Urology Case Reports 16 (2018) 110–113

Contents lists available at ScienceDirect

Urology Case Reports

journal homepage: www.elsevier.com/locate/eucr

Oncology

Ipsilateral synchronous clear and papillary renal cell carcinoma: A case report and review of the literature

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ARTICLE INFO

Article history:
Received 29 October 2017
Accepted 21 November 2017
Available online 23 November 2017

Keywords:
Clear cell renal cell carcinoma
Papillary renal cell carcinoma
Ipsilateral synchronous

ABSTRACT

Clear cell renal cell carcinoma and papillary renal cell carcinoma are the most common types of renal tumors. However, coexistence of both tumors in the same kidney is a rare condition.

We report a 56-year old male who was found to have ipsilateral synchronous clear cell and papillary renal cell carcinoma in the left kidney. Review of related literature is provided to estimate the prevalence of similar cases.

1. Introduction

Renal cell carcinoma (RCC) accounts for 2–3% of all cancers.[1] There is a 1.5:1 predominance of men over women, with peak incidence occurring at 60–70 years old. Etiology includes lifestyle factors, such as smoking, obesity, and hypertension, with cigarette smoking being a definite risk factor for RCC. On the other hand, obesity and hypertension roles as risk factors for RCC are still inconclusive.[2,3]

Clear cell (cc RCC) accounts for 75% of RCC cases, papillary RCC (pRCC) represents 10% of cases, and chromophobe RCC, 5% of cases.[3] Clear cell papillary renal cell carcinoma (ccpRCC) has recently been reported and is considered a distinct subtype, composed of cells with clear cytoplasm lining cystic, tubular, and papillary structures.[4]

The incidence of sporadic multifocal tumors is 4–20% of patients at the time of diagnosis.[5–8] Multiple synchronous renal tumors can be associated with genetic predisposition to RCC, as in hereditary familial RCC syndrome, or acquired conditions, like chronic kidney disease, which has the tendency to develop bilateral pRCC.[9] Sorbellini et al. reviewed the literature to estimate the prevalence of multifocal RCC and revealed 6.8% incidence of ipsilateral multifocal RCC and 11.7% were bilateral.[10]

Several cases of multifocal RCC that had two or more tumors of different histologic subtypes have been reported.[5,11–16]

Herein, we report an unusual case of coexistence of two different synchronous ipsilateral renal tumors; clear-cell RCC and papillary RCC.

2. Case report

We report a case of a 56 year-old gentleman who underwent abdominal CT with IV contrast during evaluation of newly diagnosed high blood pressure which revealed A unilateral synchronous two kidney lesions and one renal cyst. The first lesion was in the upper pole left renal pole, measuring 5 cm and indenting the splenic surface with no definite invasion; the second lesion was invading the renal sinus fat; and the third lesion was hemorrhagic cyst in the lower pole of the left kidney measuring about 2 cm. There is an enlarged pathological left para-aortic lymph node measuring 2.2 × 1.6 cm. There is a separate enhancing soft tissue nodule in the left adrenal gland measuring 1.6 cm; this nodule might represent metastasis. Figs. 1 and 2.

A true cut biopsy of one of the nodules showed the histopathologic features of renal cell carcinoma, the conventional type while a fine needle aspiration of the second nodule came negative.

Physical examination was normal. Hematological and biochemical tests were unremarkable.

Patient underwent laparoscopic left radical nephrectomy and adrenalectomy with para-aortic lymph nodes dissection and he was discharged from hospital after 3 days without events.

Grossly, the first nodule was in the upper pole, confined to the capsule and measuring 5 × 4.5 × 4cm with solid and cystic hemorrhagic cut surfaces; the second nodule was in the middle pole

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https://doi.org/10.1016/j.eucr.2017.11.020

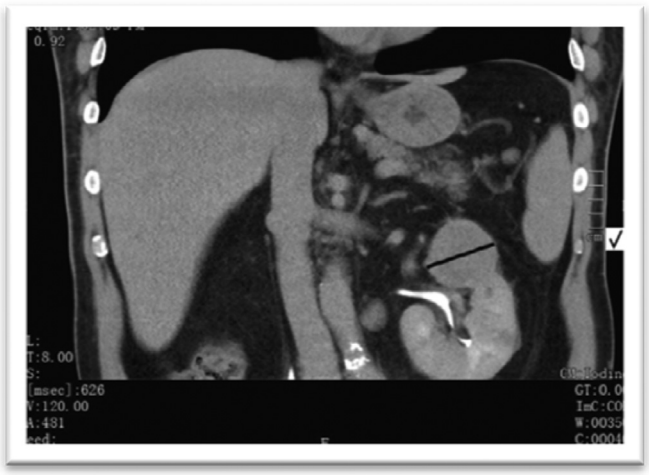

Fig. 1. Left renal upper pole nodule.

confined to the kidney, indenting the sinus fat and measuring 4.5 × 3.5 × 3.5cm with solid cut surfaces. Benign hemorrhagic renal cyst found in the lower pole. Left adrenal showed a small nodule measuring 0.5 × 0.5 × 0.5cm. Para-aortic lymph nodes showed one lymph node grossly positive for malignancy and measuring 2.5 × 2.5 × 2cm.

Microscopic examination of the specimen showed one tumor in the upper pole consistent with the histopathological subtype clear cell of renal cell carcinoma, with the pathologic stage: pT1bN0 (Fig. 3). The second tumor was in the middle pole and it was the subtype papillary renal cell carcinoma, type 2 and its stage was pT1bN1 (Fig. 4). Sarcomatoid features were absent. Histologic Grade (Fuhrman Nuclear Grade) was 2. Para-aortic lymph nodes revealed metastatic papillary renal cell carcinoma in one out of the twenty lymph nodes that were dissected and adrenal gland with focal hyperplasia.

3. Review of the literature

Methods

We underwent a review of the English-written literature using PubMed looking for these terms: “synchronous clear cell papillary RCC” and “multifocal RCC”. Besides, we reviewed the references of the available articles. Papers that did not mention the frequency of multifocal RCC or its laterality were excluded. 10 articles fulfilled our criteria, plus 3 case reports.

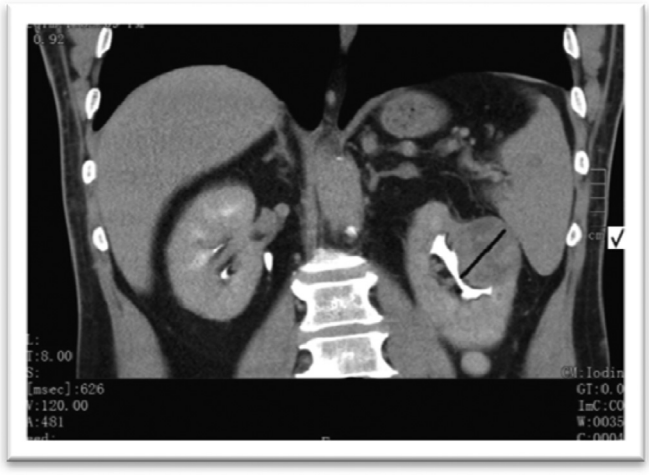

Fig. 2. Left renal middle pole nodule.

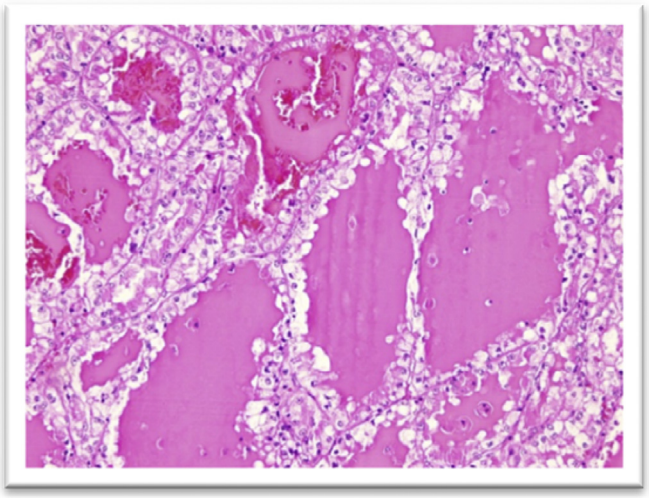

Fig. 3. Clear cell renal cell carcinoma.

Results

About 47 cases of ipsilateral synchronous clear cell renal cell carcinoma and papillary renal cell carcinoma were reported in literature (Table 1). Ipsilateral multifocal renal tumors occur in 0.5–5.4% of the total number of renal tumor patients. About 13–14% of this small subset of patients will develop cases of ipsilateral synchronous ccRCC + pRCC tumors as shown by four series.[11–13,16] Capaccio et al. reported a higher percentage, 42.8%, while Minervini reported a lower one, 5.9%.[14,15]

4. Discussion

Awareness of the coexistence of multiple synchronous tumors of different histology within the same kidney is important in managing such cases, especially when planning for nephron-sparing

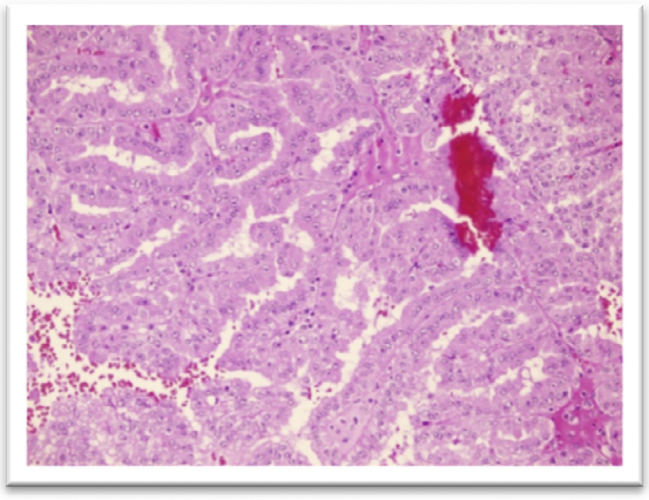

Fig. 4. Papillary renal cell carcinoma.

Table 1
Reported cases of ipsilateral synchronous ccRCC + pRCC tumors in literature.

Study Year	Total number of cases reviewed n	Ipsilateral multifocal tumors n (%)	ccRCC + pRCC ipsilateral synchronous tumors n (%)	Notes
Beaugerie et al. 2017	216[a]	50	unavailable	combinations of subtypes are not mentioned
Harlow et al. 2016	2817	15 (0.5%)	2 (13.3%)	Plus 3 cases of mixed ccRCC + pRCC in single tumors
Mano et al. 2015	333[a]	128	unavailable	combinations of subtypes are not mentioned
Simhan et al. 2013 [19]	2569	97 (3.8%)	unavailable	Plus 8 cases of mixed ccRCC + pRCC in single tumors
Capaccio et al. 2009	381	7 (1.8%)	3 (42.8%)	_
Crispen et al. 2008	1113	60 (5.4%)	8 (13.3%)	_
Minervini et al. 2008	960	34 (3.5%)	2 (5.9%)	_
Krambeck et al. 2008	>4000	140 (~3.4%)	20 (14.3%)	Same institution registry as Blute et al. Extra new ccRCC + pRCC cases are only 3
Richstone et al. 2004	1071	51 (4.8%)	9[b]	A total of 57 multifocal cases; both unilateral & bilateral
Blute et al. 2003	118[c]	118	17 (14.4%)	Plus a case of ccRCC + pRCC + papillary adenoma And a case of ccRCC + pRCC + oncocytoma
Single case reports [20–23]	_	3	3	Andreou et al., Ustuner et al., Tele JS et al. Plus 1 single mixed tumor ccRCC + pRCC, Tait et al.

[a] Only multiple synchronous renal masses were included.
[b] 9 cases of synchronous ccRCC + pRCC out of the total number of multifocal 57 cases.
[c] Only multiple ipsilateral tumors were included.

surgery (NSS) and active surveillance for some renal masses.[11] Knowing the fact that the pathological concordance rate can be as low as 67.3% and the grade concordance rate even lower, 62.5%[17] implies that if biopsy is indicated preoperatively, or in intra-operative setting for frozen section biopsy, each of the multiple nodules should be biopsied; because different tumors will carry different prognosis rates and will vary in aggressiveness.[16] Using needle biopsy was not successful in determining the histological subtype of renal masses with much reliability.[11] In our case; the true cut biopsy was successful in diagnosing the ccRCC, while the fine needle aspiration failed to diagnose the pRCC component.

In fact, depending on preoperative imaging to identify multifocal tumors will lead to missing some of the multifocal lesions.[5,13] Thus complete mobilization and inspection on the entire kidney is justified when performing NSS to identify multifocal disease.[13]

In this reported case, two factors may help in predicting the presence of multifocality. They are the papillary subtype and lymph node metastasis. Richstone, who reviewed 1071 radical nephrectomies and performed multivariate analysis of this population, showed significant associations between multifocality with papillary subtype, lymph node metastasis, advanced tumor stage (pT4), and bilateral disease. On the other hand, tumor size had not been a significant factor.[5] Furthermore, he revealed that there is no significant difference in 5 year disease-free and overall survival between patients with multifocal and those with solitary RCC. However, 2 series with large number of patients concluded that 5–6% of the patients with multiple ipsilateral renal tumors develop a contralateral metachronous recurrence and this risk is 5 times that of patients with a sporadic single tumor.[11,15] In addition, when they compared the 2 main surgical options for managing this subset of patients, similar tumor-specific survival was observed for patients treated with nephron-sparing surgery NSS and radical nephrectomy RN in carefully selected patients.[7,11,12,15,18]

We conclude that multiple ipsilateral synchronous RCC of different histological subtypes are a special entity that is needed to be considered preoperatively even though they have low incidence rates.

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.eucr.2017.11.020.

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