



Case report

Synchronous renal and para-aortic metastasis in a uterine serous carcinoma: A case review and clinical considerations

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1. Introduction

In the United States, endometrial cancer is the most common gynecologic cancer, the fourth most common cancer among women, and the seventh cause of cancer deaths among women. The lifetime incidence of endometrial cancer in the US is estimated to be 2–3%. There are two broad categorizations of endometrial carcinomas: Type 1 and Type 2. Type 1 endometrial cancers are estrogen dependent and are usually diagnosed at earlier stages. They are often confined to the uterus and are associated with more favorable outcomes. Type 2 endometrial cancers, such as serous and clear cell, are estrogen independent, more aggressive, and typically diagnosed at later stages. While only representing approximately 10% of cases of endometrial cancer, serous endometrial carcinomas account for approximately 40% of endometrial cancer deaths ([The American College of Obstetricians and Gynecologists, 2015](#)). Serous endometrial carcinomas spread in a fashion similar to ovarian cancer. This subtype more commonly involves intraperitoneal spread and lymphatic involvement. It is notable that 73% of endometrial carcinomas are discovered at FIGO stage I with a 5 year survival rate between 81 and 91%, whereas just 3% at FIGO stage IV with a 5 year survival rate of 5–20% ([Hoffman et al., 2012](#)). In this case report, we present a patient with serous endometrial carcinoma metastatic to the kidney.

2. Case

A 71 year-old gravida 3 para 1 postmenopausal patient, with no significant past medical or surgical history, presented to her obstetrician/gynecologist with complaints of irregular vaginal bleeding for over 2 years. She underwent an endometrial biopsy that demonstrated a high-grade adenocarcinoma, FIGO grade 3 with focal spindle cell morphology. She was subsequently referred to a gynecologic oncologist for further evaluation. Her hepatic and renal function tests were within normal limits. Chest X-Ray revealed no focal consolidation. A CT of the abdomen and pelvis revealed a low attenuation lesion in the right lower pole of the kidney measuring approximately

1.0 cm × 0.8 cm. The renal lesion measured 106 Hounsfield Units, and was suggestive of a cystic renal neoplasm or hemorrhagic cyst. An enlarged left para-aortic lymph node measuring 1.2 × 1.1 cm was also appreciated. An MRI was recommended for further evaluation of the renal mass. The MRI confirmed a 1.2 cm × 1.1 cm lesion in the lower pole of the right kidney that demonstrated T1 and T2 isointensity with delayed homogenous enhancement and diffusion restriction. ([Fig. 1](#)) A left retroperitoneal lymph node measuring 1.5 cm × 1.0 cm at the level of the left kidney was also confirmed ([Fig. 1](#)). Given the rarity of endometrial cancer metastasizing to the kidneys, we had low suspicion that the right renal lesion was metastasis and instead were more suspicious of a second primary lesion.

The patient underwent total abdominal hysterectomy, bilateral salpingo-oophorectomy, left para-aortic lymph node dissection, left infrarenal lymph node dissection, infra-colic omentectomy, and right partial nephrectomy. The patient did well post-operatively and was discharged home on post-operative day eight.

Final pathology demonstrated a uterine serous carcinoma of endometrium metastatic to a left infra-renal lymph node and the right kidney ([Fig. 2](#)). Mismatch repair proteins were noted to be intact. Within the uterus, the tumor had a 100% depth of invasion, spanning all 11 mm of the myometrium. Lymphatic vascular invasion was present. Both tumors were positive for p53 and PAX 8 and were negative for vimentin, thus strongly suggesting endometrial serous carcinoma ([Fig. 3](#)).

3. Discussion

Metastatic endometrial cancer to the kidney is extremely rare and has not been well studied. The most common metastatic sites of endometrial cancer are pulmonary, pelvic lymph nodes, and peritoneal. ([Kurra et al., 2013](#); [Rose et al., 1989](#)). Metastasis to the intra-abdominal organs is rare, and the most common sites of metastasis are liver (7%), adrenal glands, and spleen (1%) ([Kurra et al., 2013](#)). Endometrial clear cell adenocarcinomas tend to be more aggressive and with recurrence involving the intra-abdominal organs as well. However, from review of

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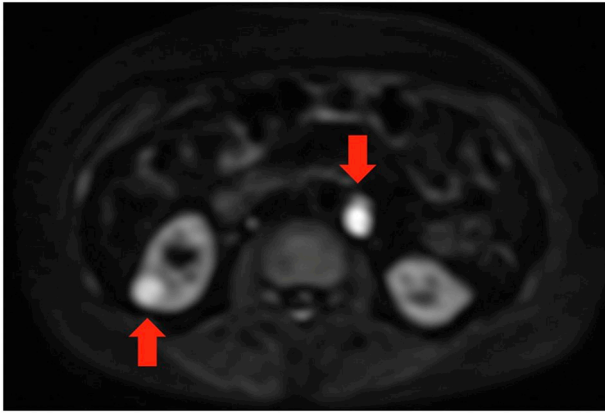


Fig. 1. MRI depicting Right renal mass and left retroperitoneal lymph node with restricted diffusion.

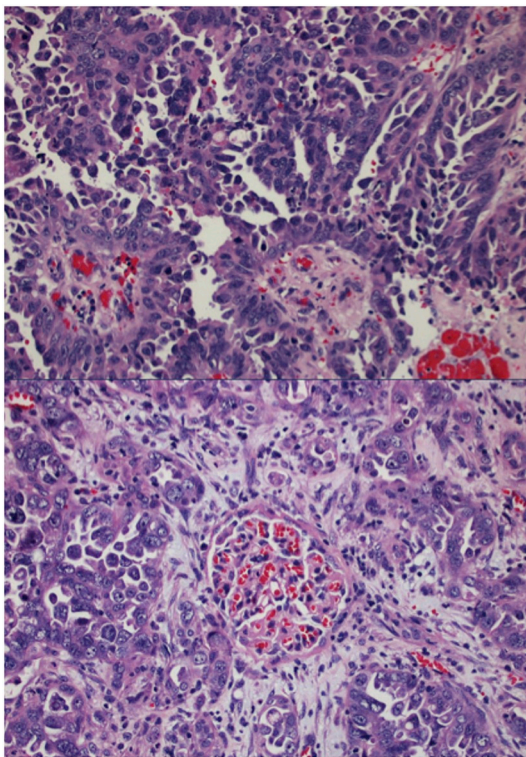


Fig. 2. Top: Serous carcinoma of the endometrium (200× magnification). Bottom: Metastatic serous carcinoma surrounding a glomerulus in the right kidney (200× magnification).

the literature, renal metastasis from endometrial clear cell adenocarcinoma has not been characterized. Few studies have addressed endometrial carcinoma metastasis to the kidney. Gupta et al. in 2003 described a patient who had a 24 year history of endometrial cancer

and was found to have metastasis to the kidney (Gupta et al., 2003). They concluded that due to the histologic morphology of the renal tumor, it was a recurrent metastasis from the patient's endometrial primary tumor (Gupta et al., 2003).

As previously discussed, serous endometrial carcinomas spread similarly to serous ovarian carcinomas, which most commonly spread by exfoliation of malignant cells and by lymphatics. As a result of these two types of metastasis, the most commonly affected organs are the omentum, hemidiaphragm, small bowel serosa, para-aortic lymph nodes and pelvic lymph nodes (Kurra et al., 2013). Though the patient in this case study did not have metastasis to intraperitoneal organs (colon/stomach/spleen/liver/omentum/peritoneum), she did have a left infra-renal lymph node that was positive for disease. Interestingly, the right infra-renal para-aortic lymph nodes were free of any obvious disease by pre-operative imaging and intra-operative assessment. Given the gross macroscopic disease involving the left infra-renal lymph node, we did not feel that there was an indication for pelvic or right para aortic lymph node dissection.

Rose et al. assessed metastatic disease patterns in 428 autopsies of patients with ovarian cancers (Rose et al., 1989). They discovered that metastasis from epithelial tumors, such as serous ovarian carcinomas, depended heavily on intraperitoneal disease and lymphatic involvement. They discovered renal metastasis in about 6% of patients with epithelial ovarian cancers, and found that it was more common to spread to the kidney if the patient had lymph node involvement (defined as para-aortic or pelvic lymph nodes) and intraperitoneal involvement (Rose et al., 1989). The para-aortic lymph node and renal involvement seen in this patient supports the previously described theory that endometrial serous carcinoma follows a metastasis pattern more similar to ovarian serous carcinoma than endometrial adenocarcinoma.

The patient presented in this case had a final diagnosis of Stage IVB serous carcinoma of the endometrium with diagnostic pathology consistent with metastatic endometrial cancer in her right kidney and left infra-renal lymph node. The patient has currently completed four of six cycles of paclitaxel and carboplatin and is doing well.

In summary, metastatic renal disease from uterine serous carcinoma is rare. However, despite the rare incidence of such pathology, imaging that reveals a renal mass in addition to possible lymph node involvement warrants heightened awareness and further investigation. Future studies investigating the incidence and outcomes of patients presenting with advanced uterine serious carcinomas metastatic to the kidney may help optimize treatment in these patients.

Conflict of interest statement

Dr. Cochrane has nothing to disclose.

Dr. Menzies has nothing to disclose.

Dr. Sweeney has nothing to disclose.

Dr. Burke reports other from Cooper Surgical, other from Titan Medical outside the submitted work.

Author contribution

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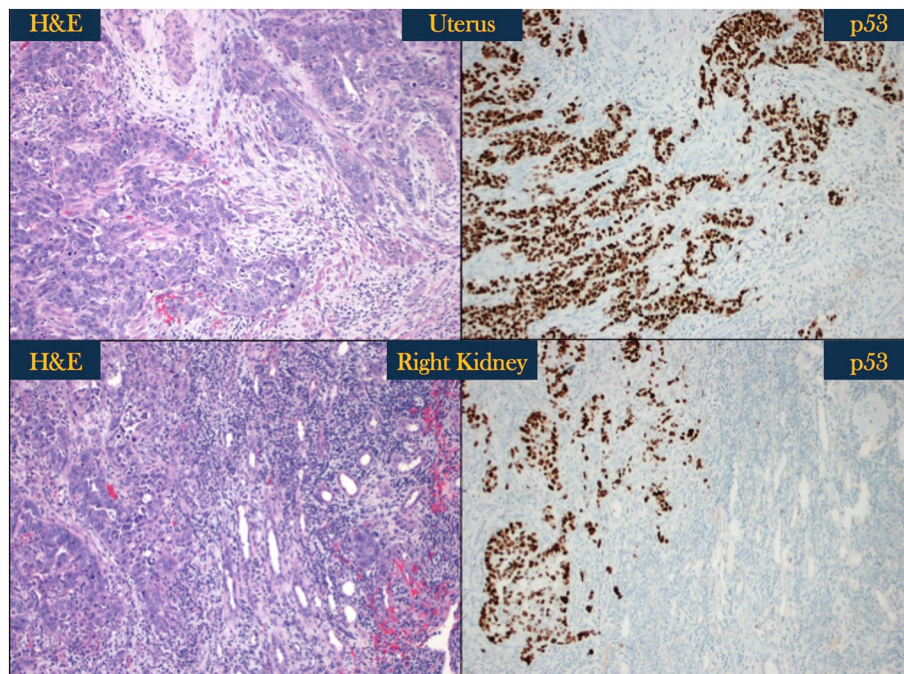


Fig. 3. H&E and p53 stains of the uterus and right Kidney at 100 × magnification.

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References

- Gupta, C., Wojno, K.J., Schervish, E.W., August, 2003. Late renal metastasis of endometrial adenocarcinoma. *J. Urol.* 170 (2), p519.
- Chapter 33, Endometrial cancer. In: Hoffman, B.L., Schorge, J.O., Bradshaw, K.D., Halvorson, L.M., Schaffer, J.I., Corton, M.M. (Eds.), *Williams Gynecology*, 3 ed. McGraw-Hill, New York, NY.
- Kurra, V., Krajewski, K.M., Jagannathan, J., Giardino, A., Berlin, S., Ramaiyaa, N., Mar 26, 2013. Typical and atypical metastatic sites of recurrent endometrial carcinoma. *Cancer Imaging* 13 (1), 113–122.
- Rose, P.G., Piver, M.S., Tasukada, Y., Lau, T., Oct 1, 1989. Metastatic patterns in histologic variants of ovarian cancer. an autopsy study. *Cancer Cytopathol.* 64 (7), 1508–1513.
- The American College of Obstetricians and Gynecologists (Ed.), April, 2015. *Endometrial cancer. Pract. Bull.* 149.