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Case Report

Rectal gastrointestinal stromal tumor (GIST) in a patient with Crohn's disease: a rare coincidence case report and brief literature review

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Abstract

Gastrointestinal stromal tumors (GISTs) are the most common type of gastrointestinal mesenchymal tumors. The most common site for developing these neoplasms is the stomach and small intestine. In contrast, anorectal GISTs are very rare. Population-based studies have shown an increased risk of colorectal cancers (CRC) in patients with Crohn's disease (CD). As in sporadic CRC, adenocarcinomas are the most commonly observed tumor. Accordingly, it is expected that rectal mass in CD patients to be an adenocarcinoma. Some reports have presented CD cases with GISTs along the gastrointestinal tract; however, to the best of our knowledge, a rectal GIST has not been reported in CD. Herein, we report a 41-year-old woman with CD who presented with 8 weeks of constipation and was diagnosed with rectal GIST and briefly review existing reports regarding GIST in IBD.

Keywords: gastrointestinal stromal tumor, colorectal neoplasms, Crohn disease, inflammatory bowel diseases, case report

INTRODUCTION

Gastrointestinal stromal tumors (GISTs) are the most common type of gastrointestinal mesenchymal tumor, accounting for 0.1%–3% of all gastrointestinal malignant neoplasms [1]. GISTs may occur in any portion of the gastrointestinal (GI) tract. The most common site for developing these neoplasms is the stomach and small intestine. In contrast, anorectal GISTs are rare, as the incidence rate of anorectal GIST is 0.018 per 100 000 person-years, approximately 0.1% of all rectal neoplasms, and comprised 2.8% of all GISTs [2].

Crohn's disease (CD) is a subtype of inflammatory bowel disease (IBD). The incidence and prevalence of CD in Western Asia have been reported to be 0.94–8.4 per person-years and 50.6–53.1 per 100 000 persons, respectively [3]. Population-based studies have shown an increased risk of colorectal cancers (CRC) in CD patients (2.5–3.4 fold in any patient with CD and 5.6–18 fold in patients with colonic CD) [4, 5]. As in sporadic CRC, adenocarcinomas are the most commonly observed tumor usually in chronic long-standing IBDs. Accordingly, it is expected that rectal mass in Crohn's patients to be an adenocarcinoma, and the presence of GIST is very rare. To the best of our knowledge, a rectal GIST has not been reported in CD yet (only one article was found reporting rectal GIST in a patient with Ulcerative Colitis [6]). In this case report, we aimed to present a case of rectal GIST as a rare tumor of the GI tract in IBD patients and to review the literature on the topic.

CASE REPORT

A 41-year-old Persian female with CD was presented with 8 weeks of constipation. The patient did not mention systemic symptoms such as fever, sweating, weight loss, and other GI symptoms such as rectal bleeding or abdominal discomfort. The physical examination was unremarkable. She was diagnosed with mild terminal ileum CD (Crohn's Disease Activity Index was 208) four years ago, which was controlled on mesalazine 2 g and azathioprine 50 mg per day.

She underwent a colonoscopy because of new-onset constipation, which revealed a 25 mm submucosal lesion in the upper rectum (Fig. 1) and a few aphthous ulcers in the terminal ileum. Endoscopic ultrasonography (EUS) was performed to characterize the lesion further, and one hypoechoic 26 mm × 26 mm lesion was

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Table 1. Patient's lab data

Lab data	Value	Reference value	Lab data	Value	Reference value
WBC	6900/μL	4–11 × 10^3	BUN	23 mg/dl	11–36
Hb	11.4 g/dl	12–15	Creatinine (Serum)	0.8 mg/dl	0.8–1.4
PLT	377 000/μL	150–450 × 10^3	ESR	28 mm/hr	Up to 10
AST	32 U/L	<37	CRP	16 mg/L	Up to 6
ALT	29 U/L	<41	Na (Serum)	138 mEq/l	135–145
AlkP	331 U/L	180–1200	K (Serum)	4 mEq/l	3.5–5
Bilirubin (Total)	0.9 mg/dl	0.3–1.2	LDH	409 U/L	<850
Bilirubin (Direct)	0.3 mg/dl	0.1–0.4	INR	1	
Albumin	3.9 g/dl	3.5–5.2	PTT	30 sec	
CEA	0.15 ng/ml	0–2.9	PT	13.5	

WBC: White Blood Cell; Hb: Hemoglobin; PLT: Platelet; AST: Aspartate aminotransferase; ALT: Alanine aminotransferase; AlkP: Alkaline phosphatase; CEA: Carcinoembryonic antigen; BUN: Blood urease nitrogen; ESR: Erythrocyte sedimentation rate; CRP: C-reactive protein; LDH: Lactate dehydrogenase; INR: International normalized ratio; PTT: Partial thromboplastin time.

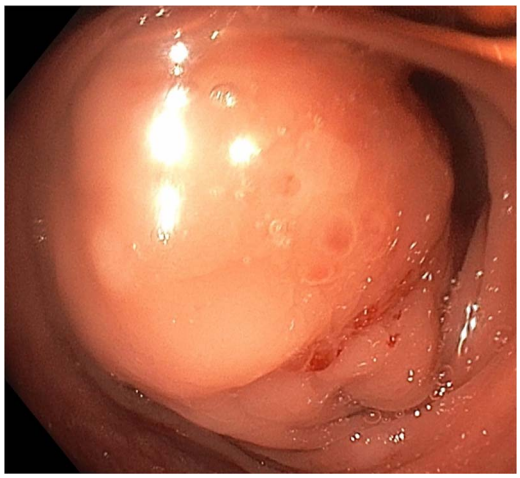

Figure 1. Colonoscopy revealed one 25 mm submucosal lesion with overlying nodules 17 cm from the anal verge.

noted (Fig. 2). The lesion was hypoechoic and heterogeneous, arising from muscularis propria, and contained a cystic component and small calcification, suggesting high-risk GIST. Additionally, the elastography strain ratio was 16, and studies for abnormal lymph node in perirectum and promontory was negative. The result of lab tests are shown in Table 1.

Because of the presence of symptoms, large size (more than 2 cm), and high-risk stigmata (heterogeneity, calcification, and cystic components), a surgical consult was requested, and after two weeks, the patient underwent transanal local excision surgery (TLE). Histopathology and immunohistochemistry (IHC) confirmed the rectal GIST tumor diagnosis. Microscopic examination of the resected 2.5 cm rectal lesion shows a well-defined submucosal and intramural cellular spindle cell neoplasm composed of a dense proliferation of bland-looking spindle cells with uniform nuclei, evenly distributed chromatin, and inconspicuous nucleoli arranged in whorls fascicles. Mitotic activity was low (less than two mitotic figures per 50 high-power fields with no evidence of nuclear hyperchromasia, pleomorphism, or necrosis (Fig. 3). IHC reported that tumor cells were positive for CD117, CD34, DOG-1 and negative for S100 protein, Desmin, and smooth muscle actin (SMA). Eventually, based on the Criteria obtained from National Cancer Care Network (NCCN) Task Force report on management of GIST [7], and according to the tumor size, site, and mitotic count, the final diagnosis was low-grade spindle cell type GIST with low-risk assessment.

DISCUSSION

An important issue in IBD patients is the increased risk for CRC compared with the general population due to prolonged inflammatory state and immunosuppression [8, 9]. While most IBD-related CRCs are adenocarcinomas, there is a higher incidence of poorly differentiated anaplastic and mucinous carcinomas compared with sporadic CRC. GISTs account for 0.1%–3% of all malignant GI neoplasms, and rectal GIST is rare, with an incidence of approximately 0.1% of all rectal neoplasms and comprises approximately 5% of all GISTs [10, 11]. Because of the rarity of this tumor, especially in IBD patients, there are few reports of such cases (Table 2). These studies showed that: a) GISTs can be present in both CD and ulcerative colitis (UC); b) GISTs can occur both coincidently at the same time as the initial diagnosis or several years after the IBD diagnosis; c) GISTs may occur in any portion of the GI tract in IBD patients; and d) GISTs can be both asymptomatic and symptomatic.

A total of 11 papers (1 case series and 10 case reports) consisting of 12 IBD patients with GIST were identified. The mean age of these patients was 50.4 ± 15.2. Eight patients were male and four patients were female (male to female ratio of 2:1). Six patients had UC and six patients had CD. The most common symptoms in these patients were GI bleeding (eight pateints) and abdominal pain (six patients) and the most common sites of GIST were small intestine with seven cases, and stomach with three cases. Rectum and omentum were the rarest GIST locations in IBD patients with only one reported case each.

The correlation between Gastrointestinal Stromal Tumors (GIST) and Inflammatory Bowel Disease (IBD) remains a topic of contention. Presently, there exists no definitive evidence to substantiate any causal link between the two. However, the heightened frequency of diagnostic procedures undergone by IBD patients, coupled with advancements in these methodologies and extended patient survival rates, may contribute to an increased probability of identifying stromal tumors that might otherwise remain undetected. However, the predisposition of individuals with IBD to neoplasms is acknowledged, owing to chronic inflammation and immune system dysfunction. Notably, studies have indicated that patients with longstanding and chronic IBDs may be prone to gastrointestinal adenocarcinomas [8, 9]. Consequently, while the correlation between GIST and Crohn's Disease (CD) is likely coincidental in our patient, further investigations are imperative to definitively elucidate this matter. It is noteworthy, however, that such coincidences are rare occurrences.

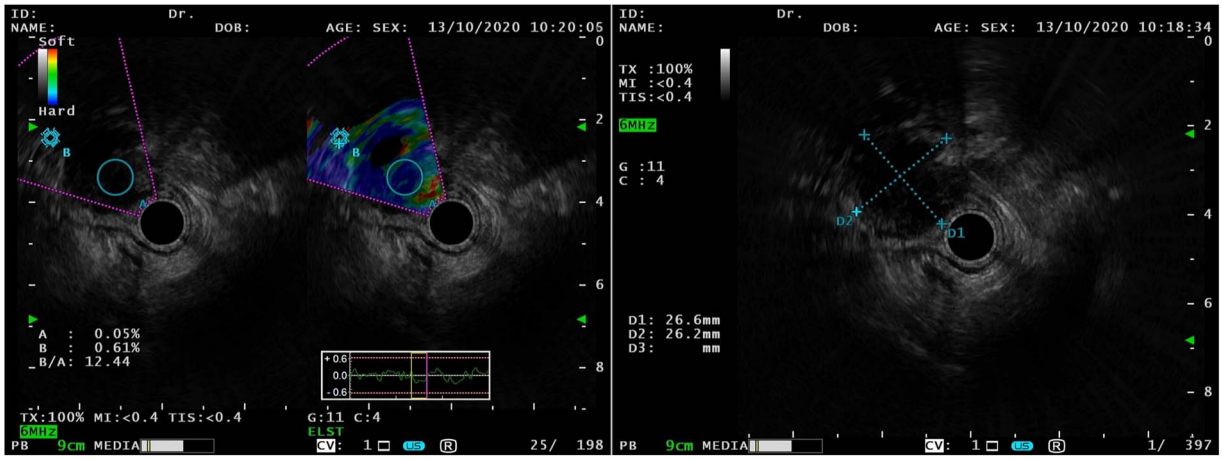

Figure 2. EUS revealed one hypoechoic 26 mm × 26 mm lesion in 16 cm from the anal verge near the promontory.

Table 2. GISTs in IBDs

Author	Year	Gender/ age	IBD type	Symptoms	Size	Diagnostic tool	Location
Pfeffel et al. [16]	1998	M/51	CD	Weight loss; Abdominal pain; Stool irregularities; Fever and fatigue	8 × 5 × 6 cm	CT scan	Terminal ileum
Grieco et al. [17]	2002	F/57	UC	Melena; Anemia	7 cm solid mass	ND	Ileum
Sinčić et al. [18]	2005	F/81	CD	Sudden colic pain; Constipation; Vomiting of fecal matter;	3 cm polypus tumor	laparotomy	50 cm from valvula Bauhini in a Meckel's diverticulum
Kaiser et al. [19]	2006	M/64	UC	Severe bleeding; Abdominal distension	5 cm calcified mass + 8 cm mobile mass	CT scan + laparotomy	Right lower end of the greater omentum
Böcker et al. [20]	2008	F/26	CD	Abdominal cramp; GI bleeding	ND size ulcerated lesion	enteroscopy	140 cm past proximal duodenum
Theodor-opoulos et al. [21]	2009	M/45	CD	Vomiting; Abdominal pain; Constipation	6 cm	laparotomy	Jejunum and distal ileum
Ruffolo et al. [6]	2010	M/59	UC	Rectal bleeding	0.5 cm	ND	Rectum, 20 cm from anal adenocarcinoma
Pellino et al. [22]	2016	M/38 M/53	CD UC	Asymptomatic Abrupt postoperative bleeding	ND ND	ND ND	Small bowel Small bowel
Hormati et al. [23]	2018	M/32	UC	Dyspepsia; Rectorrhagia	2 × 2 cm submucosal lesion	Upper endoscopy	Stomach body
Raffaeli et al. [24]	2019	F/59	UC	Abdominal pain; Diarrhea; Hematochezia; Rectal tenesmus	ND size exophytic mass	laparotomy	Anterior stomach wall
Mendel et al. [25]	2020	M/40	CD	Acute abdominal pain; Hematochezia; Diffuse joint pain	2.5 cm exophytic mass	CT scan	Stomach
Present paper	2020	F/41	CD	Constipation	26 × 26 mm hypoechoic lesion	EUS	Rectum, 16 cm from the anal verge near the promontory

M: Male; F: Female; CD: Crohn's Disease; UC: Ulcerative Colitis; ND: No Data; CT: Computed Tomography; EUS: Endoscopic Ultrasonography.

In localized GISTs, curative resection is the first-line treatment. However, it is problematic in rectal GIST because of anatomical characteristics such as the depth and narrowness of pelvis and proximity to the sphincter muscle or other organs [12]. Furthermore, in unresectable or metastatic GISTs, small-molecule tyrosine kinase inhibitors, such as imatinib, are indicated as first-line treatment, and clinical outcomes are correlated with the *KIT* mutation genotype [13, 14]. However, mutations in the *KIT* protooncogene are not well-known in rectal GIST. Neoadjuvant (preoperative) imatinib might be of specific benefit for large and

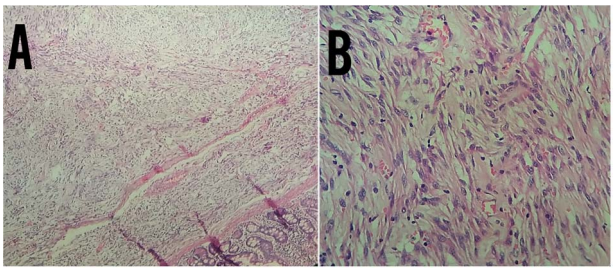

Figure 3. (A) A well-defined submucosal low-grade spindle cell neoplasm (40×) hematoxylin and eosin (H&E) staining; (B) Bland spindle cells with faintly eosinophilic cytoplasm, elongated nuclei, and inconspicuous nucleoli in a syncytial pattern (400× H&E staining).

bulky rectal GISTs, requiring extensive surgery to achieve complete surgical resection [13–15].

This case report presented a rectal GIST diagnosed in a patient with Crohn's disease. This report and other similar reports demonstrate that although adenocarcinoma is the first differential diagnosis when evaluating IBD patients with new GI masses, other malignancies such as GIST should also be considered.

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None.

CONFLICT OF INTEREST STATEMENT

No conflicts of interest.

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None.

ETHICAL APPROVAL

Not applicable.

CONSENT

Written informed consent was obtained from the patient to publish this case report and any accompanying images.

GUARANTOR

Amir Sadeghi and Mohsen Rajabnia.

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