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Transitional Cell Carcinoma of the Renal Pelvis With Synchronous Ipsilateral Papillary Renal Cell Carcinoma: Case Report and Review

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ABSTRACT

Diagnosis of synchronous primary genitourinary tumors are uncommon. Thus far, about 50 cases of synchronous renal tumors have been reported in the literature. We present for the first time a case of a 83-year-old man presenting in the same kidney two separate primary malignancies, a TCC of the renal pelvis and a papillary renal cell carcinoma Type 1. Considered the increased incidence of genitourinary tumors, in presence of a small renal tumor with hematuria, in our opinion, is necessary to pay attention to the diagnostic phase for the chance to highlight an urothelial cancer.

Introduction

Synchronous appearance of transitional cell carcinoma (TCC) and renal cell carcinoma (RCC) in the same kidney is a rather rare event. Thus far, about 50 cases of synchronous renal tumors have been reported in the literature.[1–4]

Herein we report the case of a simultaneous TCC and papillary renal cell carcinoma (PRCC) of the right kidney in 83-year old man.

Case report

A 83-year-old man was admitted to our clinic by the emergency room for hematuria with right flank pain. Physical examination was normal except for a positive right Giordano maneuver. Laboratory findings showed only a mild condition of anemia (hemoglobin 12.1 gr%). The patient's medical history was significant for more than 40 years of tabagism, for a well controlled diabetes mellitus type 2 treated with oral hypoglycemic agents, and for a Chronic Obstructive Pulmonary Disease (COPD). Patient in the last 3 years underwent TUR (transurethral resection) 3 times, in an another institution, for low-grade non muscle invasive transitional bladder cancer. Not reported adjuvant intravesical chemotherapy or immunotherapy. The ultrasonography showed in the right kidney grade 2 hydronephrosis with a 45 mm hyperechogenic lesion within the renal pelvis and a well circumscribed 25 mm isoechogenic lesion in the lower pole. Computed tomography confirmed the finding of hydronephrosis and the presence of a 45 x 40 mm mass within the renal pelvis extending to the ureteropelvic junction; in the same kidney was observed in the lower pole a lesion of 25 mm hypodense compared to normal parenchyma and with heterogenous enhancement after contrast administration (Fig. 1 left panel). Cystoscopy revealed no pathological findings and subsequently radical nephroureterectomy with bladder cuff removal was performed. Six days after surgery patients was discharged without any complication.

Gross examination of the kidney revealed the presence of a whitish mass of 4.5 cm in its maximum size in the renal pelvis and of a second yellowish mass measuring 2.5 cm in the lower renal pole (Fig. 1-right panel). Samples of the two lesions were formalin-fixed and paraffin-embedded for subsequent histological examination with hematoxylin and eosin stain and immunohistochemical analyses.

Histological examination at light microscopy of the first lesion showed a tumor composed of transitional cells arranged in a papillary pattern (Fig. 2), which infiltrated the muscular layer of the renal pelvis, consistent with a high grade urothelial carcinoma (pT2). On the other hand, the second mass (Fig. 3) was composed of cells with eosinophilic cytoplasm arranged in tubular structures. The nucleoli of the neoplastic cells were visible by using a 10x objective lens. At immunohistochemistry, the tumor cells were positive for CD10, vimentin, cytokeratin-7 and racemase. On the

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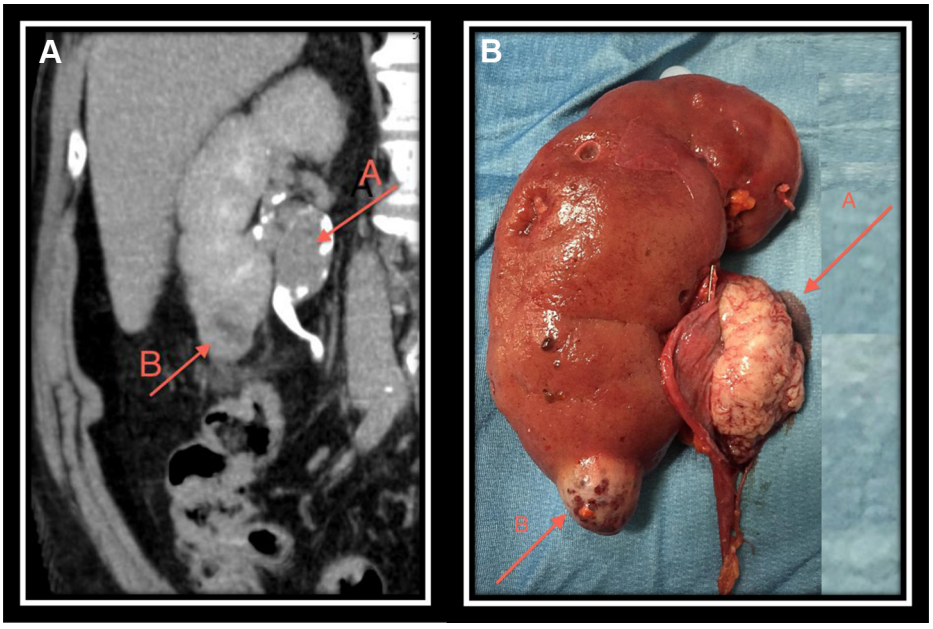

Figure 1. Left panel: Computed tomography scan showing the presence of a 45 × 40 mm mass (A) within the renal pelvis extending to the ureteropelvic junction and in the lower pole a lesion of 25 mm (B) hypodense compared to normal parenchyma and with heterogeneous enhancement- Right panel: Gross picture of the nephrectomy specimen showing the opened renal pelvis with the tumor (A) and in the lower renal pole a second yellowish mass (B).

basis of the histological and immunohistochemical findings, papillary renal cell carcinoma (PRCC), type I, was diagnosed (pT1a).

The two tumors were not intermingled, but rather separated by normal renal parenchyma.

Discussion

Diagnosis of synchronous primary genitourinary tumors are uncommon. Multiple Primary Malignant neoplasms (MPMNs) were first described in 1839 by Theodore Billroth, but it was later that Warren and Gates examined the subject by defining the criteria for a correct diagnosis of MPMNs. In 2010 the American Cancer Society reported that the prevalence of genitourinary tumors has increased by approximately 10%. This finding has led to a reasonably increased diagnosis of synchronous tumors. Thus far, about 50 cases of synchronous renal tumors have been reported in the literature.[1–4] Von Eschenbach DE et al in 1977 out of a total of 700 nephrectomies for renal cell carcinoma has encountered a single case of synchronism with the transitional cell cancer, showing up at that time a proportion of 0.14% of the total. Renal cell carcinoma (RCC) represents 3% of adult cancers but it is the commonest lesion, accounting for approximately 90%, of all kidney malignancies. Among renal carcinomas the main hystologic types are: clear cell (70%), papillary (10–15%), chromophobe (5%) and collecting duct tumors.

Transitional cell carcinoma (TCC) of the renal pelvis or ureter accounts for less than 1% of genitourinary neoplasms and 5–7% of all urinary tract tumors.

Arjona published in 2005 in Spanish language a review of 47 cases of synchronous renal tumors reporting that the simultaneous

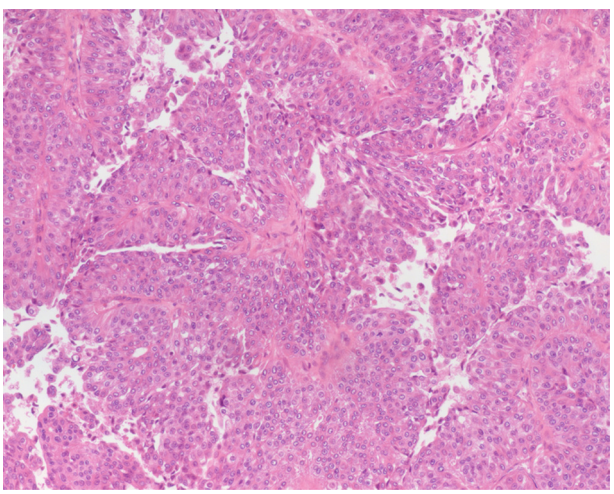

Figure 2. High grade papillary urothelial carcinoma (hematoxylin and eosin stain; original magnification, ×100) showing a tumor composed of transitional cells arranged in a papillary pattern, which infiltrated the muscular layer of the renal pelvis, consistent with a high grade urothelial carcinoma (pT2).

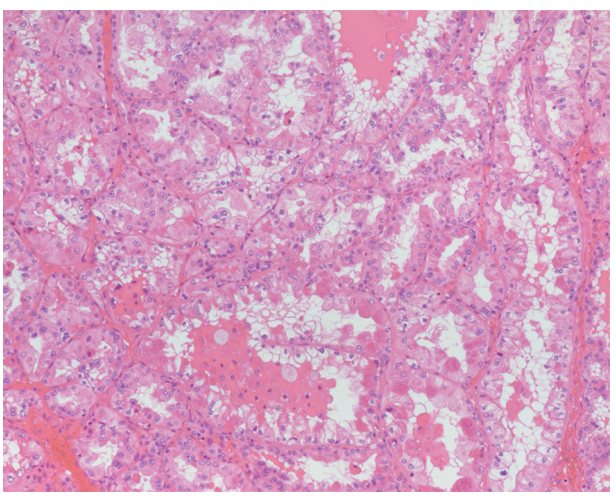

Figure 3. Papillary renal cell carcinoma, type I (hematoxylin and eosin stain; original magnification, ×100) composed of cells with eosinophilic cytoplasm arranged in tubular structures. The nucleoli of the neoplastic cells were visible by using a 10× objective lens At immunohistochemistry, the tumor cells were positive for CD10, vimentin, cytokeratin-7 and racemase.

disease not worse the overall prognosis. The authors didn't identify specific risk factors for the simultaneous presence of tumors although 24% of patients were smokers.[4] The symptoms of the synchronous RCC and TCC were the same of the solitary neoplasia with hematuria in 90% of the cases at the presentation followed by flank pain (19%) an palpable flank mass (14%).[4] Most recently Dutta G et al have shown that the prognosis for a patient with dual malignancies is likely most influenced by the more aggressive of the two tumors.[2]

In literature has been described a rare syndrome that is characterized by the possible synchronicity of multiple histological types of kidney cancer; the Birt-Hogg-Dubè syndrome was first described in 1987 and it's a rare clinic condition characterized by an elevated susceptibility for renal tumors often associated with lung cysts and pneumothoraces and skin fibrofolliculomas. It was later, in 2002, that was discovered that the syndrome is caused by germline mutations in the FLCN gene. In the largest series ever published in 2014 by Benusiglio PR et al it was observed a double renal tumor in 4 cases over 33 and a multifocal (three or more) in nine cases; most cases had oncocytoma or RCC of the chromophobe or hybrid chromophobe-oncocytoma type, 9% had a clear cell RCC and only in one case was observed a papillary RCC and an undifferentiated RCC.[5] In our case report we excluded this syndrome because we have not highlighted the diseases usually associated.

In the present case we were able to successfully diagnose two separate primary malignancies involving the same kidney, but it was the first time in literature that has been highlighted the association between a TCC of the renal pelvis with a papillary renal cell carcinoma, type I This hystologic type is less frequent among RCC.

PRCC is usually non-metastatic and shows a slower growing in comparison to RCC, although Type 2 PRCC is often aggressive. Some pathologists postulate that there are two categories of Type 2 PRCC, one is more related to Type 1 as indolent tumor, and the second the second presents aggressive tumors characteristics with poor survival rates.

Conclusion

Our case report evidences and literature data lead as to consider that, given the increased incidence of genitourinary tumors, the possibility that you may encounter synchronous tumors increases simultaneously. In the presence of a small renal tumor with hematuria, in our opinion, is necessary to pay more attention to the diagnostic phase for the chance to highlight an urothelial cancer.

Conflict of interest

The authors declare they have no conflicts of interest.

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