Case Report

Porcelain gall bladder in a case of papillary renal cell carcinoma: A rare occurrence and its impact on treatment verdict

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ABSTRACT

Multiple primary malignant neoplasms (MPMN) is a rare clinical entity in which two primary malignancies are encountered in the same individual which can be synchronous (second primary within 6 months) or metachronous (beyond 6 months). We present a case of a 41-year-old male who underwent left partial nephrectomy for suspected renal cell carcinoma and it was confirmed based on histopathology. The gallbladder was normal on contrast-enhanced computed tomogram (CECT) abdomen. Follow-up CECT done 1 year later showed no enhancing masses in both kidneys, but incidentally porcelain gallbladder was detected. An elective open cholecystectomy was done for acalculous porcelain gall bladder owing to its premalignant nature. We report this case to highlight the relative risk of second primaries in patients treated for primary malignancies and that relevant premalignant conditions should be managed as possible second malignancies to avoid potential complications.

Key words: Acalculous porcelain gallbladder, multiple primary malignant neoplasms, papillary renal cell carcinoma

INTRODUCTION

Multiple primary malignant neoplasms (MPMNs)[1] is the occurrence of a second primary malignancy in the same patient within 6 months of the detection of the first primary (synchronous) or later (metachronous). We report a case of porcelain gallbladder, detected on follow-up computed tomogram abdomen in a case of left partial nephrectomy done for papillary renal cell carcinoma (RCC) after 14 months. A PubMed™ Medline Central search for the coexistence of porcelain gall bladder (PGB) with RCC yielded no association; however, RCC has been reported to metastasize to the gallbladder.[2] This case report assumes significance because PGB is a well-acclaimed premalignant condition for carcinoma gallbladder and that the occurrence of a second primary should be kept in mind when premalignant conditions are detected in patients with known primaries.

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CASE REPORT

A 41-year-old male, a smoker, presented to the Urology outpatient department with left loin pain for 6 months and loss of appetite for 4 months. Ultrasound (US) of the abdomen showed a 4×3 cm^2 sized exophytic lower pole left renal cyst and contrast-enhanced computed tomogram (CECT) abdomen revealed a 3.9×3.1 cm^2 complex lower pole cyst in left kidney. The gall bladder was normal. Left partial nephrectomy was done with a suspicion of RCC and histopathological examination showed a type 1 papillary RCC, positive for vimentin, cytokeratin, and focal positivity for CD10 on immunohistochemistry (IHC) testing [Figure 1]. He was on a regular follow up and CECT abdomen done 1 year later showed no enhancing masses in left kidney. Incidentally, the gall bladder wall showed a curvilinear mucosal and muscularis segmental wall thickening consistent with PGB [Figure 2]. An elective open

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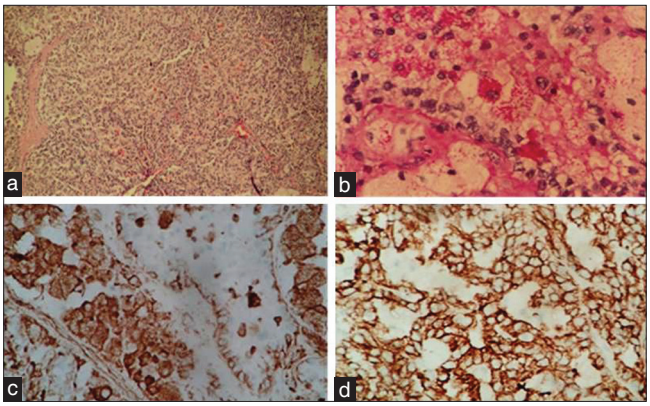

Figure 1: Histopathological micrographs of the renal specimen showing papillary renal cell carcinoma (×100). (a) Papillary pattern; (b) PAS positive granules; Cells positive for– (c) Cytokeratin; (d) Vimentin

cholecystectomy was done for acalculous PGB due to its premalignant nature considering the possibility of it being a forerunner of a second primary.

DISCUSSION

Theodore Billroth introduced the term MPMNs in 1889. [1,2] In 1932, Warren and Gates proposed criteria for the diagnosis of MPMNs – the multiple tumors must each be malignant, each must be distinct, and the probability that one is metastatic from the other must be excluded.[3] Second primaries are rare with an incidence of 0.734% to 11.7%.[4] According to the currently accepted definition, MPMNs may be synchronous when the second tumor developed within 6 months of the diagnosis of the primary tumor or metachronous when the second tumor develop beyond 6 months.[5] On follow-up, it has been shown that the relative risk for developing a second primary malignancy increases by 1.111 times every month from the time of detection of the first primary malignancy in any individual.[6]

RCC comprises about 3% of all adult malignancies. RCC metastasizing to the gallbladder is extremely rare.[2] PGB, a well-known premalignant condition of carcinoma gall bladder, is a morphological variant of chronic cholecystitis, developing in the background of gall stones.[7] The exact etiology is however obscure. The incidence varies from 0.6% to 0.8% with a female preponderance (5:1). The incidence of gall bladder malignancy in patients with PGB ranges between 12.5% and 62%.[8] Open cholecystectomy (OC) is recommended for patients with selective mucosal calcifications (Level III, Grade B).[9] OC is preferred over laparoscopic cholecystectomy (LC) for the fear of seeding of cancer cells in the trocar sites. However, recent review of a large case series suggests that LC can be safe in PGB.[10] There is no consensus for the approach for cholecystectomy in patients with treated primary malignancies. Active search for other cancers in cases of RCC is done only when the patient has known predispositions like multiple endocrine neoplasia (MEN), von Hippel Lindau (VHL), tuberous sclerosis (TC), Birt-Hogg-Dube syndrome, etc. This occurrence of papillary RCC followed by a premalignant gallbladder condition is quite rare.

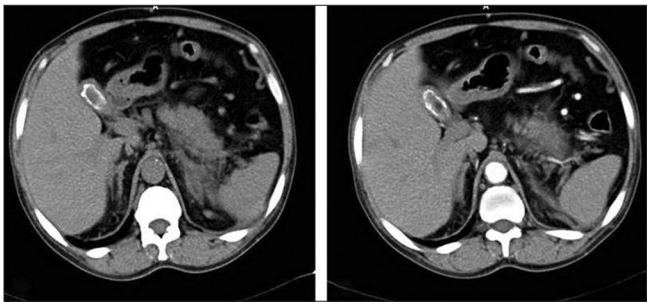

Figure 2: Contrast-enhanced computed tomogram images showing curvilinear mucosal and muscularis segmental wall thickening consistent with porcelain gallbladder

Though both papillary RCC (PRCC) and carcinoma gallbladder are adenocarcinomas, the IHC between these two malignancies is quite different. A papillary variety is observed in both RCC and carcinoma gallbladder. IHC of RCC has been studied by Bonsib *et al*.[11] According to them, PRCC is positive for CK7 and PAX 2 and negative for C-kit. The most common variety clear cell RCC is negative for all these markers. PRCC types 1 and 2 are positive for CAM 5.2, AE1/AE3, EMA, Vimentin, CD10, CK7, AMACR and S100A1. Type 1 PRCC has a clear cytoplasm and is in addition positive for RCC Ma and PAX 2. Type 2 PRCC has an eosinophilic cytoplasm.[11] Xuan *et al* assessed the expression of cell-cycle-regulated proteins in gallbladder carcinoma and its precursor lesions.[12] They observed an increased expression of p53, cyclin D1, Ki-67, and MSH2 along with a decreased expression of RB and p27 protein in carcinoma gallbladder. They observed an altered expression of cell-cycle molecules (p53, cyclin D1, RB, p27, MSH-2) in the progression of gallbladder carcinomas. They also noted an aberrant expression of cyclin D1 with reduced expression of RB in adenomas and elevated expression of cyclin D1 in low-grade dysplasias. However, they observed no change in levels of cell-cycle molecules in metaplasia.[12]

CONCLUSION

Though laparoscopic cholecystectomy can now be safely performed for porcelain gallbladder, open cholecystectomy is more appropriate when it is associated with a primary malignancy, and currently, there is no consensus regarding the approach for cholecystectomy in patients with treated primary malignancies. An active search for coexisting malignancies would be beneficial before laparoscopic cholecystectomy and this screening should be practised in all such patients and not only when syndromic associations exist.

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