



Case Report

Spontaneous rupture of peritoneal seeding hepatocellular carcinoma: Report of two cases

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Received 6 August 2015; revised 26 May 2016; accepted 26 July 2016

Available online 25 August 2016

Abstract

Background: Non-traumatic hemoperitoneum is a potentially life threatening condition that requires prompt diagnosis and intervention in the emergency department (ED). There are many causes of non-traumatic hemoperitoneum, but spontaneous rupture of a peritoneal seeding tumor is rare.

Case report: We describe two cases of spontaneous rupture of a peritoneal seeding hepatocellular carcinoma (HCC), following spontaneous rupture of HCC in the ED. Two patients, with a history of ruptured HCC presented with acute left upper quadrant and right lower quadrant abdominal pain. Vital signs were stable, and the diagnosis was made by contrast-enhanced computed tomography scan of abdomen. The patients survived because of early diagnosis and surgical intervention.

Conclusion: This report highlights that spontaneous rupture of peritoneal seeding HCC can occur after spontaneous rupture of HCC. Emergency physicians should be aware of this rare complication, particularly in Asian countries. Surgical intervention is the appropriate choice for definitive treatment.

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Keywords: hemoperitoneum; hepatocellular carcinoma rupture; peritoneal seeding tumor; spontaneous rupture

1. Introduction

Non-traumatic hemoperitoneum is defined as the presence of blood within the peritoneal cavity that is not related to trauma. The etiology of non-traumatic hemoperitoneum includes splenic, hepatic, gynecological and vascular causes as well as bleeding disorders.¹ Hemoperitoneum due to spontaneous rupture of HCC is not uncommon in Asian countries.² Rupture of primary HCC may result in spillage of tumor cells onto the peritoneal surface with possible seeding and tumor growth.³ Rarely, spontaneous rupture of the seeding

tumor may occur. Herein, we report two cases of spontaneous rupture of peritoneal seeding HCC following spontaneous rupture of HCC.

2. Case Report

2.1. Case 1

A 63-year-old man presented to the ED with a sudden onset of severe left upper quadrant abdominal pain. His medical history included Child A liver cirrhosis and spontaneous rupture of HCC 16 months previously. Physical examination revealed marked tenderness over the left upper quadrant of the abdomen. Vital signs were as follows: heart rate, 63 beats/min; blood pressure, 164/96 mm Hg; respiratory rate, 16 breaths/min, and body temperature, 36°C. Laboratory findings were unremarkable, as shown in [Table 1](#). Tramadol (150 mg) was

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Table 1
Demographic characteristics and laboratory results of the patients.

	Case 1	Case 2
White blood cell, count/mm ³	4970	18780
Hemoglobin, g/dL	10	7.4
Platelet, 10 ⁹ /L	104	230
International normalized ratio	1.13	1.04
Alanine Aminotransferase, IU/L	25	14
C-reactive protein, mg/L	0.148	0.029
Month after previous HCC rupture	16	12
Time for diagnosis at ED, minute	138	155

ED = emergency department.

HCC = hepatocellular carcinoma.

administered intravenously for analgesia, but did not result in pain relief. We performed contrast-enhanced computed tomography scan of abdomen because of the unusual pain, and this revealed peritoneal tumor seeding with hematoma formation in the left upper abdomen. In view of the history of HCC rupture, the possibility of a ruptured peritoneal seeding HCC tumor was considered (Figure 1). Emergency laparotomy was performed, and the diagnosis was confirmed on pathological examination. The patient was discharged in stable condition after seven days in the hospital.

2.2. Case 2

A 65-year-old man presented to the ED with 15 hours of progressive right lower quadrant abdominal pain. His medical history included hypertension, urolithiasis, coronary artery disease, and spontaneous rupture of HCC 12 months previously. Physical examination revealed marked tenderness over the right lower quadrant of the abdomen. Vital signs were as follows: heart rate, 99 beats/min; blood pressure, 101/61 mm Hg; respiratory rate, 16 breaths/min; and body temperature, 35.8°C. Laboratory tests revealed a white blood cell count of

18780/mm³ and a hemoglobin level of 7.4 g/dl. Further laboratory data are shown in Table 1. A contrast-enhanced computed tomography scan of abdomen was performed because acute appendicitis was suspected. However, this revealed contrast-enhancing masses with contrast medium extravasation in the right lower abdomen, a high-density blood clot and fluid collection in the peritoneal cavity. Extrahepatic HCC spread with tumor bleeding and hemoperitoneum was considered, because of the history of HCC rupture. (Figure 2). The patient underwent emergency laparotomy, and the diagnosis was verified on pathological examination (Figure 3). He was discharged in stable condition after 11 days in the hospital.

3. Discussion

HCC is one of the most common visceral malignancies in the world.⁴ The incidence of HCC is rising worldwide, and most primary HCC is caused by hepatitis B and C viral infections.^{5,6} Extrahepatic metastatic spread to the lungs, regional lymph nodes and bones is common, occurring in 28–55% of cases.⁷ However, peritoneal metastases are uncommon. Needle tract seeding of HCC after percutaneous needle biopsy was first reported in 1983.⁸ Thereafter, HCC peritoneal seeding following radiofrequency ablation, percutaneous ethanol injection, tumor resection, transarterial chemoembolization and spontaneous rupture were also reported.⁹ The mechanism of HCC peritoneal seeding remains unclear, but loss of membranous β -catenin reactivity may be associated with the development of tumor seeding.¹⁰ Although peritoneal seeding is not an independent prognostic factor for HCC,¹¹ rupture of the seeding HCC can increase patient mortality if management is delayed.¹² Among the complications of HCC, spontaneous rupture of HCC is a potentially life-threatening condition. Although it is rare in Western countries, rupture

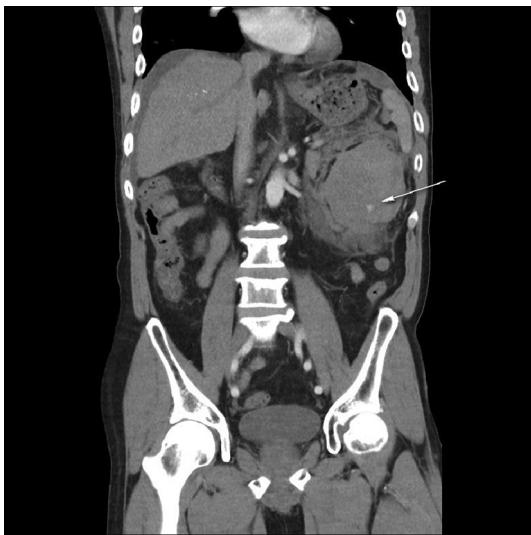


Figure 1. Contrast-enhanced computed tomography scan of abdomen demonstrating a ruptured peritoneal seeding HCC tumor with extravasation (white arrow) in the left upper quadrant of the abdomen.

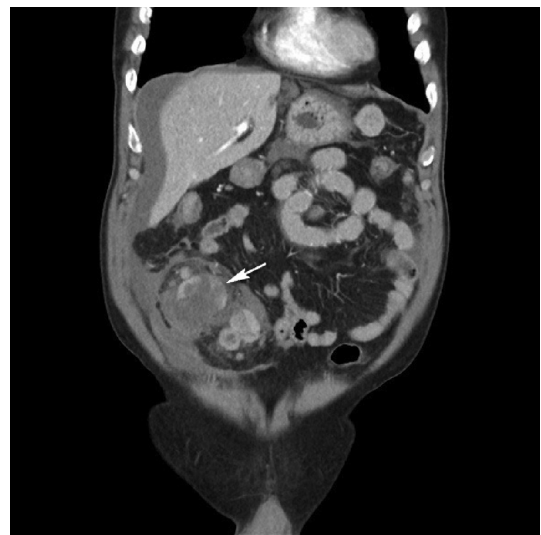


Figure 2. Contrast-enhanced computed tomography scan of abdomen demonstrating a ruptured peritoneal seeding HCC tumor (white arrow) in the right lower quadrant of the abdomen, accompanied by hemoperitoneum.

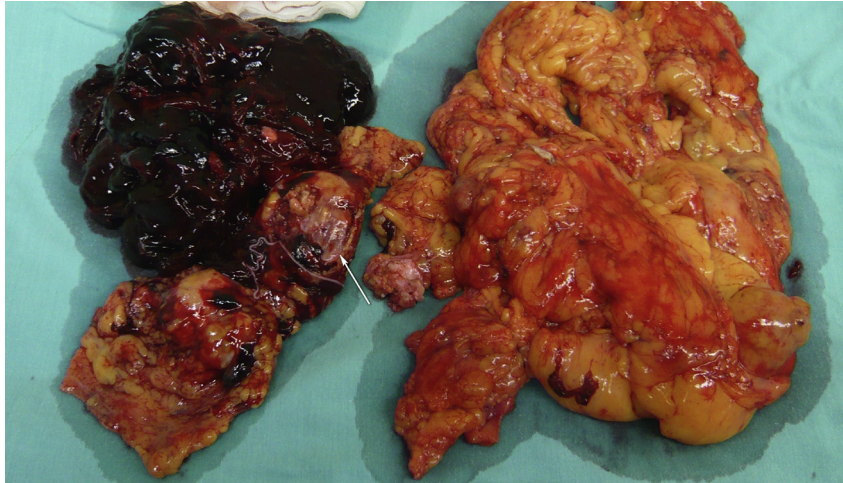


Figure 3. A ruptured peritoneal seeding HCC tumor (white arrow).

of HCC is relatively common in Asian countries.^{2,13} The incidence of spontaneous rupture of HCC is approximately 3–26%, and nearly 10% of patients die from tumor rupture every year.¹⁴ Following diagnosis, conservative treatment, transcatheter arterial embolization, and laparotomy are the mainstay of management. However, spontaneous rupture of peritoneal seeding HCC is extremely rare, and there is no standardized management. Surgical intervention is an appropriate and optimal management for spontaneous rupture of peritoneal seeding HCC.^{9,15} In the cases presented here, early diagnosis and surgical intervention were crucial in preventing clinical deterioration. Surgical intervention is the most reasonable treatment option, as the vascular supply did not derive from the main trunk of the hepatic vascular system and the lesions were located at a distance from the abdominal wall. Therefore, emergency physicians should be aware of this rare complication, particularly in Asian countries.

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