A Giant Intramural Gastric Hematoma Successfully Treated by Transcatheter Arterial Embolization

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Abstract

We describe a case of intramural gastric hematoma with hemorrhagic shock caused by the formation of a large hematoma. Computed tomographic and angiographic examinations confirmed the presence of active bleeding into the hematoma. Transcatheter arterial embolization (TAE) was performed for hemostasis. To our knowledge, although 21 cases of intramural gastric hematoma have been reported in the literature, this is apparently the first case treated by TAE. We conclude that TAE is a safe and effective treatment option for intramural gastric hematoma confirmed to be associated with active bleeding into the hematoma. (Internal Medicine 39: 231–234, 2000)

Key words: intramural hematoma, anticoagulant therapy, Mallory-Weiss syndrome

Introduction

Intramural hematoma of the gastrointestinal tract can be caused by hemophilia, trauma, anticoagulant therapy, and complications of gastroendoscopy (1–3). Most cases arise in the duodenum, and intramural gastric hematoma is rare (4). Here, we describe a giant intramural hematoma of the stomach that was apparently triggered by violent vomiting in a patient receiving anticoagulant therapy. This case responded to transcatheter arterial embolization (TAE). Reports of similar cases are also reviewed.

Case Report

The patient was a 79-year-old Japanese woman with a diagnosis of unstable angina who was admitted to Kitasato University Hospital on June 25, 1998. On admission, her blood pressure was 146/70 mmHg and laboratory tests revealed mild anemia (hemoglobin, 10.6 g/dl) and a mildly elevated serum glucose concentration (glucose, 149 mg/dl), but there were no other distinct abnormalities. Coronary arteriography performed on the day of admission confirmed triple-vessel disease; an intra-aortic balloon pump was inserted, and anticoagulant therapy with heparin sodium was begun. Surgery was scheduled, but the patient began to vomit violently, with no signs of hematemesis at the night of the first hospital day. On the second hospital day her blood pressure decreased gradually without cardiac events. Then, the systolic blood pressure was 60 mmHg and the hemoglobin concentration was 4.8 g/dl; hemorrhagic shock developed. Laboratory examinations showed that the prothrombin time was 1.6 INR (International Normalized Ratio), and the activated partial thromboplastin time was 200 second or more (control, 37.6 second).

Computed tomography (CT) was performed to investigate the cause of hemorrhagic shock. CT examination showed a large, clearly demarcated mass (17x8 cm) in the stomach. The inside of the mass showed slightly heterogeneous low density, and extravasation of contrast medium into the mass. The liver, gallbladder, pancreas, and kidneys showed no abnormalities, and there was no ascites (Fig. 1). Endoscopic examination disclosed marked narrowing of the gastric lumen, and a giant mass was seen in the lesser curvature of the body. The mass was dark red; its surface was smooth and covered with normal mucosa. Evidence of hemorrhage and erosion was also seen in some areas of the mucosa (Fig. 2). No other lesions with a distinct potential for hemorrhage were noted in the esophagus, stomach, or duodenum, but the esophagogastric junction could not be fully observed due to a giant mass. The giant mass was thus diagnosed as an intramural gastric hematoma with active bleeding. Angiography was done for hemostasis. The left gastric artery with accessory left hepatic artery arose from the aorta directly. Extravasation of contrast medium was noted at the branch of the left gastric artery (Fig. 3). A 5 Fr. hook shaped catheter was inserted into the left gastric artery and TAE with Gelfoam® (Pharmacia and Upjohn, Inc.) was performed using a coaxial placed microcatheter. Gelfoam® was prepared by cutting a strip of Gelfoam® into cubes 2–3 mm. These cubes were then injected along with contrast medium. After TAE, shock...
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Figure 2. Endoscopic examination demonstrated marked narrowing of the gastric lumen, and a giant mass was seen in the lesser curvature of the body (arrowheads).

Figure 1. A: Abdominal CT scan showed a large, clearly demarcated mass in the gastric wall. B: CT scan revealed a soft tissue density mass with a high density layer and extravasation of contrast medium (arrow) into the mass was seen inside of the mass. The hematoma is encircled by arrowheads.

Figure 3. A: Early phase, B: Late phase. Angiography showed that the accessory left hepatic artery (ALHA) and the left gastric artery (LGA) formed a common channel. Extravasation of contrast medium was noted at the branch of the left gastric artery (arrow).
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Figure 4. On 12th hospital day, endoscopic examination showed no longer evidence of hematoma, only a laceration of the cardiac mucosa.

soon resolved. Anemia improved subsequently with blood transfusion, and endoscopic examination revealed no more evidence of hematoma on the 12th hospital day. Only a laceration of the cardiac mucosa was found (Fig. 4). Coronary bypass grafting was done on the 14th hospital day, and the patient was discharged after a while.

Discussion

Intramural hematoma of the gastrointestinal tract is generally associated with abdominal trauma or bleeding tendency, such as hemophilia or with anticoagulant therapy. Hematoma can develop in the submucosal layer and the proper muscle layer of the gastrointestinal wall (4). Most hematomas arise in the duodenum (1). Intramural hematoma restricted to the stomach is relatively rare. To our knowledge, 22 cases of intramural gastric hematoma, including the present case, have been reported in the literature (2, 5–21). The characteristics of intramural hematoma of the stomach as described in these reports are summarized in Table 1. The mean age of the patients was 38.3 years (range, 5–84 years). Intramural gastric hematoma was found to occur in all decades of life.

The maximum diameter of the hematoma was not stated for 10 patients. The hematoma of the present case was the largest among patients for whom the diameter was specified. As for therapy, 12 patients (54.5%) received conservative treatment including the administration of coagulation factors or blood transfusions. Eight (36.4%) underwent surgical therapy. TAE

Table 1. Reported Cases of Intramural Gastric Hematoma

<table>
<thead>
<tr>
<th>Number of cases</th>
<th>22*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>38.3 (5–84)*</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15</td>
</tr>
<tr>
<td>Female</td>
<td>7*</td>
</tr>
<tr>
<td>Underlying disease</td>
<td></td>
</tr>
<tr>
<td>Hemophilia</td>
<td>9 (40.9)</td>
</tr>
<tr>
<td>Von Willebrands disease</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>S. L. E.</td>
<td>2 (9.1)</td>
</tr>
<tr>
<td>Gastric ulcer</td>
<td>2 (9.1)</td>
</tr>
<tr>
<td>Chronic renal failure</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Myelofibrosis</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Unstable angina</td>
<td>1 (4.5)*</td>
</tr>
<tr>
<td>None</td>
<td>5 (22.7)</td>
</tr>
<tr>
<td>Direct cause</td>
<td></td>
</tr>
<tr>
<td>Trauma</td>
<td>3 (13.6)</td>
</tr>
<tr>
<td>Perforated gastric ulcer</td>
<td>2 (9.1)</td>
</tr>
<tr>
<td>Mallory-Weiss syndrome</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Duodenal ulcer</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Ingestion of foreign body</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Unknown</td>
<td>13 (59.1)*</td>
</tr>
</tbody>
</table>

Anticoagulant therapy
+; 3 (13.6)*, –; 19 (86.4)

Location of hematoma
Cardia 6 (27.3)
Body 11 (50.0)*
Antrum 4 (18.2)
whole stomach 1 (4.5)

Size of hematoma (d; diameter, cm)
d ≤ 5 2 (9.1)
5 < d ≤ 10 5 (22.7)
d > 10 5 (22.7)*
Unknown 10 (45.5)

Treatment
Laparotomy 8 (36.4)
Conservative treatment 12 (54.5)
TAE 1 (4.5)*
Unknown 1 (4.5)

*including the present case ( ): %.
was only performed in our patient.

Intramural hematoma was diagnosed by CT in the present patient. Scheward et al reported that intramural hematoma is characterized by homogenous attenuation, lack of stomach infiltration, and absence of calcification on CT scans, findings unlike those of gastric neoplasms (16). CT findings in our case showed these characteristics. In addition, our patient was confirmed to have extravasation of contrast medium on enhanced CT. Ultrasonography and magnetic resonance imaging have also been reported to be useful in the diagnosis of intramural hematoma of the gastrointestinal tract (11, 15, 21).

Generally, small hematomas can be managed conservatively with blood transfusions and correcting any bleeding tendency by the administration of coagulation factors or by other means. However, in hematomas with substantial bleeding and a trend toward enlargement sometimes surgical therapy is indicated. Surgery is also the treatment of choice in patients with hematomas which are difficult to distinguish from tumors. The diameter of the giant hematoma in our patient was 17 cm, and extravascular extravasation of contrast medium was seen on CT scanning. The development of shock required aggressive hemostasis, and angiography was performed to aid TAE. Because angiography revealed extravasation of contrast medium from the gastroparietal branch of the left gastric artery, TAE was performed. After TAE, the patient’s vital signs stabilized promptly, and shock resolved.

The decrease in blood pressure following severe vomiting and confirmation of laceration of the cardiac mucosa on follow-up endoscopy may have suggested that the intramural hematoma in our patient was associated with a variant type of Mallory-Weiss syndrome, but the true direct cause of the hematoma was unknown. Mallory-Weiss syndrome is characterized by massive hematemesis following laceration of the gastrointestinal area, associated with or induced by retching or forceful vomiting (22). In our patient, however, blood released from ruptured blood vessels in the stomach wall entered the gastric wall, rather than the lumen, thereby forming a hematoma. Other factors contributing to the formation of a giant hematoma were the fragility of the gastric mucosa, caused by the patient’s advanced age, and the fact that the patient was receiving anticoagulant therapy.

Intramural hematoma restricted to the stomach is a relatively rare disease. In addition, no previous report has described the use of TAE to treat this condition. TAE was found to be minimally invasive, safe, and useful for the management of intramural hematoma with massive bleeding.

References