Suppurative gastritis as a rare cause of acute abdomen and septic shock in a pregnant woman: a case report

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ABSTRACT

Background: Suppurative or phlegmonous gastritis is an uncommon but serious disease, which can be fatal if untreated. The treatment is conservative at first with antibiotic therapy, but a total gastrectomy might be required if the patient is unresponsive to medical treatment and the clinical conditions deteriorate.

Case presentation: We present a case of acute suppurative gastritis, the second in the literature to our knowledge not to be fatal in a pregnant woman, caused by group A *Streptococcus pyogenes*, treated conservatively after an exploratory laparoscopy. The delivery was uncomplicated and the patient recovered well after a long cycle of targeted antibiotic therapy.

Conclusion: The rarity of suppurative gastritis may be associated with the difficulty of a prompt diagnosis and high mortality as a result. The aim of this case report is to raise awareness about the importance of an early diagnosis, and it is crucial to avoid treatment delays. The emergency physician, radiologist, and surgeon should be aware of this entity.

Keywords: Suppurative gastritis, gastric abscess, emergency medicine, emergency radiology, case report.

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Background

Suppurative gastritis is a rare but severe disease that, if not promptly diagnosed, might be fatal in approximately 42% of cases. Clinical presentation is often nonspecific with acute abdominal pain, nausea, and high fever. Hematemesis can be present [1].

There are two main forms of suppurative gastritis: the localized form, most commonly confined to the antrum, and the diffuse form (the most frequent), which involves all the gastric walls [2].

The risk factors include alcoholism, advanced age, malnutrition, uncontrolled diabetes mellitus, immunosuppression, low socio-economic status, long and excessive use of proton pump inhibitors, and some medical procedures including upper gastrointestinal endoscopy and nasogastric tube insertion [2,3].

The knowledge about this disease comes primarily from clinical reports, and this is to our knowledge the second non-fatal case reported on a pregnant woman [4], with two other known deadly cases [5,6].

Case Presentation

A 34-year-old patient presented at the Obstetric and Gynecological Emergency Department of our University Hospital because of the onset of labor. Her medical history was unremarkable except for postpartum hemorrhage in 2011 and an uncomplicated umbilical hernia.

She reported of hyperpyrexia (39°C) and vomiting since 10 days before being treated at home with paracetamol and metoclopramide.

The delivery progressed spontaneously and was uncomplicated, but a few hours later the patient presented severe abdominal pain. An abdominal ultrasound was performed, which showed marked abdominal effusion and gastrectasis. Her blood test revealed neutrophilic leukocytosis (8 × 10^9/l) and increased C-RP (>40 mg/dl). Hemocultures and urinary cultures were taken and an empiric antibiotic therapy was started with Piperacillin/Tazobactam.

A contrast-enhanced computed tomography (CT) was performed the day after, demonstrating a severely distended stomach filled with fluid, characterized by diffuse mural thickening (up to 2 cm), with intramural hypodensity, representing submucosal abscesses. Diffuse abdominal effusion was associated (Figure 1).

A few hours later the patient progressed to septic shock with multiorgan failure and required endotracheal intubation and positioning of a central venous catheter. She was transferred to the Intensive Care Unit and an esophagogastroduodenoscopy (EGDS) was performed, showing

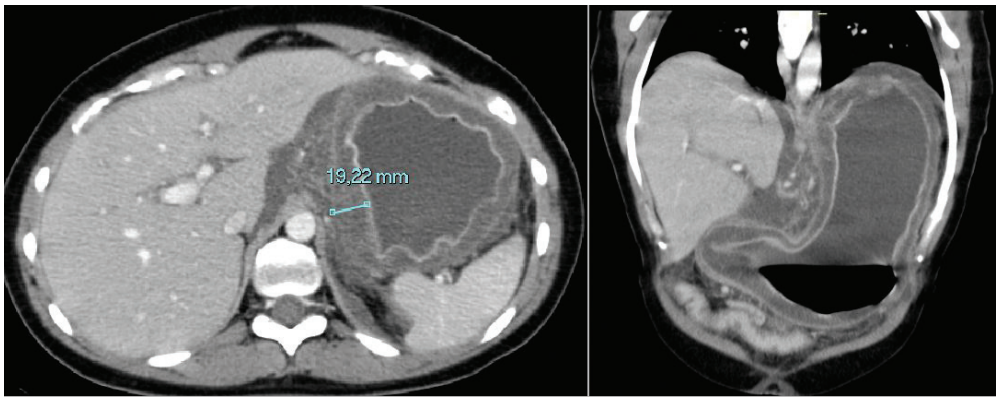

***Figure 1**. Contrast-enhanced CT of the upper abdomen showing distention of the stomach with diffuse gastric wall thickening (almost 2 cm at the lesser curve) and mucosal hyperenhancement. (A: axial, B: paracoronal planes).*

***Figure 2**. Follow-up contrast-enhanced computer tomography of the upper abdomen showing a reduction in the gastric distention and thickness of the gastric wall and less free fluid.*

fresh blood and clots inside the stomach, which had an extensive and deep ulceration on her greater curve, confirming the severely thickened and inflamed gastric mucosa.

The same day, given the critical clinical situation, an urgent diagnostic laparoscopy was performed, confirming the diagnosis of suppurative gastritis, but given the intrinsically elevated surgical risk of an emergency gastrectomy, the young age of the patient, the possibility of regression with antibiotic therapy alone, and the absence of a histopathologic diagnosis, it was decided to just aspire the free fluid and put in place two abdominal drains.

A group A *Streptococcus pyogenes* was isolated from hemocultures, and the antibiotic therapy was consequently switched from Piperacillin/Tazobactam to Meropenem.

The patient slowly improved with medical therapy and was discharged from the Intensive Care Unit to the Emergency Surgical Unit in 1 week. A follow-up contrast-enhanced CT was performed 10 days later, showing a reduction in the gastric distension and in the thickening of the gastric wall, and less free fluid in the abdominal cavity (Figure 2). The follow-up EGDS showed healing of the previous ulceration and reduction of the inflammatory aspect of the gastric folds.

The patient, together with her newborn son, was discharged from the hospital in good clinical condition 2 weeks after admission.

Discussion

Suppurative gastritis is an extremely uncommon but severe infection of the gastric wall.

It is classified into primary, secondary, and idiopathic types; the first is caused by a direct injury of the stomach (e.g., due to a gastric tumor or a peptic ulcer); the second is a consequence of a systemic infection, such as endocarditis; the term "idiopathic" is used when no primary cause is found [3].

The patient we presented was affected by idiopathic suppurative gastritis because no cause of mucosal injury was found and the patient was otherwise healthy at the moment of presentation. To our knowledge, this is the second case of idiopathic suppurative gastritis not to be fatal in a pregnant woman.

The most common microorganism isolated as a causative agent is the *Streptococcus* spp., responsible for approximately 70% of all cases. The other two most frequent pathogenic bacteria are *Escherichia coli* and *Staphylococcus* spp. [3]. In our case, a group A *S. pyogenes* was isolated in the hemocultures taken before the start of the empiric antibiotic therapy, thus allowing to rapidly switch to a targeted therapy effective against this specific bacterium after just 2 days from presentation.

The classic clinical presentation of suppurative gastritis is intense epigastric pain associated with fever, nausea, and hematemesis. A contrast-enhanced CT is the exam of choice showing gastric distention and a markedly increase thickness of the gastric wall, with free fluid in the abdominal cavity as a reactive response to the severe inflammation of the stomach.

Differential diagnosis of suppurative gastritis at CT is gastric localization of Crohn's disease, gastric malignant lymphoma, Ménétrier's disease, and Bormmann type 4 advanced gastric cancer. Gas accumulation within the

gastric wall could help in the process of diagnosis, but in our case no air bubbles were detected [7,8].

Suppurative gastritis has an elevated mortality rate; therefore, rapid diagnosis and prompt treatment are crucial. If treatment with antibiotics alone is ineffective, emergency surgery is a valid option and a total gastrectomy has to be done to avoid the aggravation of the patient [9]. In the selected patient, endoscopic drainage of the purulent fluid through the gastric lumen, associated or not with antibiotic therapy, might be effective [2]. In our case, the surgeon decided to proceed with an urgent explorative laparoscopy, but given the absence of histological diagnosis, the possibility of a good recovery with antibiotic therapy only, and the intrinsic risks of an emergency total gastrectomy, the risk/benefit ratio was in favor of a conservative approach: aspiration of the free fluid and placement of two drains in the abdominal cavity, leaving the stomach in place. This approach was successful and the patient recovered well.

Notably, the only other reported case of idiopatic phlegmonous gastritis in a pregnant woman (4) was caused by type A *S. pyogenes*, and that case too resolved with conservative surgical treatment with placing of a local peritoneal drainage and antibiotic therapy (in that case a combination of cefotaxime 3 g/day and metronidazole 1.5 g/day was administered until the results of blood and peritoneal fluid culture were available; it is not specified if this therapy was modified after the analysis of the cultures).

Conclusion

Suppurative gastritis is a rare but severe condition. Given the unspecific presentation (abdominal pain, fever, nausea, and sometimes hematemesis) and its high mortality rate, a high level of suspicion is necessary. Contrast-enhanced abdominal CT is the exam of choice, showing markedly thickened and enhancing gastric walls sometimes with gas bubbles within; CT is often followed by endoscopy. A conservative approach with targeted antibiotic therapy and at times endoscopic drainage is usually effective, but in case of deterioration of the patient's clinical condition a total gastrectomy might be required.

Given the importance of an early and correct diagnosis the radiologist, surgeon, and physician working in the emergency department should be well aware of this entity.

The reports about pregnant women presenting with phlegmonous gastritis are just a few, but it could be speculated that in case of type A *S. pyogenes*, a targeted antibiotic therapy could represent, with or without the placement of abdominal drains, a first line therapy in order to avoid an immediate and potentially unnecessary gastrectomy. Clearly given the poor literature about this entity further clinical reports by colleagues facing the same challenge would be necessary and useful.

What is new?

To the authors' knowledge, this is the second report of phlegmonous gastritis on a pregnant woman not to be fatal with other two deadly cases. We report our approach of a targeted antibiotic therapy together with the placement of abdominal drains in order to avoid gastrectomy.

List of Abbreviations

C-RP	C-reactive protein
CT	Computed tomography
EGDS	Esophagogastroduodenoscopy

Funding

None.

Conflict of interests

The authors declare that there is no conflict of interest regarding the publication of this article.

Consent for publication

The patient gave consent to publish this case report.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

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Summary of the case

1	**Patient (gender, age)**	Female, 34
2	**Final diagnosis**	Idiopathic suppurative gastritis
3	**Symptoms**	Hyperpyrexia (39°C), vomiting since 10 days before admittance, severe abdominal pain
4	**Medications**	Empiric antibiotic therapy (Piperacillin/Tazobactam), targeted antibiotic therapy (Meropenem)
5	**Clinical procedure**	Clinical examination, US scan, CT scan, endotracheal intubation and positioning of a central venous catheter, esophagogastroduodenoscopy, urgent diagnostic laparoscopy
6	**Specialty**	Emergency Radiology, Emergency Medicine