

Emphysematous gastritis

E. Makhoul¹, F. Mana², L. Vandermeulen², N. Basile³

Department of (1) Gastroenterology and (3) Surgery, CHU Notre Dame de Secours, Byblos, Lebanon ; (2) Department of Gastroenterology, UZ Brussel, Brussels, VUB.

To the Editor,

Emphysematous gastritis is characterized by the presence of intramural gas produced by bacteria in situ in the gastric wall. It is an uncommon and severe form of phlegmonous gastritis, associated with a high mortality. We report two cases of emphysematous gastritis.

First case : a 64-year-old alcoholic man presented with acute epigastric pain radiating to the back, distended abdomen and hematemesis. C-reactive protein level was 322 mg/l. Three hours later, the patient experienced sudden exacerbation of the pain, with abdominal guarding. CT scan showed symmetrical thickening of the gastric wall with presence of intra-parietal air bubbles and peritoneal effusion (Fig. 1).

Emergency laparotomy revealed abundant peritoneal turbid fluid and a distended stomach with a thickened and congested wall covered with false membranes. A partial gastrectomy was performed. The following day, a deterioration of the general status appeared due to a disseminated *Pseudomonas aeruginosa* infection with shock and not reversible multi-organ failure.

Second case : a 77-year-old man, known with diabetic macro-angiopathy and chronic lung obstructive disease was admitted for amputation of the left leg because of a multi-resistant *Pseudomonas* infection of his foot. On post-operative day 3, the patient developed abdominal pain en distention, vomiting, epigastric tenderness and hyperthermia. Plain abdominal X-ray revealed the presence of gaseous clarity around the gastric circumference and the abdominal CT scan showed the presence of a fully distended stomach, with important parietal dissection by gas patches and also gas in the portal vein. GI endoscopy revealed edema a large ulcer at the level of the greater curvature.

Emergency total gastrectomy with esophago-jejunostomy was carried out (Fig. 2). After intensive reanimation and broad spectrum antibiotics, the general condition improved and the patient was discharged ten days post surgery.

Discussion

Phlegmonous gastritis is an infection of the gastric wall caused by bacteria. Emphysematous gastritis is rare and life-threatening variant of phlegmonous gastritis. It is characterized by the presence of gas-forming microorganisms within the gastric wall and diffuse necrotizing

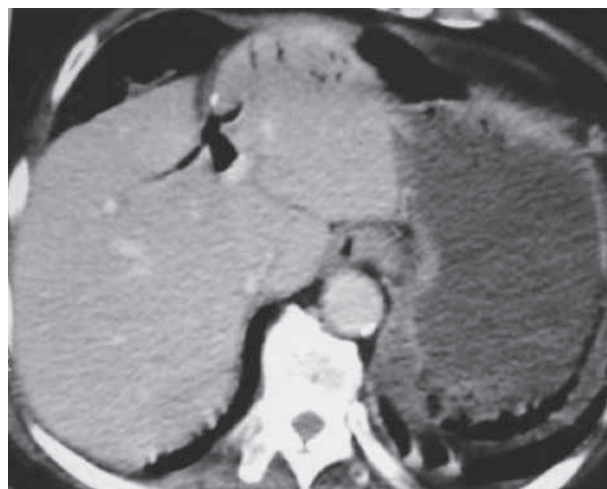


Fig. 1. — CT scan showing symmetrical thickening of the gastric wall with presence of intra-parietal air bubbles.

inflammation. This disease can also affect children even of low age (1) and can also reach the esophagus. Early diagnosis and treatment are mandatory.

Usually, the gastric wall is well protected from infection by the local acidity and a good vascularization. The etiology of the penetration of the disease-causing agents is often unknown. Predisposing factors are ingestion of caustic substances (37%) (2), alcoholism (22%), acute gastroenteritis (15%) and recent abdominal surgery (15%). Less common conditions include anti-inflammatory drugs, acute dilation of the stomach, fungal septicemia, carbonated drinks abuse, immune-compromised status, diabetes, impaired renal function, long-term treatment with steroids and antibiotics.

Identified responsible pathogens include *Streptococcus* (> 50%), *Escherichia coli*, *Pseudomonas aeruginosa*, *Clostridium perfringens*, *Staphylococcus aureus*, *Candida* Species and mucormycosis (3).

Clinical presentation : intense epigastric pain, nausea, vomiting which can contain flows of necrotic gastric mucous membrane (pathognomonic sign), hematemesis,

Correspondence to : Dr. Elias Makhoul, M.D., Faculty of medicine Holy Spirit University Kaslik, CHU Notre Dame de Secours Byblos, Pob : 3 Byblos Lebanon. E-mail : eliemakhoul@hotmail.com and eliasmakhoul@chu-org.lb

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Fig. 2. — Resected stomach with extended necrotic zone

fever and diarrhea, septic shock. The diagnosis is obtained by radiologic imaging (abdominal X-ray, CT scan) describing the presence of gas in the thickened gastric wall and in the portal vein (4). Gastroscopy generally shows congestion, edema, erosions, exudates and friability of the mucous membrane or even frank necrosis.

The differential diagnosis is mainly between emphysematous gastritis and gastric emphysema. The cause of gastric emphysema is not infectious, but consists in high pressure conditions in the lumen followed by air passage in the gastric wall. For example following gastroscopy, in case of atonic stomach, post-surgery or gastro-intestinal occlusion. It has also a more linear distribution of gas in the gastric wall. Symptoms of acute abdomen and severe disease are absent and the course is spontaneously benign, requiring no treatment. Early management of

emphysematous gastritis focuses on treatment of shock and use of broad-spectrum antibiotics covering Gram-negative and anaerobe bacteria. An aggressive medical approach allows a favorable evolution in 40% of the cases (5,6). However, a risk of gastric stricture as sequel is reported in 20% of the cases. The role of surgery is not well defined. Urgent surgery is indicated in the event of necrosis, perforation and peritonitis, or in case of rapid deterioration of the patient's general status under medical treatment. The necrosis is often more severe than suggested by the macroscopic aspect and requires a broad resection. In phlegmonous gastritis no gas is visible. In the event of gastric necrosis, post-operative mortality is about 60%, but the evolution without surgery is fatal.

In conclusion, emphysematous gastritis is uncommon and associated with a high mortality. Early diagnosis and immediate intensive management are mandatory. The differential diagnosis has to be made with gastric emphysema which has a spontaneous favorable outcome.

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