

Case Report

Urothelial carcinoma of the renal pelvis with choriocarcinomatous and squamous differentiation: a case report and review of literature

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Abstract: The current report presents the case of a 71-year-old female with a 2-year history of right flank pain. Serum beta human chorionic gonadotropin was slightly elevated, and computed tomography revealed a tumor approximately 3 cm in diameter in the area of the right renal pelvis with lymph node metastases. The tumor was encapsulated by a stone with a diameter of 2 × 1.5 cm. Radical nephrectomy was conducted, pathological assessment indicated urothelial carcinoma of the renal pelvis with choriocarcinomatous and squamous differentiation. 6 months after surgery, liver metastasis was identified and the patient died soon.

Keywords: Urothelial carcinoma, Choriocarcinoma, squamous cell carcinoma, renal pelvis

Introduction

Choriocarcinoma is a malignant tumor of gestational trophoblastic neoplasia. Extragonadal choriocarcinomas are scarce in the urinary tract and choriocarcinoma of the renal pelvis, either pure choriocarcinoma or occurs as a component of a mixed tumor, is extremely rare.

To the best of our knowledge, we report the first case of urothelial carcinoma of the renal pelvis with choriocarcinomatous and squamous differentiation in the present study. The clinicopathological characteristics, treatment and prognosis are discussed.

Case report

A 71-year-old female presented with right flank pain of 2 years' duration. She had a history of gravida 3, para 3 with menopausal status for 21 years. The rest of her medical history was unremarkable. Physical examination revealed mild abdominal tenderness but was otherwise normal. Laboratory examinations revealed a slightly increased serum concentration of beta human chorionic gonadotropin (beta-HCG: 10.8 mIU/ml; normal range in menopausal woman: <

9 mIU/ml). Pelvis ultrasonography showed no abnormal findings, except for a right-sided ovarian cystic structure measuring 10 × 15 mm.

A computed tomography was performed, which revealed a tumor approximately 3 cm in diameter in the area of the right renal pelvis with lymph node metastases. The tumor was encapsulated by a stone with a diameter of 2.0 × 1.5 cm, causing urinary obstruction with dilation of the renal pelvis and severe hydronephrosis (**Figure 1**). Computed tomographic scan of the chest showed no evidence of metastatic lesions. Based on a clinical diagnosis of renal pelvic carcinoma, a radical nephrectomy was conducted.

Gross pathological examination showed a grayish-white tumor measuring 5.5 × 3 × 2 cm, situated at the renal pelvis, invading the renal parenchyma and wall of ureter and extending to Gerota fascia. Cut section showed multiple yellow-brown colored stones. The tumor was composed of a mixture of growth patterns. Most of the tumor showed neoplastic urothelium with mild to moderate atypia, consistent with conventional urothelial carcinoma (**Figure 2A**). Part

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Figure 1. The computed tomography manifestation of the tumor. A tumor (arrow) approximately 3 cm in diameter located in the area of the right renal pelvis with lymph node metastases. The tumor was encapsulated by a stone (arrowhead) with a diameter of 2 × 1.5 cm, causing urinary obstruction with dilation of the renal pelvis and severe hydronephrosis.

of the tumor showed moderately differentiated squamous cell carcinoma (SCC), squamous metaplasia with areas of moderate and severe dysplasia were identified (**Figure 2B**). Some cells in focal area were syncytiotrophoblast-like atypical multinucleated cells with dense eosinophilic, partially vacuolated cytoplasm (**Figure 2A**). Hemorrhage and necrosis were prominent. Lymph node metastases showed both conventional urothelial and trophoblastic elements, but few squamous components were seen in the nodes.

On immunohistochemical studies, both urothelial and squamous components showed strong positivity for CKpan (**Figure 2C**) and focal positivity for p63 and CK20, while the choriocarcinomatous areas stained for placental alkaline phosphatase (**Figure 2D**) and stained focally and weakly for human chorionic gonadotropin. Based on the histopathological and immunohistochemical findings, the diagnosis of an urothelial carcinoma of the renal pelvis with choriocarcinomatous and squamous differentiation was made.

Because of the patient's poor general condition, chemotherapy was not administered after surgery. 6 months after surgery, liver metastases were identified and the patient died soon.

Discussion

Choriocarcinoma is a rare malignant tumor of gestational trophoblastic neoplasia, often fol-

lowing a molar pregnancy. Due to the rapid dissemination through hematogenous route, choriocarcinoma often metastasizes to lung, brain and liver [1]. Extragonadal choriocarcinomas are scarce neoplasms, and always located in the midline of the body between the pineal gland and the coccyx, including the mediastinum, retroperitoneum, the gastrointestinal system and bladder [2].

Choriocarcinoma of the renal pelvis, either pure choriocarcinoma or occurs as a component of a mixed tumor, is extremely rare. More frequently, choriocarcinoma of the renal pelvis was admixed with urothelial carcinoma. To the best of our knowledge, only 9 cases of choriocarcinoma of the renal pelvis have been reported in the English-language literature (summarized in **Table 1**).

Simultaneous choriocarcinomatous and squamous differentiations have not been reported in association with urothelial carcinoma of the renal pelvis. The incidence of SCC is often associated with chronic pyelonephritis or nephrolithiasis, and urinary calculi are thought as a main carcinogenic factor for SCC [3]. Under chronic irritation and infection conditions, the urothelium are believed to develop squamous metaplasia, which eventually induces dedifferentiation, dysplasia and progressions to SCC [4]. In our report, the patient presented with multiple urinary stones, and the histological examination showed severe inflammation in the tumor lesion. It is consistent with the above mentioned mechanism.

Since most of extragonadal choriocarcinomas are associated with HCG production by the trophoblastically differentiated cells that can be detected by both serological examination and immunohistochemical staining, HCG values have been used for the diagnosis and follow up [5]. What's more, Zettl et al. reported a case of urothelial carcinoma of the renal pelvis with choriocarcinomatous features [6]. The comparative genomic hybridization showed a close genetic relationship between the papillary urothelial and the choriocarcinomatous component. Further, this showed the diagnostic significance of HCG values in extragonadal choriocarcinomas.

Choriocarcinomas of the renal pelvis are usually diagnosed when they have metastasized,

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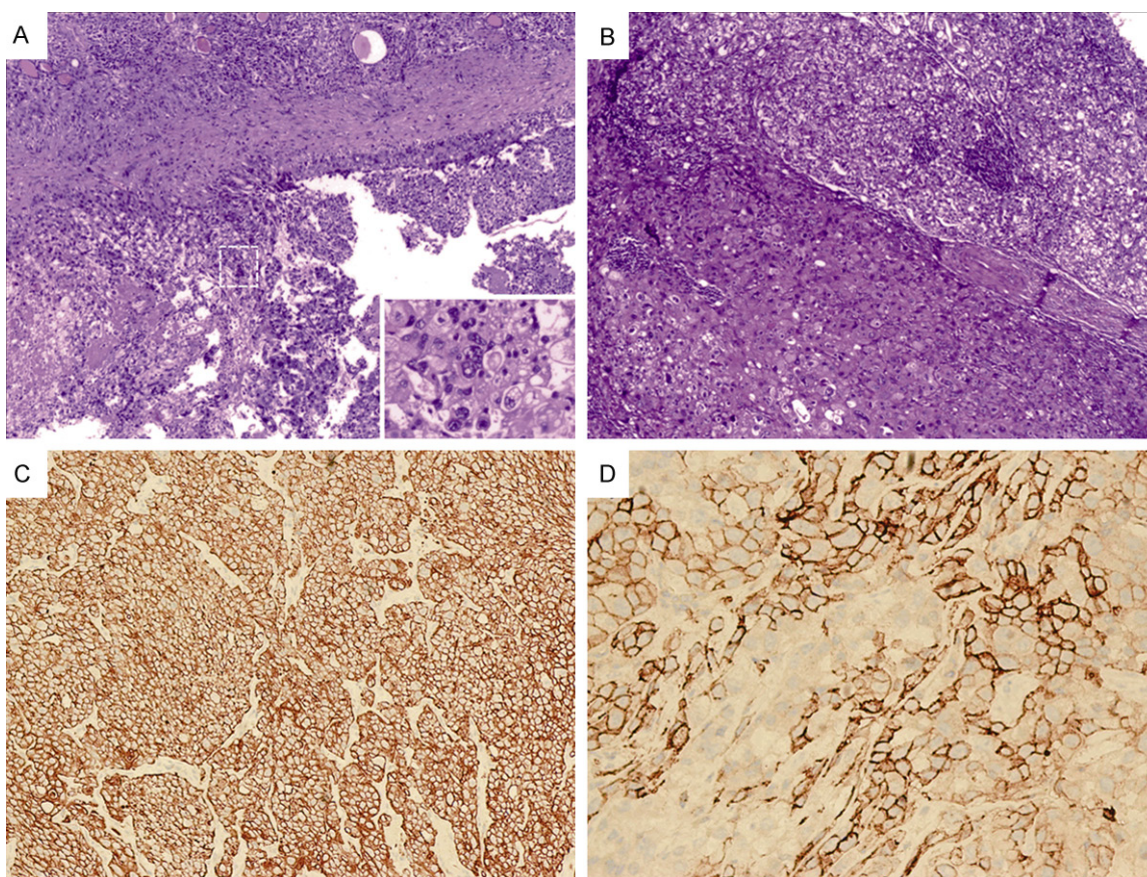


Figure 2. Microphotographs of the tumor. A. Hematoxylin and eosin stain showed invasive urothelial carcinoma with choriocarcinoma areas. The latter (inset) is characterized by atypical multinucleated cells with dense eosinophilic, which represent syncytiotrophoblasts (magnification $\times 40$). B. Hematoxylin and eosin stain showed moderately differentiated squamous cell carcinoma, squamous metaplasia with areas of moderate and severe dysplasia were identified (magnification $\times 40$). C. Immunohistochemical staining for CKpan is positive in urothelial and squamous components (magnification $\times 100$). D. Immunohistochemical staining for PLAP is positive in choriocarcinomatous areas (magnification $\times 200$).

Table 1. Summary of cases of choriocarcinoma of the renal pelvis

References	Age/yr	Sex	Side	Size/cm	Serum HCG	Tissue HCG	Histologic type	Chemotherapy	Metastasis and Invasion	Follow-up/ months
Campo [9]	54	M	NA	NA	ND	Positive	TCC-CC	NA	NA	A6
Vahlensieck [10]	56	F	R	5	High	Positive	CC	ND	No	A22
Huang [8]	53	M	R	10	High	Positive	CC	PVB	Lung and brain	D4
Grammatico [11]	84	M	L	1.5	ND	Positive	TCC-CC	NA	NA	NA
Hara [7]	68	M	L	NA	High	Positive	TCC-CC	MVP + BEP	Lung	A18
Zettl [6]	60	M	R	~15	ND	Positive	TCC-CC	ND	Liver and lung	D1.5
Kyriakou [12]	38	F	R	6	High	Positive	CC	ND	Liver	D1
Vereczkey [2]	30	F	L	8.5	High	Positive	CC	BEP	Lung	A24
Ovidiu [13]	47	F	L	6	High	Positive	TCC-CC	ND	Lung	A18
Present	71	F	R	3.5	High	Positive	TCC-CC-SCC	ND	Liver	D6

A: alive; BEP: Bleomycin + Etoposid + Cisplatin; Bil: bilateral; CC: choriocarcinoma; D: dead; F: female; L: left; M: male; MVC: Methotrexate + Vinblastine + Cisplatin; NA: not available; ND: not done; PVB: Cisplatin + Vinblastine + Bleomycin; R: right; SCC: squamous cell carcinoma; TCC: urothelial transitional cell carcinoma.

and the prognosis is extremely poor. Radical surgery is the mainstay of therapy. We found

that in all these 9 cases, 2 patients who underwent chemotherapy after surgery both had a

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relatively good outcome [2, 7]. And in another patient, the chest lesions regressed and the serum HCG level decreased after three courses of chemotherapy. However, the patient died of brain metastasis after he refused to receive further chemotherapy [8]. Recently, Vereczkey et al. detected the DNA polymorphism to analyze the origin of renal choriocarcinoma [2]. The genotyping of the tumor showed essential significance for prognosis and sensitivity to chemotherapy. However, the role of chemotherapy in choriocarcinoma of the renal pelvis needs further study.

In conclusion, we presented a rare case of urothelial carcinoma of the renal pelvis with choriocarcinomatous differentiation and review the literature of it. To the best of our knowledge, this is the first case of urothelial carcinoma of the renal pelvis with choriocarcinomatous and squamous differentiation. Though the prognosis is poor, radical surgery and adjuvant chemotherapy may be helpful.

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Disclosure of conflict of interest

None.

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