Prolapsed giant rectal gastrointestinal stromal tumor presented with incarceration

A rare case of emergency rectal lesion

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Prolapsed giant rectal gastrointestinal stromal tumor presented with incarceration. A rare case of emergency rectal lesion

Prolapse of the tumor is an extremely rare clinical presentation in patients with rectal gastrointestinal stromal tumor (GIST).
A 79-year-old male patient was consulted in the in-patient ward of internal medicine clinic of our hospital due to his incarcerated hemorrhagic mass protruding from the anal canal. Anal inspection revealed an incarcerated prolapsed hemorrhagic mass larger than 10 cm in diameter that looked like a cauliflower. The incarcerated rectal GIST protruding from the anal canal was removed by transanal excision under the emergency conditions. Clean surgical margins were obtained. No postoperative complications occurred. The histological diagnosis of high-risk GIST was made. Imatinib mesylate treatment was started postoperatively.
The colorectum are the less common primary sites in adult GISTs (5%). Giant GISTs of the anorectum represent a real potential for anorectal emergency. They may be involved in rectal bleeding, obstruction, prolapse or incarceration. Prolapse of the tumor is an extremely rare clinical presentation in cases of rectal GISTs, and only a few cases have been reported in the medical literature so far. Complete surgical resection with en bloc excision of the tumor is the treatment of choice.
Lower rectal GISTs are a rare entity that requires multidisciplinary management and long-term surveillance. We recommend, in case of lower rectal GIST, to perform an initial transanal local excision that achieves the essential R0 resection and define the risk of aggressive behavior and the involvement of the resection margins. Patients' close follow-up is mandatory to disclose as soon as possible local recurrences or metastases. Preoperative imatinib mesylate therapy and downstaging of the tumor may play an important role.

KEY WORDS: Gastrointestinal stromal tumor, Incarceration, GIST, Prolapse, Transanal excision

Introduction

Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal neoplasm of the gastrointestinal tract [1]. The most common site is stomach (50%–60%), followed by small intestine (30%–40%), colon (7%), and esophagus (1%) [2]. Due to the rarity of both rectal and anal GISTs, they are often grouped together as anorectal GISTs representing the 5% of all GISTs [3]. Rectal GISTs are very rare, and approaxiamtely 5 % of rectal GISTs originate within the muscularis propria of the rectum, with a reported incidence of 0.45/1.000.000 per year [4]. Prolapse of the tumor is a rare clinical presentation in cases of rectal GISTs. A few cases have been reported in the medical literature so far [5]. Prolapsing anorectal GIST may mimic benign anorectal conditions such as prolapsed hemorrhoids and cause treatment dilemma in the emergency setting.
A variety of surgical methods have been reported, including transanal excision, laparoscopic surgery, transsacral excision, and transanal endoscopic microsurgery [6-9]. Complete surgical resection with en bloc excision of the tumor is the treatment of choice, but the oncologic advantage of rectal resection over local excision has been questioned [10]. For rectal GISTs, especially those located

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in the lower rectum, a transanal excision is an alternative to radical rectal resection for patients who are poor surgical candidates because of their comorbidities. Recurrence occurs in more than 50 % of cases even after a radical rectal resection and is related to the size and grade of the tumor rather than to the extent of surgery [11-13]. However, the recent introduction of imatinib mesylate therapy has completely changed the prognosis of this disease [14].

The aim of this study was to present a patient with acute hemorrhagic incarceration of prolapsed giant rectal GIST which was treated successfully by transanal excision.

Case Presentation

A 79-year-old male patient was consulted in the in-patient ward of internal medicine clinic of our hospital due to his incarcerated hemorrhagic mass protruding from the anal canal. We learnt from his medical history that he had a 6-month history of chronic constipation, and lost 10 kg in the last 3 months. His past medical history also included a 5-year history of chronic obstructive pulmonary disease (COPD) and a 12-year history of chronic heart failure. The patient underwent coronary bypass surgery 5 years ago.

The patient was firstly admitted to a general hospital in another city with complaints of chronic constipation and abdominal distention 2 months earlier. The patient underwent a total colonoscopic examination at that hospital. A mass lesion localized at 2 cm above dentate line was detected, and multiple biopsies was taken. The pathology result was reported as rectal GIST. Since the patient was deemed a poor surgical candidate given his underlying COPD, cardiomyopathy and anticoagulation, and refused surgery, then he was started on imatinib mesylate treatment to shrink the tumor at that hospital. Later, the patient was admitted to the department of medical oncology of our hospital for further examination and treatment. The patient was hospitalized in the in-patient ward of internal medicine clinic of our hospital, and an abdominopelvic magnetic resonance imaging (MRI) and whole body ^{18}F-fluorodeoxyglucose positron emission tomography / computed tomography (^{18}F-FDG PET/CT) appointments were made. Then, the patient was started on imatinib mesylate therapy by the

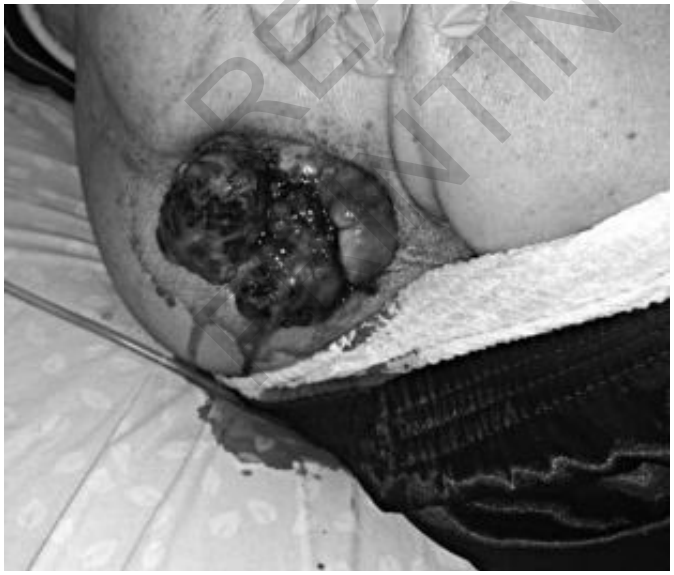

Fig. 1: Anal inspection with the patient in left lateral decubitus position revealed an incarcerated prolapsed mass >10 cm in diameter that looked like a cauliflower.

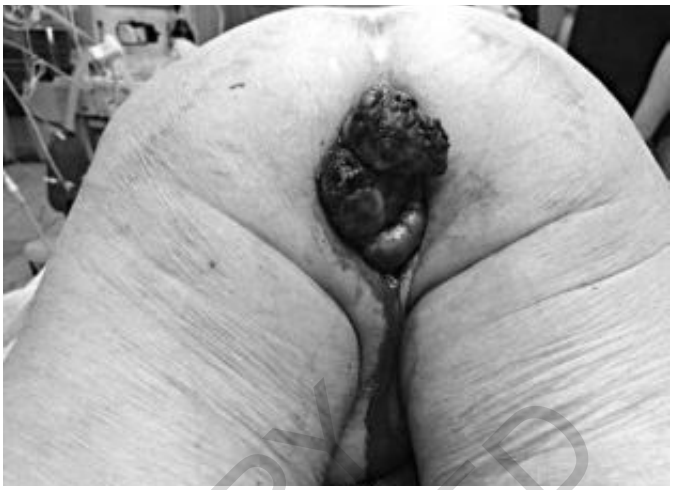

Fig. 2: Preoperative image of giant hemorrhagic necrotic rectal GIST prolapsed from the anus in genupectoral position.

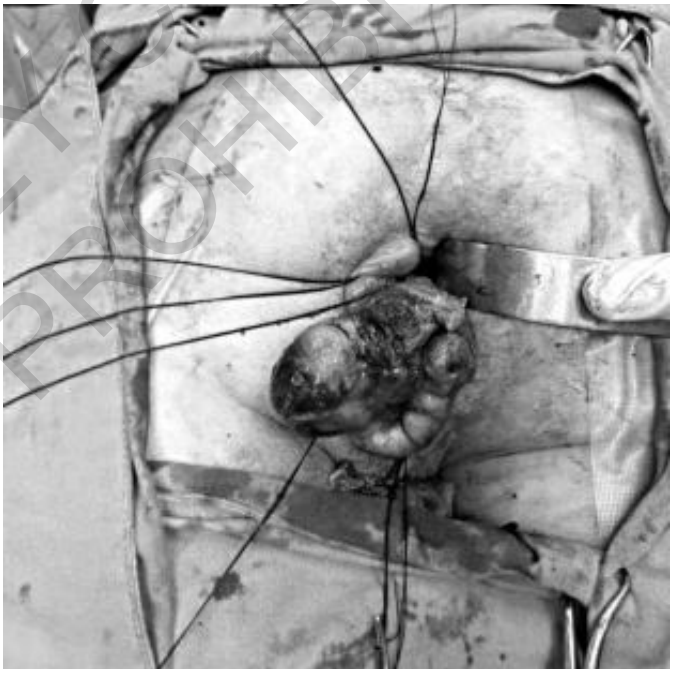

Fig. 3: Transanal local excision of the tumor.

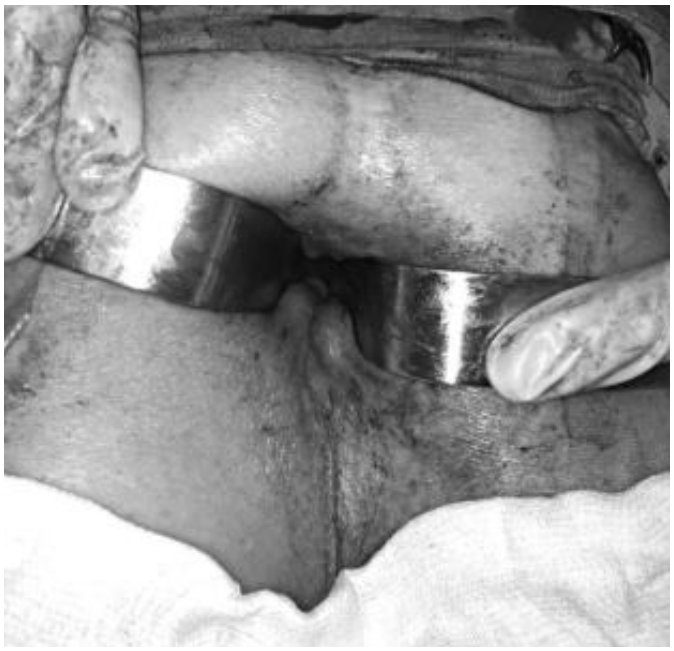

Fig. 4: Post-surgical image of the perianal region.

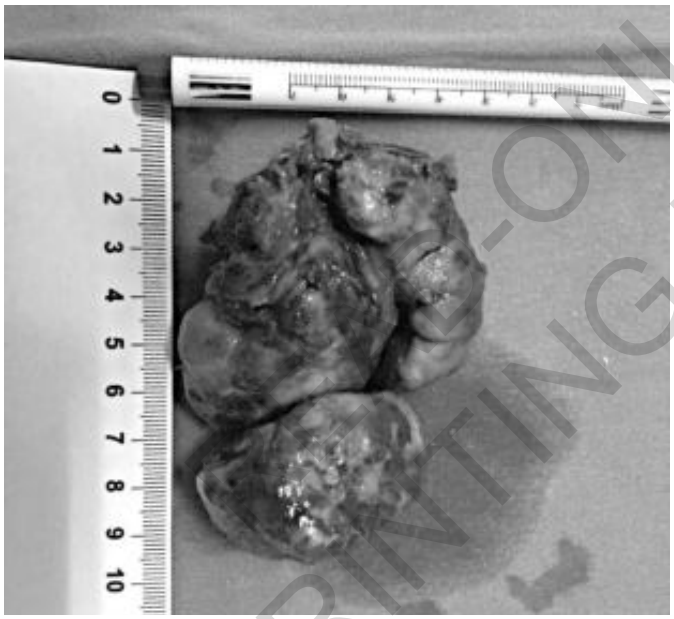

Fig. 5: The gross appearance of resected specimen.

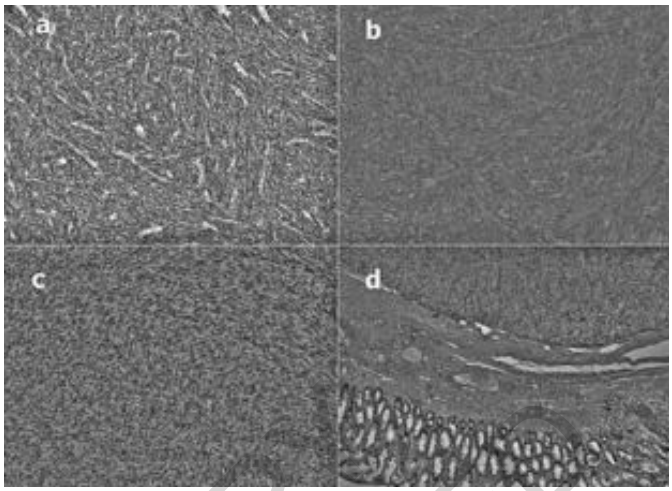

Fig. 6: Microscopic features: A) Immunohistochemical stain positive for CD34 (×40), B) Immunohistochemical stain positive for CD117 (c-KIT) (x40), C) Tumor composed of spindle or polygonal cells with eosinophilic cytoplasm (H&E ×40), and D) Photomicrograph showing the relationship between the tumor and bowel mucosa (H&E ×10).

department of medical oncology of our hospital. Unfortunately, upon the development of acute hemorrhagic incarceration of the mass protruding from the anal canal on the 4th day of hospitalization, a consultation was requested from the emergency surgery unit before performing any radiological or nuclear medicine imaging method on the patient.

Physical examination did not reveal abdominal pain or signs of intestinal obstruction. Anal inspection with the patient in left lateral decubitus position revealed an incarcerated prolapsed hemorrhagic mass >10 cm in diameter that looked like a cauliflower (Fig. 1). The mass was foul-smelling, and had a necrotic surface and erosion (Fig. 2). Hemoglobin was 9,5 g/dL and other biochemical values were normal. The incarcerated GIST protruding from the anal canal was removed by transanal excision under general anesthesia in the emergency setting (Fig. 3). Clean surgical margins were obtained by transanal excision of the mass and underlying muscular layer as a single piece. It was possible to save the anal sphincter (Fig. 4). The postoperative course was uneventful and the patient was discharged without any complications. The 10x6x4 cm mass was determined in pathologic examination to be a GIST with invasion to submucosa (Fig. 5). Immunohistochemical examinations showed the tumor cells to be positive for CD34, CD117, and DOG1, focally positive for smooth muscle actin (SMA), and negative for desmin and S100 (Fig. 6). Ki-67 index was 12%. The mitotic rate was 8/50 high-power fields (HPF). The histological diagnosis of high-risk GIST was made. An abdominopelvic MRI could not be performed because the patient had shortness of breath due to his COPD in the early postoperative period. Instead, a thoraco-abdomino-pelvic computed tomography (CT) scan and whole body ^{18}F-FDG PET/CT were obtained after surgery. No metastatic lesion was encountered on both imaging methods. In the postoperative period, imatinib mesylate treatment was started again by the medical oncology clinic.

Discussion

GISTs are the most common mesenchymal neoplasms of the gastrointestinal tract, distinguished immunohisto-

chemically by positive staining for CD34 and CD117 (c-KIT), markers of their origin from the interstitial cells of Cajal [15]. Since metastases in locoregional lymph nodes are extremely rare and the tumors are often exophytic and surrounded by a pseudocapsule, surgery does not include lymph node dissection or removal of the mesorectum, although the complete removal of the mass without tumor rupture is essential for oncologic radicality.

The NCCN Task Force Report on the management of patients with GISTs has defined as at high risk of metastasizing those lesions with a diameter greater than 10 cm, a mitotic rate >10/50 HPF or with a diameter of 5 cm, and a mitotic rate > 5/50 HPF [16]. Our patient's GIST was removed with negative resection margin and identified in the pathologic evaluation as a high-grade GIST with invasion to the submucosa. The tumor diameter was >10 cm. The mitotic rate was 8/50 HPF, and Ki-67 index was 12%.

Inhibitor of Growth 4 (ING4) is a novel tumor suppressor gene that is reported to be down-regulated in various tumors including GISTs originated from different locations. Recently, Sahin *et al*. reported that the low ING4 expression level was found to be related with unfavorable prognosis [17]. They suggested that loss of ING4 expression might play a role in the progression of GISTs and might be used as a potential prognostic tool. On the other hand, Belfiori *et al*. analyzed the risk stratification systems for surgically treated localized primary GISTs by comparing the three prognostic criteria: Memorial Sloan-Kettering Cancer Center (MSKCC) nomogram, National Institute of Health-Fletcher (NIH-Fletcher) criteria and Armed Forced Institute of Pathology (AFIP) system (AFIP-Miettinen) [18]. They concluded that MSKCC nomogram can be used in clinical practice to predict the risk of recurrence, being especially helpful for the therapeutic decision making since it is simple to use and accurate.

Multiple mechanisms are related to polyps or tumoral masses that prolapse through the anus. It seems that this condition is seen more often in children because during the first years of life there is less fat in the ischiorectal fossa, and so there is less pressure provided for this functional component of the perineum [19-21]. Increased straining during bowel movements triggered by diarrhea, a frequent condition at this age, may also play a role [19,20]. In adults, the main predisposing factors for prolapse include defects or dysfunction of the anal sphincter or conditions that induce increased intra-abdominal pressure, such as chronic constipation [22]. In our case, the patient had no obvious alterations in the integrity of the anal sphincter that predispose to prolapse, but he suffered from constipation.

Total resection is the best choice for rectal GIST treatment. Radical resection is one of the most important factors for rectal GIST prognosis [23]. However, the surgical procedure for rectal GISTs is difficult and has been debated [24-26]. Most GISTs originate from the muscularis propria and occasionally from the muscularis mucosa [25,26]. For large rectal GISTs or lower rectal GISTs, radical resection may induce severe anal dysfunction and discomfort. Currently, minimally invasive surgery is widely accepted [26,27]. Studies have shown that minimally invasive surgery, such as transanal endoscopic surgery, could reduce the rate of anal dysfunction [28,29]. The approach of minimally invasive surgery for rectal GIST patients depends on the tumor pathology, volume, location, and the surgeon's skills. The most common approach is transanal excision. It is suitable for small GISTs located in the distal rectum with limited bowel circumference extension [30,31]. Transsacral resection and transanal endoscopic microsurgery are suitable for tumors located on the posterior wall or in the middle or upper rectal regions [9,32]. When the tumor is located in the lower rectum, with a high risk for metastasis or large volume, it can also be considered preoperative imatinib mesylate treatment for shrinking tumor volume, improving intact resection, good anal function, and improving disease-free survival [33-35]. In our case, initially, a preoperative imatinib mesylate treatment to shrink the tumor volume was started. However, upon the development of acute hemorrhagic incarceration of giant rectal GIST protruding from the anal, we had to carried out a transanal tumor extirpation in the emergency conditions. Patients with rectal GIST usually undergo extensive procedures such as abdominoperineal resection or low anterior resection, which represent overtreatment in many cases, especially considering that there is no evidence that extensive surgery prolongs survival or delays recurrence [10]. However, less invasive approaches such as transanal excisions are often inadequate because of the large size of the mass and its exophytic growth [9]. Other possible approaches for local excision include the transvaginal route [36] or the transsacral approach described by Kraske [9,37,38], which entails a paracoccygeal incision between the anus and coccyx, the fifth sacral vertebra (S5) or coccyx transection, and incision of Waldeyer's fascia with exposure of the perirectal fat [9,38]. The mass may be excised through a wedge resection or even a segmental resection with an end-to-end anastomosis [9,38]. However, several postoperative complications have been described, including fecal fistulas, wound infections, urinary retention, fecal incontinence, and hemorrhage [39]. The transsphincteric [39] and transperineal [40] approaches have been shown to achieve good exposure in order to remove anteriorly located pelvic masses while preserving the sphincter mechanism, although this surgical approach has never been applied to a GIST. Moreover, the local excision could be carried out extramucosally because of the presence of a surgical plane between the tumor and the rectal lumen so that a rectal resection was not necessary in order to achieve tumor-free margins.

An alternative for large rectal GIST would be the use of imatinib mesylate therapy preoperatively which results in tumor shrinkage [41]. In a recent report, neoadjuvant

therapy with imatinib mesylate was used prior to local excision via the Kraske approach [37]. The safety and long-term results of either approach remain to be determined. The natural history of GIST is indolent, with a latency period of more than 4 years; therefore, long-term follow-up results are needed [11]. The recommended duration of imatinib mesylate therapy in the adjuvant setting remains unclear. Because of the low toxicity of the treatment and the lack of current guidelines, we preferred to continue imatinib mesylate therapy in our patient with high-risk tumor, as suggested by a recent case–control study [42]. What constitutes the optimal type and duration of follow-up is still unknown. In the absence of current guidelines, we preferred to follow up our patient every 6 months by performing CT and/or MRI and total colonoscopy and annual ^{18}F-FDG PET/CT.

Conclusions

Lower rectal GISTs are a rare entity that requires multidisciplinary management and long-term surveillance. We recommend, in case of lower rectal GIST, to perform an initial transanal local excision that achieves the essential R0 resection and define the risk of aggressive behavior and the involvement of the resection margins. A close follow-up in patients with high-risk rectal GIST with an abdominopelvic CT and/or MRI and total colonoscopy should be scheduled every 6 months. These patients should also be monitored with annual ^{18}F-FDG PET/CT. Neoadjuvant therapy with imatinib mesylate and downstaging of the tumor may play an important role in order to facilitate a successful local R0 excision and avoid more extensive surgical procedures related to a higher risk of complications.

Riassunto

Il prolasso del tumore è una presentazione clinica estremamente rara nei pazienti con tumore stromale gastrointestinale rettale (GIST).
Un paziente maschio di 79 anni è stato consultato nel reparto ospedaliero della clinica di medicina interna del nostro ospedale a causa della sua massa emorragica incarcerata che sporge dal canale anale. L'ispezione anale ha rivelato una massa emorragica prolasso incarcerata più grande di 10 cm di diametro che sembrava un cavolfiore. Il GIST rettale incarcerato che sporge dal canale anale è stato rimosso dall'escissione transanale in condizioni di emergenza. Sono stati ottenuti margini chirurgici puliti. Non si sono verificate complicanze postoperatorie. È stata fatta la diagnosi istologica di GIST ad alto rischio. Il trattamento con imatinib mesilato è stato iniziato dopo l'intervento.
Il colorectum sono i siti primari meno comuni nei GIST adulti (5%). I GIST giganti dell'anoretto rappresentano un vero potenziale per l'emergenza anorettale. Possono essere coinvolti in sanguinamento rettale, ostruzione, prolasso o incarcerazione. Il prolasso del tumore è una presentazione clinica estremamente rara nei casi di GIST rettali e finora sono stati riportati solo pochi casi nella letteratura medica. La resezione chirurgica completa con escissione in blocco del tumore è il trattamento di scelta. I GIST rettali inferiori sono un'entità rara che richiede una gestione multidisciplinare e una sorveglianza a lungo termine. Si consiglia, in caso di GIST rettale inferiore, di eseguire un'escissione locale transanale iniziale che raggiunga la resezione R0 essenziale e definisca il rischio di comportamento aggressivo e il coinvolgimento dei margini di resezione. Lo stretto follow-up dei pazienti è obbligatorio per rivelare al più presto ricorrenze o metastasi locali. La terapia preoperatoria con imatinib mesilato e il downstaging del tumore possono svolgere un ruolo importante.

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