Spontaneous Rupture of a Large Exogastric Hemangioma Complicated by Hemoperitoneum and Sepsis
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Hemangiomas are benign congenital tumors of mature blood vessels and usually consist of dense masses of capillaries or larger blood vessels. Hemangioma of the stomach presenting with spontaneous rupture and sepsis is rare. We report a 22-year-old male who presented at the emergency room with sudden-onset epigastric pain, intractable nausea, and vomiting. Fever, tachycardia, leukocytosis and peritonitis were found on examination after admission. Computed tomography revealed a single, well-defined homogeneous lesion measuring approximately $6 \times 8 \times 9$ cm in size over the left upper abdomen and hemoperitoneum. Laparotomy was performed because of intra-abdominal hemorrhage, peritonitis, and fever. During the operation, a dark red tumor was found on the greater curvature side of the stomach, accompanied by bleeding and hemoperitoneum. The tumor was removed and a wedge resection of the stomach and partial omentectomy were performed. Histopathologic examination of the excised tumor revealed mixed cavernous–capillary hemangioma with central necrosis. The postoperative course was uncomplicated. The pathogenesis of spontaneous rupture and sepsis in this case may have resulted from pedicle torsion accompanied by ischemia, central necrosis, rupture of hemangioma and subsequent peritonitis and sepsis. [J Formos Med Assoc 2006;105(12):1027–1030]

Key Words: gastric hemangioma, hemangioma, hemoperitoneum, spontaneous rupture, stomach neoplasms

Hemangiomas are benign congenital tumors of mature blood vessels and usually consist of dense masses of capillaries or larger blood vessels. Hemangiomas of the gastrointestinal tract are rare and account for only 0.05% of all intestinal neoplasms; gastric hemangiomas constitute less than 2% of benign gastric neoplasms.1 Gascoyen first described gastric hemangioma in 1860, and only 45 cases have been reported.1–5 Hemangioma of the stomach presenting with spontaneous rupture and sepsis is rare. We describe a 22-year-old male who had rupture of abdominal hemangioma and subsequent peritonitis and sepsis.

Case Report

A 22-year-old male college student presented to our emergency room soon after waking up and complaining of having awoken at midnight with sudden-onset epigastric pain and concurrent nausea and vomiting. He denied a history of medical diseases or previous surgery. The patient had no specific history of travel, parasitic infection, or trauma. He was conscious on examination with a heart rate of 92 beats/minute and blood pressure of 104/68 mmHg. Physical examination revealed abdominal distension, diffuse tenderness and...
rebound pain over the entire abdomen. There was no evidence of vascular diseases such as port wine spots or pigmented areas on the skin.

Laboratory analysis of blood revealed the following: white blood cell (WBC) count, 13,700/μL; hemoglobin (Hb), 12.8 g/dL; platelet count, 279,000/μL; neutrophils, 86.5%; lymphocytes, 7.0%; amylase, 57 U/L; and elevated C-reactive protein, 16.5 mg/dL. As chest X-ray and abdominal plain film did not show any abnormalities, the patient was admitted for observation without a definite diagnosis. After admission, the patient developed a high fever (39.1°C). Complete blood cell analysis was repeated 14 hours after admission and revealed persistent leukocytosis and anemia (WBC count, 17,200/μL; Hb, 11.1 g/dL). Coagulopathy was also noted (prothrombin time, 15.3/11.5; international normalized ratio, 1.77; activated prolonged prothrombin time, 44.5/29.7).

Computed tomography (CT) revealed an ovoid heterogeneous lesion measuring approximately 6 × 8 × 9 cm in size on the posterior left lateral aspect of the stomach with loss of the normal fat plane of the stomach wall. A precontrast scan showed the lesion to be of high density, and a postcontrast scan showed no evidence of significant enhancement. Mild hemoperitoneum in Morrison’s pouch was also noted (Figure 1).

Laparotomy under general anesthesia was performed because of suspected tumor rupture and internal bleeding, peritonitis and sepsis. Laparotomy revealed approximately 800 mL of fresh blood in the peritoneum and an ovoid mass 9 cm in diameter, the surface of which was coated with blood clots. The greater omentum covered the mass, which had a pedicle adhesion to the antrum of the stomach (Figure 2). Careful examination of the other abdominal viscera showed no evidence of other vascular malformations. The tumor was removed, and wedge resection of the stomach and partial omentectomy were performed.

Pathologic examination confirmed the presence of a mixed cavernous–capillary hemangioma with necrosis, abscess formation, and histiocytic

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**Figure 1.** Nonenhanced computed tomography (CT) reveals an ovoid heterogeneous lesion with irregular margins measuring approximately 6 × 8 × 9 cm in size on the posterior left lateral aspect of the stomach with loss of the normal fat plane of the stomach wall: (A) this lesion (arrow) exhibited high density on precontrast CT scan; (B) there was no significant vascular enhancement on postcontrast CT scan, but mild hemoperitoneum was found in Morrison’s pouch (arrow).

**Figure 2.** An ovoid mass coated with blood clots and covered by the greater omentum. After removal of the omentum, it was apparent that the mass was a tumor, with a pedicle originating from the stomach (arrow).
aggregation (Figure 3A). The specimen was fixed in 10% buffered formalin and embedded in paraaffin wax. Sections were stained with hematoxylin and eosin, and silver. Microscopically, the tumor was composed of aggregates of closely packed thin-walled capillaries filled with blood; flattened endothelia lined the capillaries and scant connective tissue stroma separated them (Figure 3B).

The patient had an uncomplicated postoperative course during 2 years of follow-up.

Discussion

Hemangiomas of the gastrointestinal tract are rare and account for only 0.05% of all intestinal neoplasms; gastric hemangiomas constitute less than 2% of benign gastric neoplasms, and only 45 cases have been reported thus far.

Although there is no standard system for classifying hemangiomas, they are generally classed as cavernous, capillary, or mixed type. The majority of gastrointestinal tract hemangiomas are of the cavernous type, which is most frequently associated with phleboliths and bleeding. Our patient had a mixed hemangioma, which is usually single and encapsulated.

The clinical manifestations of gastrointestinal hemangiomas range from insignificant incidental findings to large symptomatic masses with gastrointestinal bleeding, which can lead to spontaneous gastric rupture requiring surgical intervention. Gastric hemangiomas are usually asymptomatic and hemorrhage is the most frequent complication. The clinical presentation of gastric hemangioma in our patient was nonspecific. Spontaneous rupture of gastric hemangioma is often associated with an abdominal mass, sudden onset of abdominal pain, or peritonitis. In such instances, a laboratory test would reveal decreased hemoglobin levels and impaired coagulation. Gastric bleeding and stools positive for the presence of blood would be present in patients with intrastomach hemangiomas.

On imaging studies, abdominal plain film would be nonspecific, but a soft-density lesion would be evident when a large hemangioma is present. Abdominal ultrasound (US) is useful for detecting mass lesions and intraperitoneal bleeding. CT can supplement US data by identifying the blood supply of the tumor. Angiography is helpful for identifying the arterial blood supply of the tumor and is the method of choice for confirmation of a diagnosis. Marked vascular enhancement of gastrointestinal hemangiomas is a characteristic feature on CT scans conducted after intravenous administration of contrast medium. Wan et al reported a case of exophytic gastric hemangioma that showed high density on precontrast CT scan but was not enhanced on postcontrast CT. They concluded that torsion of
the tumor pedicle had resulted in intratumoral bleeding. In our patient, contrast-enhanced CT did not show vascular enhancement, which may have been not only due to torsion of the tumor pedicle but also to intratumoral bleeding, thrombosis formation in the vessels of the tumor, or necrosis. As the tumor was ischemic and necrotic, it may have ruptured spontaneously.

This patient initially had mild anemia which became more severe several hours later (Hb concentration decreased from 12.8 g/dL to 11.1 g/dL). The rapid progression of anemia may have been due to spontaneous rupture of the hemangioma or the effects of fluid supplementation. In addition, a high fever and an increased WBC count (from 13,700/μL to 17,200/μL) implied the presence of an inflammatory process. These features suggest that central necrosis or abscess formation occurred in this large hemangioma and that inflammation and peritonitis resulted when it ruptured.

Laboratory analysis of blood revealed coagulopathy but no thrombocytopenia. The patient denied any history of hematologic disease or previous ecchymosis or petechiae on the trunk or limbs. These symptoms may have been caused by consumptive coagulopathy, which may have resulted from an enlarging hemangioma complicated with an inflammatory syndrome.

Gastric hemangiomatis are rare. Tumors should be differentiated from exophytic gastric leiomyoma, leiomyoblastoma, leiomyosarcoma or, rarely, neurilemmoma. Gastric hemangiomas are usually intragastric, but our patient’s hemangioma was exogastric. Wan et al reported an exophytic gastric hemangioma with torsion and intratumoral hemorrhage. This is the first report of a case of exogastric hemangioma presenting with spontaneous rupture, hemoperitoneum, and sepsis. The classic treatment for intraperitoneal hemangioma is surgical resection, but transarterial embolization is helpful for treating ruptured hemangioma with an arterial supply. Bamanikar et al described the use of left gastric arterial embolization to treat a 36-year-old woman with gastric hemangioma.

Surgical resection appeared to be the best option for our patient because of the large size of the hemangioma and because it was complicated by central necrosis, rupture, and peritonitis. In our opinion, a large gastric hemangioma may compress the stomach and surrounding organs. As these tumors may also have an increased risk of spontaneous rupture, a potentially fatal complication, surgical removal is the treatment of choice.

References