

Case Report

Emphysematous gastritis associated with ileus due to fecal impaction

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Abstract

Background: Gastric emphysema and emphysematous gastritis (EG) are rare diseases involving air being introduced into the stomach wall. Emphysematous gastritis is an infectious disease with a high fatality rate.

Case presentation: An 83-year-old woman had recovered from septic shock, however, an antibiotic-refractory inflammatory response remained. She was diagnosed with pseudogout and administered a non-steroidal anti-inflammatory drug. However, abdominal pain, prominent abdominal distension, and strawberry milk-like gastric juice were recognized. Computed tomography showed ileus due to fecal impaction and GE. The results of culture of the gastric juice were positive (*Pseudomonas aeruginosa* and *Enterococcus faecalis*). Disimpaction, fasting management, and antibacterial treatments resulted in the recovery of her symptoms.

Conclusion: This is the first case in which ileus associated with fecal impaction caused EG. The present case highlights the importance of promoting regular bowel movements.

Key words: constipation, computed tomography, emphysematous gastritis, fecal impaction, ileus

INTRODUCTION

GASTRIC EMPHYSEMA (GE) and emphysematous gastritis (EG) are rare diseases involving air being introduced into the stomach wall.^{1,2} Gastric emphysema is a relatively benign disease induced by mechanical trauma, intestinal obstruction followed by an increase in bowel internal pressure, and burst of pulmonary emphysema or bulla.^{1,2} Emphysematous gastritis is an infectious disease with a high fatality rate that involves the invasion of gas-forming organisms into the gastric mucosa, and mucosal defects as risk factors.^{1,2} Although GE shows asymptomatic or mild abdominal pain and is usually self-limiting, EG is often associated with abdominal pain, fever, and vomiting and is accompanied by sepsis or septic shock.³ Emphysematous gastritis is treated by conservative management with antibiotics, intravenous hydration (or pressor support), bowel rest, or surgical management involving emergent laparotomy or gastrectomy.¹⁻³

We herein report a case of EG associated with ileus due to fecal impaction.

CASE PRESENTATION

AN 83-year-old woman with a history of hypertension and diabetes was hospitalized for septic shock due to urinary tract infection. The results of a urine culture was extended-spectrum β -lactamase-producing bacteria. After recovery from septic shock thanks to intensive treatments, an antibiotic-refractory inflammatory response remained. She was diagnosed with pseudogout and treated with a non-steroidal anti-inflammatory drug from day 30. She also had constipation and was being fed through a nasogastric tube due to appetite loss. The inflammatory response showed a temporary improving trend.

However, on day 34, abdominal pain, prominent abdominal distension, and the presence of strawberry milk-like gastric juice were recognized. Her level of alertness was 6 on the Glasgow Coma Scale (E2VtM4) with a blood pressure of 115/53 mmHg, a heart rate of 67 b.p.m., and a percutaneous oxygen saturation of 97% (FiO₂ 0.25). The main results of a blood analysis were as follows: white blood cell count, 12,000/ μ L; hemoglobin, 8.1 g/dL; platelets, 35.3×10^4 / μ L; aspartate aminotransferase, 26 IU/L;

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alanine aminotransferase, 24 IU/L; blood urea nitrogen, 52.7 mg/dL; creatinine, 0.54 mg/dL; and C-reactive protein, 14.2 mg/dL. Computed tomography showed ileus due to fecal impaction, GE (Fig. 1) and portal vein gas (Fig. 2). The results of culture of the gastric juice were positive (*Pseudomonas aeruginosa* and *Enterococcus faecalis*), and catheter urine was also positive (*Candida albicans*). Tazobactam/piperacillin and micafungin were administered. Disimpaction discharged 400 g of stool, and her symptoms promptly improved. Antibacterial treatments, disimpaction, and fasting management resulted in the recovery of her abdominal distension and upper gastric tenderness. Subsequent computed tomography on day 39 showed the disappearance of gastric emphysema (Fig. 3), and her white blood cell count returned to 8,900/ μ L that same day. After keeping the bowel clear with drugs, she was transferred to a rehabilitation facility.

DISCUSSION

A PUBMED SEARCH was undertaken to identify articles using the key words “emphysematous gastritis” and “fecal impaction” or “constipation” on March 7, 2022. This search did not yield any reports of EG associated with ileus due to fecal impaction. Accordingly, we believe that this is the first report to describe a case of EG associated with ileus due to fecal impaction.



Fig. 2. Abdominal computed tomography findings on day 34 of admission of an 83-year-old woman with emphysematous gastritis. Portal vein gas is recognized (arrow).

Regarding possible mechanisms underlying the formation of EG by ileus due to fecal impaction, the gastric mucosa in the present patient might have been weakened by a nasogastric tube and nonsteroidal anti-inflammatory drug therapy. Ileus induced by fecal impaction might have resulted in an increase in the bowel internal pressure, with gas entering the weakened gastric mucosa, which led to GE. Gas-forming organisms then could enter the GE region, followed by the

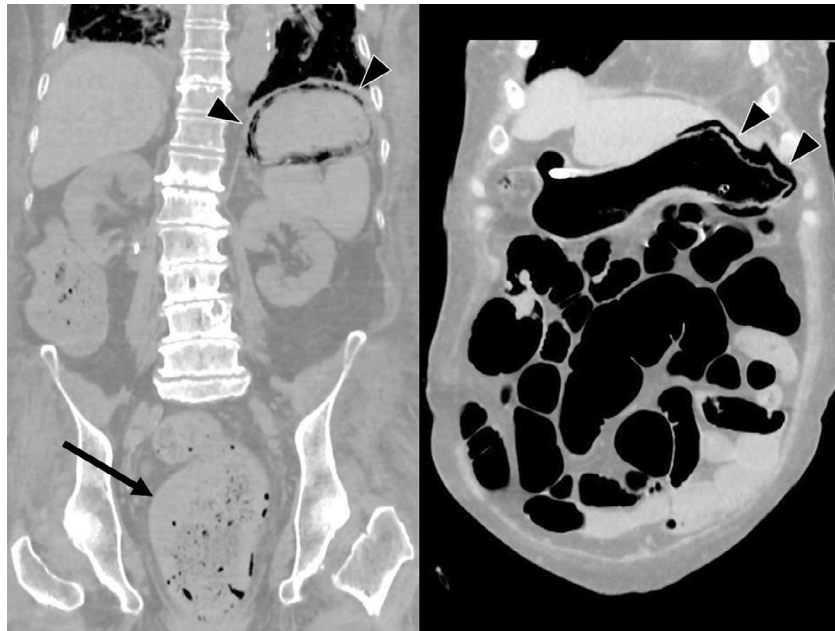


Fig. 1. Abdominal computed tomography on day 34 of admission of an 83-year-old woman with emphysematous gastritis. Computed tomography shows air within the gastric wall (arrowheads), extensive gas in the bowels, and massive feces in the rectum (arrow).

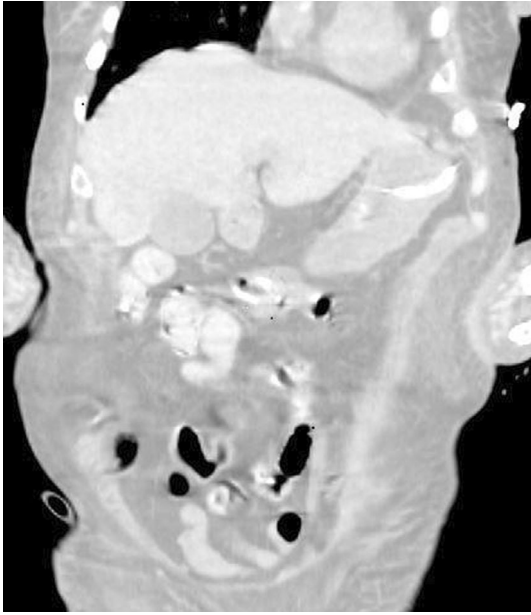


Fig. 3. Subsequent computed tomography on day 39 of admission of an 83-year-old woman with emphysematous gastritis. Computed tomography shows the disappearance of gastric emphysema.

development of EG, because of the immunocompromised status of diabetes. In this case, the cause of the observed bacteria could have been *P. aeruginosa*^{4,5} and *E. faecalis*.

The fact that disimpaction followed by antibacterial treatment resulted in the dramatic improvement in the present case could support our hypothesis. Our patient was diagnosed with EG based on the results of culture of the gastric juice and septic complication; however, the initial mechanism also supports a diagnosis of GE. Matsushima *et al.* reported that it can be challenging to differentiate the two disorders.¹

We emphasize that promoting regular bowel movements is important for preventing fatal EG. Constipation is a common symptom in the elderly and is sometimes overlooked.^{6,7} However, appropriate management is required, especially in immunocompromised hosts.² After keeping the bowel clear with drugs, EG did not recur again in the present case.

CONCLUSION

WE REPORTED THE first case of EG associated with EG ileus due to fecal impaction. Further reports should be accumulated to clarify the associated clinical char-

acteristics, such as risk factors, the frequency, or treatment. We also emphasize that promoting regular bowel movements is important to prevent fatal EG, especially in immunocompromised hosts.

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DISCLOSURE

APPROVAL OF THE research protocol: This case report was approved by the review board of our hospital (approval number: 298).

Informed consent: We obtained informed consent from the patient.

Registry and the registration no. of the study/trial: N/A.

Animal studies: N/A.

Conflict of interest: None.

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