Case Report

GASTROINTESTINAL STROMAL TUMOR OF RECTUM

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Abstract

Although gastrointestinal stromal tumors (GISTs) frequently occur in the gastrointestinal tract, they are relatively rare in the rectum. Biopsy of the lesion and immunohistochemistry (IHC) confirm the diagnosis. Complete surgical resection is the principal curative procedure. In combination with surgery, immunotherapy with Imatinib shows cure in intermediate risk and improvement in high risk rectal GIST. We report a case of a 45-year-old female who presented with constipation and generalized weakness, ultimately diagnosed to have rectal GIST.

Key words: Gastrointestinal stromal tumor, Rectal GIST, Imatinib

Introduction:

Gastrointestinal stromal tumor is a name given to a group of gastrointestinal tumors which were otherwise unclassifiable as being of smooth muscle or neurogenic origin¹. They are mesenchymal neoplasms expressing KIT(CD117) tyrosine kinase and showing presence of activating mutations in KIT or PDGFRα (platelet-derived growth factor alpha)². It is the commonest gastrointestinal mesenchymal tumor³ with the commonest site being stomach (50–60%), followed by small intestine (30–40%), colon (7%), and oesophagus (1%)⁴.

GISTs of anal canal and rectum are often grouped together and account for nearly 5% of all GISTs⁴. We present a case of rectal GIST, treated by anterior resection and adjuvant immunotherapy with Imatinib.

Case Report:

A 45-year-old female presented to our hospital with history of constipation and generalized weakness for 3 months. Rectal examination showed a well defined mass located at the posterior aspect of the rectal wall free from mucosa. Routine blood tests were within normal limit. CT scan revealed distension of rectum with one large polypoidal soft tissue attenuation lesion (Figure-1). The mass measured 9.1x8.7x5.2 cm, located posteriorly towards right. Post contrast image revealed heterogenous enhancement and variable areas of central necrosis with few calcified areas. There was no lymphadenopathy on CT scan. Colonoscopy was done and biopsy was taken from the rectal mass. Histopathological examination showed rectal tissue with submucosal tumor location composed of proliferation of densely packed epitheloid and spindle cells, with prominent nuclear palisading (Figure-2).
Mitotic count was of 3 mitosis/50HPF. C-KIT protein (Figure-3) and CD34 (Figure-4) were positive. Final diagnosis was GIST of intermediate risk aggressive behavior (Table-1). Patient underwent ultralow anterior resection, coloanal anastomosis and defunctioning ileostomy. Postoperative course was uneventful. The patient was discharged on postoperative day 14 with Imatinib and gut continuity was restored by closure of ileostomy after 6 months. Follow up at 6 months with sigmoidoscopy and CT scan showed no tumor mass.

![Fig.-1: CT Abdomen- showing distension of rectum with large polypoidal soft tissue attenuation, heterogenous enhancement and areas of central necrosis with calcification](image1)

![Fig.-2: Histopathology -Tumour composed of proliferation of densely packed spindle cells, with nuclear palisading. (HE X400)](image2)

![Fig.-3: CD117 Positivity seen in tumor cells of GIST (C-KIT staining) (×400).](image3)

![Fig.-4: CD34 Positivity seen in tumor cells of GIST (IHCx 400)](image4)

| Table-I | Defining risk of aggressive behavior in GIST⁵ |
|---------|-----------------------------------------------|
| **Size** | **Mitotic Count** |
| Very low risk | < 2 cm | < 5/50 HPF |
| Low risk | 2–5 cm | < 5/50 HPF |
| Intermediate risk | < 5 cm | 6–10/50 HPF |
| | 5–10 cm | < 5/50 HPF |
| High risk | > 5 cm | > 5/50 HPF |
| | > 10 cm | Any mitotic rate |
| Any size | > 10/50 HPF |

**Discussion:**

The term “GIST” was introduced in 1983. It included tumors of the GI tract that could not be classified as either smooth muscle or neurogenic in origin⁶. Among GI mesenchymal tumors GISTs are the most common. GIST is an uncommon mesenchymal tumor and expresses CD117, a tyrosine-kinase growth factor receptor as important marker⁷. CD117 also serves as the target for drug therapy with imatinib, a selective tyrosine-kinase receptor inhibitor that is at present the only promising chemotherapeutical drug for the
treatment of patients with advanced GIST, although complete surgical resection remains the most effective treatment for such a tumor. The symptoms of GIST in the rectum do not generally differ from those of other rectal tumors and diagnostic work-up is also similar. Digital examination of the rectum, colonoscopy and CT abdomen are essential for diagnosis. Preoperative biopsy plays a key role in the diagnosis of GIST, since it provides information on the immunohistochemical features and mitotic count. GIST typically expresses CD117, often CD34 and sometimes SMA and S-100, but its expressions vary depending on different sites. Miettinen et al found that CD34 is expressed in 92% cases of rectal GIST but only 50% cases of small intestinal GIST. On the other hand, Smooth muscle antigen (SMA) is expressed in 47% cases of small intestinal GIST but only 14% cases of rectal GIST. The reason for these variations remains unexplained. Most GISTs originate within the muscularis propria and most commonly have an exophytic growth pattern, seen on CT or MRI images. A focal, well-circumscribed mural mass is the most common finding and an infiltrated layer can be clearly assessed. CT or MRI helps define local invasion and detection of metastases.

Because of lower incidence, the clinicopathological profiles of rectal GIST have not yet been accurately characterized and prognostic factors of common sites like stomach is used instead. Size and mitotic rate are common prognostic criteria. A rate of 5 mitoses per 50 HPF is taken used as a limit to discriminate between benign and malignant lesion. Tumors of 2 cm in diameter generally behave in a benign fashion. Less than 5 cm in diameter are associated with a better survival. The epithelioid phenotype has poor outcome. Symptoms lasting for a year are considered as further prognostic factors.

Complete surgical resection with negative margins is curative for primary and non-metastatic low risk tumors. Local excision, anterior resection or abdomino-perineal resection for rectal GIST depends on tumor size and location. Imatinib is useful as adjuvant post-operative treatment in high risk tumor or in patients with incomplete surgical resection. Imatinib is accepted treatment for advanced or metastatic tumors but further evidence is needed to see its effectiveness in high risk tumors and to evaluate its role as neoadjuvant therapy.

**Conclusion:** Rectal GIST is rare. The diagnostic workup is same as other rectal tumors. Biopsy of rectal GIST is essential for preoperative diagnosis. CD117 and CD34 are important tumor markers. Rectal GIST should be considered as a differential diagnosis for exophytic lesions in rectum.

**References:**

1. Vander F, Sciot R, Blyweert W. et al. Gastrointestinal stromal tumor of the prostate. Urology 2005; 65(2):388.
2. Heinrich MC, Blanke CD, Druker BJ, Corless CL. Inhibition of KIT tyrosine kinase activity: a novel molecular approach to the treatment of KIT-positive malignancies. J Clin Oncol 2002; 20(6): 1692–1703.
3. Ghobadi A, Kabbani W, Barker B, Dowell JE. Rectal GI stromal tumor mimicking a prostate mass. J Clin Oncol, 2007; 25(36): 5827–28.
4. Miettinen M, Sarlomo-Rikala M, Lasota J. Gastrointestinal stromal tumours. Ann Chir Gynaecol 1998; 87(4): 278–81.
5. 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 clinicopathologic, immunohistochemical, and molecular genetic study of 144 cases. Am J Surg Pathol 2001; 25(9): 1121–33.
6. Eisenberg BL, Judson I. Surgery and imatinib in the management of GIST: emerging approaches to adjuvant and neoadjuvant therapy. Ann Surg Oncol 2004; 11: 465-75.
7. Fletcher CD, Berman JJ, Corless C, Gorstein F, Lasota J, Longley BJ, Miettinen M, O’Leary TJ, Remotti H, Rubin BP, Shmookler B, Sobin LH, Weiss SW. Diagnosis of gastrointestinal stromal tumors: A consensus approach. Hum Pathol 2002; 33: 459-65.
8. DeMatteo RP, Lewis JJ, Leung D, Mudan SS, Woodruff JM, Brennan MF. Two hundred gastrointestinal stromal tumors: recurrence patterns and prognostic factors for survival. Ann Surg 2000; 231: 51-58.
9. Miettinen M, Sobin LH, Sarlomo-Rikala M. Immunohistochemical spectrum of GISTs at
different sites and their differential diagnosis with a reference to CD117 (KIT). Mod Pathol 2000; 13: 1134-42.

10. Richmond JA, Mount SL, Schwarz JE. Gastrointestinal stromal tumor of the stomach with rhabdoid phenotype: immunohistochemical, ultrastructural, and immuno-electron microscopic evaluation. Ultrastruct Pathol 2004; 28: 165-70.

11. Joensuu H, Fletcher C, Dimitrijevic S, Silberman S, Roberts P, Demetri G. Management of malignant gastrointestinal stromal tumors. Lancet Oncol 2002; 3: 655-64.

12. Levy AD, Remotti HE, Thompson WM, Sobin LH, Miettinen M. Gastrointestinal stromal tumors: radiologic features with pathologic correlation. Radiographics 2003; 23: 283-304.

13. Franquemont DW. Differentiation and risk assessment of gastrointestinal stromal tumors. Am J Clin Pathol 1995; 103: 41-7.

14. Lerma E, Oliva E, Tugues D, Prat J. Stromal tumors of the gastrointestinal tract: a clinicopathological and ploidy analysis of 33 cases. Virchows Arch 1994; 424: 19-24.

15. Miettinen M, Sarlomo-Rikala M, Lasota J. Gastrointestinal stromal tumors. Ann Chir Gynaecol 1998; 87: 278-81.

16. Connolly EM, Gaffney E, Reynolds JV. Gastrointestinal stromal tumors. Br J Surg 2003; 90: 1178-86.

17. Roberts PJ, Eisenberg B. Clinical presentation of gastrointestinal stromal tumors and treatment of operable disease. Eur J Cancer 2002; 38 Suppl 5: 37-8.

18. Cipolla C, Fulfaro F, Sandonato L, Fricano S, Pantuso G, Grassi N, Vieni S, Valerio MR, Lo Dico R, Gebbia N, Latteri M. Clinical presentation and treatment of gastrointestinal stromal tumors. Tumori 2006; 92: 279-84.

19. Shibata Y, Ueda T, Seki H, Yagihashi N. Gastrointestinal stromal tumor of the rectum. Eur J Gastroenterol Hepatol 2001; 13: 283.