กรณีศึกษาผู้ป่วยโรคกระเพาะอาหารทะลุที่ไม่พบอาการแสดงทางรังสีวิทยาในภาพถ่ายรังสี

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บทคัดย่อ

โรคกระเพาะอาหารทะลุเป็นภาวะแทรกซ้อนที่สำคัญของโรคแผลในกระเพาะอาหาร ข้อมูลในอดีตพบว่าผู้ป่วยโรคกระเพาะอาหารทะลุมีอัตราการตายประมาณร้อยละ 30 การวินิจฉัยโรคที่รวดเร็ว การช่วยฟื้นคืนชีพที่มีประสิทธิภาพและการรักษาด้วยการผ่าตัดที่เหมาะสมทำให้ผลการรักษาโรคดีขึ้น ภาพถ่ายรังสี เช่น การเอกซเรย์ช่องท้อง (abdominal plain film) และการเอกซเรย์คอมพิวเตอร์ช่องท้อง (computed tomography of the abdomen) เป็นวิธีการที่ใช้บ่อยในการวินิจฉัยโรคนี้ ผู้ป่วยชายไทย อายุ 55 ปี มีอาการปวดท้องรุนแรง 5 ชั่วโมงก่อนมาโรงพยาบาล การตรวจร่างกายพบลักษณะเกร็งคล้ายกระดานแข็งที่ช่องท้อง (board-like rigidity) ภาพถ่ายเอกซเรย์ช่องท้องและทรวงอก (acute abdominal series) ไม่พบความผิดปกติ ภาพถ่ายเอกซเรย์คอมพิวเตอร์ช่องท้องไม่พบลักษณะลมรั่วในช่องท้อง (pneumoperitoneum) อย่างไรก็ตาม ผู้ป่วยได้รับการผ่าตัดฉุกเฉินเนื่องจากมีอาการและอาการแสดงของโรคกระเพาะอาหารทะลุและพบลักษณะแผลในกระเพาะอาหารที่บริเวณก่อนไพโรลิก (pre-pyloric ulcer) ผู้ป่วยได้รับการเย็บซ่อมแผลและสามารถจำหน่ายออกจากโรงพยาบาลได้ใน 5 วัน กรณีนี้แสดงให้เห็นถึงความสำคัญของอาการและอาการแสดงที่ช่วยในการวินิจฉัยโรคนอกเหนือไปจากการดูภาพทางรังสีวิทยาเพียงอย่างเดียว

คำสำคัญ

กระเพาะอาหารทะลุ, แผลในกระเพาะอาหาร, ภาพถ่ายรังสี

Absence of Imaging Signs in Perforated Peptic Ulcer: A Case Report

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Abstract

Perforated peptic ulcer (PPU) is a serious complication of peptic ulcer disease (PUD) that carries a risk of mortality of up to 30%. Early recognition, adequate resuscitation, and prompt surgical intervention are essential to provide good outcomes. Imaging such as plain film and computed tomography (CT) are frequently used for diagnosis confirmation. Herein, we reported a case of a 55-year-old man who presented with acute abdominal pain five hours before ED arrival. Physical examination showed a flat abdomen without surgical scarring and there was board-like rigidity on palpation. Acute abdominal series revealed no intra-abdominal free air. Subsequent abdominal CT scan with contrast also revealed no pneumoperitoneum. However, he was undergoing surgical intervention based on his clinical features that suggested PPU. The intra-operative finding showed a perforated pre-pyloric ulcer. He was discharged after five days of hospitalization without any complications. This case highlights the significance of clinical signs and symptoms and not solely relying on imaging findings.

Keywords

perforated peptic ulcer, peptic ulcer, absence, imaging sign

Introduction

Perforated peptic ulcer (PPU) is one of the common emergent surgical conditions worldwide that is associated with increased short-term mortality of up to 30%.[1–3] Patients with PPU often present with acute abdominal pain with signs of localized or generalized peritonitis.[2] Early recognition and prompt resuscitation, including fluid administration and timely antibiotic use are essential to prevent further morbidity and mortality.[3] Imaging, consisting of upright chest X-ray and computed tomography (CT) plays an important role in diagnosis, especially in the elderly or immunocompromised host.[4] Abdominal CT has become the imaging of choice because of its superior sensitivity and adds value in the evaluation of other differential diagnoses.[5–9] Yet, the absence of positive findings on imaging does not rule out PPU.[6] Clinicians should focus on signs and symptoms along with relevant medical history and potential risk factors. Here, we report a case of a 55-year-old man who presented with acute abdominal pain and finally was diagnosed with PPU. The diagnosis was made based on clinical signs and symptoms without positive findings on imaging including acute abdominal series and abdominal CT scan with contrast.

Case presentation

A previously healthy 55-year-old man presented to the emergency department (ED) with acute abdominal pain five hours before arrival. He complained of an abdominal cramp along with pain. The pain was relieved by leaning forward. He had vomited twice within two hours before arrival. He also reported of intermittent abdominal pain which could be relieved with antacid. He had no underlying disease, neither current medication nor a history of non-steroidal anti-inflammatory drugs use. However, he had a chronic drinking habit of nine standard drinks per day, three times a week for thirty years.

On admission, the patient was sitting upright and leaning forward possibly because of the severe pain. He was apyretic and vital signs at presentation showed blood pressure 133/86 mmHg, heart rate 98/min, respiratory rate 20/min, peripheral oxygen saturation 98% in room air. The abdominal examination revealed flat contour abdomen without surgical scarring, absence of bowel sound, and

there was board-like rigidity on palpation. The other physical examinations were unremarkable.

Investigations, treatments, outcomes, and follow-up

Blood tests revealed mild leukocytosis with a total white blood cell count of 11.1 x 10^3/µL with neutrophil 73%, hemoglobin level of 15.7 g/dL, and platelet count 249 x 10^3/µL. Electrolytes showed metabolic acidosis with bicarbonate of 13 mmol/L. Renal function and liver function were normal. Serum amylase and lipase were within the normal range. All laboratory results are demonstrated in Table 1.

Acute abdominal series showed no evidence of intra-abdominal free air and bowel ileus (Figure 1). Abdominal CT with contrast was performed to evaluate the exact cause of peritonitis (Figure 2). Attending radiologist reported that it was negative for pneumoperitoneum. The liver, spleen, and pancreas appeared normal. However, it demonstrated diffused fat reticulation in the right paracolic gutter region and multiple diverticula involving ascending colon without signs of diverticulitis (Figure 2).

At the ED, he received a total of 1,000 mL of normal saline, followed by maintenance doses. He also received the first dose of ceftriaxone and metronidazole before underwent surgical intervention. As mentioned earlier, based on clinical signs and symptoms, the surgeon on duty decided to perform an explore laparotomy after initial fluid resuscitation and prophylactic antibiotic. On surgical exploration, a perforated peptic ulcer 0.5 cm in size with a sharp edge was found at the pre-pyloric area, the antrum of the stomach (Figure 3).

The patient was discharged after five days of hospitalization without any complications. He remained healthy on follow-up 2 weeks later. Histopathology reported opened ulceration with a negative result for *Helicobacter pylori* and malignancy.

Discussion

Peptic ulcer disease (PUD) accounts for four million people annually.[2] J. J. Y. Sung et al. conducted a systematic review that estimated the annual incidence rates of PUD were 0.10–0.19% for physician-diagnosed PUD and 0.03–0.17% when based

Table 1 Laboratory data on ED arrival of this patient

Variables	Recorded values	Reference ranges
Hemoglobin (g/dL)	15.7	13.0-18.0
Hematocrit (%)	45.1	40.0-54.0
White blood cells (cells/μL)	11.1 x 10^3	5.0-10.0 x 10^3
Absolute neutrophil count (cells/μL)	8.4 x 10^3	3.0-6.0 x 10^3
Platelet count (cells/μL)	249 x 10^3	140-450 x 10^3
Glucose (mg/dL)	119	74-109
Blood Urea Nitrogen (mg/dL)	19	6-20
Creatinine (mg/dL)	1.10	0.51-0.95
Sodium (mmol/L)	135	136-145
Potassium (mmol/L)	3.9	3.4-3.5
Chloride (mmol/L)	101	98-107
Bicarbonate (mmol/L)	13	22-29
Albumin (g/dL)	3.5	3.5-5.2
Aspartate aminotransferase (U/L)	44	0-32
Alanine aminotransferase (U/L)	47	0-33
Total bilirubin (mg/dL)	0.77	0.00-1.20
Direct bilirubin (mg/dL)	0.54	0.00-0.30
Amylase (U/L)	87	30-110
Lipase (U/L)	44	0-160

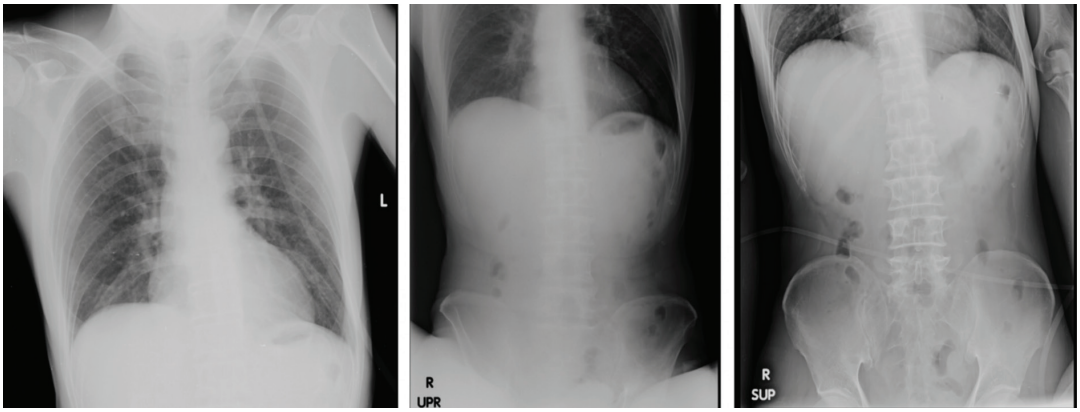

Figure 1 Acute abdominal series shows neither pneumoperitoneum nor bowel ileus

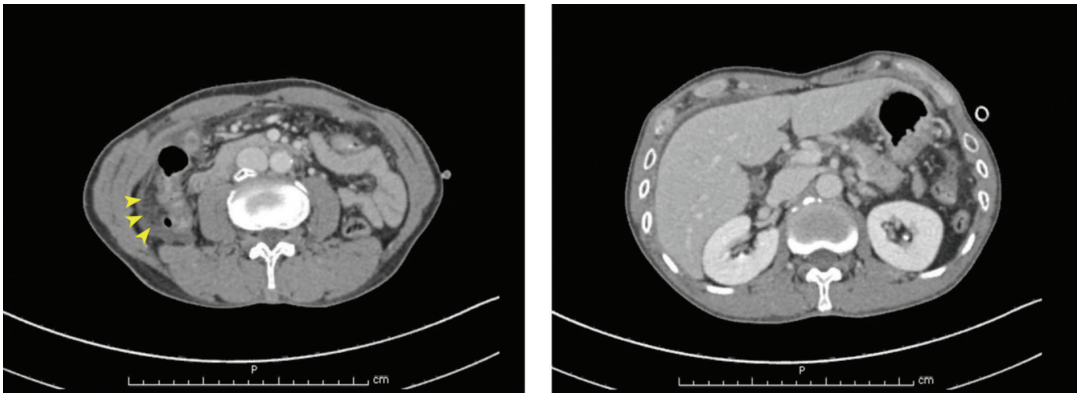

Figure 2 Computed tomography (CT) scan of the abdomen shows diffuse fat reticulation (arrowheads) in right paracolic gutter region and multiple diverticula involving ascending colon without signs of diverticulitis

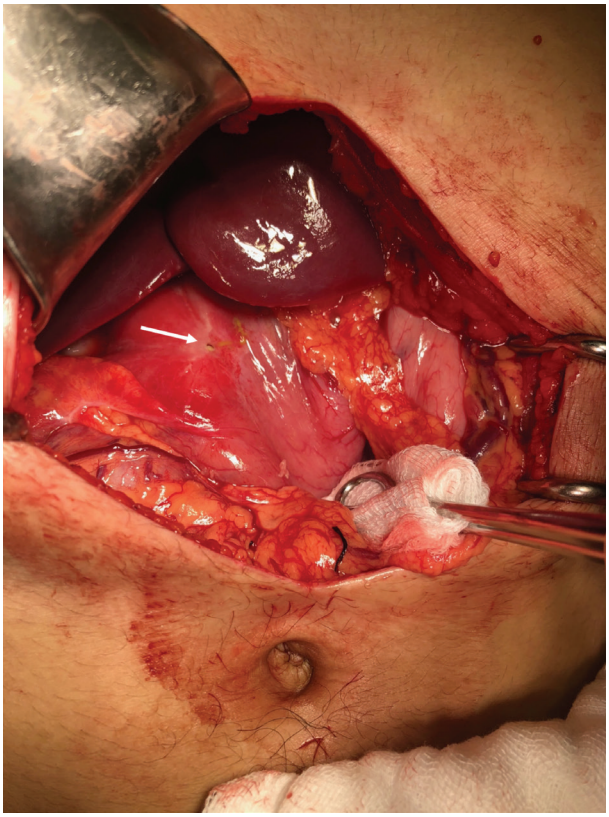

Figure 3 Intraoperative finding perforated peptic ulcer 0.5 cm in size with sharp edge at pre-pyloric area (arrow).

on hospitalization data.[10] PPU is one of the most serious complications of PUD, which needs urgent surgical intervention. Patients with PPU often present with sudden onset of abdominal pain or acute deterioration of the progressive abdominal pain.[2] The classic triad of sudden onset of abdominal pain, tachycardia, and abdominal rigidity is the cornerstone in the diagnosis of PPU.[2] However, the clinical presentation may be obscured in the obese, elderly, immunocompromised, patients on steroids, and patients with altered mental status.[3] Interestingly, only two-thirds of patients with PPU present with frank peritonitis.[11]

From the literature review, there are three major modalities used in practice.[5] First, ultrasonography, which has less sensitive in detecting intraperitoneal free air. However, it is the initial and non-invasive investigation that can be done in many settings. Although its accuracy is lower than other modalities, ultrasonography still plays a role in children and pregnant women where radiation should be limited.[6] The second is conventional radiography. The routine acute abdominal series X-ray is generally requested. Free intraperitoneal gas commonly indicates hollow viscus organ perforation. A study done by Roscoe E. Miller et al. has shown that as little as 1 ml of gas can be detected below the right hemidiaphragm on upright chest X-ray.[7] Lastly, CT is considered the most reliable diagnostic method.[5,8] It can detect even a small amount of intraperitoneal free air. Unlike other modalities, direct diagnostic findings of perforation are an extravasation of oral contrast and intestinal wall focal defects.[5] Not only does CT detect a small amount of intraperitoneal free air, but it also may help determine the site of perforation according to the anatomic site defects.[8] A retrospective review done by Picone et al. found that free air was present in 100% of perforated patients.[5] In contrast, Grassi et al. demonstrated that 12 out of 146 patients with suspected gastroduodenal perforation had negative radiographic, sonographic, and CT findings.[9] Grassi et al. also reported that the abdominal plain film alone can detect lesions in 56.6% of cases and when followed by sonography and CT, the accuracy rose to 75.4% of cases. They purposed that CT examination was not

useful 6 hours before the onset of abdominal pain. If abdominal film and sonography were correctly performed and did not show any free air, CT could not add value to the diagnostic findings.[9] Moreover, in cases of without gas-contained viscus perforation, fluid leakage, entirely gas absorption or temporarily covered perforation, its imaging finding could be found negative.[5] Magnetic resonance imaging (MRI) is sometimes used but not routinely in terms of diagnostic workup but can be considered for pregnant women and children.[12]

In the present case, the patient was suspected of hollow viscus organ perforation according to a history of chronic alcohol drinking, acute onset of abdominal pain, and board-like rigidity on palpation. Despite negative findings on imaging, including conventional radiography and CT, the patient underwent surgical exploration and found the lesion as described above. The reason behind this may be due to the site of perforation (pre-pyloric) and possibly covered perforation of the ulcer. This case highlights the significance of clinical signs and symptoms, and not only to rely on imaging findings.

Learning points

- In summary, negative findings on imaging assessment could be found in a patient with PPU due to timing of onset, gas absorption, site of perforation, and covered perforation.
- The management should depend on not only imaging assessment but also careful history and focused physical examination. There is a rare circumstance where the CT scan can yield negative results in detecting free air or tiny ruptures. It is crucial to commence the firm decision to undergo the exploratory laparotomy even with the negative abdominal CT scan, based on the clinical manifestation and signs.
- This case highlights the importance of clinical signs and symptoms. Emergency physicians should practice and improve focused physical examination skills, and not rely only on the imaging findings.

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