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Teaching Case

Synchronous renal cell carcinoma and clear cell hepatocellular carcinoma mimicking metastatic disease

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ABSTRACT

Double carcinomas of hepatocellular and renal cell carcinoma (RCC) are extremely rare, and among the reported cases, none of the hepatocellular carcinomas show clear cell change. We report a case of synchronous double primary clear cell tumor in the liver and the kidney of a 70-year-old male. The renal mass was a renal cell carcinoma of mixed clear and granular cell types, and the hepatic mass was a hepatocellular carcinoma with extensive clear cell change that mimicked a metastatic renal cell carcinoma. A simple battery of immunohistochemical stains composed of hepatocyte antigen, and CD10 was performed to make a definite diagnosis.

Introduction

It could be morphologically impossible to differentiate clear cell hepatocellular carcinoma (HCC-CC) from metastatic conventional renal cell carcinoma (RCC). Although some clinical information could be taken as clues, such as the presence of a renal tumor or a known history of viral hepatitis, immunohistochemical staining is still needed to render a reliable diagnosis. The morphology and the immunohistochemical profile regarding these two diagnoses are well-established. However, no coexistence of HCC-CC and RCC has been documented. Herein, we report a unique case of synchronous HCC-CC and RCC.

Case presentation

A 69-year-old man diagnosed with hepatitis C virus-associated liver cirrhosis had been regularly followed-up in a local hospital. During regular abdominal sonographic examination, a hepatic mass in the right lobe was noted. The non-tumorous part of the liver parenchyma showed coarse echogenesity. In addition, a left renal mass was found accidentally. CT also revealed suspected tumor thrombi in the inferior vena cava. He was transferred to our hospital for surgical intervention. The initial laboratory data were as follows: AST/ALT: 45/49 IU/L, BUN/Creatinine: 28/1.9 mg/dL, alpha-fetoprotein: 64.4 IU/mL. After thorough assessment, he underwent synchronous left radical nephrectomy and segmental resection of the liver.

Pathology findings

The received specimens were a totally resected left kidney with partial ureter and a segment of liver. The renal tumor was $10 \times 5 \times 5\,cm^3$ in size with a gray-tan and necrotic cut surface located in the lower pole. There was a tumor thrombus, $2 \times 1.8 \times 1.6\,cm^3$, in the renal vein. The hepatic tumor was $3 \times 3 \times 2.8\,cm^3$ in size with a yellow-tan necrotic cut surface embedded in liver parenchyma without the involvement of the capsule.

Microscopically, the renal tumor was composed of polygonal cells with eosinophilic and clear cytoplasm arranged in a compact tubulocystic and focal pseudopapillary pattern (Fig. 1A). The tumor thrombus in the renal vein exhibited the same feature as that of the renal tumor. The hepatic tumor was composed of two different cell types: cells with clear cytoplasm and cells with abundant granular eosinophilic cytoplasm. The clear cells were arranged in sheets while the eosinophilic cells were arranged in a classical trabecular pattern (Fig. 2A). Focal sinusoidal dilatation and congestion were also noted in the clear cell region of the

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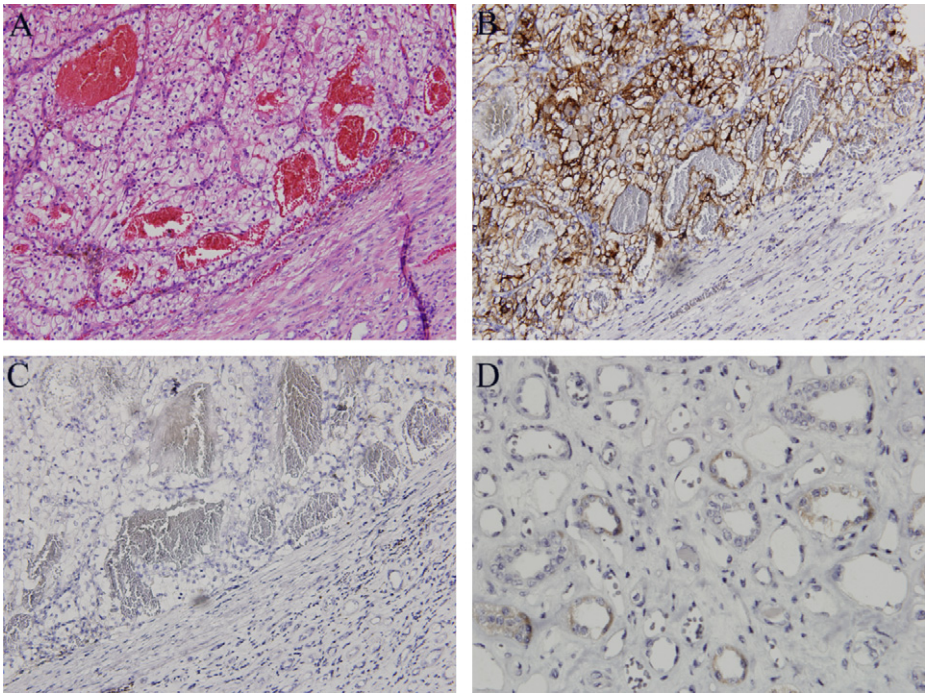

Fig. 1. HE and immunological staining of renal tumor: (A) Well-demarcated clear cell tumor with delicate vasculature and hemorrhage in renal parenchyma; (B) CD10 staining demonstrated diffuse positivity among tumor cells; (C) HePar-1 staining of tumor cells is completely negative; and (D) epithelium of renal tubules shows focal mild positivity to HePar-1 staining.

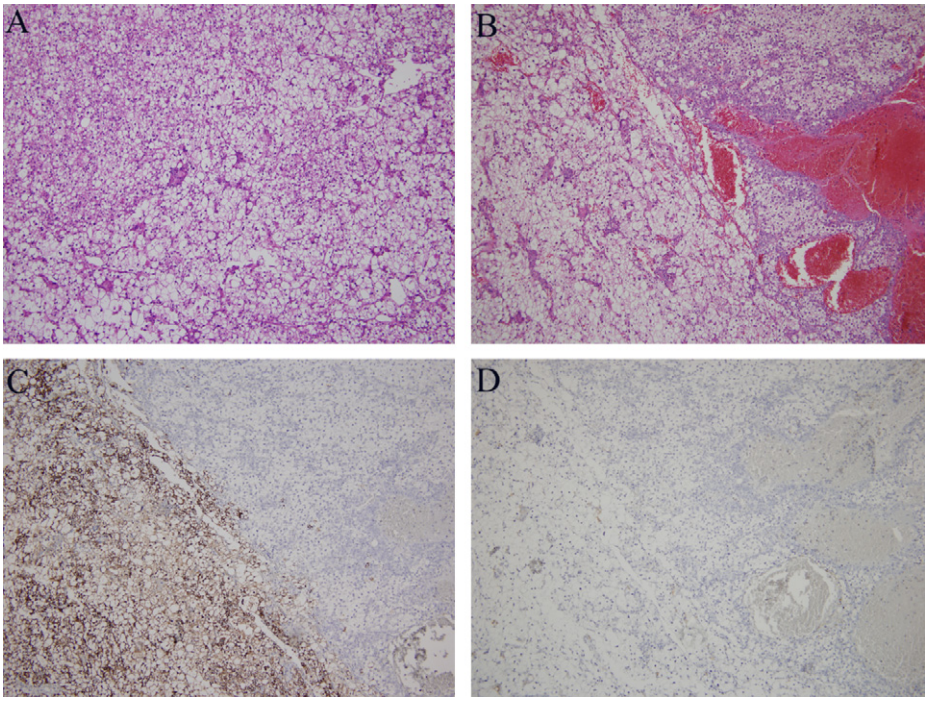

Fig. 2. HE and immunological staining of hepatic tumor: (A) Low-power view of the tumor with diffuse clear cell change; (B) mix of clear cell tumor with and without sinusoidal dilatation and congestion; (C) HePar-1 staining in clear cell region demonstrated variable positivity; and (D) CD10 staining is completely negative.

hepatic tumor (Fig. 2B). Mallory bodies were frequently seen in areas with trabecular pattern, but not in the clear cell region. The non-tumorous part of the liver showed cirrhotic change with scattered foci of large-cell dysplasia of hepatocytes.

The CD 10 antibody yielded strong and diffuse surface membrane staining in the renal neoplasm and was completely negative for surface staining in the hepatic tumor (Figs. 1B and 2D). Focal canalicular staining pattern was seen in the hepatic tumor in regions of classical trabecular type, but not in regions of clear cell type.

The hepatocyte immunochemical staining (HePar-1) in the renal neoplasm was completely negative while the adjacent non-