

3 **CASE REPORT**

4 **Emphysematous gastritis in a patient with**  
5 **metastatic cholangiocarcinoma: a case**  
6 **report**

7 Ibrahim Alzubaidi<sup>1,2</sup>, Rawan M. Alqurashi<sup>1,2</sup>, Emtenan M. Bukhari<sup>2,3\*</sup> ,  
8 Husun K. Kecheck<sup>2,3</sup>

9 **ABSTRACT**

10 **Background:** Emphysematous gastritis is a rare, life-threatening infection of the stomach wall caused by  
11 gas-forming bacteria. Fewer than 200 cases have been reported. The mortality rate has declined from 60% to  
12 33% owing to earlier diagnosis and improved care. This report presents a case of emphysematous gastritis,  
13 highlighting the challenges with diagnosis and management.

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

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

23 **Keywords:** Emphysematous gastritis, cholangiocarcinoma, case report.

24 **Introduction**

25 In 1889, Frankl first documented a condition involving  
26 gas within the gastric wall, which subsequently became  
27 known as emphysematous gastritis (EG) [1]. More than  
28 50 years later, in 1946, Ween provided the first radiologic  
29 evidence of EG [2]. EG is an uncommon condition, with  
30 fewer than 200 cases reported in the literature to date [3].  
31 It carries a high mortality rate, which has improved from  
32 approximately 60% to around 33% since 2000, likely  
33 reflecting advances in early diagnosis and supportive  
34 care [4]. EG is caused by infection with gas-producing  
35 bacteria such as *Clostridium* spp., *Escherichia coli*, or  
36 *Klebsiella pneumoniae* [5]. Owing to its nonspecific  
37 clinical presentation, which includes epigastric pain,  
38 nausea, vomiting, and signs of a systemic infection,  
39 diagnosis and treatment are challenging [6]. Surgical  
40 intervention was the primary form of treatment strategy  
41 up to 2000. Since then, the use of surgery has declined and  
42 is generally reserved for patients who have complications  
43 such as perforation or who do not respond to conservative  
44 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

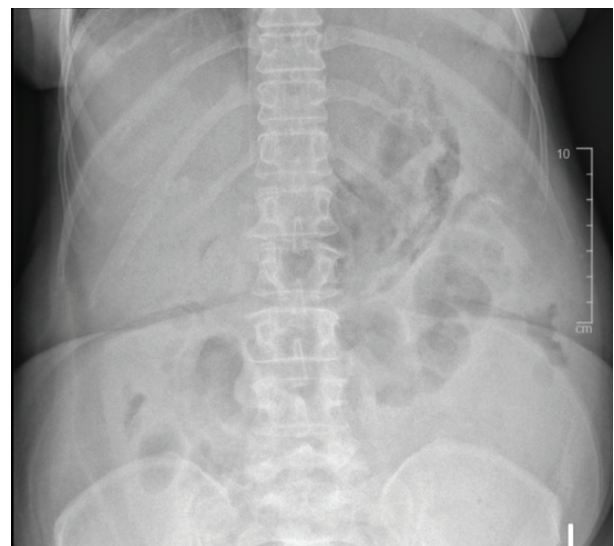
82 chemotherapy cycle with a one-day history of fever,  
 83 associated with generalized abdominal pain, fatigue,  
 84 reduced oral intake, and two episodes of coffee-ground  
 85 vomiting. She also reported constipation for the past 4  
 86 days. Her medical history included diabetes mellitus,  
 87 hypertension, and hypothyroidism. She was taking  
 88 apixaban 5 mg twice daily for splenic vein thrombosis,  
 89 which was later withheld during hospitalization. On  
 90 examination, she was alert and oriented to time, place,  
 91 and person. She was hemodynamically stable, with a  
 92 blood pressure of 123/75 mmHg, a heart rate of 106 beats  
 93 per minute, a respiratory rate of 18 breaths per minute,  
 94 a temperature of 36.7°C, and an oxygen saturation of  
 95 99% breathing room air. The abdomen was distended  
 96 and tense, with generalized mild tenderness on deep  
 97 palpation. Chest auscultation revealed decreased air  
 98 entry into the lung bases, with no abnormal sounds.  
 99 She had bilateral pitting edema of the lower legs. Her  
 100 initial laboratory test results are shown in Table 1. The  
 101 complete blood count showed thrombocytopenia with  
 102 a platelet count of  $57 \times 10^9/L$ . The C-reactive protein  
 103 level was markedly elevated (154.3 mg/L), indicating  
 104 a marked inflammatory response. Serum lactate was  
 105 1.1 mmol/L. Chest radiography showed a normal-  
 106 sized heart and atelectatic changes in the left lower  
 107 lung zone. Plain abdominal radiography revealed a  
 108 nonspecific bowel gas distribution pattern, air in the  
 109 rectum, a right renal or gallbladder calculus, and a small  
 110 right pelvic phlebolith (Figure 1). Contrast-enhanced  
 111 computed tomography (CT) of the abdomen and  
 112 pelvis was performed and reviewed by a radiologist.  
 113 The images revealed gas within the thickened gastric  
 114 wall, primarily affecting the fundus and body of the  
 115 stomach, with surrounding inflammatory fat stranding  
 116 and mesenteric vascular congestion, suggesting EG. No  
 117 free intraperitoneal air was identified, suggesting that  
 118 there was no gastric perforation. The adjacent small  
 119 and large bowel loops appeared unremarkable, with no  
 120 evidence of bowel obstruction (Figure 2). A diagnosis  
 121 of EG was made; therefore, she was started on a proton  
 122 pump inhibitor (PPI), metoclopramide, normal saline  
 123 infusion, piperacillin-tazobactam, and vancomycin,  
 124 administered intravenously. The adult medical oncology  
 125 team was consulted. The patient was admitted. On the  
 126 advice of the oncologists, she was kept nil per mouth,  
 127 intravenous fluids were maintained, and a continuous  
 128 PPI infusion was administered for gastrointestinal  
 129 protection. Fluids were used to maintain a mean arterial  
 130 pressure (MAP) of  $\geq 65$  mmHg, and her vital signs,  
 131 urine output, hemoglobin levels, and bowel movements  
 132 were closely monitored. Venous Doppler ultrasound  
 133 of the lower legs was arranged to exclude deep vein  
 134 thrombosis. Additionally, the gastroenterology and  
 135 general surgery teams were consulted. The general  
 136 surgery team advised against surgery, given the  
 137 absence of perforation, advanced malignancy, and high  
 138 operative risk, supporting conservative management,  
 139 and the gastroenterology team recommended continued  
 140 conservative management.

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

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

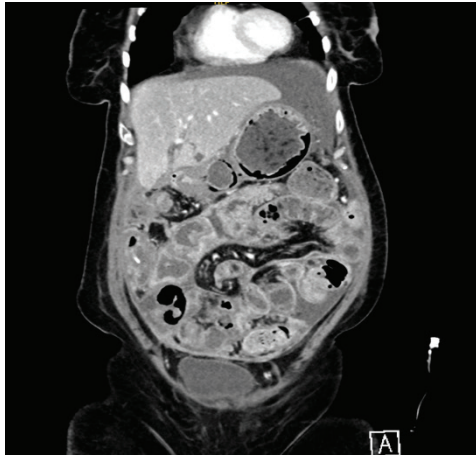
Characteristic	Value	Normal range
pH	7.44	7.34-7.45
pCO <sub>2</sub>	35	35-45
HCO <sub>3</sub>	23.8	20-24
Albumin (g/L)	32	39-50
Sodium (mmol/L)	122	135-147
Chloride (mmol/L)	93	101-111
WBC ( $\times 10^9/L$ )	4.6	4-11
Platelets ( $\times 10^9/L$ )	57	150-450
Creatinine ( $\mu\text{mol/L}$ )	43	50-74
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  
 144 disease consultation, therapy was de-escalated to  
 145 piperacillin-tazobactam. During hospitalization, she  
 146 received piperacillin-tazobactam for 9 days, meropenem  
 147 for 9 days, vancomycin for 4 days, and metronidazole  
 148 for 2 days. Moreover, anidulafungin was initiated as  
 149 antifungal coverage and continued for 6 days. The  
 150 patient remained in the general ward. On hospital day  
 151 11, her code status was changed to palliative care. Two  
 152 days later, her care was transferred to the palliative  
 153 care team following a family meeting. The psychology  
 154 team provided the family with emotional support.  
 155 Despite appropriate antibiotic therapy and supportive  
 156 management, the patient's condition continued to  
 157 deteriorate, and she died on day 21, most consistent  
 158 with infection-related complications in the setting of  
 159 advanced malignancy.  
 160



**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.

## 168 Discussion

169 EG is a rare condition with high morbidity and mortality.  
170 Several patient and treatment-related factors can weaken  
171 the gastric mucosal barrier and increase susceptibility to  
172 EG [7]. Our patient had several established risk factors,  
173 including diabetes mellitus, advanced malignancy, and  
174 ongoing chemotherapy, all of which can impair mucosal  
175 integrity and host immunity. Chemotherapy in particular  
176 disrupts rapidly dividing gastrointestinal epithelium and  
177 alters immune function, creating a favorable environment  
178 for bacterial invasion [8]. Additionally, her poor oral  
179 intake and underlying vascular compromise related  
180 to metastatic cholangiocarcinoma may have further  
181 reduced mucosal resilience, increasing susceptibility to  
182 ischemia-associated EG [9]. In line with Jenkins et al.  
183 [7], who reported EG in an immunocompromised patient  
184 with neutropenic sepsis, our patient also demonstrated  
185 impaired host immunity contributing to disease  
186 susceptibility.

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

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

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

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

## 243 Conclusion

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

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

#### 257 **List of Abbreviations**

258 CT Computed tomography  
259 EG Emphysematous gastritis  
260 PPI Proton pump inhibitor

#### 261 **Conflict of interest**

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

#### 264 **Funding**

265 None.

#### 266 **Consent for publication**

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

#### 269 **Ethical approval**

270 Ethical approval was granted by the Institutional Review  
271 Board of King Abdullah International Medical Research  
272 Centre (KAIMRC), Jeddah, Saudi Arabia (reference number:  
273 00000269125).

#### 274 **Author details**

275 Ibrahim Alzubaidi<sup>1,2</sup>, Rawan M. Alqurashi<sup>1,2</sup>, Emtenan M.  
276 Bukhari<sup>2,3</sup>, Husun K. Kecheck<sup>2,3</sup>

277 1. Department of Emergency Medicine, Ministry of National  
278 Guard Health Affairs, Jeddah, Saudi Arabia

279 2. King Abdullah International Medical Research Center,  
280 Jeddah, Saudi Arabia

281 3. College of Medicine, King Saud Bin Abdulaziz University for  
282 Health Sciences, Jeddah, Saudi Arabia

#### 283 **References**

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

Virchows Arch. 1889;118(3):526–35. <https://doi.org/10.1007/BF01942531> 286  
287

2. Weens HS. Emphysematous gastritis. Am J Roentgenol 288  
Radium Ther. 1946;55:588–93. 289

3. Cecchini A, Cecchini A, Darweesh M, Sill JM. Successful 290  
medical management of emphysematous gastritis. 291  
Chest. 2023;164(4):A1893. <https://doi.org/10.1016/j.chest.2023.07.1305> 292  
293

4. Watson A, Bul V, Staudacher J, Carroll R, Yazici C. 294  
The predictors of mortality and secular changes in 295  
management strategies in emphysematous gastritis. Clin 296  
Res Hepatol Gastroenterol. 2017;41(1):e1–7. <https://doi.org/10.1016/j.clinre.2016.02.011> 297  
298

5. Haouimi A. Emphysematous gastritis. Radiology. 299  
1967;89(3):426–31. 300

6. Elnaggar M, Abbas OF, Haddad R, Helal MM, AbouShawareb 301  
H, Abouelmagd AA, et al. Unrevealing emphysematous 302  
gastritis: insight from a comprehensive systemic review. 303  
Clin Res Hepatol Gastroenterol. 2025;49(7):102638. 304  
<https://doi.org/10.1016/j.clinre.2025.102638> 305

7. Jenkins JK, Georgiou A, Laugharne M, Meisner S, Cook T. 306  
Emphysematous gastritis in a patient with neutropenic 307  
sepsis: a case report and literature review with comment 308  
on management. J Intensive Care Soc. 2023;24(3):328– 309  
31. <https://doi.org/10.1177/17511437231153048> 310

8. Johnson RW, Obeng K, Depaz H, Gilani M, Saeed K. 311  
Emphysematous gastritis in the setting of stage four 312  
colon cancer after radiation therapy and ongoing 313  
chemotherapy: a case report. Cureus. 2025;17(9):e91398. 314  
<https://doi.org/10.7759/cureus.91398> 315

9. Alshahwan N, Alqarzaie AA, Aldeligan SH, Alqusiyer AA, 316  
Alnumay A, Mashbari H, et al. Successful conservative 317  
management of emphysematous gastritis in an elderly 318  
patient with multiple comorbidities: a case report. World 319  
J Gastrointestinal Surg. 2025;17(7):107046. <https://doi.org/10.4240/wjgs.v17.i7.107046> 320  
321

10. Nasser H, Ivanics T, Leonard-Murali S, Shakaroun D, 322  
Woodward A. Emphysematous gastritis: a case series 323  
of three patients managed conservatively. Int J Surg 324  
Case Rep. 2019;64:80–4. <https://doi.org/10.1016/j.ijscr.2019.09.046> 325  
326