Case Report

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Giant gastrointestinal stromal tumor of ileum: the gist of GIST: a case report

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ABSTRACT

Gastrointestinal stromal tumors (GIST) are relatively rare pathology as compared with other mitotic lesions of GIT. However, GIST is the most common mesenchymal neoplasms of the gastrointestinal tract. Biopsy of the lesion and Immuno-Histo-Chemistry (IHC) for CD117 confirms the diagnosis. Surgery remains the standard of care and only potentially curative therapy for patients with primary, resectable, localized gastrointestinal stromal tumor. However, chemotherapy with Imatinib is added in neoadjuvant or adjuvant form according to clinical situation, and histopathological status of the lesion.

Keywords: GIST, Small intestine-ileum

INTRODUCTION

Gastrointestinal stromal tumor (GIST) is a rare disease. The crude incidence rates of this soft tissue sarcoma are 1.5 individuals per 100,000 persons per year. GIST most commonly arises from the stomach and accounts for about 1% of gastric malignancies.² A small number may originate from outside the gastrointestinal tract; these are designated extra-GISTs (EGISTs).3 Gastro Intestinal Stromal Tumors (GISTs) are a subset of GI mesenchymal tumors of varying differentiation. Previously, these tumors were classified as GI leiomyomas, leiomyosarcomas, leiomyoblastomas, or schwannomas as a result of their histological findings and apparent origin in the muscularis propria layer of the intestinal wall. With the advent of immunohistochemical staining techniques ultra-structural evaluation, GISTs now recognized as a distinct group of mesenchymal tumors. GI stromal tumors express c-kit protein also known as CD 117, and is considered as a highly specific marker that differentiates GIST from other mesenchymal tumors such as leiomyomas.4 Clinically, most present with an

abdominal mass, pain and malena. USG and CT scan show a mass arising from gastric or intestinal wall, displacing adjacent bowel loops.⁵

CASE REPORT

A 38-year-old female reported to some remote hospital with history of gradually growing lump lower abdomen of about 06-08 months duration. No h/o pain abdomen, features suggestive of intestinal obstruction and menstrual disorder and genito-urinary pathology. USG revealed a large mass arising exophytically from the fundus of the uterus. Case was taken up by gynecologist as a large fibroid uterus and at op, it was found that the mass was actually "densely adherent" to the proximal ileum with flimsy adhesions to the fundus of the uterus. The case was closed and referred to GI surgical centre on recovery. At the higher GI centre the case was worked up with a presumed workup diagnosis of "GIST-ILEUM". USG and CT Chest and Abdomen revealed a large well circumscribed lobulated, hypodense abdominopelvic mass of (16x10.5x9.7cm), adherent to small bowel. No

lymphadenopathy, ascites or liver metastasis. The routine GI tumor markers (CA19-9, CEA, AFP and CA-125) were normal. The case was taken up for surgery. The mass was delivered out of the abdomen along with the bowel, after adhesiolysis and resected out sacrificing 20 cm of proximal ileum which was integral part of the mass. Small bowel continuity was restored by side-side jejuno-ileal anastomosis. Specimen sent for HPE and IHC. Patient made uneventful recovery over the next 10 days, was eating well and passing well and discharged to home on 15th post op day after suture removal. HPE showed ileal mass (15x10x10) cm with Meckel's Diverticulum. IHC showed positive for CD-117, CD-34 and DOG-1, confirming GIST Ileum. Case was discussed in the hospital tumor board and was offered Imatinib 50 mg OD x 3 years with 03monthly USG abdomen and follow up. Case was followed up for over 03 years with no recurrence.



Figure 1: CT scan: large mass about (15x10x10cm) arising from proximal ileum adherent to the uterus. no liver metastesis, acsites or lymphadenepathy.



Figure 2: Large mass (about 15x10x10 cm) arising from proximal ileum seen at laparotomy.

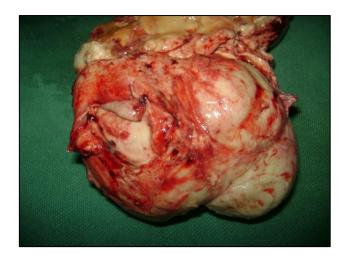


Figure 3: Large mass as in figure 2 delivered out of the abdominal wound.



Figure 4: Large mass as in figure 2 resected out and is being sent as specimen to lab.



Figure 5: A neat "04 layer" side-to-side, generous anastomosis done (jejuno-ileostomy).



Figure 6: Positive for kit (CD-117) showing membrane, diffuse cytoplasmic and perinuclear accentuation pattern.



Figure 7: Positive for CD-34 (typical membrabe pattern).



Figure 8: Positive for DOG 1 (discovered on GIST-1) desmin and vimentin.

DISCUSSION

Gastrointestinal stromal tumors (GIST) are mesenchymal tumors of the gastrointestinal tract arising from smooth muscle pacemaker cells of Cajal (interstitial cells of cajal or ICC). Previously believed to be of smooth muscle or neural origin, the concept of GIST has evolved considerably over the past few years especially with the advent of immunohistochemistry (IHC). GIST are now defined as cellular, spindle cell, epithelioid or occasionally pleomorphic mesenchymal tumors of the GIT expressing CD-34 and CD-117 (c-kit) a product of c kit proto-oncogene.7 Although CD-34 was the first marker discovered for GIST. The Gold standard IHC marker for GIST is CD-117 (cluster designation 117) which is a C-KIT (tyrosine protein kinase). The other corroborative and newer markers DOG1 (Discovered on GIST-1) desmin and vimentin. The behavior of these tumors are driven by the mutation in KIT gene mostly. GIST arise from the muscularis mucosa or muscularis propria layers and most exhibit an endophytic growth pattern, growing within the bowel lumen. In up to one third of patients the tumor invades an adjacent organ. The vast majority of GIST (up to 70%) arise in the stomach, with 20-30% originating in the small intestine and the remainder 10% occurring in the esophagus, colon and rectum.8

GIST have been divided into 4 subtypes on the basis of their differentiation (i) Tumors showing smooth muscle differentiation (ii) Tumors showing neural differentiation (iii) Tumors showing dual differentiation (iv) Tumors lacking differentiation towards either cell type. Morphologically GIST may be spindle or epithelioid type. Spindle cells GIST are more common. Grossly, GIST are submucosal, usually well circumscribed, may project into the lumen, or may grow outwards with a dumbbell shaped configuration. They are soft to firm, and show a pale pink, fleshy or whorled cut surface. On histology, GIST show continuity with muscularis propria with an intact or ulcerated mucosa.9 GIST are classified into benign, borderline and malignant on the basis of tumor size, mitotic activity and clinical outcome. Most of GIST are small and asymptomatic and are discovered incidentally during evaluation for unrelated problems. GIST more than 10cm are called 'Giant GIST'. When the lesion grows over 2cm in size, ulceration may occur and symptoms like epigastric pain and gastrointestinal bleeding become more common at that time.

Occasionally the lesion may be pedunculated and may obstruct the pylorus or duodenum. Spontaneous rupture of large mass into gastric lumen has also been reported. 10 About 10% GIST exhibit malignant behavior. 11 Prognostic factors include age, location (oesophageal and gastric GIST having a better prognosis than intestinal GIST), staging, tumor size and mitotic activity. Size and mitoses are most useful predictors. Mutation of c-kit gene is a strong prognostic predictor of malignancy. Metastases occur most commonly to liver and peritoneum. 12 The aim of imaging is to locate GIST lesions, evaluate local invasion and detect distant metastases. In barium studies of the stomach, GIST have the classic features of sub mucosal masses, similar to those of leiomyomas and leiomyosarcomas. 13 On

sonograms, larger GIST appear as complex masses with cystic and solid components, which are consistent with their tendency to undergo necrosis. Ultrasound examination with high resolution transducer confirms the intramural mass in sub mucosal location. 3D ultrasound demonstrates smooth mucosal surface and the ulceration, if present. Appropriate reformation of 3D data can produce images resembling the gastroscopic appearance.

Endoscopic ultrasonography can be valuable in the evaluation of GIST. CT is also sensitive for the detection of metastatic liver, peritoneal, lung, and bone lesions. The diagnosis of GIST can be suggested in the presence of a large, complex, intestinal mass with liver lesions but without significant lymphadenopathy. CT scanning has good sensitivity for the detection of GIST, and it can show abnormalities in 87% of cases. Unfortunately, imaging findings are nonspecific to differentiate between Leiomyoma and GIST. Imaging studies cannot reliably distinguish benign from malignant GIST, unless there is an obvious metastasis or local extension. However, a favourable prognosis is associated with tumor size less than 5cm and lack of infiltration into adjacent organs. Both tumor size and mitotic activity have been identified as the most important factors predicting malignant behavior.14

The number of mitotic figures present can be used to histologically grade GIST. In general, GIST with less than 1 mitotic figure per 50 high-powered fields (HPFs) are correlated with benign behavior. A finding of 1-5 mitoses per 10 HPFs suggests potential malignancy. A finding of more than 5 per 10 HPFs indicates malignancy. A finding of more than 10 per 10 HPFs denotes highgrade malignancy.¹⁵ Surgery in the form of wide surgical resection is the mainstay of therapy for non-metastatic GIST. Lymph node metastases are rare, and routine removal of lymph nodes is typically not necessary. Laparoscopic surgery has been shown to be effective for removal of these tumors without needing large incisions. 16 The clinical issues of exact surgical indications for tumor size are controversial. The decision of appropriate laparoscopic surgery is affected by tumor size, location, and growth pattern.¹⁷ Extra-GIT GIST are rare entity affecting gall bladder and peritoneum. GIST are refractile to radiotherapy and most chemotherapy. A substantive proportion of GIST, even after surgery have high recurrence rate.

CONCLUSION

GIST are relatively rare GI neoplasms with an incidence of 10 to 20 per million people. The hall marker of their identification lies with Immunohistochemistry (IHC) as CD-117. Smaller GIST (less than 5cm in diameter) are often benign, the larger GIST (with >5cm as in our case) have substantial malignant potential. They often recur despite wide surgery and adjuvant therapy. The "sheet anchor" of GIST therapy is surgery. They are refractile to

chemo and radiotherapy. Adjuvant therapy with Imatinib for 3 years reduces the risk of recurrence.

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REFERENCES

- Mucciarini C, Rosi G, Bertolini F, Valli R, Cirilli C, Rashid I. Incidence and clinicopathologic features of gastrointestinal stromal tumors. A populationbased study. BMC Cancer. 2007;7(230):1-7.
- 2. Miettinen M, Furlong M, Sarlomo-Rikala M, Burke A, Sobin LH, Lasota J. Gastrointestinal stromal tumors, intramural leiomyomas and leiomyosarcomas in the rectum and anus: a clinicopathologichistochemical and molecular genetic study of 144 cases. Am J Surg Path. 2001;25(9):1121-33.
- Reith JD, Goldblum JR, Lyles RH, Weiss SW: Extragastrointestinal (soft issue) stromal tumors: an analysis of 48 cases with emphasis on histologic predictors of outcome. Mod Pathol. 2000;13(5):577-85.
- Miettinen M, Sarlomo-Rikala M, Lasota J. Gastrointestinal stromal tumors: recent advances in understanding of their biology. Hum Pathol. 1999;30:1213-20.
- Isimbaldi G, Santangelo M, Cenacchi G. Gastrointestinal autonomic nerve tumor (plexosarcoma): report of a case with fine needle aspiration biopsy and histologic, immunocytochemical and ultrastructural study. Acta Cytol. 1998;42:1189-94.
- 6. Raut C, Dematteo R. Evidence-Guided surgical management of GIST: beyond a simple case of benign and malignant. Ann Surg Onc. 2008;15(5):1542.
- 7. Boggino HE, Fernandez MP, Logrono RF. Cytomorphology of gastrointestinal stromal tumor: diagnostic role of aspiration cytology, core biopsy, and immunochemistry. Diagn Cytopathol. 2000;23:156-60.
- 8. De Matteo RP, Lewis JJ, Leung D, Mudan SS, Woodriff JM, Brennan MF. Two hundred gastro-intestinal stromal tumors: recurrence patterns and prognostic factors for survival. Ann Surg. 2000;231:51-8.
- 9. Dodd LG, Nelson RC, Mooney EE, Gottfried M. Fine-needle aspiration of gastrointestinal stromal tumors. Am J Clin Pathol. 1998;109:439-43.
- Mehta RM, Vayoth OS, John AK, Nandakumar RR, Dhar PS, Sudhindran S, et al. Spontaneous rupture of giant gastric stromal tumor into gastric lumen. World J Surg Oncol. 2005;3(11):1477-8.
- 11. Li SQ, O'Leary TJ, Buchner SB. Fine needle aspiration of gastrointestinal stromal tumors. Acta Cytol. 2001;45:9-17.

- 12. Dong Q, McKee G, Pitman M, Geisinger K, Tambouret R. Epithelioid variant of gastrointestinal stromal tumor: diagnosis by fine-needle aspiration. Diagn Cytopathol. 2003;29:55-60.
- 13. Nauert TC, Zornoza J, Ordonez N. Gastric leiomyosarcoma. AJR Am J Roentgenol. 1982;139:291-7.
- 14. Miettinen M, El-Rifai W, Sobin LH, Lasota J. Evaluation of malignancy and prognosis of gastrointestinal stromal tumors: a review. Hum Pathol. 2002;33:478-83.
- 15. Pidhorecky I, Cheney RT, Kraybill WG, Gibbs JF: Gastrointestinal stromal tumors: current diagnosis, biologic behavior, and management. Ann Surg Oncol. 2000;7(9):705-12.

- 16. Nguyen SQ, Divino CM, Wang JL, Dikman SH. Laparoscopic management of gastrointestinal stromal tumors. Surg Endosc. 2006;20(5):713-6.
- 17. Lee CH, Hyun MH, Kwon YJ, Cho SI, Park SS. Deciding laparoscopic approaches for wedge resection in gastric submucosal tumors: a suggestive flow chart using three major determinants. J Am Coll Surg. 2012;215(6):831-40.

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