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Title: A rare complication of acute phlegmonous gastritis: Right gastroepiploic artery aneurysm and abdominal hemorrhage

Running Title: Acute phlegmonous gastritis

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Abstract

Background: Acute phlegmonous gastritis (APG) is an unusual disorder characterized by the diffuse suppurative infection of the stomach. Although the clinical features of APG are non-
specific, it is a serious condition and may lead to life-threatening complications. Therefore, early diagnosis and treatment are crucial.

Case report: A 67-year-old female was presented with severe acute abdominal pain, high fever, vomiting, and clouding of consciousness. She had a history of diabetes mellitus for 18 years and received insulin therapy. Physical examination revealed diffuse abdominal guarding. The patient underwent abdominal computed tomography (CT), and CT showed diffuse wall thickening affecting the entire stomach, suspicious for malignancy. Moreover, CT showed gastroepiploic artery aneurysm and abdominal free fluid with high attenuation compatible with abdominal hemorrhage. Urgent upper gastrointestinal endoscopy revealed dark-colored and thickened gastric mucosa with several ulcerations, consistent with acute phlegmonous gastritis (APG).

Conclusion: APG is a life-threatening condition, and early diagnosis and appropriate treatment are vital. APG should be kept in mind in the differential diagnosis of acute abdomen, especially in diabetic and elderly patients.

Keywords: Phlegmonous gastritis; hemoperitoneum; computed tomography; abdominal pain; acute abdomen

INTRODUCTION

Acute phlegmonous gastritis (APG) is a rare but life-threatening disorder characterized by the suppurative infection of the gastric wall, and early diagnosis is crucial (1). However, early diagnosis of APG is difficult due to non-specific clinical and laboratory findings. APG can cause perforation, stomach wall necrosis, and peritonitis (1, 2). APG is a severe clinical entity with high mortality rates of about 18–67%, and prompt treatment is vital (1-3). It is reported that the mortality rate decreases with correct diagnosis and rapid antibiotic therapy (1). Older age, alcohol consumption, diabetes mellitus, malnutrition, immunosuppression, and gastric

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ulcers are important risk factors for APG (3). To our knowledge, APG-associated primary vascular complications have not been reported previously. Herein, we present an 87-year-old woman with APG complicated by gastroepiploic artery aneurysm and abdominal hemorrhage who presented to the emergency room (ER) with acute abdominal pain.

CASE REPORT

A 67-year-old female was presented to the ER with severe acute abdominal pain, high fever (38.6 Celcius degrees), vomiting, and clouding of consciousness, which were present for a few hours. She had a history of diabetes mellitus for 18 years and received insulin therapy. Physical examination revealed diffuse abdominal guarding. The patient was hypotensive (blood pressure of 95/50 mmHg) and tachycardic (122 heartbeats per minute). Laboratory test results showed decreased hemoglobin value (9.8 g/dL; reference range; 12-14 g/dL), elevated white blood cell (WBC) count (16.5 K/uL, reference; 4-10 K/uL) and c-reactive protein level (22.5 mg/L, normal value; < 0.5 mg/L). The patient underwent abdominal computed tomography (CT), and CT showed diffuse wall thickening affecting the entire stomach, suspicious for malignancy. Moreover, CT showed gastroepiploic artery aneurysm and abdominal free fluid with high attenuation compatible with abdominal hemorrhage (Fig. 1). Urgent upper gastrointestinal endoscopy revealed dark-colored and thickened gastric mucosa with several ulcerations, compatible with acute phlegmonous gastritis (APG). Immediately after endoscopy, the patient was taken to emergency surgery. However, the patient died at the beginning of the surgical procedure. Histopathologic examination of the gastric mucosal biopsy specimens revealed neutrophilic exudates and mucosal necrosis, and the culture of gastric biopsy specimens was positive for *Escherichia coli*.

DISCUSSION

Acute phlegmonous gastritis (APG) is an unusual and life-threatening disorder characterized by a suppurative bacterial infection invading the gastric wall (1, 2). APG is common in elderly adults with diabetes mellitus, immunosuppression, and gastric ulcer (2, 3). Although few case
reports have been reported in the literature, it is essential to be aware of this rare but fatal condition (3). It is thought that APG may occur as a result of orally ingested pathogenic bacteria directly infiltrating the damaged gastric mucosa or a pathogenic bacteria enter the stomach wall through the bloodstream or as a result of bacteria reaching the stomach wall from another infection focus via the lymphatic system (1-4).

Although an early diagnosis of APG is of great clinical importance, early diagnosis is difficult because clinical and laboratory findings are nonspecific (1). Patients usually present with epigastric pain, loss of appetite, nausea, vomiting, and fever (2, 3). Especially in patients with risk factors such as diabetes and immunosuppression, APG should be kept in mind in the presence of epigastric pain and fever (2). Gastroscopy and biopsy are the gold standards for diagnosis, while CT is used as a problem-solving method to diagnose and investigate complications, as in the present case.

Kim et al. (1) reported a previously healthy young patient with APG complicated by an abdominal abscess successfully treated with percutaneous drainage and antibiotics. Schlosser et al. (4) reported a case with pharyngitis and developed APG after upper endoscopy and gastric biopsy. Although gastric biopsy is a relatively safe technique, they reported that upper endoscopy and biopsy should be postponed in patients with upper respiratory tract infections such as pharyngitis (4). Schlosser et al. (4) also showed that the patient recovered completely with empirical antibiotic therapy. Similarly, Yang et al. (5) reported that the patient who presented with abdominal pain, vomiting, and high fever diagnosed with APG recovered completely after empirical antibiotic therapy and gastrectomy. Moreover, Yakami et al. (6) reported three patients diagnosed with APG and showed that these patients recovered completely with antibiotic treatment. However, the present case died due to APG-related gastroepiploic artery aneurysm and hemoperitoneum. In the present case, the presence of APG complicated by gastroepiploic artery aneurysm and important comorbidities such as advanced age and diabetes worsened the course of the disease.
APG progresses very rapidly, and patients may be present with sepsis at the time of diagnosis. It has been reported that many bacterial agents cause APG, and the most frequently reported pathogens are Streptococcus spp., Enterococcus spp., and Clostridium spp (1, 5). Rarely, fungal agents such as mucormycosis have been reported to cause APG (1). *Escherichia coli* was detected in the gastric biopsy obtained in the present case. Although antibiotic treatment is quite effective in treating APG, these patients should be carefully investigated vascular complications associated with APG.

In conclusion, the present case report showed acute phlegmonous gastritis (APG) complicated by gastroepiploic artery aneurysm and hemoperitoneum. Since the early diagnosis of APG and APG-associated complications are crucial, radiologists and emergency physicians should be aware of this unusual disorder in patients with acute abdominal pain.

References


Figure Legends

**Figure 1:** Contrast-enhanced CT angiography images. 

a) Axial CT image at the stomach level shows diffuse wall thickening affecting the entire stomach, suggesting malignancy (arrowheads). 

b) Axial CT image at the level of left liver lobe demonstrates gastroepiploic artery aneurysm (red arrow) and abdominal free fluid with high attenuation (*) compatible with hemoperitoneum. Note the diffuse gastric wall thickening (arrowheads) and wall irregularities in the gastroepiploic artery (dashed arrow). 

c) Coronal CT image shows diffuse gastric wall thickening (arrowheads) and gastroepiploic artery aneurysm (red arrow). 

d) Three-dimensional
volume rendering CT image shows the fusiform aneurysm of gastroepiploic artery (arrow).
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