

Spontaneous acalculous gallbladder perforation in a man secondary to chemotherapy and radiation

A rare case report

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Abstract

Rationale: Gallbladder perforation is a serious clinical condition and associated with high morbidity and mortality. A definitive diagnosis is contentious before surgery.

Patient concerns: We herein report a case of perforation of the gallbladder neck secondary to chemotherapy and radiation for nasopharyngeal carcinoma patient.

Diagnoses: Gallbladder perforation secondary to chemotherapy and radiation.

Interventions: To decrease the mortality associated with gallbladder perforation, Laparoscopic cholecystectomy and peritoneal lavage were performed followed for gallbladder perforation patient because of chemotherapy and radiation.

Outcomes: The patient recovered fully without serious complication and discharged on the 10th postoperative day. A pathological examination of the resected gallbladder revealed cholecystitis in the thinning of the neck.

Lessons: Early diagnosis and surgical intervention of gallbladder perforation in relation to asopharyngeal carcinoma chemotherapy and radiation are of prime importance. The laparoscopic procedure is safe and feasible in the selected patients.

Abbreviation: CT = computed tomography.

Keywords: chemotherapy, gallbladder, radiation, spontaneous perforation

1. Introduction

Gallbladder perforation is a rare but serious and potentially fatal disease due to the delayed diagnosis, which usually requires immediate surgical intervention.^[1] The main cause of gallbladder perforation is often associated with cholecystitis with or without gallstones.^[2] The incidence of gallbladder perforation in acute cholecystitis is about 2% to 18%.^[3] However, cases reported as

idiopathic or spontaneous gallbladder perforation are rarely seen due to lacking the typical clinical presentation, radiological, and histopathological characteristics.^[4] As a result, the diagnosis is often delayed or even missed. This report presents an interesting case of acute acalculous cholecystitis secondary to chemotherapy and radiation with the finding of macroscopic perforation of the gallbladder neck, which has not been reported yet.

2. Case report

This study was approved by the Institutional Review Board of Zhejiang Provincial People's Hospital. Informed consent was obtained from this patient for publication of the unique case report.

A 54-year-old male presented in surgical emergency with upper abdomen pain for 1 day with increase in its intensity over the last 2 hours. The pain was more in the right hypochondrium with occasional vomiting and upper abdominal distention. There was a history of nasopharyngeal carcinoma half 1 year ago, and he has received cisplatin chemotherapy for 5 times and radiation for 30 times (95%PTV boost 8.8 Gy/4F) until now. He just received cisplatin chemotherapy and radiation 1 day ago. There was nothing particular in the patient's other history. His vital signs were as follows: temperature: 37.7°C, pulse: 105 beats/minute, respirations: 30 breaths/minute, blood pressure: 138/72 mmHg, saturation: 94% on room air, and the patient's abdomen was distended, and there was local tenderness in the upper abdomen without muscular defense. On abdominal examination, it was found distended and tender in the upper abdomen with muscular defense. His routine investigations revealed his Hb was 12.2g,

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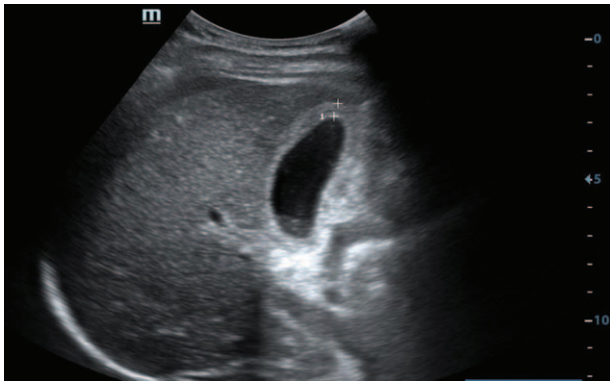


Figure 1. Preoperative imaging findings. Preoperative ultrasonography shows thickened gallbladder with moderate free fluid in peritoneal cavity.

ALT 83 U/L, AST 98 U/L, PT 18.2 seconds, leukocyte count: $2.93 \times 10^9/L$, CRP 28 mg/L, sodium 133 mmol/L, T bilirubin, INR, amylase, and lipase were within normal limits. Ultrasonography showed moderate free fluid in peritoneal cavity with thickened gallbladder and no stones within (Fig. 1). A computed tomography (CT) scan was also available (Fig. 2A and B). Diagnostic puncture in right lower abdomen showed 5 mL yellow-brown purulent ascites. Under the diagnosis of the

digestive tract perforation, emergency laparoscopic exploration was performed. Contrary to our expectations, the perforation site was not in the alimentary tract, but rather in the gallbladder.

The following were the operative finding: upper and lower abdomen contained about 0.5 L of bile stained fluid with pus moses. There was a 0.5×0.5 cm ulcerative perforation in the gallbladder neck area (Fig. 3A and B). No gallstone was found in peritoneal cavity. Laparoscopic cholecystectomy was performed followed by thorough peritoneal lavage and a subhepatic drain was placed.

In postoperative period, there was about 100 mL bilious drainage daily from subhepatic drain. The patient recovered fully subsequently and discharged on the 10th postoperative day. A pathological examination of the resected gallbladder revealed cholecystitis in the thinning of the neck (Fig. 4).

3. Discussion

Gallbladder perforation comprises of about 2% cases of acute biliary emergencies and forms a challenge because of high mortality and morbidity.^[5,6] Niemeier^[7] classified the condition into 3 types: type I, acute free perforation into peritoneal cavity; type II, subacute perforation with pericholecystic abscess formation; and type III, chronic perforation with cholecystoenteric fistula. Type I perforation is in the form of peritonitis, and its treatment is relatively necessary by urgent laparotomy and

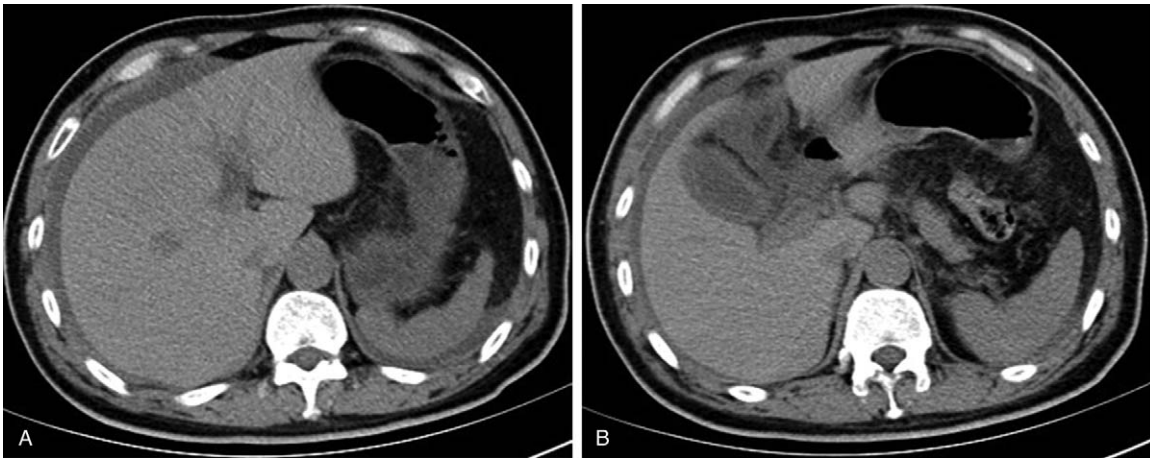


Figure 2. Preoperative imaging findings. Computed tomography (A, B) shows thickened gallbladder with moderate free fluid in peritoneal cavity.

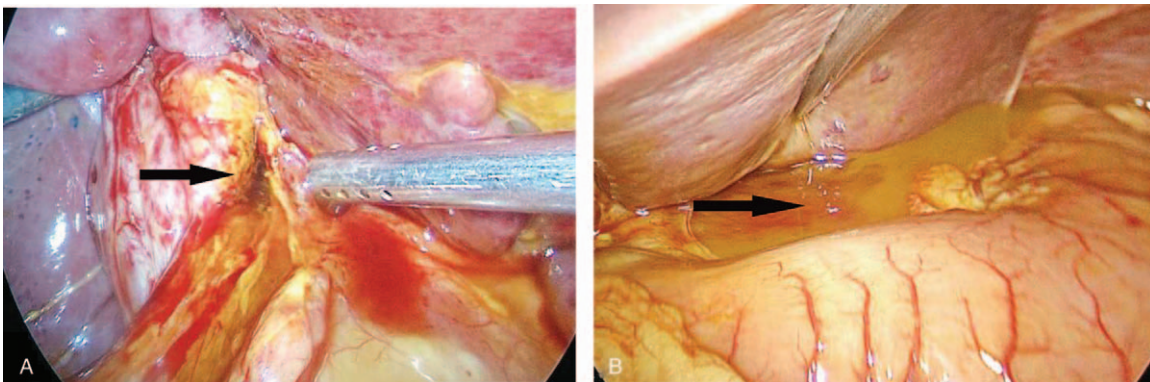


Figure 3. Intraoperative finding: (A) perforation of gallbladder at neck and (B) moderate free fluid in peritoneal cavity.

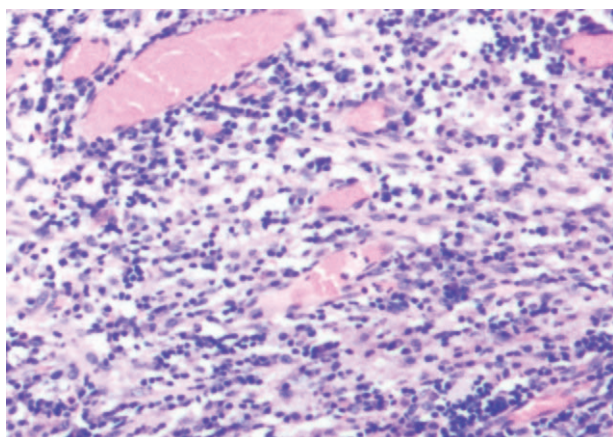


Figure 4. Photomicrograph shows cholecystitis of the gallbladder (200×).

cholecystectomy, or cholecystostomy. In contrast, type II perforation is far more complex due to chronic nature and the lack of consensus about treatment modality.^[8] Our patient had a type I gallbladder perforation. Factors contributing to spontaneous perforation include acute inflammation, infection, lithiasis, congenital obstruction, and anticoagulant therapy. The fundus, the most distant part from the main feeding artery, is the most common site for perforation because of ischemic changes of the gallbladder wall. But interestingly, our case occurs at the neck not the fundus. Systemic vascular disorders, such as atherosclerotic cardiovascular disease, diabetes, and malignancy, are major risk factors for the perforation of gallbladder.^[9]

It is relatively rare that gallbladder perforation developed without inflammation, stone, cancer, or body trauma, which makes our research more innovative and unique. Gallbladder perforation may be related to bile duct obstruction or the gallbladder wall destruction, such as acute cholecystitis, gallstones, abdominal surgery, parasites, gallbladder vascular compression, or obstruction. Uncommonly, chemotherapy and radiation can also lead to gallbladder injury. To our knowledge, there is no report of nasopharyngeal carcinoma chemotherapy and radiation-induced gallbladder perforation, especially it occurs at gallbladder neck. It is worth noting that the gallbladder perforation occurred on the second day after completing the cisplatin chemotherapy and radiation, so chemotherapy and radiation-induced gallbladder injury is an important contributing factor. Nasopharyngeal carcinoma is one of the most universal malignant tumors worldwide, and metastasis can cause the majority of cancer-related mortalities. But, our pathological examination of the resected gallbladder revealed chronic cholecystitis and necrosis, without secondary gallbladder cancerous metastasis. In this gallbladder perforation case, gallbladder motility-related hormonal reduce, the decline of enteric nervous system function and immunosuppressed states may also play important roles in gallbladder perforation.

Prior to laparotomy, we often have difficulty in diagnosing the gallbladder perforation. Patients with spontaneous perforation often present with biliary peritonitis^[10] as we saw in the patient. The typical presentation includes fever, vomiting, abdominal pain, and sometimes shock.^[11] CT and ultrasonography are the sensitive and effective tools to diagnose gallbladder perforation.^[12,13] Gallbladder wall thickening, pericholecystic fluid collection, and the streaky omentum or mesentery is common findings of gallbladder perforation.^[1,14] Detection on imaging

such as CT scans or ultrasonography can be difficult in small perforations and the findings are usually nonspecific. The presence of extra-luminal gallstones would be a suggestive sign, but it was not seen in this case. Confirmatory diagnosis is only after laparotomy and by seeing bile colored peritoneal collection and perforated gallbladder. In the event of the calculus gallbladder perforation, the first choice is urgent surgical treatment. But we also give conservative treatment consisted of puncture drainage, antibiotics, absolute diet, and total parenteral nutrition when there are no symptoms of peritonitis.

4. Conclusions

Our case report is the first presentation of gallbladder perforation associated with nasopharyngeal carcinoma chemotherapy and radiation. In order to prevent gallbladder perforation, we should think seriously about the chemotherapy or radiation adverse event, dose, the weight, gallstones, body surface area, and physical problems. To decrease the morbidity and mortality associated with gallbladder perforation, early diagnosis and surgical intervention are of prime importance. Such cases should always be properly investigated keeping in mind the serious complications.

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