

CASE REPORT

Emphysematous gastritis in a patient with metastatic cholangiocarcinoma: a case report

Ibrahim Alzubaidi^{1,2}, Rawan M. Alqurashi^{1,2}, Emtenan M. Bukhari^{2,3*} ,
Husun K. Kecheck^{2,3}

ABSTRACT

Background: Emphysematous gastritis is a rare, life-threatening infection of the stomach wall caused by gas-forming bacteria. Fewer than 200 cases have been reported. The mortality rate has declined from 60% to 33% owing to earlier diagnosis and improved care. This report presents a case of emphysematous gastritis, highlighting the challenges with diagnosis and management.

Case presentation: A 70-year-old woman with unresectable cholangiocarcinoma and hepatic metastases presented with fever, abdominal pain, and coffee-ground vomiting. Imaging revealed gas within the gastric wall consistent with emphysematous gastritis. She was managed conservatively with intravenous antibiotics, fluids, and proton pump inhibitors. Despite treatment, her condition worsened, and she was transitioned to palliative care. She died on hospital day 21.

Conclusion: This case describes the difficulties in managing emphysematous gastritis in a patient with a complex medical history and advanced malignancy, as well as the unfavorable outcome despite timely and appropriate treatment. It highlights the need for early recognition of emphysematous gastritis using imaging, aggressive medical therapy, and management by a multidisciplinary team.

Keywords: Emphysematous gastritis, cholangiocarcinoma, case report.

Introduction

In 1889, Frankl first documented a condition involving gas within the gastric wall, which subsequently became known as emphysematous gastritis (EG) [1]. More than 50 years later, in 1946, Ween provided the first radiologic evidence of EG [2]. EG is an uncommon condition, with fewer than 200 cases reported in the literature to date [3]. It carries a high mortality rate, which has improved from approximately 60% to around 33% since 2000, likely reflecting advances in early diagnosis and supportive care [4]. EG is caused by infection with gas-producing bacteria such as *Clostridium* spp., *Escherichia coli*, or *Klebsiella pneumoniae* [5]. Owing to its nonspecific clinical presentation, which includes epigastric pain, nausea, vomiting, and signs of a systemic infection, diagnosis and treatment are challenging [6]. Surgical intervention was the primary form of treatment strategy up to 2000. Since then, the use of surgery has declined and is generally reserved for patients who have complications such as perforation or who do not respond to conservative treatment [7]. Owing to its rarity, management options

for EG are not standardized. This report describes a case of EG, highlighting the management challenges.

Case Presentation

A 70-year-old woman with unresectable cholangiocarcinoma and hepatic metastases was receiving chemotherapy with gemcitabine, cisplatin, and durvalumab, with 25% dose reduction, and had completed 6 cycles. She presented to the emergency department approximately 12 days after the last

Correspondence to: Emtenan M. Bukhari

*College of Medicine, King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia.

Email: Emtenan136@gmail.com

Full list of author information is available at the end of the article.

Received: 06 February 2026 | **Revised:** 03 May 2026 |

Accepted: 13 May 2026



chemotherapy cycle with a one-day history of fever, associated with generalized abdominal pain, fatigue, reduced oral intake, and two episodes of coffee-ground vomiting. She also reported constipation for the past 4 days. Her medical history included diabetes mellitus, hypertension, and hypothyroidism. She was taking apixaban 5 mg twice daily for splenic vein thrombosis, which was later withheld during hospitalization. On examination, she was alert and oriented to time, place, and person. She was hemodynamically stable, with a blood pressure of 123/75 mmHg, a heart rate of 106 beats per minute, a respiratory rate of 18 breaths per minute, a temperature of 36.7°C, and an oxygen saturation of 99% breathing room air. The abdomen was distended and tense, with generalized mild tenderness on deep palpation. Chest auscultation revealed decreased air entry into the lung bases, with no abnormal sounds. She had bilateral pitting edema of the lower legs. Her initial laboratory test results are shown in Table 1. The complete blood count showed thrombocytopenia with a platelet count of $57 \times 10^9/L$. The C-reactive protein level was markedly elevated (154.3 mg/L), indicating a marked inflammatory response. Serum lactate was 1.1 mmol/L. Chest radiography showed a normal-sized heart and atelectatic changes in the left lower lung zone. Plain abdominal radiography revealed a nonspecific bowel gas distribution pattern, air in the rectum, a right renal or gallbladder calculus, and a small right pelvic phlebolith (Figure 1). Contrast-enhanced computed tomography (CT) of the abdomen and pelvis was performed and reviewed by a radiologist. The images revealed gas within the thickened gastric wall, primarily affecting the fundus and body of the stomach, with surrounding inflammatory fat stranding and mesenteric vascular congestion, suggesting EG. No free intraperitoneal air was identified, suggesting that there was no gastric perforation. The adjacent small and large bowel loops appeared unremarkable, with no evidence of bowel obstruction (Figure 2). A diagnosis of EG was made; therefore, she was started on a proton pump inhibitor (PPI), metoclopramide, normal saline infusion, piperacillin-tazobactam, and vancomycin, administered intravenously. The adult medical oncology team was consulted. The patient was admitted. On the advice of the oncologists, she was kept nil per mouth, intravenous fluids were maintained, and a continuous PPI infusion was administered for gastrointestinal protection. Fluids were used to maintain a mean arterial pressure (MAP) of ≥ 65 mmHg, and her vital signs, urine output, hemoglobin levels, and bowel movements were closely monitored. Venous Doppler ultrasound of the lower legs was arranged to exclude deep vein thrombosis. Additionally, the gastroenterology and general surgery teams were consulted. The general surgery team advised against surgery, given the absence of perforation, advanced malignancy, and high operative risk, supporting conservative management, and the gastroenterology team recommended continued conservative management.

Blood cultures were obtained and remained negative, while the urine culture was positive for *Candida* species. The patient initially received meropenem, vancomycin,

Table 1. The patient's blood test results on admission.

Characteristic	Value	Normal range
pH	7.44	7.34-7.45
pCO ₂	35	35-45
HCO ₃	23.8	20-24
Albumin (g/L)	32	39-50
Sodium (mmol/L)	122	135-147
Chloride (mmol/L)	93	101-111
WBC ($\times 10^9/L$)	4.6	4-11
Platelets ($\times 10^9/L$)	57	150-450
Creatinine ($\mu\text{mol/L}$)	43	50-74
Hemoglobin (g/dL)	8.8	11.5-16.5
Blood urea nitrogen (mmol/L)	5.4	1.9-5.7
C-reactive protein (mg/L)	154.3	0-5
Lactate (mmol/L)	1.1	0.5-2.2

WBC, white blood cell

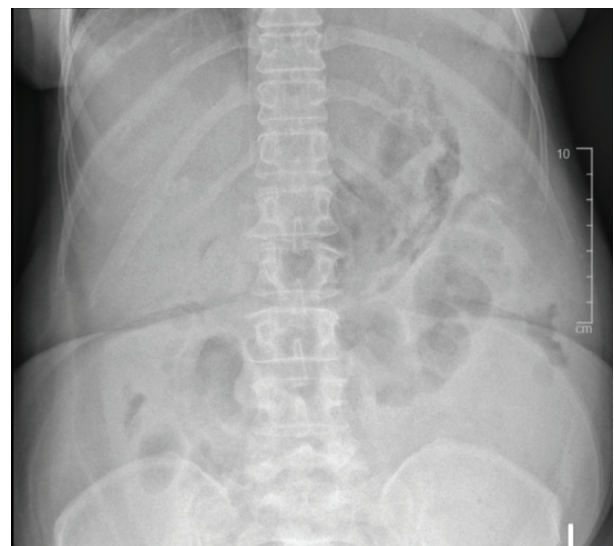


Figure 1. Abdominal radiograph on admission showing nonspecific bowel gas distribution pattern, air in the rectum, a right renal or gallbladder calculus, and a small right pelvic phlebolith.

and metronidazole; however, following infectious disease consultation, therapy was de-escalated to piperacillin-tazobactam. During hospitalization, she received piperacillin-tazobactam for 9 days, meropenem for 9 days, vancomycin for 4 days, and metronidazole for 2 days. Moreover, anidulafungin was initiated as antifungal coverage and continued for 6 days. The patient remained in the general ward. On hospital day 11, her code status was changed to palliative care. Two days later, her care was transferred to the palliative care team following a family meeting. The psychology team provided the family with emotional support. Despite appropriate antibiotic therapy and supportive management, the patient's condition continued to deteriorate, and she died on day 21, most consistent with infection-related complications in the setting of advanced malignancy.

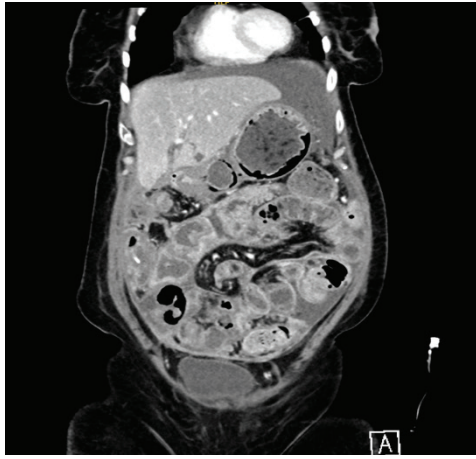


Figure 2. Contrast-enhanced computed tomography of the abdomen and pelvis showing a thickened gastric wall containing gas, primarily affecting the fundus and body of the stomach, with surrounding inflammatory fat stranding and mesenteric vascular congestion.

Discussion

EG is a rare condition with high morbidity and mortality. Several patient and treatment-related factors can weaken the gastric mucosal barrier and increase susceptibility to EG [7]. Our patient had several established risk factors, including diabetes mellitus, advanced malignancy, and ongoing chemotherapy, all of which can impair mucosal integrity and host immunity. Chemotherapy in particular disrupts rapidly dividing gastrointestinal epithelium and alters immune function, creating a favorable environment for bacterial invasion [8]. Additionally, her poor oral intake and underlying vascular compromise related to metastatic cholangiocarcinoma may have further reduced mucosal resilience, increasing susceptibility to ischemia-associated EG [9]. In line with Jenkins et al. [7], who reported EG in an immunocompromised patient with neutropenic sepsis, our patient also demonstrated impaired host immunity contributing to disease susceptibility.

The clinical presentation of EG is nonspecific but typically includes abdominal pain, nausea, vomiting, fever, and occasionally hematemesis [10]. Laboratory abnormalities frequently include elevated inflammatory markers and leukocytosis, although findings may vary depending on immune status [7]. In our patient, the presentation of fever, abdominal pain, fatigue, and coffee-ground emesis, combined with a markedly elevated C-reactive protein level and the imaging findings, was consistent with the typical but nonspecific manifestations of EG.

EG is primarily a radiologic diagnosis characterized by the presence of gas within a thickened gastric wall. Intramural gas is uncommon and may overlap with other conditions, such as gastric emphysema or pneumatosis intestinalis, making interpretation challenging [7]. Importantly, EG should be differentiated from gastric emphysema, which is a more benign condition typically induced by non-infectious mechanisms and not associated with systemic toxicity. In contrast, EG is caused by gas-forming organisms and is frequently accompanied by systemic indications of infection, as well as poor prognosis [4-7].

CT is the most sensitive modality for detecting even small volumes of intramural air and also helps localize the gas and assess associated findings such as gastric dilation, bowel wall thickening, or portal venous air [5]. In this case, CT imaging revealed intramural gas in the gastric fundus and body, with surrounding inflammatory changes, establishing the diagnosis. The need for imaging to make the diagnosis highlights the importance of maintaining a high index of clinical suspicion, particularly in elderly or immunocompromised patients, in whom presentations may be subtle and obscured by comorbidities.

Owing to the high mortality rate, early recognition and prompt treatment are essential in EG [7]. Although no standardized management protocol is available, current evidence supports an initial conservative approach consisting of bowel rest, broad-spectrum antibiotics targeting gram-negative and anaerobic organisms, hemodynamic optimization, and gastric protection with PPIs [6,7]. Over the past two decades, the outcomes of EG have improved as practice has shifted away from routine exploratory laparotomy. Compared with immediate surgical intervention, conservative treatment is now associated with lower mortality [4]. Consistent with other reported cases [9,10], our patient was managed conservatively due to the absence of perforation and high surgical risk. In this case, CT imaging showed intramural gas without perforation, and the patient was hemodynamically stable at presentation. Based on these considerations, the patient was treated conservatively with bowel rest, intravenous antibiotics, PPI infusion, and supportive care. Despite these measures, her condition progressively declined due to the underlying advanced malignancy and comorbidities, and care was transitioned to comfort-focused management.

Conclusion

This case illustrates EG occurring in a high-risk patient with advanced malignancy undergoing chemotherapy with multiple predisposing factors. Despite early radiologic diagnosis and appropriate conservative management, the patient's condition deteriorated,

underscoring the significant impact of underlying comorbidities on outcomes. The nonspecific presentation, difficulties in establishing the diagnosis, and lack of standardized treatment protocols make clinical management challenging. This case highlights these challenges. Additional case reports are needed to develop a larger evidence base to support the development of standardized diagnostic and management guidelines.

List of Abbreviations

CT	Computed tomography
EG	Emphysematous gastritis
PPI	Proton pump inhibitor

Conflict of interest

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

Funding

None.

Consent for publication

Informed consent to publish the patient's case details was obtained from the patient's family.

Ethical approval

Ethical approval was granted by the Institutional Review Board of King Abdullah International Medical Research Centre (KAIMRC), Jeddah, Saudi Arabia (reference number: 00000269125).

Author details

Ibrahim Alzubaidi^{1,2}, Rawan M. Alqurashi^{1,2}, Emtenan M. Bukhari^{2,3}, Husun K. Kecheck^{2,3}

1. Department of Emergency Medicine, Ministry of National Guard Health Affairs, Jeddah, Saudi Arabia
2. King Abdullah International Medical Research Center, Jeddah, Saudi Arabia
3. College of Medicine, King Saud Bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia

References

1. Fraenkel E. Ueber einen fall von gastritis acuta emphysematosa wahrscheinlich mykotischen Ursprungs.

- Virchows Arch. 1889;118(3):526–35. <https://doi.org/10.1007/BF01942531>
2. Weens HS. Emphysematous gastritis. Am J Roentgenol Radium Ther. 1946;55:588–93.
3. Cecchini A, Cecchini A, Darweesh M, Sill JM. Successful medical management of emphysematous gastritis. Chest. 2023;164(4):A1893. <https://doi.org/10.1016/j.chest.2023.07.1305>
4. Watson A, Bul V, Staudacher J, Carroll R, Yazici C. The predictors of mortality and secular changes in management strategies in emphysematous gastritis. Clin Res Hepatol Gastroenterol. 2017;41(1):e1–7. <https://doi.org/10.1016/j.clinre.2016.02.011>
5. Haouimi A. Emphysematous gastritis. Radiology. 1967;89(3):426–31.
6. Elnaggar M, Abbas OF, Haddad R, Helal MM, AbouShawareb H, Abouelmagd AA, et al. Unrevealing emphysematous gastritis: insight from a comprehensive systemic review. Clin Res Hepatol Gastroenterol. 2025;49(7):102638. <https://doi.org/10.1016/j.clinre.2025.102638>
7. Jenkins JK, Georgiou A, Laugharne M, Meisner S, Cook T. Emphysematous gastritis in a patient with neutropenic sepsis: a case report and literature review with comment on management. J Intensive Care Soc. 2023;24(3):328–31. <https://doi.org/10.1177/17511437231153048>
8. Johnson RW, Obeng K, Depaz H, Gilani M, Saeed K. Emphysematous gastritis in the setting of stage four colon cancer after radiation therapy and ongoing chemotherapy: a case report. Cureus. 2025;17(9):e91398. <https://doi.org/10.7759/cureus.91398>
9. Alshahwan N, Alqarzaie AA, Aldeligan SH, Alqusiyer AA, Alnumay A, Mashbari H, et al. Successful conservative management of emphysematous gastritis in an elderly patient with multiple comorbidities: a case report. World J Gastrointestinal Surg. 2025;17(7):107046. <https://doi.org/10.4240/wjgs.v17.i7.107046>
10. Nasser H, Ivanics T, Leonard-Murali S, Shakaroun D, Woodward A. Emphysematous gastritis: a case series of three patients managed conservatively. Int J Surg Case Rep. 2019;64:80–4. <https://doi.org/10.1016/j.ijscr.2019.09.046>