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# An Unusual Cause of Obscure Gastrointestinal Bleeding Using an Abdominal CT Scan with Contrast: A Case Report of Small Intestinal GIST at the Duodenojejunal Junction

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## Abstract

**Background/Aim:** Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract. However, they only constitute approximately 1% of all primary GI tumors. GISTs are most commonly found in the stomach (60% - 70%) and small intestine (20% - 30%). Colorectal (5%) and esophageal (<5%) tumors are less often encountered We aim to report a case of this rare neoplasm in a patient with obscure gastrointestinal bleeding, treated by surgical resection. **Presentation of Clinical Case:** A 33-year-old male, presented to the emergency department for melena and dizziness in January 2023. He was hospitalized several times for anemia with multiple blood transfusions since 2017 and never made a final diagnosis. From 2017 to 2019 he underwent esophagogastroduodenoscopy (EGD) and ileocolonoscopy 3 times which always gave a negative result. At this time, laboratory results showed microcytic anemia with hemoglobin 7 g/dl. We performed an EGD and ileocolonoscopy again but still showed negative then we did an abdominal CT scan with contrast with demonstrated a solid exophytic hypervascular mass measuring 62 × 38 × 73 mm that appeared to arise from the duodenojejunal junction. The surgeon decided to proceed with surgical resection of the mass and the histopathologist confirmed the diagnosis of GISTs. The patients were discharged in stable condition after the surgery and followed up every 3 - 6 months with the oncologist. **Conclusion:** The presentation of chronic GI bleeding with negative results in EGD and ileocolonoscopy, and abdominal CT scan with contrast could pro-

vide useful information in order to obtain a diagnosis of bleeding GISTS. Teamwork is the cornerstone in the management of the case. After the resection of the mass by the surgeon, the histopathologist allowed us to establish the definitive diagnosis and the oncologist will follow up with this patient in order to prevent the relapse of symptoms.

## Keywords

Obscure Gastrointestinal Bleeding, Gastrointestinal Stromal Tumors, Gastrointestinal Endoscopy, Histopathological Study, Surgical Resection

## 1. Introduction

Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract. However, they only constitute approximately 1% of all primary GI tumors. They may occur anywhere in the GI tract from the esophagus to the anus, and rarely in the omentum and mesentery adjacent to the GI tract. GISTs are most commonly found in the stomach (60% - 70%) and small intestine (20% - 30%). Colorectal (5%) and esophageal (<5%) tumors are less often encountered [1]

Pathologically, the diagnosis of GISTs relies on morphology and immunohistochemistry, the latter being positive for CD 117 (KIT) and/or DOG 1 [2]. We report a case of this rare neoplasm in a patient with obscure gastrointestinal bleeding, treated by surgical resection.

## 2. Case Description

A 33-year-old male with, unknown family history of colorectal cancer presented to the emergency department for melena and dizziness in January 2023. He was hospitalized several times for anemia with multiple blood transfusions since 2017 and never made a final diagnosis. From 2017 to 2019 he underwent esophagogastroduodenoscopy (EGD) and ileocolonoscopy 3 times which always gave a negative result but he has never done any CT scan. On examination, the patient was pale and fatigued, laboratory result showed a microcytic anemia with hemoglobin 7 g/dL. After resuscitation, we performed an EGD and ileocolonoscopy again but still showed negative.

At this time, we had done an abdominal CT scan with contrast which demonstrates a solid exophytic hypervascular mass measuring 62 × 38 × 73 mm that appears to arise from the duodenojejunal junction (**Figure 1**).

After this result, the surgeon decided to proceed with surgical resection of the mass (**Figure 2**). The histological and immunohistochemical examination confirmed the diagnosis of GISTs, DOG-1: positive (**Figure 3**), CD 117: positive (**Figure 4**), Ki67: nuclear expression about 1% of the tumor cell, with 2 mitoses/50HPF (**Figures 5-7**).

The patient was discharged in stable condition after the surgery. The wound

was taken care of, by a nurse in his village. A month after his discharge he came for a follow-up, a complete blood count showed hemoglobin 14 g/dL and the CT scan was normal. The oncologist decided to treat him with Imatinib and follow-up every 3 - 6 months for 5 years.

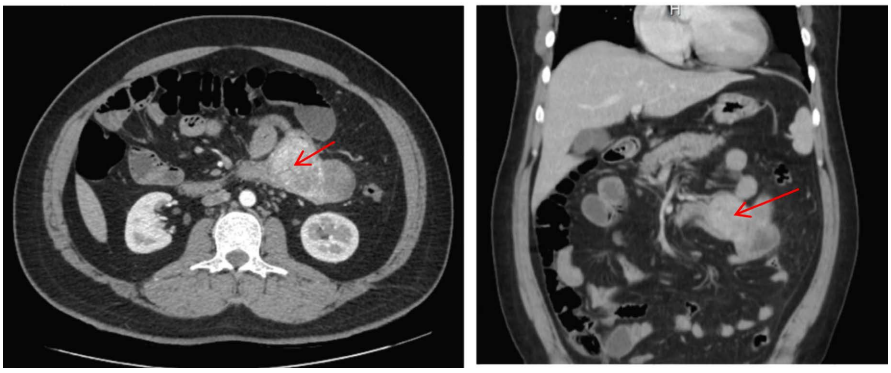

**Figure 1.** Abdominal CT scan of GISTs (Arrows: a solid exophytic hypervascular mass measuring 62 × 38 × 73 mm that appears to arise from the duodenojejunal junction).

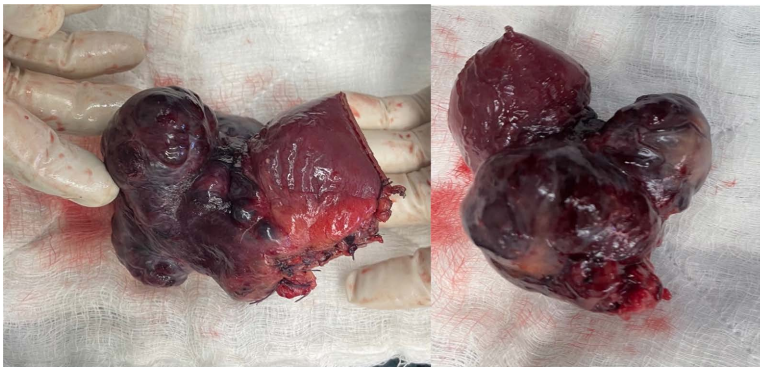

**Figure 2.** Excised tumor.

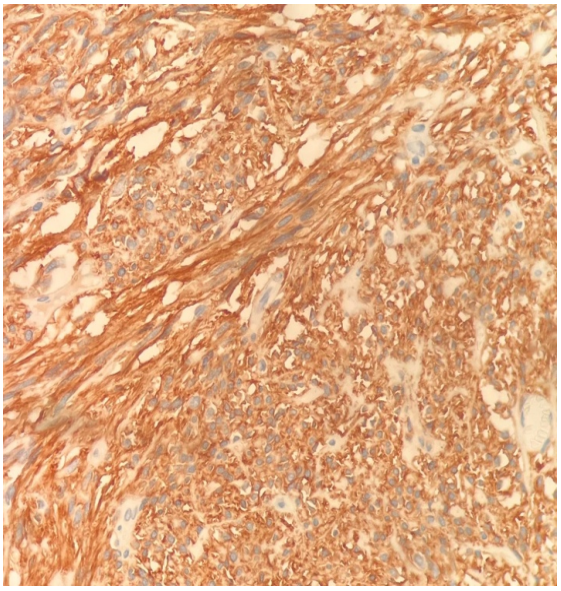

**Figure 3.** Immunohistochemistry: Dog-1: positive (high-power view).

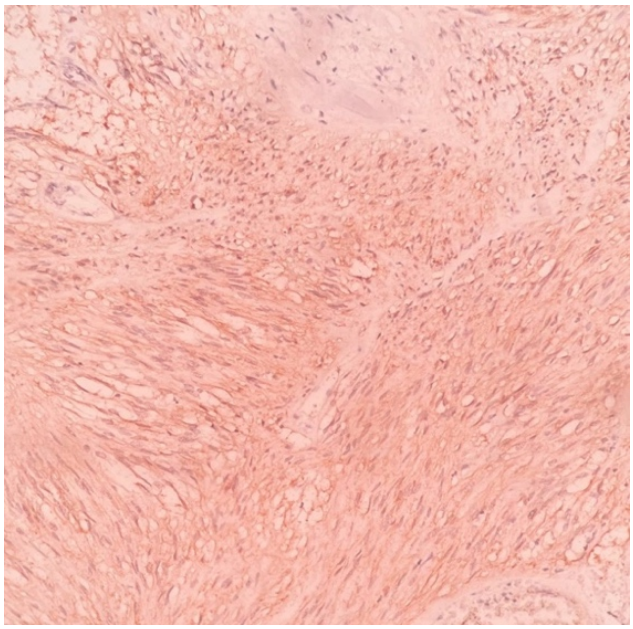

**Figure 4.** Immunohistochemistry: CD117 (C-Kit): positive (high-power view).

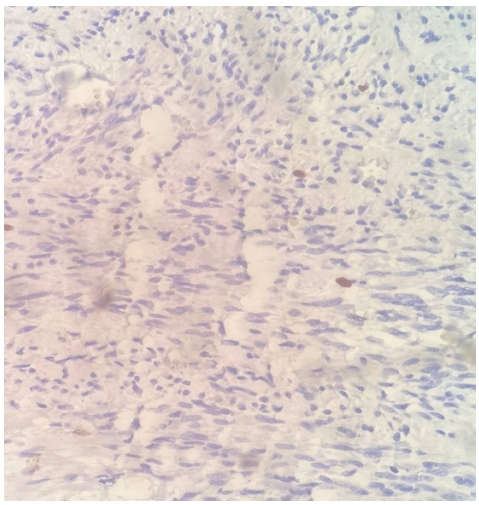

**Figure 5.** Immunohistochemistry: Ki67: Nuclear expression of about 1% of the tumor cells (high-power view).

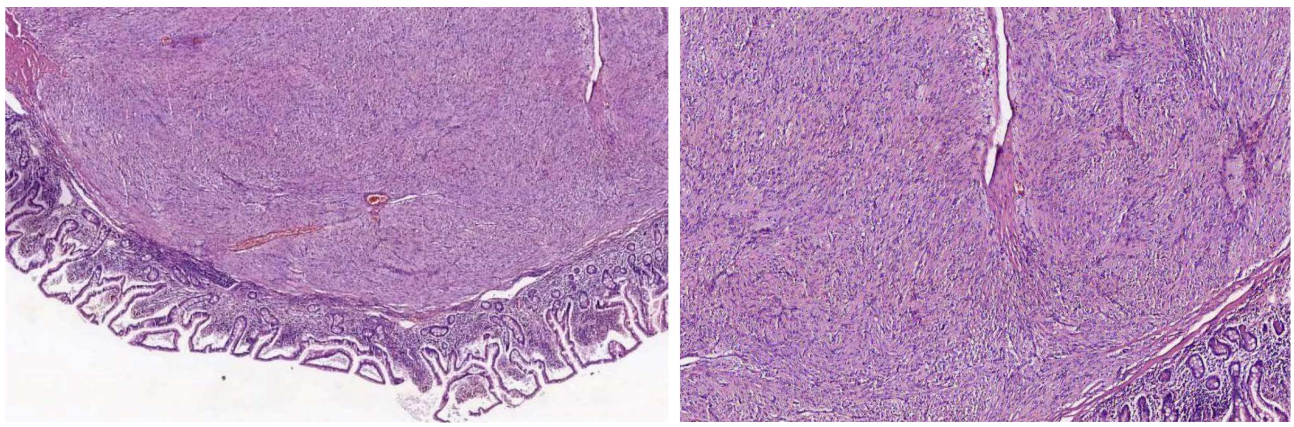

**Figure 6.** Hematoxylin and eosin staining: the tumor is under the intestinal mucosa (medium-power view).

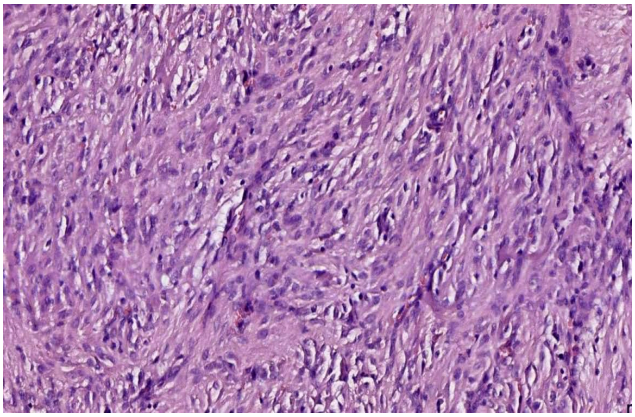

**Figure 7.** Hematoxylin and eosin staining: the tumor is composed of cells with elongated nuclei and eosinophilic cytoplasm arranged in fascicles (high-power view).

## 3. Discussion

In a systemic review of 29 studies conducted in 19 countries, the most commonly reported incidence rates were between 10 and 15 cases per million population per year. The highest incidence rates were seen in Chinese Mainland, Taiwan Region, Korea, and Norway [1]. Presenting symptoms and signs, bleeding in the digestive tract and abdominal pain were more frequent in gastric GISTs (58% and 61%), and acute abdominal symptoms were more frequent in jejunal and ileal GISTs (40% and 60%) [2]. In contrast to the patient in our case report, who presented with only bleeding and almost never had abdominal pain.

GISTs most commonly appear along the gastrointestinal tract, in rare cases could have a tendency to occur in other localities. Endoscopy can be done to evaluate a luminal involvement by the mass, and endoscopic ultrasound (EUS) can differentiate intramural and extramural lesions, also further characterize the mass by identifying its layer of origin, ultrasound-guide core biopsy with immunohistochemistry study to obtain a definitive diagnosis [3].

GISTs that are located at the esophagus, stomach, and colorectum; most commonly can be found by the convention modalities, gastroscopy, and ileocolonoscopy; on the other hand, small bowel GISTs give rise to challenges in finding a conclusion. When the presenting symptoms are obscure-occult or obscure-overt bleeding or anemia, the traditional endoscopic and radiological workup is nondiagnostic, capsule endoscopy (CE) and push or double-balloon endoscopy (DBE) are allowed to inspect the mucosal surface in order to make a diagnosis [4] [5]. In a study by R. Urgesi *et al.* in Italy, 57.8% of 500 patients indicated CE for obscure GI bleeding, and 9 patients were diagnosed with small bowel GISTs [6]. CE is a noninvasive procedure in that the overall sensitivity in detecting small bowel pathologies is high and DBE is a confirmatory test in case of nondiagnostic or negative CE findings [7].

Computed tomography (CT) is also helpful in detecting small bowel masses or metastatic spread of small bowel malignancies [8]. Lymphatic spreading is extremely rare and these lesions most commonly spread through hematogenous

modality (most commonly to the liver) or to the peritoneum [9]. In our case report, after the negative endoscopy, the patient underwent CT immediately and we skipped CE due to the non-availability of equipment in our center, an exophytic hypervascular mass measuring 62 × 38 × 73 mm at the duodenojejunal junction was seen.

Based on Siripom Pinaikul *et al.*, a retrospective review of CT images of 50 patients with pathologically and immunohistochemically proven GISTs was reached by consensus, the most common location of GISTs was stomach (62%) the mean size was 10.2 cm. The contours were lobulated in 84%. The boundary was smooth at 84%. The growth patterns were exophytic in 68%. The CT signs of malignancy found were adjacent organ invasion (18%), ascites (18%), lymphadenopathy (6%), liver metastasis (20%), and peritoneal seeding (16%). The presence of both necrosis and peritoneal seeding was found to be a significant predictor of the high mitotic rate of GISTs [10]. Our case report showed, the location of GIST was at duodenal, size 7 cm with contours lobulated, the CT signs showed no metastasis, and the immunohistochemical examination found only two mitoses in 50 HPF without necrosis.

Open surgery is recommended for large GISTs to decrease the risk of pseudo capsule perforation and subsequently seeding of the abdomen leading to an increased risk of recurrence. Lymphadenectomy is not required alongside tumor resection because of the rarity of lymph node metastasis. The major risks involved in GIST resection are pseudo capsule perforation, which leads to worsened prognosis and bleeding [11].

The relationship between the risk of recurrence and metastases showing variance in the anatomical location of the primary GIST has been found by many authors. Miettinen and Lasota 2006 refined the risk table of follow-up information on 1900 patients having GISTs over time. (**Table 1**) [12]. According to this table, the GISTs patients in this case report are categorized as at high risk of recurrence.

**Table 1.** Miettinen criteria [12].

| Group | Tumor size(cm) | Mitotic Rate (per 50HPFs) | Gastric GISTs | Small intestinal GISTs |
|---|---|---|---|---|
| 1 | ≤2 | ≤5 | Very low or none | Very low or none |
| 1 | >2 to ≤5 | ≤5 | Low | Low |
| 3a | >5 to ≤10 | ≤5 | Low | Intermediate |
| 3b | >10 | ≤5 | Intermediate | High |
| 4 | ≤2 | >5 | Low | High |
| 5 | >2 to ≤5 | >5 | Intermediate | High |
| 6a | >5 to ≤10 | >5 | High | High |
| 6b | >10 | >5 | High | High |

HPFs: high-power fields, GISTs: gastrointestinal stromal tumor.

If R0 excision is not considered possible or the surgery entails gross functional sequelae, neoadjuvant imatinib is considered for 6 - 12 months to achieve cytoreduction. Tumor response is assessed by serial ultrasonogram or CT. The Risk of relapse is estimated on the basis of mitotic rate, tumor size, tumor site, surgical margins, and whether the tumor ruptured during excision [13]. Adjuvant therapy with imatinib for 3 years is the standard treatment for patients with a significant risk of relapse. Imatinib received registration for adjuvant treatment in the USA and Europe for patients with a resected primary GIST deemed to be at risk of recurrence [14].

In our case review, the surgeon already resected the whole tumor with R0 excision, immunohistochemistry showed Ki67 only 1% and only 2 mitoses/50HPF but according to **Table 1**, this patient stays at high risk of recurrence therefore, the oncologist decided to treat him with imatinib and follow up in every 3 months.

## 4. Conclusion

In conclusion, the presentation of chronic GI bleeding with negative results in esophagogastroduodenoscopy and colonoscopy, and abdominal CT scans with contrast could provide useful information in order to obtain a diagnosis of bleeding GISTs. In our case report after GISTs were hypothesized by CT scan the surgeon team was the cornerstone in the management of the bleeding. Passing the tumor to a histopathologist, allowed us to establish the definitive diagnosis and reach a good outcome for this patient.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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