



## CLINICAL COMMUNICATIONS TO THE EDITOR

### Diagnosing porcelain gallbladder

To the Editor:

#### Presenting features

A 63-year-old Chinese woman without notable medical history presented to our hospital for calcifications over the right upper abdomen on plain radiograph during a routine health examination. She recalled right upper quadrant pain after heavy meals for years. The abdominal pain could be relieved gradually after resting. She denied fever, exercise intolerance, weight loss, or relevant family history of malignancy. She also denied consumption of alcohol.

On physical examination after admission, her vital signs were normal. She looked neither anemic nor icteric. She had normal cardiac and pulmonary findings. Her abdomen had normal bowel sounds and was soft to palpation. Neither tenderness nor rebound tenderness could be elicited even when she took deep inspirations. Liver and spleen were not palpable.

Laboratory examinations showed a white blood cell count of 5070 cells/ $\mu$ L, hemoglobin of 13 g/dL, and a normal basic metabolic panel with a serum albumin level of 5.2 g/dL and total calcium level of 2.48 mmol/L (normal range 2.02-2.60). Liver study results were all within normal limits.

Computed tomography scanning of the abdomen without contrast enhancement showed a circular hyperdense lesion beneath the liver parenchyma at the location of the gallbladder fossa (Figure 1). Surveys for tumor makers disclosed a serum chorioembryonic antigen level of 0.43 ng/mL (normal <3.0) and a serum CA19-9 level of 14.5 U/mL (normal <37).

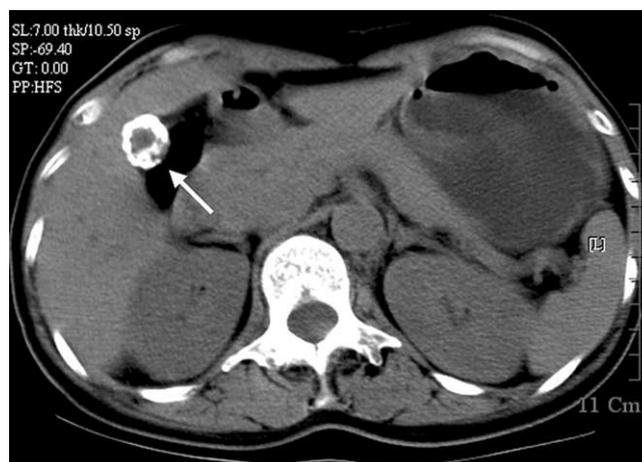
What is the diagnosis?

#### Discussion

Porcelain gallbladder denotes extensive deposition of calcium in the wall of gallbladder, resulting in a gallbladder with a fragile and brittle consistency.<sup>1</sup> Calcification of the gallbladder is rare and estimated to occur in 0.06% to 0.8%

of all gallbladder specimens.<sup>2</sup> In 1951, Kazmierski first proposed an association between porcelain gallbladder and gallbladder cancer in a patient.<sup>3</sup> The incidence of gallbladder cancer in calcified gallbladder was reported in the 1960s to be between 12% and 61%.<sup>4</sup> Recent studies suggest a lower incidence of gallbladder cancer in porcelain gallbladder than previously estimated.<sup>1,5</sup> Towfigh and colleagues<sup>5</sup> reported 15 porcelain gallbladders among 10 741 gallbladder specimens. None of the porcelain gallbladders harbored gallbladder cancer (0/15). Stephen and Berger<sup>1</sup> reported 44 calcified gallbladders among 25 900 gallbladder specimens. Overall incidence of gallbladder cancer in calcified gallbladder was 5% (2/44), and these 2 gallbladder cancers were exclusively found in the pattern of selective mucosal calcification. Patterns of calcification were reported to be associated with different incidence of gallbladder cancer. Two studies suggest a higher incidence of gallbladder cancers in gallbladders with selective mucosal calcification than in those with complete intramural calcification.<sup>1,6</sup> The pathogenesis of the calcification of the gallbladder wall is not clear. Hypotheses include imbalance of local calcium metabolism with deposition of calcium salts and chronic inflammation.<sup>7</sup> Furthermore, the role of mural calcification in the carcinogenesis of gallbladder cancer remains mostly unknown.<sup>8</sup>

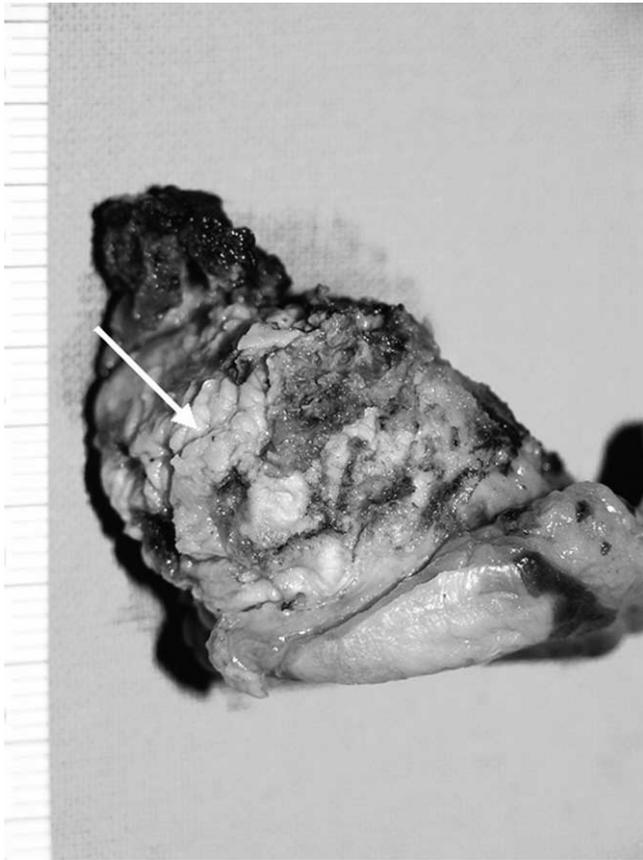
Porcelain gallbladder is 5 times more common in women than in men, usually in the sixth decade. Patients may present



**Figure 1** A circular calcification (white arrow) is noted in the gallbladder fossa on computed tomography scan without contrast enhancement.

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**Figure 2** Specimen of laparoscopic cholecystectomy has extensive calcification (white arrow) over the whole circumference of gallbladder wall.

with symptoms of abdominal pain, nausea, vomiting, and fever. Some present asymptotically with an incidental finding on radiograph.<sup>1</sup> Large solitary calcification in the right upper quadrant of the abdomen on plain radiograph should indicate porcelain gallbladder. The list of differential diagnosis includes a large gallstone, echinococcal cysts, calcified renal cysts, chest wall masses with calcification, degenerative cystic lesions of the pancreas, calcified adrenal tumors, or rarely an atherosclerotic aneurysm of the abdominal aorta.<sup>7,9,10</sup> Definite diagnosis can usually be achieved with abdominal ultrasound or computed tomography scan by showing characteristic calcification of the gallbladder wall. In 95% of patients with porcelain gallbladder, gallstones are accompanying findings.<sup>7</sup> Because of the grave prognosis of gallbladder cancer, prophylactic cholecystectomy is recommended for porcelain gallbladder.<sup>8,11</sup> Recently, because of the relatively low incidence of cancer in completely calcified gallbladders, nonoperative management is proposed for such gallbladders if the operation risk is high.<sup>1,5,10</sup>

Laparoscopic cholecystectomy proceeded smoothly in this patient. The specimen exhibited a stony hard gallbladder with extensive and circumferential transmural calcification (Figure 2), accompanied by 2 small gallstones (not shown). Pathologic examinations documented a porcelain gallbladder without evidence of cancer. The patient made an uneventful recovery.

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## Reversal of a potent investigational anticoagulant: Idraparinux with recombinant factor VIIa

To the Editor:

Idraparinux is an investigational synthetic pentasaccharide anticoagulant in development as a potent selective inhibitor of Factor Xa administered subcutaneously weekly.<sup>1</sup> Given as a