Porcelain Gallbladder Mimicking Carcinoma Gallbladder—a Case Report and Review of Literature

Preethi Shivanna Puttasubbappa · P. Pallavi

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Abstract Porcelain gallbladder, inspite of its rare occurrence, assumes importance because of its risk of malignant transformation. Here, we report a case which mimicked carcinoma during surgery and on histopathological examination was reported as Porcelain gallbladder. This report focuses on the rarity of occurrence of Porcelain gallbladder, its differentiating histopathological features with respect to carcinoma, risk of malignancy and its treatment.

Keywords Porcelain gallbladder · Carcinoma gallbladder

Introduction

Calcification, one of the end stages of chronic inflammation and scar formation, may represent the phenomenon of scar-related cancer. Porcelain gallbladder, associated with significant fibrosis, and scarring [1], is a premalignant condition with a risk of malignancy varying between 4 % and 22 % [2, 3]. Hence, its early diagnosis and appropriate management is essential.

Case Report

A 65-year-old hypertensive woman presented with upper abdominal pain for 15 days. She had obstructive jaundice

6 months back and had undergone endoscopic retrograde cholangiopancreatography with stenting for choledocholithiasis. Physical examination showed the soft and nontender abdomen with no scars, organomegaly/palpable mass. Abdominal sonography showed multiple calculi in the gallbladder, Common bile duct (CBD) 9 mm with no calculi, and stent in situ till the lower end. The liver function tests were normal.

On laparoscopy, the gall bladder wall was found to be diffusely thickened and inflamed with multiple hard nodules at the fundus (Fig. 1). The CBD was dilated. There was no obvious infiltration into the liver or surrounding tissues with no secondaries on the liver or peritoneum. There was a suspicion of gallbladder malignancy intraoperatively and hence cholecystectomy with excision of margin of liver at the gallbladder bed was done. The specimen was removed in an endobag. Postoperatively the patient was counseled about the possible requirement for radical excision if pathological examination revealed malignancy of the gallbladder.

Gross specimen showed the calcified gallbladder measuring 4 cm×2.5 cm×2.5 cm, wall thickness of 0.4–0.5 cm with mucosa lost with calcifications. Microscopic examination showed congestion, hemorrhage, fibrosis, focal muscular hypertrophy, and calcification. Mucosa showed focal pyloric metaplasia at the neck. Lamina propria and muscle showed lymphoid follicles. Subserosal fibrosis was noted. Adherent liver parenchyma was unremarkable with reactive hyperplasia in a tiny lymph node.

Discussion

The term “porcelain gallbladder” was coined in 1929 to describe the bluish discoloration and brittle consistency of a gallbladder with an extensively calcified wall [4]. The

P. Shivanna Puttasubbappa (✉)
Department of General Surgery, J.S.S Medical College,
J.S.S University,
Mysore, Karnataka, India
e-mail: preethisp_89@yahoo.co.in

P. Pallavi
Department of Pathology, J.S.S Medical College, J.S.S University,
Mysore, Karnataka, India

Table 1 Showing histopathological features of Porcelain gallbladder and Carcinoma gallbladder

Histopathological features	Porcelain gallbladder	Carcinoma gallbladder
Gross	Gallbladder is contracted and diffusely involved with bluish discolouration and brittle consistency Thickened walls	Diffuse growth or polypoid mass Thickened walls
Microscopy	Chronic inflammatory cells. Calcification is seen in broad bands or as small intramural concretions Extensive fibrosis	Pleomorphic tumour cells arranged in papillary or glandular pattern showing varying degrees of differentiation Extensive fibrosis

incidence is 0.6–0.8 %, with a mean age of 54 years and male-to-female ratio of 1:5.

Porcelain gallbladders are associated with gallstones in 90 % of cases. Low-grade inflammation, intramural hemorrhage, and an imbalance in calcium metabolism have been proposed as the probable etiology of gallbladder wall calcification. Histological examination shows that microliths are diffusely scattered throughout the mucosa, submucosa, glandular spaces, and in Rokitansky-Aschoff sinuses [5]. Histopathological features of the porcelain and carcinoma gallbladders are summarized in Table 1.

A chemical within stagnant bile or the degeneration and regeneration process within the gallbladder epithelium may act as a carcinogenic stimulus. By implanting hard foreign bodies in the gallbladder wall of animals, Petrov and Krotkina were able to induce gallbladder carcinoma [6]. Stephen and Berger found that the incidence of cancer arising in a gallbladder with selective mucosal wall calcification was approximately 7 %, with an odd ratio of 13.89 ($P=0.01$) [5].

The clinical and imaging characteristics of the porcelain gallbladder need to be recognized because of the risk (22 %) of adenocarcinoma [3]. Clinically, they are

usually asymptomatic with a palpable mass being found occasionally. It is an incidental diagnosis on plain abdominal radiographs, sonograms, computed tomography (CT), and bone scans.

Most carcinomas associated with the porcelain gallbladder are diffusely infiltrating adenocarcinomas, although squamous cell carcinoma has been described as well. Stephen and Berger in their review of 25,900 cholecystectomies, with 150 cases of gallbladder cancer and 44 case of calcified gallbladder found that 7 % of the calcified specimens showed malignant changes [5]. In a retrospective study of 59 cases of histologically proven gallbladder carcinoma, Rooholamini et al found an association with the porcelain gallbladder in 4 % of cases [2].

Thus, in cases of the porcelain gallbladder, considering the risk of gallbladder cancer and its poor prognosis, current guidelines continue to recommend prophylactic cholecystectomy [7].

Conclusion

Porcelain gallbladder is a premalignant condition and is treated by cholecystectomy to prevent its further progression to carcinoma.

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Fig. 1 Peroperative picture