

Diagnostic challenges in differentiating intramural gastric abscess from gastric cancer

Two case reports

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Abstract

Rationale: Intramural gastric abscess is a rare clinical condition. It is frequently neglected because of the absence of specific clinical symptoms and misdiagnosed due to the difficulty in differentiating a benign lesion from a malignant one on the gastric wall. Several imaging techniques are helpful for identifying an intramural gastric abscess. Nevertheless, a definite diagnosis is still challenging, and unnecessary surgery is sometimes performed. Therefore, more information regarding case experiences should be shared to help correctly diagnose intramural gastric abscesses.

Patient concerns: Two patients, a 47-year-old woman and a 31-year-old man, were hospitalized for abdominal pain.

Diagnosis and interventions: In addition to routine blood tests, either two or three imaging examinations, including esophagogastroduodenoscopy (EGD), computed tomography (CT), and endoscopic ultrasonography (EUS), were performed for these patients. The first patient was diagnosed with gastric cancer metastasized to the gastrocolic ligament, and the other was suspected to have a gastric wall abscess secondary to cancer of unknown origin. Both patients underwent surgery.

Outcomes: Surgery revealed a gastric wall abscess involving the colon in the first patient. She recovered after using oral antibiotics for 1 week, and she showed no discomfort or abnormalities during follow-up examinations. The second patient was diagnosed with gastric wall abscess derived from metastasized gastric cancer with a primary tumor located at the splenic flexure of the colon. He was discharged because of intolerance to chemotherapy and died before follow-up.

Lessons: EGD, CT, and EUS/fine-needle aspiration (EUS/FNA) are extremely valuable for differentiating an intramural gastric abscess from gastric cancer, and misdiagnoses can occur if any of these assessments is ignored. Hence, we recommend performing EGD, CT, and EUS/FNA as part of the routine examination when either of these two diseases is suspected clinically.

Abbreviations: CBC = complete blood count, CMP = comprehensive metabolic panel, CT = computed tomography, EGD = esophagogastroduodenoscopy, EUS = endoscopic ultrasonography, FNA = fine-needle aspiration.

Keywords: gastric abscess, phlegmonous gastritis, suppurative gastritis

1. Introduction

Suppurative gastritis is a rare clinical condition characterized by a purulent inflammatory process involving the gastric wall. It can be classified into 3 types: diffuse, localized, and mixed. The localized form, which is also known as an intramural gastric abscess, accounts for 5% to 15% of all suppurative gastritis cases and mainly involves the gastric antrum. The common pathogenic mechanisms of an intramural gastric abscess include direct invasion by microorganisms secondary to gastric mucosa

injuries, such as carcinoma, gastric ulcer, or endoscopic biopsy.^[1,2,3,4]

The diagnosis of an intramural gastric abscess is often difficult.^[5,6,7,8] It has a protruding appearance similar to that of subepithelial gastric neoplasms, such as a gastrointestinal stromal tumor (GIST), lipoma, neuroendocrine tumor (NET), and hematoma, under esophagogastroduodenoscopy (EGD). Computed tomography (CT) and endoscopic ultrasonography (EUS) often fail to reliably differentiate an intramural abscess from a malignancy, especially when the abscess lesion penetrates adjacent organs, or when a cancerous lesion of an adjacent organ invades the gastric wall to form a tumor-like mass. We report 2 intramural gastric abscess cases that were easily confused with gastric cancer when examined using either a CT scan or an upper endoscopic procedure. A short literature review of this rare condition is also provided. We obtained informed consent from the patients to report the cases. The study was approved by the Ethics Board of Zhejiang Provincial People's Hospital and People's Hospital of Hangzhou Medical College.

2. Case presentation 1

A 47-year-old woman was hospitalized for dull epigastric pain for 4 days. She reported upper abdominal pain just below the xiphoid. The pain was dull, constant, and bearable; it was accompanied with distention, but there was no radiating pain,

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nausea or vomiting, chills, fever, hematemesis, or hematochezia. Upper endoscopy performed at the local hospital indicated a gastric sub-mucosal tumor located in the gastric antrum. The patient had no significant medical history.

2.1. Assessment after admission

The patient's body temperature was 36.9°C. The upper abdomen was slightly rigid, without tenderness or rebound pain. The complete blood count (CBC), comprehensive metabolic panel (CMP), and chest X-ray results were all within normal limits. Contrast-enhanced CT of the abdomen indicated a possible gastric carcinoma that had metastasized to the gastrocolic ligament (Fig. 1). Upper endoscopy was performed (Fig. 2), and the following pathological study showed chronic gastritis involving the gastric antrum accompanied by inflammation, drainage, and necrosis. The clinical diagnosis was possible gastric malignancy, but an intramural abscess could not be ruled out.

The patient and her family preferred surgical treatment; therefore, an exploratory laparoscopy was performed. During surgery, a mass measuring approximately 5 cm * 6 cm was seen at the greater curvature of the gastric antrum. It penetrated the serosa and involved the transverse colon and its mesentery. No free fluids were noted in the abdomen. No metastasis was noted in the pelvis, mesentery, or liver. Billroth I was performed, and the major proximal stomach and partial transverse colon were removed. The surgical pathology report indicated an ulcerated lesion at the greater curvature of the gastric antrum measuring 1.0 cm * 1.0 cm * 0.5 cm and severe chronic superficial gastritis (active) around the ulcer that was accompanied by the formation of a lymphoid follicle, necrosis of the mucosa, inflammation, and drainage. The focal area showed low-grade intraepithelial neoplastic changes and a perforated ulcer affecting the transverse colon by forming a closed abscess from chronic transverse colitis. The discharge diagnosis was a gastric wall abscess. Postoperative treatment included antibiotics (amoxicillin/sulbactam [unasin] with ornidazole) for 1 week and supportive care for the symptoms. The follow-up examinations performed every month

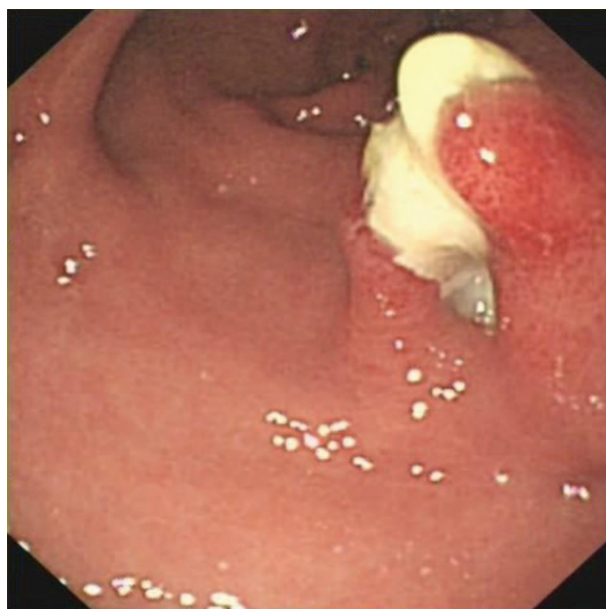


Figure 2. A protruded lesion with ulcer at the greater curvature of gastric antrum, measured at 2.0 cm * 2.5 cm, covered with a thick white coat, shown by endoscopy.

for the next 6 months confirmed that the patient had no abdominal pain, fever, or any other discomfort.

3. Case presentation 2

A 31-year-old man was admitted to the hospital for fever and abdominal pain for 5 days. The symptoms started as a fever with a maximum temperature of 38.9°C. He also developed intermittent fever accompanied by paroxysmal shooting pain in the right upper quadrant and below the xiphoid, vomiting with gastric content, and yellow, watery bowel movements 3 to 4 times per day. No cough, sputum, or jaundice of the skin or conjunctiva were noted. A CT scan of the abdomen at the local hospital showed multiple low-density nodules on the liver, indicating possible metastasis, and multiple slightly enlarged lymph nodes on the retroperitoneum and between the liver and stomach. The serum tumor marker carcinoembryonic antigen level was 254.7 mg/mL. The patient was transferred to our hospital to receive a higher level of care. He had no significant medical history.

3.1. Assessment after admission

The patient's body temperature was 37.9°C. Slight tenderness without rebound pain was noted at the right upper quadrant. EGD indicated a possible gastric wall abscess (Fig. 3). EUS indicated gastric cellulitis (Fig. 4). The initial clinical diagnosis was a gastric abscess secondary to cancer of an unknown origin.

To examine the primary cancer lesion, colonoscopy was performed; it indicated a cauliflower-like elevated lesion close to the splenic flexure of the colon and intestinal stenosis. Results of an endoscopic biopsy of the lesion indicated moderate to low-grade adenocarcinoma at the splenic flexure of the colon. A contrast-enhanced CT scan of the abdomen was performed again and revealed transverse colon carcinoma, multiple liver metastases, and multiple lymph node metastases in the abdominal retroperitoneum. On day 10 after hospitalization, palliative



Figure 1. A significant wall thickening in gastric antrum, localized dent wall and partial gastric mucosa missing were noted; there was an increased density of perigastric fatty tissue, a measure of 52 mm * 40 mm cloudy high density shadow noted in the middle, small lymph node seen around that area.

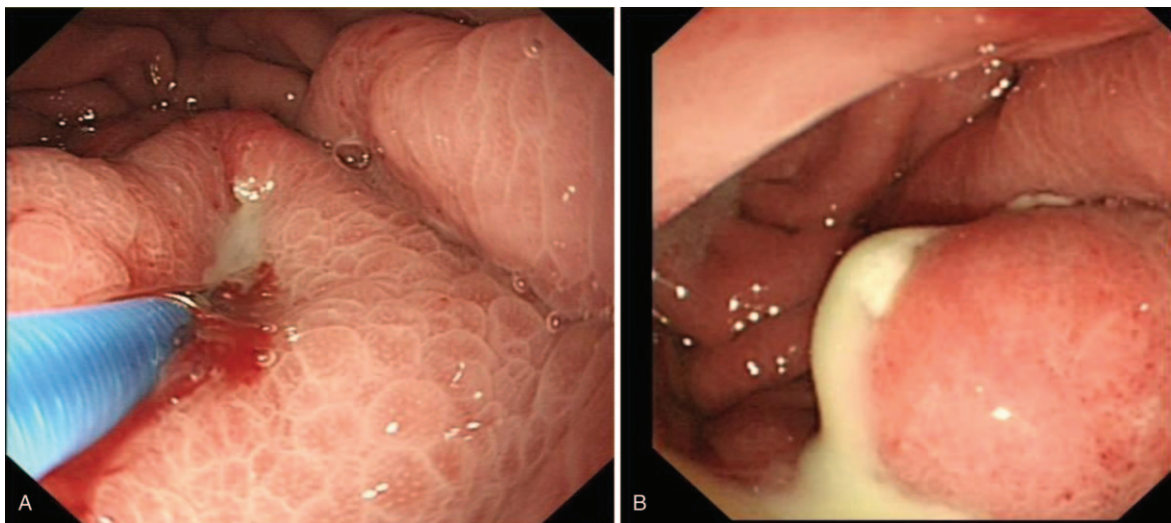


Figure 3. (A) A protruding lesion at the greater curvature of stomach body, measured about 4.0 cm. The lesion was smooth and soft to touch. (B) Biopsy at the lesion created milky purulent discharges, shown by endoscopy.

surgery involving colon cancer resection was performed. The colon mass was seen at the splenic flexure during surgery. The mass measured was approximately 5 cm * 5 cm and firm. It was wrapped around the colon, with limited mobility, and invaded the retroperitoneum, gastric wall, and abdominal wall. Because the primary cancer had metastasized to multiple organs, radical resection was not possible. Therefore, double-barrel transverse colostomy at the right lower quadrant was performed. The postoperative diagnosis was a partial bowel obstruction due to colon cancer with extensive metastases to the liver and peritoneum. The postoperative pathological examination revealed abdominal wall and greater omentum fibro-fatty tissue metastases. The patient was treated with chemotherapy comprising oxaliplatin 150mg dL plus capecitabine (500mg

twice daily, day 1–day 14); however, he was unable to tolerate the treatment. On day 63, because of end-stage cancer, he chose to be discharged. He died 2 months later, before the telephone follow-up.

4. Discussion

The diagnosis of intramural gastric abscess depends on a series of imaging examinations. The diagnosis can be definitively established if any purulent fluid leaking from the lesion site is seen during routine endoscopy. More commonly, the disease presents as a localized thickening lesion on the gastric wall with congestive and intact mucosa, which looks like a sub-mucosal tumor.^[5] Some patients also present with chronic superficial gastritis that is seen during endoscopy. However, if any purulent fluid draining is noted after a prick during the biopsy, then an intramural gastric abscess can also be diagnosed.^[6,9] Abdominal enhanced CT shows a low-density mass with peripheral ring enhancement. EUS is superior to CT for assessing the depth and extent of the abscess. Typical manifestations under EUS are thickening of the gastric wall with a localized hypoechoic mass, which has heterogeneously mixed echogenicity, mainly fluid echo, and few gas or foreign body echoes distributed in the muscular layer or sub-mucosal layer.^[1,7,10] The abscess lesion often progresses to involve several layers of the gastric wall. If whole layers disappear under EUS observation, then more caution should be used to avoid a misdiagnosis of gastric cancer. In such a case, fine-needle aspiration (FNA) and core biopsy can be very valuable when evaluating the nature of the wall mass; in addition, an analysis of the aspiration fluid using FNA can guide the administration of antibiotics.^[11]

For case 1, the initial EGD performed at the local hospital showed gastric antrum sub-mucosal bulging. The follow-up gastroscopy performed at our center revealed its progression to a protuberant lesion with an ulcer and sticky secretions. The following biopsy results indicated no evidence of a tumor. The abdominal CT scan showed a typical low-density mass with peripheral ring enhancement in the gastric wall. Therefore, a gastric wall abscess was considered first. The pus drained into the abdominal cavity to form an encapsulated abscess in the

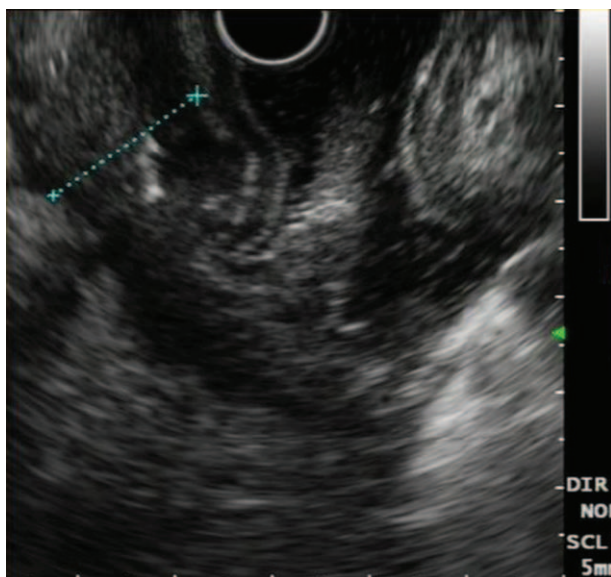


Figure 4. A significant gastric wall thickening, mainly muscularis propria, infused with surrounding tissue area, measured about 3cm * 5cm, hyperechoic change in the middle noted. No purulent drainage obtained through FNA, shown by endoscopic ultrasonography.

transverse colon, which resembled invasion by a malignant tumor and severely interfered with our initial judgment of a benign lesion. Moreover, EUS and FNA were not routinely performed for this case due to limited resources. Therefore, the diagnosis was ambiguous. Regrettably, the patient's treatment culminated in surgery to determine the complete diagnosis.

For case 2, the CT scan showed possible metastatic liver cancer. EUS revealed a markedly thickened and hyperechoic gastric wall that merged with the peripheral tissue to form a huge mass. The results of CT and EUS implied that the diagnosis could be gastric cancer metastasized to the adjacent tissue and liver. However, EGD indicated protuberant lesions with a smooth and soft texture, and milky purulent fluid was drained after probing with the endoscope. Therefore, our initial diagnosis was an intramural gastric abscess derived from an immunosuppressive state attributed to primary gastric cancer. However, such a diagnosis was ruled out by the following colonoscopy, which helped us to identify the correct primary lesion.

Recently, therapeutic endoscopic interventions have increasingly replaced surgery and have become a more promising method of treating intramural gastric abscesses.^[1,10,12] Endoscopic drainage includes mucosa resection with a snare, needle-knife incision, forceps, and puncture needle, with or without a drainage catheter. Percutaneous drainage and antibiotics are also used. However, patients whose conditions do not improve with endoscopic drainage in combination with antibiotics, patients with recurrent symptoms, and patients whose conditions are complicated with stromal tumors may sometimes need surgical treatment.^[1,4,10,12] For case 1, if EUS and FNA had been performed before the gastric wall abscess ruptured, then the patient might have been cured with endoscopic drainage combined with antibiotic therapy instead of invasive surgery. Even when the gastric wall abscess ruptures into the gastral cavity, leading to self-drainage, or into the abdominal cavity, leading to an encapsulated abscess with the transverse colon mucosa, surgery could still be avoided if both antibiotics and endoscopic drainage are applied. However, mortality rates are high if the gastric wall abscess develops into diffuse purulent gastritis or diffuse peritonitis.

In conclusion, an intramural gastric wall abscess is rarely diagnosed in the clinic because of the lack of specific clinical symptoms, and because it is easily confused with gastric cancer. Although CT is not perfectly reliable when trying to determine if a mass on the gastric wall is benign or malignant, EGD and EUS can provide important clues. EUS-FNA further helps to determine

the nature of the mass. Furthermore, a culture test of the aspiration fluid can help guide the selection of the antibiotic. We recommend using CT, EGD, EUS, and EUS-FNA as routine examinations to correctly diagnose an intramural gastric wall abscess, especially when gastric cancer cannot be excluded.

Author contributions

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Project administration: Jing Du.

Resources: Yong Han.

Validation: Yong Han, Jing Du.

Writing – original draft: Youwei Chen.

Writing – review & editing: Jing Du.

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