



Peritoneal chronic inflammatory mass formation due to gallstones lost during laparoscopic cholecystectomy



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ARTICLE INFO

Article history:

Received 24 December 2013

Received in revised form 26 February 2014

Accepted 20 March 2014

Keywords:

Peritoneal chronic abscess formation

Lost gallstone

Laparoscopic cholecystectomy

Computed tomography

ABSTRACT

We here describe the radiologic findings of peritoneal chronic abscess formation due to gallstones lost within the peritoneum during laparoscopic cholecystectomy (LC). A radiologic workup 7 months after LC revealed a soft-tissue mass with contrast enhancement, harboring internal necrosis and punctate calcium located in the Morrison's pouch. The mass exhibited restricted water molecule diffusion, absence of fat deposition, and increased F-18 fluorodeoxy-D-glucose uptake, thus mimicking a malignant tumor. The biopsy revealed an inflammatory granuloma. Another patient with similar findings was treated with percutaneous abscess drainage. Thus, radiologists should be aware of this disease condition and its imaging findings.

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1. Introduction

Laparoscopic cholecystectomy (LC) has become the gold standard treatment for symptomatic gallstones, as it offer improved patient satisfaction and reduced hospital stays [1]. Although the overall complication rate associated with the LC procedure is less than that with open cholecystectomy, two major LC-associated complications have been frequently described in the literature including bile duct injury or leakage and delayed abscess formation due to lost gallstones [1]. Although the incidence of bile duct injury with LC ranges from 0.1% to 0.5% and has decreased as surgeons have accumulated more experience during the past 2 decades [1], the incidence of complications due to lost gallstones has been unaffected. The estimated incidence of post-LC abscess formation due to lost gallstones is approximately 0.3% [2]. Previous reports described that abscesses or inflammatory masses that contained gallstones or stone fragments were generally located in the abdominal wall, subhepatic space, or retroperitoneum below the subhepatic space, but such masses could occur anywhere in the abdomen or in unusual locations, including the right thorax or the site of incisional hernias [3]. Our literature search did not find any previous reports that precisely describe the radiologic features of this disease condition. Therefore, we describe these findings in this report.

2. Case reports

2.1. Case 1

In a 52-year-old woman, an asymptomatic subhepatic mass was identified using ultrasonography during a medical checkup and was referred to our hospital for further examination. She underwent LC for a symptomatic gallstone 7 months before. Blood biochemical findings revealed normal levels, except for a slightly elevated C-reactive protein (CRP) level (0.25 mg/dl).

Unenhanced computed tomography (CT; Discovery CT750 HD; GE Healthcare, Milwaukee, WI, USA) demonstrated a soft-tissue-density mass at the Morrison's pouch that measured 3 cm in diameter and had ill-defined margins and internal punctate calcium (Fig. 1A). Contrast-enhanced dynamic CT demonstrated delayed, peripheral enhancement with central necrosis in the mass during the arterial and equilibrium phases (Fig. 1B, C). Magnetic resonance imaging was performed on a 1.5-T system (Intera Achieva 1.5-T Pulsar; Philips Medical Systems, Netherlands). In-phase (TR/TE, 292/2.3 msec) and out-of-phase (TR/TE, 292/1.1 msec) T1-weighted gradient-recalled-echo images showed the mass as an isointense area in comparison with the right kidney (Fig. 1D, 1E). Respiratory-triggered T2-weighted turbo spin-echo axial images (TR/TE, 1,600/80 msec) showed the mass as a hypointense area in comparison with the right kidney (Fig. 1F). Diffusion-weighted imaging (TR/TE, 2,291/46 msec; *b* factors, 0 and 500 sec/mm²) showed obvious diffusion restriction within the mass (Fig. 1G), with a reduced apparent diffusion coefficient value of $0.87 \times 10^{-3} \text{ mm}^2/\text{s}$. The F-18 fluorodeoxy-D-glucose (FDG) positron emission tomography (PET)/CT scanning (Biograph Sensation 16; Siemens Medical Solutions, Malvern, PA, USA)

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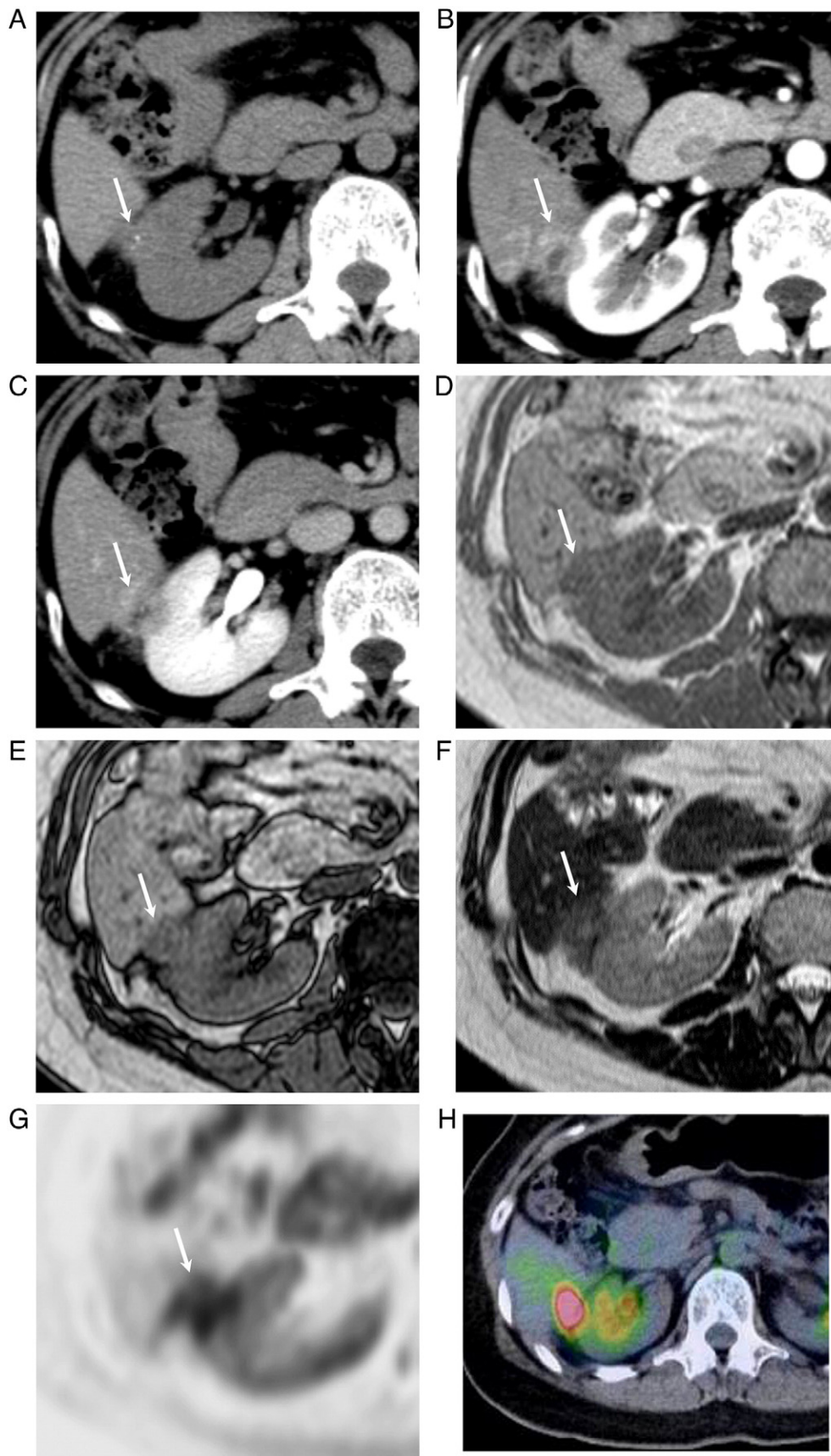


Fig. 1. A 52-year-old woman with asymptomatic subhepatic mass who had undergone LC 7 months before. (A) Unenhanced CT demonstrates a soft-tissue-density mass (arrow) at the Morrison's pouch that measured 3 cm in diameter and had ill-defined margins and internal punctate calcium. Contrast-enhanced CT demonstrates delayed peripheral enhancement in the mass during the arterial (B) and equilibrium (C) phases. In-phase (D) and out-of-phase (E) T1-weighted gradient-recalled-echo images show the mass as an isointense area, compared with the right kidney. Respiratory-triggered T2-weighted turbo spin-echo axial image (F) shows the mass as a hypointense area, compared with the right kidney. Diffusion-weighted image (G) shows obvious diffusion restriction corresponding to the mass. The F18-FDG-PET/CT scan (H) demonstrates intense and homogeneous FDG uptake in the mass, with a maximum standardized uptake value of 9.99.

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