Gastric intramural hematoma: A case report and literature review

Vivek Dhawan MD PhD1, Ahmed Mohamed MD2, Richard N Fedorak MD2

Intramural hematoma of the gastrointestinal tract is an uncommon occurrence, with the majority being localized to the esophagus or duodenum. Hematoma of the gastric wall is very rare, and has been described most commonly in association with coagulopathy, peptic ulcer disease, trauma, and amyloid-associated microaneurysms. A case of massive gastric intramural hematoma, secondary to anticoagulation therapy, and a gastric ulcer that was successfully managed with conservative therapy, is presented. A literature review of previously reported cases of gastric hematoma is also provided.

Key Words: Anticoagulation; Gastrointestinal bleeding; Gastric intramural hematoma; Gastric ulcer; Hematoma; Peptic ulcer disease

CASE PRESENTATION AND DIFFERENTIAL DIAGNOSIS

A 69-year-old man was admitted to a community hospital where he was treated for five days for acute exacerbation of chronic obstructive pulmonary disease and pneumonia. While in the hospital, the patient developed hematemesis, and his hemoglobin dropped to 44 g/L. Due to absence of emergent transfusion capacity and an endoscopic facility, the patient was transferred to the University of Alberta Hospital, Edmonton, Alberta. While at the community hospital, the patient provided a history of intermittent black stools for the past three weeks. There was no history of abdominal pain, previous gastrointestinal bleeding, changes in bowel habit or constitutive symptoms. There was no history of liver disease. Medical history was significant for abdominal aortic aneurysm repaired by endovascular graft one year previously (the exact site of the graft was not known at this point), peripheral vascular disease, previous stroke, hypertension, dyslipidemia, alcohol abuse, chronic renal failure with a baseline serum creatinine of 250 µmol/L, chronic obstructive pulmonary disease, gout, cellulitis of the left foot and gastroesophageal reflux. Current medications included warfarin, clopidogrel, acetylsalicylic acid, lisinopril, amlodipine, lansoprazole, innovane, lorazepam, albuterol, atorvastatin, multivitamin and ferrous gluconate.

On arrival, the patient was hemodynamically unstable, requiring intubation, intravenous fluids and packed red blood cells. Cardiovascular examination was within normal limits except for bilateral crackles at both lung bases. Abdominal examination was unremarkable. There were no signs of peritonitis or chronic liver disease. A digital rectal examination revealed occult blood-positive feces. Laboratory investigations were remarkable except for a white blood cell count of 12.3×10⁹/L, neutrophils 10.8×10⁹/L, platelet count 185×10⁹/L, partial thromboplastin time of 31 s, international normalized ratio of 2.5, creatinine 263 µmol/L and urea 33.7 mmol/L.

Five units of packed red blood cells raised the patient’s hemoglobin from 44 g/L to 76 g/L. Two units of fresh frozen plasma, 10 mg of vitamin K and desmopressin were provided to reverse coagulopathy. Intravenous pantoprazole and octreotide were initiated for a presumed upper gastrointestinal bleed of unknown origin. After initial resuscitation, the patient was admitted to the intensive care unit for further management.

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mass was a discrete, hypodense area consistent with active and measured 8 cm × 16 cm. At the caudal aspect of the cystic fundus to the mid-body. The mass was homogeneous, intramural along the posterior aspect of the stomach, from the level of the fied. However, there was a large, fluid-filled cystic mass coursing No hepatic, splenic or pancreatic abnormalities were identi- hemoglobin level was not secondary to an aortogastric fistula. gastric region of the abdomen, confirming that the decrease in contrast and no proximal extension of the aneurysm into the six months earlier. Specifically, there was no extravasation of angio graphic (CT) angiogram was performed hematoma. To further investigate this mass, a computed tom- mural gastric neoplasia, likely a gastric leiomyoma or gastric graft aneurysm. The differential diagnoses included an intra extrinsic mass or ulcer were performed to avoid complicating a no hemostatic injections or biopsies of the nterstic mass over the posterior-inferior surface of the stomach was considered to be extrinsic mass over the posterior-inferior surface of the stomach was identified (Figure 1). Over the surface of the mass was a 5 mm ulcer with a flat nonbleeding red spot at its base (Figure 1). Given the patient's history of aortic aneurysm repair with an endovascular graft (site unknown), the extrinsic mass was considered to be associated with a graft aneurysm and the ulcer, an aortoenteric fistula, as the bleeding site. The remainder of the stomach was endoscopically normal. The duodenum was normal except for a nonbleeding 2 mm superficial erosion with a white base in the second part. No hemostatic injections or biopsies of the extrinsic mass or ulcer were performed to avoid complicating a possible aortic graft aneurysm and aortoenteric fistula. On completion of the upper endoscopy, the working diag- nosis was an aortogastric fistula in the presence of an aortic graft aneurysm. The differential diagnoses included an intra mural gastric neoplasm, likely a gastric leiomyoma or gastric hematoma. To further investigate this mass, a computed tom- ography (CT) angiogram was performed A CT angiogram demonstrated an aortobifemoral graft complicated by a proximal pseudoaneurysm, which had been repaired with an endovascular stent (Figure 2). This appearance had not changed when compared with a CT performed six months earlier. Specifically, there was no extravasation of contrast and no proximal extension of the aneurysm into the gastric region of the abdomen, confirming that the decrease in hemoglobin level was not secondary to an aortogastric fistula. No hepatic, splenic or pancreatic abnormalities were identi- fied. However, there was a large, fluid-filled cystic mass coursing along the posterior aspect of the stomach, from the level of the fundus to the mid-body. The mass was homogeneous, intramural and measured 8 cm × 16 cm. At the caudal aspect of the cystic mass was a discrete, hypodense area consistent with active arterial contrast extravasation. This fluid-filled cystic mass was not communicating with the aorta and was a significant distance from the endovascular graft site (Figure 2B).

These findings confirmed the diagnosis of an intramural gas- tric hematoma with a central bleeding ulceration, and correlated with the endoscopic appearance. It was hypothesized that the patient’s warfarin-associated anticoagulation therapy accelerated bleeding from a shallow benign gastric ulcer, with the arterial vessel bleeding into the intramural tissue plane as well as intraluminal. The patient was managed conservatively with reversal of the coagulopathy, and fluid and blood replacement. There was no further ulcer bleeding and the intramural gastric hematoma resolved on follow-up over the next eight weeks.

**DISCUSSION**

Although intramural hematomas of the gastrointestinal tract have been described, intramural gastric hematoma is extremely rare. A PubMed search for all reported adult cases of intramural gastric hematoma in the English literature was performed and identified 26 cases (Table 1).

**Diagnosis of gastric hematomas**

In earlier case reports (5,9-13), upper gastrointestinal barium studies were used to investigate gastric hematomas. However, barium studies cannot readily distinguish a gastric hematoma from a solid tumour mass. Similarly, ultrasound has poor dis- criminatory capacity for gastric hematomas, showing an anechoic or hypoechoic pattern that is nonspecific and can mimic gastro- intestinal neoplasm or inflammatory lesions (13,14).

The CT scan is the current diagnostic procedure of choice for gastrointestinal-wall hematomas because it has the ability to precisely differentiate whether a mass is solid or liquid. In 1982, Plojoux et al (15) reported the use of CT scanning to diagnose intramural hematoma of the small bowel. They described gastrointestinal hematomas as well-circumscribed, high-density homogeneous masses. Unlike gastrointestinal neoplasms, gastrointestinal hematomas lack signs of calcification and infiltration into other organs.

Angiography has also been used to diagnose gastric hema- tomas, although the primary reason for using this modality was therapeutic rather than diagnostic (8,16).

**Management of gastric hematomas**

Gastric hematomas secondary to intrinsic coagulopathy are generally managed conservatively. All six reported cases

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**Table 1**

<table>
<thead>
<tr>
<th>Cause</th>
<th>References</th>
<th>Cases, n (%)</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coagulopathy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemophilia</td>
<td>5,6,14,17-19</td>
<td>6 (23.1)</td>
<td>6 0</td>
</tr>
<tr>
<td>Anticoagulation</td>
<td>8,9,20,21</td>
<td>4 (15.4)</td>
<td>3 1</td>
</tr>
<tr>
<td>Others</td>
<td>16,22-24</td>
<td>4 (15.4)</td>
<td>0 4</td>
</tr>
<tr>
<td>Aneurysm</td>
<td>25-28</td>
<td>4 (15.4)</td>
<td>1 3</td>
</tr>
<tr>
<td>Peptic ulcer disease</td>
<td>12,13,29</td>
<td>3 (11.5)</td>
<td>0 3</td>
</tr>
<tr>
<td>Spontaneous</td>
<td>2,24,30</td>
<td>3 (11.5)</td>
<td>1 2</td>
</tr>
<tr>
<td>Other causes</td>
<td>7,27</td>
<td>2 (7.6)</td>
<td>2 0</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>13 13</td>
<td></td>
</tr>
</tbody>
</table>

**Conservative**

**Surgical**

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(5,6,14,17-19) of gastric hematomas secondary to hemophilia were managed through blood and coagulation factor replacement. Nevertheless, bleeding can be massive because one of the six documented patients died from ongoing hemorrhage (6).

There are only four reported cases of gastric hematomas associated with anticoagulation therapy (8,9,20,21). Only one of the four cases required therapeutic transcatheter arterial embolization (8). In that case, angiography revealed active extravasation of the contrast medium from the gastroparietal branch of the left gastric artery. The remaining three cases were managed conservatively with blood transfusions and reversal of the anticoagulation.

A surgical approach has also been used in the management of gastric hematomas. However, in both of the reported cases, amyloidosis with vascular microaneurysms, and persistent and repetitive bleeding was identified (22,23). One of the two patients died after surgery as a result of multiorgan failure secondary to hypovolemic shock (22) while the second patient had a favourable postoperative course (23).

The patient reported in the present case study was therapeutically anticoagulated with warfarin. Similar to previous reports, the diagnosis was confirmed with a CT scan and the patient was treated with conservative therapy. The patient recovered fully with no recurrence during eight months of follow-up. Nevertheless, the patient experienced additional renal insufficiency secondary to hypovolemia, and CT contrast agent-induced nephropathy and required transient hemodialysis.

In this patient, it is likely that the small gastric ulcer was the initiating site for the gastric hematoma, with bleeding from the arterial vessel separating intramural gastric planes leading to intramural bleeding and the hematoma.

CONCLUSION

Gastric hematoma is a rare disorder. CT of the abdomen is the diagnostic modality of choice. Gastric hematomas secondary to coagulopathy can usually be managed with a conservative approach, and surgery should be reserved for hematomas secondary to structural abnormalities of either the gastric wall or gastric blood vessels.

REFERENCES


