoma was not considered as a differential diagnosis in our case because of predominant spindle cell morphology in microscopy.

Reports have shown that the gastric GISTs have the lowest rates of recurrence while rectal and duodenal GISTs have the highest rates. So far recurrence in gastro-jejunal anastomosis site has been reported in one case of a low grade GIST in 71 year old male in 2010.[1] As the details of previous surgery were not available, we hypothesize that the initial surgery could have been for a gastrointestinal stromal tumor which had recurred.

Conclusion

It is important to keep GIST as a differential diagnosis in recurrent tumors arising from post gastric bypass surgery. GIST can present as a solid and cystic mass with hemorrhage. Careful follow up is essential to monitor recurrence even in low grade GIST. Treatment with c-Kit inhibitors should be initiated after mutational studies to rule out the risk of drug resistance.

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Competing Interests

None Declared

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