An Unusual Case of Recurrent Gastric Abscess

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Suppurative gastritis (SG) is an uncommon, often fatal condition characterized by suppurative bacterial infection of the stomach arising from a local or disseminated hematogenous infection. SG is divided into two categories based upon the extension of pathology: the more common phlegmonous diffuse gastritis and the much rarer intramural localized gastric abscess. In this case report, we describe a case of recurrent gastric abscess in a 28-year-old woman.

Case Report

A 28-year-old woman presented with severe epigastric left-upper-quadrant pain that was progressive and burning in nature without radiating for 6 days. Her associated symptoms included weakness, nausea, and vomiting of all solids and liquids over the previous 2 days. The patient denied any changes in bowel habits, blood in stool, hematemesis, fever, or chills, and her past medical history was significant for depression, irritable bowel syndrome, and cholecystectomy. Her first episode of pain was 9 months earlier when she developed similar severe epigastric pain with nausea and vomiting, for which she was admitted to hospital. Upper endoscopy at that time revealed the presence of antral thickening, and biopsies were negative for malignancy but positive for *Helicobacter pylori* infection. Computed tomography (CT) scan at that time showed stranding around the antral region. The patient was treated with antibiotics, and follow-up CT scan demonstrated resolution of perinatal stranding. Eight months later, she presented with similar symptoms and findings on upper endoscopy and CT scan of the abdomen and was once again treated with intravenous (IV) antibiotics until resolution of her symptoms and hospital discharge. The patient presented again to the hospital 1 month later (the current presentation) with left-upper-quadrant pain for 6 days and was referred for endoscopic ultrasound (EUS). Her social history was significant for cigarette smoking (<1 pack per week) and occasional alcohol use. Physical examination revealed dry mucous membranes, mild orthostasis that resolved with IV fluids, a soft abdomen with positive bowel sounds, and tenderness to palpation in the left upper quadrant. Rectal examination was guaiac-negative, and a complete blood count was significant for leukocytosis with left shift. CT scan of the abdomen demonstrated 3-cm soft tissue, fluid-filled density in the prepyloric antrum consistent with an abscess or a malignancy with central necrosis or hemorrhage (Figure 1). Upper endoscopy showed a 3-cm submucosal antral mass in the prepyloric area (Figure 2), and EUS demonstrated a 2-cm hypoechoic submucosal lesion suggestive of an abscess in the antrum that was confined to subcutaneous/muscularis propria (Figure 3). The lesion was opened with a cystotome, and following drainage of pus, a 10 Fr × 5-cm straight plastic stent was inserted into the cyst. The patient's pain rapidly resolved after drainage, and she was immediately started on IV piperacillin/tazobactam (Zosyn, Wyeth). Aspirate cultures were positive for *Streptococcus* species, and follow-up EUS showed a possible 2-cm foreign body, which may have been the cause of her recurrent abscess. She was discharged home on oral antibiotics and the recommendation to follow-up with surgical treatment. The patient had a recurrent abscess 2 months later and underwent distal gastrectomy with Roux-en-Y gastrojejunostomy. She recovered postoperatively and was discharged in stable condition and has been doing well since then.

Discussion

Gastric abscess was first described in the time of Galen (AD 150) as an erysipelas tumor of the stomach,[1] whereas the first description of SG was recorded by Cruveilhier in 1862[2] and a case series of 215 SG cases was later reported in 1919 by Sundberg.[3] Two types of SG have been described in the literature: a diffuse or phlegmonous

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Figure 1. Computed tomography scans of the abdomen demonstrating a gastric intraluminal wall abscess (indicated by the arrows), shown from different cut images.

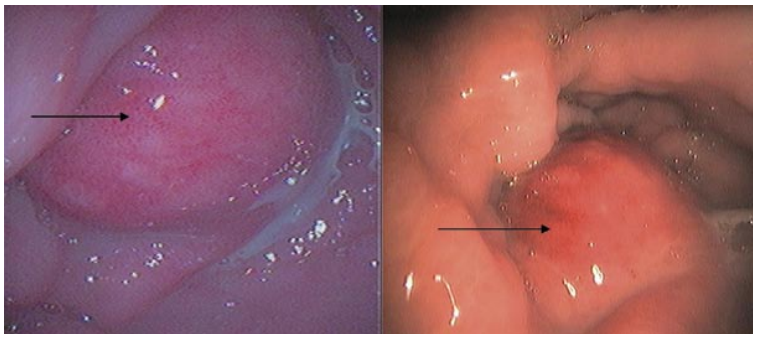

Figure 2. Submucosal antral mass measuring 3 cm in the prepyloric area, shown from different angles during endoscopy.

variant type of SG as opposed to a localized or intramural gastric abscess. A review of English language publications since 1972 identified only 18 reported cases of intramural gastric abscess.[4]

Normally, the stomach harbors low numbers of bacteria due to its highly acidic contents. Because of this semisterile environment, gastric wall abscesses are very rare.[5] When the protective effect of gastric acid is absent, bacterial overgrowth can occur. This phenomenon has been reported in the elderly and patients with achlorhydria, gastric ulcer, or gastric carcinoma.[6] The pathogenesis of intragastric mural abscess is thought to involve a focus of injury to the gastric mucosa due to penetrating trauma from an ingested foreign body or an endoscopic biopsy.[1,7] There have been reports of contiguous extension of infection into the gastric wall secondary to pancreatitis, cholecystitis, appendicitis, and diverticulitis. In addition, infection may arise from foreign body ingestion (fish bones), inflammation of ectopic pancreatic tissue, endoscopic biopsies, and gastric surgery. There have been reports of superinfection of gastric wall neoplasms, including carcinomas and leiomyosarcomas.[2,8,9] Patient-related risk factors for the development of SG include alcoholism, older age, diabetes mellitus, hypochlorhydria, achlorhydria, and immunosuppression. The most commonly reported pathogen is *Streptococcus*, which is implicated in up to 75% of cases.[7,10-13] Other less commonly reported organisms include *Escherichia, Staphylococcus, Clostridium, Bacillus,* and *Proteus*.[14] In most cases, epigastric abdominal pain and nausea dominate the clinical picture. In a literature review conducted by Choong and associates, 89% of the 18 cases that were found presented with abdominal pain. Fevers and rigors may also be found, though usually not in certain patient populations such as the elderly, the immunosuppressed, and diabetics. Two specific, though seldom present, clinical signs are the Deininger sign (decreased pain upon changing from a supine to sitting position)[13] and vomiting.[7] Currently, intramural gastric abscess is being diagnosed with increasing frequency by endoscopic ultrasonography.[4,10] On ultrasound, it appears as a well-defined hypoechoic mass within the gastric wall. In addition, there is increased vascularity around the mass

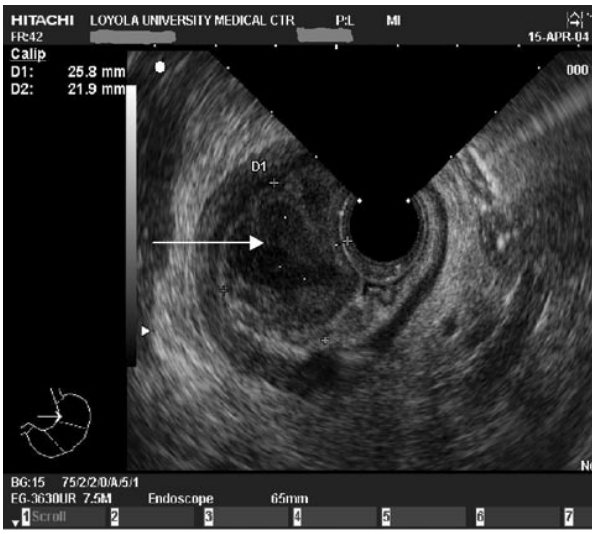

Figure 3. Endoscopic ultrasound image demonstrating a 2-cm hypoechoic submucosal lesion suggestive of an abscess in the antrum that is confined to subcutaneous/muscularis propria.

on the color Doppler images.[15] Upper gastrointestinal series may show a filling defect suggestive of submucosal mass.[16] On CT, the lesion appears as a localized area of mural thickening within the stomach wall, and fluid and air may also be seen within the mass.[13,17]

Until recently, the recommended therapy for intramural gastric abscess was gastrectomy in combination with antibiotics. However, technical advances currently allow either radiologic or endoscopic intervention. Endoscopic drainage with or without antibiotics has been shown to be effective.[10,15,18-20] In our case, endoscopic drainage was performed during EUS using a plastic stent. Due to the recurrent nature of the patient's disease, she underwent gastrectomy with Roux-en-Y gastrojejunostomy and has since done well. Percutaneous drainage has also been reported to be successful.[11] Although one report described successful treatment of a patient with diffuse SG with antibiotics alone, this approach should be regarded with caution.[21] In the review conducted by Choong and colleagues, there was a 100% survival rate for patients treated with surgery or endoscopic/percutaneous drainage with or without antibiotics (Table 1).

In conclusion, the diagnosis of intramural gastric abscess is not difficult to confirm but requires a high degree of suspicion because of its rarity. Early diagnosis is important, as it may obviate a needless gastrectomy and even death.

Table 1. Treatment and Survival Rates for 18 Patients With Intramural Gastric Abscess

	Patients			
	Treatment rate		Survival rate	
Treatment	***No.***	***%***	***No.***	***%***
Surgery	11	61	11	100
Endoscopic drainage ± antibiotics	4	22	4	100
Percutaneous drainage ± antibiotics	2	11	2	100
Antibiotics alone	1	6	0	0

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Review

Potential Utility of EUS in the Diagnosis and Management of Intramural Gastric Abscess

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Intramural gastric abscess is a rare phenomenon that can present as a focal intramural mass[1-13] or can occupy the entire stomach, leading to diffuse suppurative gastritis.[14,15] The bactericidal effect of gastric acid is partially responsible for the rarity of this condition.[2] Pathogenic mechanisms include direct invasion by microorganisms secondary to gastric mucosal trauma from foreign body ingestion,[3-5] endoscopic biopsy or polypectomy,[6] ulcer, carcinoma, leiomyosarcoma,[7] or empyema of the gallbladder.[8] Alternatively, hematogenous seeding may result from pneumonia, endocarditis, impetigo, scarlet fever, typhoid fever, osteomyelitis, or erysipelas.[9] This condition can also develop in the absence of any identifiable risk factors, as shown by the case reported by Khan and colleagues.[16] Although *Streptococcus* is most often associated with this condition, a variety of aerobic and anaerobic bacteria, as well as various fungi (eg, *Candida glabrata)*, have been implicated.

As highlighted in the case presented by Khan and coworkers, the diagnosis of suppurative gastritis may be delayed in patients presenting with prolonged epigastric pain without fever or systemic signs of infection. Abdominal computed tomography often fails to reliably differentiate an intramural abscess from a malignancy,[10,11] as illustrated in the patient treated by Khan and associates. Endoscopic ultrasound (EUS) is a valuable diagnostic tool for evaluating intramural gastric subepithelial mass lesions that offers therapeutic potential. EUS accurately discerns the layer of origin within various gastric wall layers, mass size, echo-density, echo-pattern, and relationship to adjacent structures. The differential diagnosis of gastric subepithelial masses is broad and includes both neoplastic and nonneoplastic lesions such as, but not limited to, gastrointestinal stromal tumor (GIST), lipoma, granular cell tumor, glomus tumor, pancreatic rest, carcinoids, neurofibroma, hematoma, metastatic deposits, and intramural varices.[12] The diagnosis is usually suspected based upon the presence of distinctive sonographic features with the addition of EUS-guided fine-needle aspirate (FNA) and core biopsy, which often allow definitive diagnosis. Given the rarity of gastric abscess, the typical sonographic features and potential spectrum of findings has not been sufficiently elucidated. However, the findings generally note a hypoechoic subepithelial mass with variable echogenicity[10,11] containing fluid, echogenic debris, or a foreign body, as evidenced in the case presented by Khan and colleagues. Kang and coworkers found that an increased Doppler signal at the perimeter of gastric abscesses aids in their differentiation from other subepithelial masses (eg, GISTs), which typically demonstrate enhanced Doppler flow within the center of the lesion.[13] EUS-FNA often facilitates diagnosis and allows fluid aspiration and analysis to guide the administration of antibiotics.

Definitive treatment should be initiated promptly to help alleviate the risk of mortality, which has been reported to be between 37% and 92%.[11] Surgery, either resection or drainage, is the standard method of therapy. Alternatively, percutaneous or endoscopic drainage combined with antibiotics provides a less invasive alternative to surgery.[1] Surgical management is preferred when the presence of underlying malignancy or clinical evidence of peritonitis is uncertain or following failed efforts at nonsurgical (endoscopic or percutaneous) drainage.

In conclusion, a gastric wall abscess is a rare clinical entity. In the absence of specific clinical symptoms, the diagnosis is often delayed. Even though there is a lack of pathognomonic features, the endosonographic appearance often provides important clues to the diagnosis and aids in the exclusion of other pathologies. EUS may also be utilized in a therapeutic capacity to guide antibiotic selection for fluid aspiration.

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