Carcinoid Tumor of the Duodenum Presenting as Iron Deficiency Anemia

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Abstract

Carcinoid tumors are slow-growing tumors that typically occur in the gastrointestinal tract, the lung, and other endocrine glands. They are most commonly discovered incidentally and usually cause no symptoms. When symptomatic, they tend to present with vague abdominal pain and may lead to carcinoid syndrome after metastasis to the liver. Such tumors rarely present with gastrointestinal bleeding and thus, very rarely present with iron deficiency anemia. We herein present an uncommon case of a 71-year-old male who presented with fatigue and weakness. He also had intermittent rectal bleeding and black stools. He was vitally stable but cachectic. Laboratory studies revealed iron deficiency anemia of unknown origin. A colonoscopy was initially done that only revealed internal hemorrhoids so an upper endoscopy was scheduled. Upper gastrointestinal endoscopy revealed a bleeding duodenal nodule in the upper half of the duodenum that was biopsied, and immunohistochemistry revealed it to be a duodenal carcinoid tumor. The lesion was resected endoscopically as the patient was unfit for surgery given his concurrent comorbidities. Abdominal imaging showed no signs of liver metastasis. The patient was following periodically with the gastroenterology clinic to ensure no recurrence or metastasis, but the patient eventually died from other comorbidities. Our case highlights the challenges in diagnosing and managing this rare presentation in a significantly ill patient with multiple comorbidities. Upon review of the literature, we found that it was very rare for carcinoid tumors of the gastrointestinal tract to present with bleeding or anemia. Of those reported in the literature to have caused bleeding, the majority were in the stomach or ileum. To the best of our knowledge, this is the first case of a duodenal carcinoid tumor presenting with iron deficiency anemia reported in the literature.

Keywords: Duodenum Carcinoid Tumor Endoscopy

Introduction

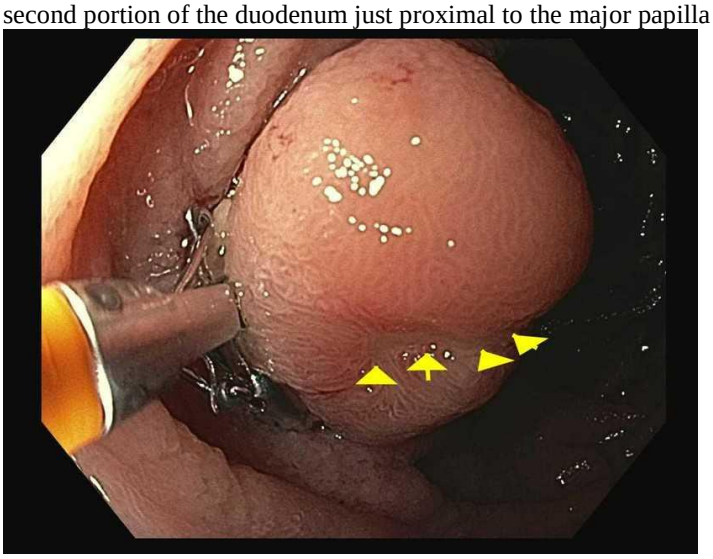
Carcinoid tumors are rare well differentiated malignancies that arise from enterochromaffin neuroendocrine cells found across the gastrointestinal (GI) tract. They constitute less than 1% of all visceral malignancies and may metastasize to the liver causing carcinoid syndrome.[1] Immunologically, carcinoid tumor cells evade T-lymphocyte mediated destruction by expressing large amounts of PDL-1 thus promoting carcinoid survival.[2] Despite the malignant nature of such tumors, they are usually slow growing and are discovered incidentally on endoscopy. When symptomatic, they most commonly cause vague abdominal pain.[3] In about 10% of cases, carcinoid syndrome occurs as the tumor metastasizes to the liver and excessive serotonin produced from the tumors is released to the blood stream.[4] In the GI tract, carcinoid tumors most commonly arise from the small bowel (45%) and less commonly, from the colon (11%) or stomach (8%).[5] Duodenal carcinoid tumors account for less than 1% of all gastrointestinal

carcinoids and rarely bleed or cause iron deficiency anemia.[6] Here, we report an unusual case of a duodenal carcinoid tumor presenting as iron deficiency anemia.

Case Report

The patient is a 71-year-old male who was referred to the gastroenterology outpatient clinic by his primary care physician due to new onset anemia. His hemoglobin upon presentation was 7.5 gm/dl, a drop from 11.7 gm/dl 2 months before presentation. Complete blood count showed mean corpuscular volume of 75, white blood cell count of 6.1 and platelet count of 147. His basic metabolic profile showed normal electrolytes, kidney function, and liver function tests. His medical history includes atrial fibrillation on home rivaroxaban, chronic obstructive pulmonary disease, congestive heart failure, diabetes mellitus, and reflux disease. One-year prior to presentation, he had on-and-off rectal bleeding that was investigated by colonoscopy and found bleeding internal hemorrhoids that were successfully banded. On presentation, patient reported postural dizziness, weakness, and fatigue for many weeks prior to presentation for which his primary care provider has ordered a hemoglobin level test. He also reported black stools which the patient thought to be due his oral iron supplements. He reported no blood per rectum, hematemesis, or coffee-ground emesis. He also reported no rash, shortness of breath, or palpitations. His review of systems was otherwise negative. His vital signs were within normal range on presentation. Physical exam showed a thin and frail African American man, clear lungs on auscultation, and no abdominal tenderness or masses. Physical exam was otherwise unremarkable. We planned to perform an upper endoscopy and colonoscopy to investigate for a source of gastrointestinal bleeding given patient's anticoagulation use and previous history of rectal bleeding. A colonoscopy was first performed that showed a 5mm tubular adenoma near the hepatic flexure that was unlikely to cause his anemia.

An upper endoscopy was then performed; non-bleeding gastric erosions with benign features were seen in the gastric antrum. Advancement of the scope to the duodenum showed a single 12 mm ulcerated bleeding nodule in the second portion of the duodenum just proximal to the major papilla (Figure 1).



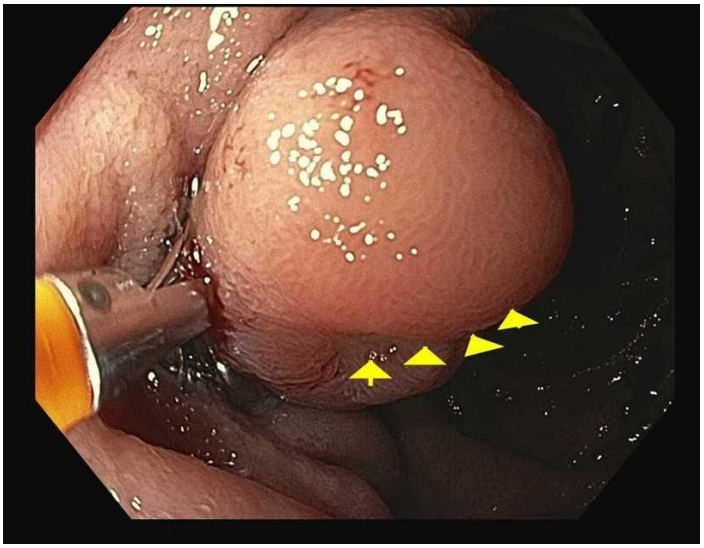
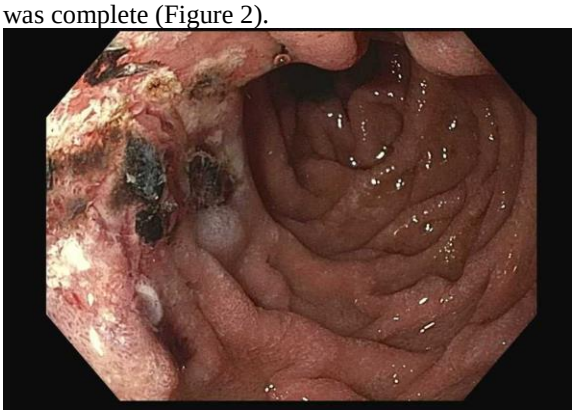


Figure 1: Duodenum showed a single 12 mm ulcerated bleeding nodule in the second portion of the duodenum just proximal to the major papilla.

Biopsies of the duodenal nodule were taken with a cold forceps and sent for pathology. Pathological analysis of the biopsied nodule showed a 1.5cm well differentiated neuroendocrine tumor with carcinoid features extending to the submucosa layer. To further classify the tumor, immunohistochemistry staining was performed; the neoplastic cells stained positive for CK8/18, CD56, synaptophysin, and were focally positive for chromogranin. This staining pattern confirmed the diagnosis of a duodenal carcinoid tumor. Patient was then evaluated in the oncology outpatient clinic; workup ordered included an iron panel, PET scan, 24-hour urinary 5-HIAA, and chromogranin level to evaluate extent and possible metastasis of the lesion. PET scan revealed mild heterogeneous tracer localization involving the duodenum and no evidence of metastasis. His iron studies showed iron levels of 21 mcg/dl, ferritin of 31 ng/dl, and a transferrin saturation of 5.6% confirming iron deficiency anemia. His 24-hour urine 5-HIAA was 1.1 mg/L and serum chromogranin A level was 1725 ng/mL confirming the absence of metastasis. Given significant comorbidities and extensive medical history, patient was unfit for surgery and thus, was referred back to the gastroenterology clinic for endoscopic resection of the tumor. Patient was planned for endoscopic mucosal resection of the tumor and upper endoscopy was performed. Scope advancement showed a single 12 mm centrally ulcerated submucosal nodule in the 2nd portion of the duodenum, away from the ampulla. The area was successfully injected with 7-8 mm saline for lesion assessment, and injection appeared to lift the lesion adequately. A 12-15 mm area was resected, and retrieval was complete (Figure 2).



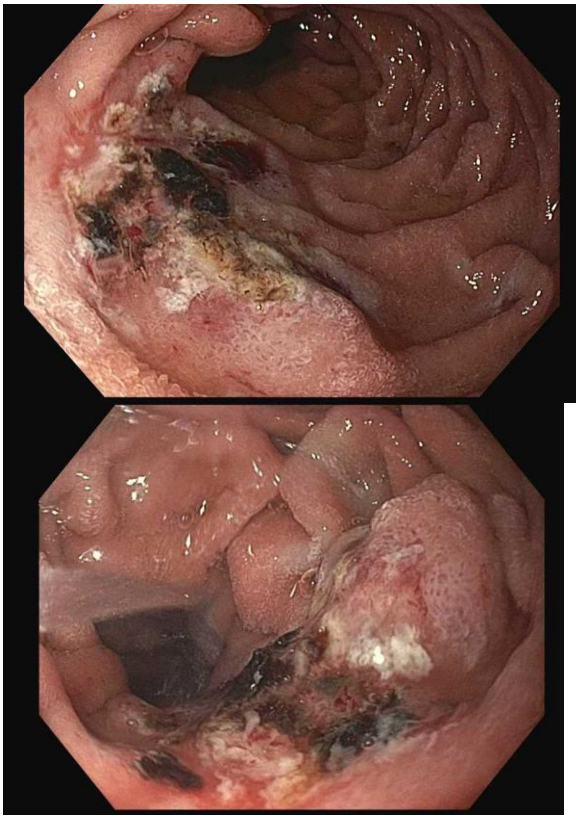


Figure 2: The nodule was resected and retrieval was complete.

There was no bleeding throughout the procedure. Patient was then instructed to follow up with the gastroenterology clinic for endoscopic surveillance of the tumor. Unfortunately, the patient was admitted to the hospital many times for other medical reasons and was deceased before surveillance and follow-up were completed.

Discussion

Carcinoid tumors are rare tumors that arise from a wide array of organ systems; in the gastrointestinal tract, they account for less than 2% of all gastrointestinal neoplasms.[1] Duodenal carcinoids are the rarest of gastrointestinal carcinoid tumors and account for only 2.6% of all gastrointestinal carcinoid tumors in the United States.[6] Given the rarity of such tumors, there are a few studies in the literature assessing duodenal carcinoids with most articles including only a small number of patients with the given diagnosis.[7]

Waisberg et al.[8] reviewed the clinical characteristics of 24 patients with a pathological diagnosis of duodenal carcinoids at their institution. The most common clinical symptoms were dyspepsia (50%), epigastric pain (45%), and less commonly, weight loss and vomiting.[8] None of the patients included in their study showed a reported symptom or lab value of iron deficiency anemia. Furthermore, in our review of the literature, we could not find any cases of reported duodenal carcinoids causing iron deficiency anemia as in our patient. Dutta and Panda[9] reported an interesting case of an ileal carcinoid tumor causing severe lower GI bleeding and an abrupt decrease in baseline hemoglobin and hemodynamic instability. Reported patient had an EGD and colonoscopy 6-months prior to presentation with no detection of a tumor. Similarly to our case, the suspicion of a carcinoid tumor causing the GI bleed was low on initial presentation. Eventually, an emergent laparotomy was required to stop the bleed caused by the ileal carcinoid.[9] Luckily in our case, the tumor was in the upper half of the duodenum making it easily detectable by EGD. In the Upper GI tract, Thongtan et al[10] reported a similar case of a gastric carcinoid presenting with melena of 1-day duration and hypotension. An EGD done detected a gastric carcinoid that eventually metastasized to the liver and lead to patient death in 2-months.[10] Although very rare, there has been reports of pancreatic carcinoids causing GI bleeds by either

metastasizing to the stomach leading to ulcers, or by infiltrating the portal venous system eventually leading to the formation of varices and subsequent GI bleeds.[11]

Most duodenal carcinoid tumors reported in the literature were less than 2cm in size and were discovered by upper endoscopy.[12] While little data is available to guide the choice of intervention in such tumors, carcinoid tumors in general have a tendency for lymph node involvement and surgical intervention was performed for most cases of duodenal carcinoids in the literature.[13,14] Across the literature, duodenal carcinoids that are less than 10mm in diameter were successfully managed by endoscopic mucosal resection alone with minimal risk of recurrence. However, for tumors that are larger than 10mm but less than 2cm, the limited data across the literature has been conflicting between local excision and more aggressive surgery.[15] Although our patient had a tumor of 12mm in diameter, the only choice for treatment was endoscopic resection given the patient was extremely unfit for surgery with a high risk of mortality if surgery was to be done. Nevertheless, more data and reports are required to provide higher levels of evidence in the management of duodenal carcinoid tumors.

Conclusion

This case report presents an unusual occurrence of a duodenal carcinoid tumor leading to iron deficiency anemia secondary to slow GI bleeding. While carcinoid tumors very rarely cause GI bleeds, they should at least be considered in the differential diagnosis when assessing a patient with iron deficiency anemia and slow GI bleeding. Furthermore, clinicians should be encouraged to publish all cases of duodenal carcinoids presenting with a GI bleed to increase the number of reported cases in the literature which may facilitate further research on the best approaches to deal with similar diagnosis.

Institutional Review Board Approval

As per our institution’s policy, IRB approval was not required for this case report given no patient identifying information were included.

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