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Case Report

Prostatic adenocarcinoma (PCa) metastasizing to renal cell carcinoma (RCC) with periureteral tumor deposit: A case of tumor-to-tumor metastasis (TTM)

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ABSTRACT

Renal cell carcinoma (RCC) and prostatic adenocarcinoma (PCa), occurring as a double primary is uncommon, but well documented. However, metastatic PCa in a RCC is quite rare. We report a case of an 81-year old male chemical engineer with history of hematuria and prostatomegaly suspicious for carcinoma, who underwent left radical nephrectomy for a renal mass. Histopathology revealed RCC that harbored an undiagnosed PCa. Periureteral tumor deposit likewise showed combined metastasis of RCC and PCa.

1. Introduction

Clear cell carcinoma accounting for 70%–80% of all RCCs, is the most common type of RCC while prostate adenocarcinoma (PCa) is the most common non-skin cancer malignancy [1]. The diagnosis of a double primary RCC and PCa is quite rare [1] but well-documented in literature [2]. A more rare phenomenon is metastasis of one malignancy into another such as a tumor-to-tumor metastasis (TTM) involving the kidney and prostate with only one case reported in 1976 [3]. Furthermore, a TTM of PCa to RCC with dropdown metastasis into the ureter containing both histologic components is seen in this case. To date, only 50 and 43 cases of metastatic RCC and PCa to ureter were reported, respectively [4,5].

In this report, a case of RCC harboring metastases from an undiagnosed PCa is presented. Interestingly, periureteral collision tumor deposit was also observed. With the extent of literature search, this is the first reported TTM with periureteral tumor deposit in literature.

2. Case report

An 81-year-old male chemical engineer complained of 3-year history of intermittent painless gross hematuria associated with urinary frequency. Consult was done and antibiotic was started for urinary tract infection. Interim, symptom recurrence prompted work-up showing left renal mass with hydronephrosis and prostatomegaly with elevated prostate specific antigen (PSA). Patient lost to follow-up.

One month prior to admission, patient developed isolated left flank pain. On physical examination a hard enlarged nodular prostate was palpated during rectal examination. Serum PSA was elevated at 413.81 ng/mL. Abdominal CT scan demonstrated an ill-defined, heterogenous soft tissue mass occupying the left kidney with severe hydroureter secondary to a ureteral mass. Prostatomegaly was observed with a volume of 160 g. Multiple enlarged iliac lymph nodes, pulmonary nodules, and lucent acetabular and ischial foci were also demonstrated (Fig. 1). A transabdominal left radical nephroureterectomy was performed with specimen sent for histopathological diagnosis (Fig. 2).

2.1. Histopathology

Grossly, the left kidney was replaced by a well-encapsulated tumor measuring 9.1 × 6.1 × 6 cm abutting the renal pelvis, sparing the renal vessels. It was cream tan to yellow in colour with cystic areas. Another

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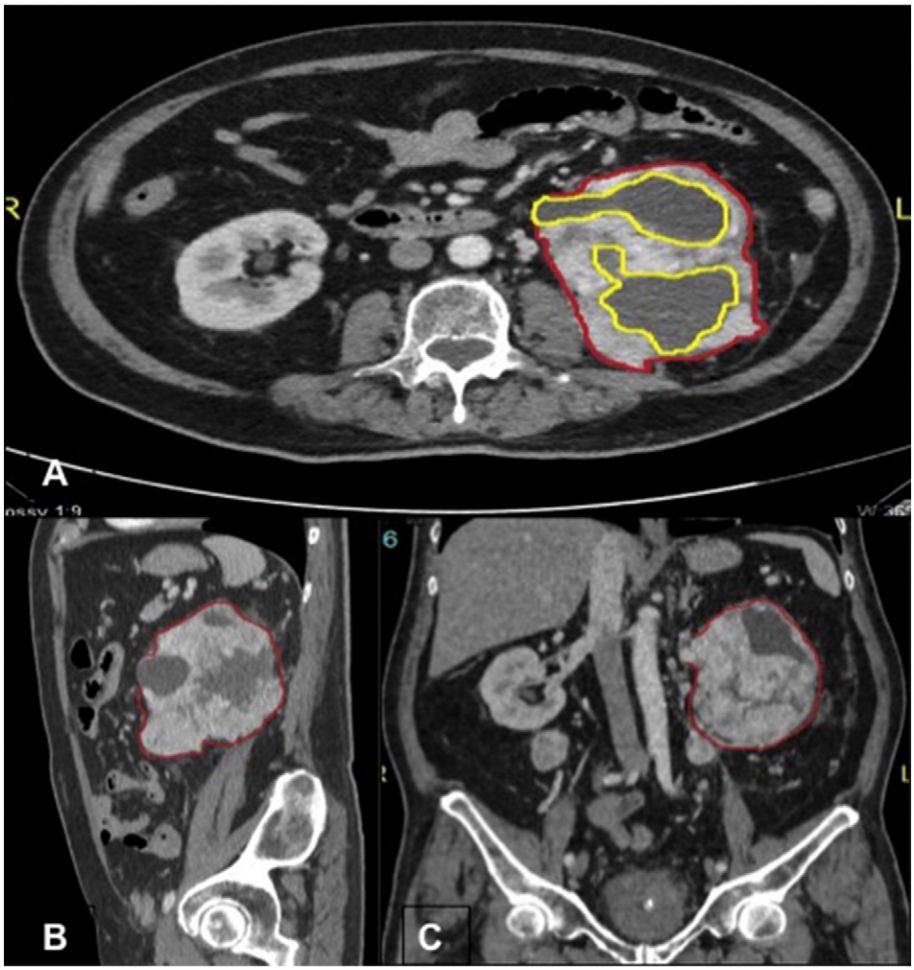

Fig. 1. Contrast-enhanced computed tomography of the abdomen at presentation. (A) Axial view showing the enlarged left kidney (red) with dilated pelvocalyceal complex (yellow). (B) and (C) showing sagittal and coronal view of diffusely enlarged left kidney with heterogenous enhancement.

cream-tan, well-circumscribed ureteral nodule is seen measuring 1.3 × 1 × 1 cm(Fig. 2).

Microscopy shows histologic admixture of two cell groups. The first population is arranged in sheets and nests, with large, hyperchromatic nuclei, clear cytoplasm, and sharply outlined boundaries, and the second arranged in solid to cribriform patterns, with the cells having large, hyperchromatic nuclei, with prominent nucleoli and amphophilic cytoplasm. The histomorphology of the first and second population of neoplastic cells are consistent with renal cell carcinoma and prostatic adenocarcinoma, respectively (Fig. 3). These findings are supported by immunohistochemical stains: CD10, PAX8, PSA and NKX3.1 (Fig. 4). Consistently, the same admixture of neoplastic cells is seen in the ureteral nodule (Fig. 5).

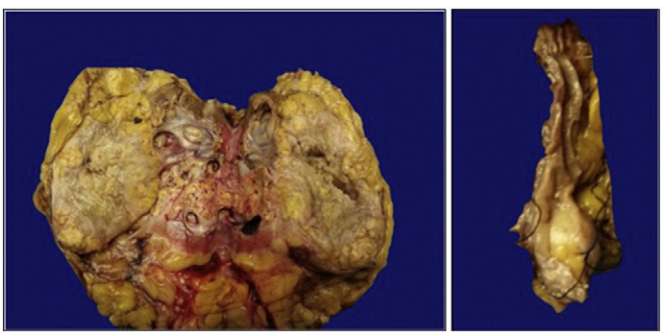

Fig. 2. Gross examination of renal mass and ureteral nodule. Renal mass (left) with cream tan to yellow cut surface. Ureteral nodule (right).

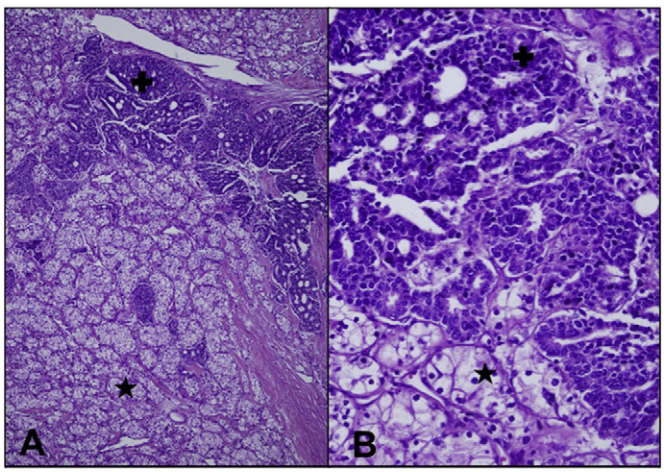

Fig. 3. Microscopic examination of renal mass. Low (A) and high (B) power magnification of prostatic adenocarcinoma(+) metastasizing to renal cell carcinoma(♦).