

Metastatic serous endometrial carcinoma to the ureter

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ABSTRACT

Metastatic endometrial carcinoma involving the renal parenchyma has been reported. However, ureteral metastasis is exceedingly rare. Here we describe what we believe to be the first case report of metastatic endometrial serous carcinoma to the ureteral and renal pelvic urothelium. The patient is a 68 year old female diagnosed with endometrial serous carcinoma three years prior to presentation who was found to have metastatic disease within the right ureter and retroperitoneal lymph nodes. Following a complete response in the lymph nodes to chemotherapy, she was treated with robot-assisted right nephroureterectomy for residual, isolated PET-avid right ureteral metastasis.

1. Introduction

Endometrial cancer is the most frequently diagnosed gynecological malignancy in the United States.¹ Disease recurrence remains a problem in the aggressive Type 2 variants following treatment of the primary tumor.² Typical distant sites of recurrence include the pelvic and para-aortic lymph nodes, peritoneum, and lungs.² Metastases to the kidneys or ureters is a rare event with few reported cases. We present a patient with metastatic serous endometrial carcinoma to the ureter.

2. Case presentation

A 68 year old Caucasian female presented for evaluation of persistent, painless right lower leg swelling and was found to have a 2 × 1.8 cm pelvic mass in the region of the right distal ureter on CT scan. Her past medical history was notable for Stage III serous carcinoma of the endometrium. She had undergone total laparoscopic hysterectomy and bilateral salpingo-oophorectomy with adjuvant dose dense carboplatin/paclitaxel chemotherapy and vaginal brachytherapy three years prior to presentation. Lower extremity doppler ruled out deep venous thrombosis. On CT imaging, there was severe hydronephrosis of the right kidney in addition to compression and stenosis of the right common iliac vein. Follow-up PET scan confirmed a right mid-ureteral PET avid lesion and two PET positive lymph nodes (Fig. 1a and b). CA-125 was normal at 21 (Normal range 0–35U/ml). Previous genetic workup was negative for

any identifiable mutations including those associated with Lynch syndrome.

The patient underwent ureteroscopy with biopsy and ureteral barbotage for cytology. Grossly, the tumor was noted to completely obstruct the right ureter with retrograde growth proximally. Final pathology was consistent with serous endometrial carcinoma.

The patient completed another two cycles of carboplatin and paclitaxel followed by four cycles of doxorubicin and avastin. Repeat PET scan four months after the final round of chemotherapy showed a persistent PET avid soft tissue mass within the mid to distal right ureter with partial treatment response (Fig. 1c). The PET positive lymph nodes demonstrated complete response with no FDG avidity (Fig. 1d). Post-chemotherapy tumor markers remained normal (CA-125: 18). After extensive discussion, the patient agreed to undergo surgical debulking of the only remaining site of disease within the right ureter. Given the markedly atrophic kidney, robotic-assisted laparoscopic right nephroureterectomy was performed (Fig. 2a). The patient did well post-operatively and was discharged home on post-operative day three.

Final pathology demonstrated metastatic serous carcinoma to the ureter and renal pelvic urothelium (Fig. 2b and c). The 7.5 cm ureteral tumor was predominantly intraluminal with a focus of lamina propria invasion. The urothelial lining of the renal pelvis was partially colonized by serous carcinoma. The tumor was noted to be PAX 8 positive with a p53 mutant pattern and negative GATA-3, consistent with high-grade serous endometrial carcinoma.

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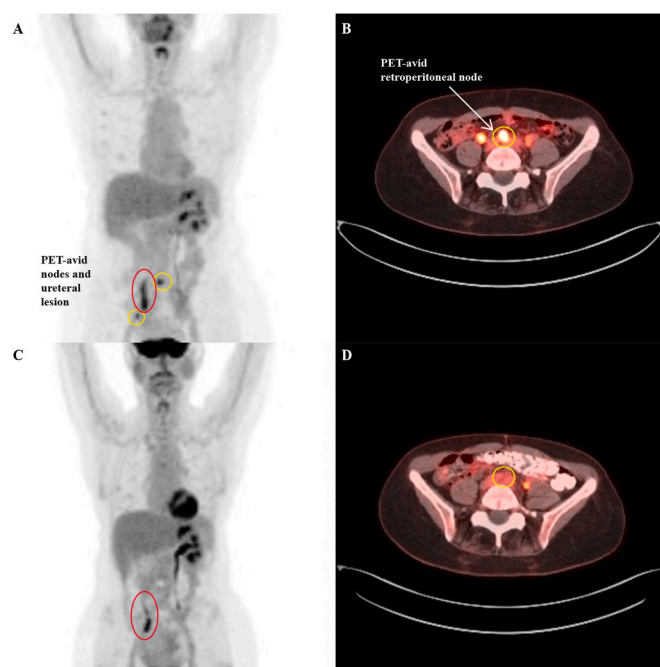


Fig. 1. A–B: Pre-treatment PET/CT showing PET-avid retroperitoneal lymph nodes (yellow) and ureteral lesion (red). C–D: Post-treatment PET and CT scan showing resolution of lymph nodes with only partial response of ureteral lesion (red). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

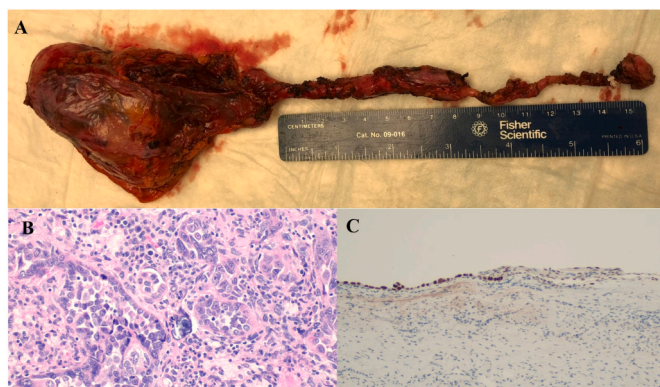


Fig. 2. A: Gross anatomy of right nephroureterectomy specimen. B: Ureteral tumor specimen showing metastatic high grade serous carcinoma with psammomatous calcifications (Hematoxylin & eosin stain, 400× magnification). C: p53 stain (mutant pattern) highlights renal pelvis urothelial colonization by serous carcinoma.

3. Discussion

Upper urinary tract involvement with endometrial cancer is rare and most often manifests as renal parenchymal metastasis.^{3,4} Cochrane et al. described a case in which a synchronous renal parenchymal lesion, with no ureteral involvement, was found simultaneously with the primary serous endometrial carcinoma.³ Tsurumaki and colleagues report a case of recurrent endometrioid carcinoma to the upper urinary tract eleven years after hysterectomy for uterine cancer. The patient experienced local recurrence in the pelvic lymph nodes three years after primary surgery, which prompted lymphadenectomy and partial ureterectomy

due to nodal adhesion. There was no histologic evidence of invasion of the ureter at the time of this second surgery. Eight years following the second surgery, the left renal pelvis and pelvic ureter were found to be packed with tumor and treated with left nephroureterectomy.⁵ The authors postulate that upper urinary tract seeding may have occurred during the second surgery in which the urinary tract was entered. Taken together with the current report, these two cases represent the only published descriptions of upper urinary tract invasion with endometrial carcinoma. Our case is unique for two reasons: (1) it is the first reported type II (serous) endometrial cancer subtype with upper urinary tract involvement and (2) there was no known entry into the urinary tract during prior surgeries raising the possibility of hematogenous seeding.

Upper urinary tract tumors found on staging or surveillance imaging are often thought to be primary renal malignancies since urinary tract metastases are rare.^{3–5} In the present case, a second primary ureteral malignancy was considered; however, the patient's genetic workup was negative for Lynch syndrome and initial ureteroscopic biopsy confirmed the lesion's metastatic origin. This finding is unique, since a majority of metastasis to the upper urinary tract appear as solitary lesions in the renal parenchyma.⁴ Serous endometrial carcinoma is an aggressive malignancy and while recurrence is common, omentum and liver are the most likely metastatic sites.² Currently, there are no guidelines for the treatment of upper urinary tract metastases in serous endometrial carcinoma. However, Zhou and colleagues demonstrated that patients who undergo resection of isolated upper urinary tract metastases experience longer survival than those who do not have metastases resected.⁴ Our patient first underwent chemotherapy with complete nodal response followed by nephroureterectomy to remove the remaining PET-avid disease. She is being followed closely with surveillance imaging and has had no evidence of recurrence to date.

4. Conclusion

In conclusion, we describe the first case report of metastatic endometrial serous carcinoma to the ureter treated with chemotherapy followed by nephroureterectomy to remove the only remaining site of active disease.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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