

# Mixed epithelial and stromal tumor of the kidney treated with minimally invasive surgery

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## Abstract

Mixed epithelial and stromal tumor of the kidney (MESTK) is a rare kidney tumor that tends to occur in middle-aged and older women and is characterized by a distinctive histological appearance. Most of them were incidentally detected. A 26-year-old female patient was referred to in our clinic due to intermittent left lower back pain for 2 months and left renal mass. Abdominal computed tomography showed a cystic enhanced heterogenic left renal mass about 5 cm in the largest diameter was extending from the renal pelvis to the ureter and causing gross hydronephrosis of the left kidney. The mass treated with transperitoneal laparoscopic nephroureterectomy and bladder cuff resection. Histopathological evaluation revealed MESTK. In our patient, MESTK successfully and without any complication be treated by minimally invasive surgery. We believe that the fact that the tumor can mimic the urothelial-cell carcinoma of the kidney in radiological appearance, as seen in our case, should be taken into consideration.

**Keywords:** Kidney, laparoscopy, mixed epithelial and stromal tumor, treatment

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## INTRODUCTION

Mixed epithelial and stromal tumor of the kidney (MESTK) is a rare and distinctive kidney neoplasm that develops from müllerian-like stromal cells. In the past, it has been reported with several different names, including the adult type of mesoblastic nephroma, cystic hamartoma of the pelvis, adult type of cystic nephroma, leiomyomatous hamartoma, and solid and cystic biphasic tumor of the kidney.<sup>[1]</sup> MESTK was first defined by Michal and Syrucek in 1998 and included in the World Health Organization renal tumor classification.<sup>[2]</sup> Although it is characterized by a benign, malign transformation and recurrences can occur rarely. Therefore, most cases are treated surgically.<sup>[3,4]</sup> In this report,

we present a case with MESTK treated with laparoscopic radical nephroureterectomy and bladder cuff resection.

## CASE REPORT

A 26-year-old female patient was referred to in our clinic from the Internal Medicine department due to intermittent left lower back pain for 2 months and left renal mass. Her medical and family history were unremarkable. Physical examination by palpation was totally normal. Her routine blood investigations were in normal ranges. Routine urine analysis revealed no hematuria. Urine cytology was negative for malignancy. Abdominal computed tomography (CT) revealed a cystic enhanced heterogenic left renal mass about

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5 cm in the largest diameter was extending from the renal pelvis to the ureter and causing gross hydronephrosis of the left kidney [Figure 1a]. There was no evidence of lymph node or distant metastases. The images favored a renal cell or urothelial-cell carcinoma of the kidney were also considered. After all these findings, we planned to perform transperitoneal left laparoscopic nephroureterectomy and bladder cuff resection. After written informed consent was obtained from the patient, she underwent the surgery with the lateral decubitus position. On the surgery, there was a hydronephrotic left kidney with a mass arising from the pelvis renalis extending into the ureter [Figure 1b]. The surgical specimen disclosed the left kidney with a size of 10 cm [Figure 1c]. The patient was discharged on the postoperative 2<sup>nd</sup> day without any complication. The urethral catheter was removed at postoperative 1<sup>st</sup> week. No recurrence or disease-related mortality was observed in the patient at postoperative 1<sup>st</sup> year.

### Histopathologic evaluation

#### Macroscopy

The tumor was covering entire in the renal pelvis and measured 6.5 cm × 4.5 cm × 4 cm in diameter. The tumor typically contains small and large cysts mixed with solid areas. The lesion appeared to be well-demarcated with no invasion of adjacent kidney parenchyma.

#### Microscopy

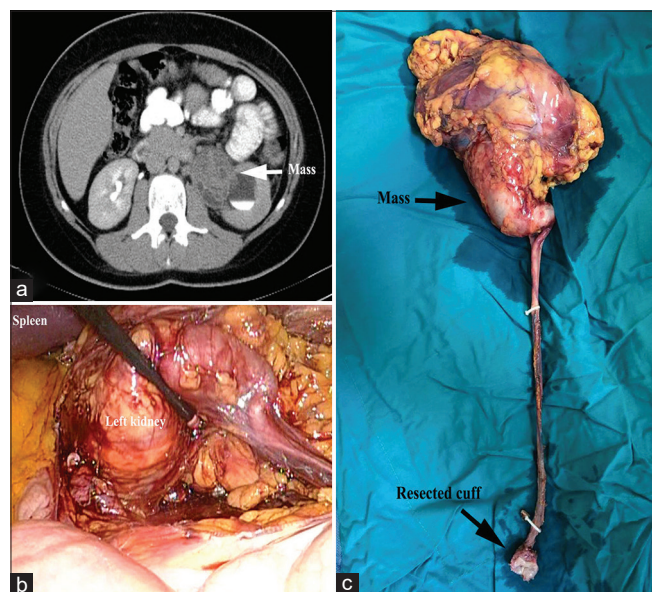
The tumor was biphasic with both epithelial and stromal elements. The stromal component was composed of the bland spindle or smooth muscle cells. The stromal portion

usually resembles so variant stroma arranged within creased density in pericyclic areas. The stromal component was composed of uniform spindle cells without cellular atypia, necrosis, or mitoses. Epithelial components exhibited various-sized tubuloglandular and cystic formations lined by bland flattened cells, hobnail cells, and columnar cells without atypia. Mitotic figures were detected. Immunohistochemically, the stroma cells were positive for estrogen and progesterone receptors,  $\alpha$ -smooth muscle actin, desmin, common acute lymphoblastic leukemia antigen 10, and vimentin. Cystic components expressed cytokeratin 7, paired box 2 and 8, and high molecular weight cytokeratin antibodies [Figure 2]. The pathological and immunohistochemical findings were compatible with the diagnosis of MESTK.

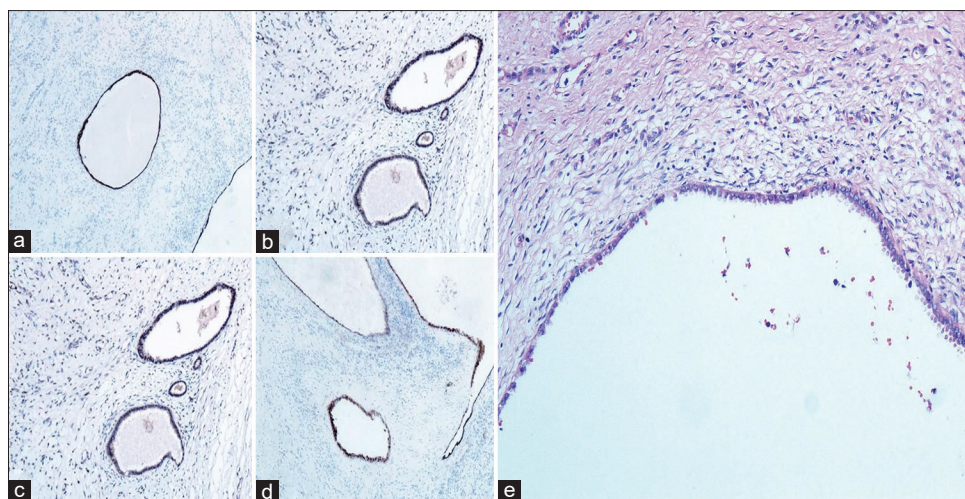
### DISCUSSION

MESTK is most often seen in middle-aged women and is associated with estrogen replacement treatment.<sup>[1,3]</sup> Because of advances in imaging modalities and the prevalence of health examinations, patients detected earlier and usually present with nonspecific symptoms, such as flank pain, hematuria, or symptoms primarily suggestive of genitourinary infections.<sup>[1,3]</sup> In our case, the tumor was identified incidentally. Our case is a young female patient with no estrogen replacement treatment, and the only complaint was left intermittent lower back pain.

Radiographically, diagnosis of MESTK reported in literature often relies on CT as a diagnostic imaging tool, but some selected patient magnetic resonance imaging (MRI) can also be used. On CT and MRI, MESTK has been reported as a well-circumscribed, multi-septate cystic mass with variable solid and cystic components.<sup>[4]</sup> Radiographically, MESTK can be reported as a Bosniak categories III to IV or pure solid lesions, and it is difficult to distinguish from cystic renal cell carcinoma and cystic nephroma.<sup>[4]</sup> In our case, CT revealed a 5 cm in largest diameter a cystic enhanced heterogenic tumor was extending from the renal pelvis to the ureter. In light of the findings, our preliminary diagnosis was urothelial cell carcinoma of the left kidney and we performed transperitoneal laparoscopic nephroureterectomy and bladder cuff resection. In our patient, the tumor successfully and without any complication be treated by minimally invasive surgery. In a radiological investigation, the tumor was mimicking conventional urothelial-cell carcinoma of the kidney. Until now, several cases of an open resection for MESTKs have been reported.<sup>[5-8]</sup> The main difference in our case compared with the other cases mentioned in the literature is that our case was treated with minimally invasive surgery.



**Figure 1:** (a) Computed tomography showing a large tumor filling the renal pelvis causing hydronephrosis of the left kidney; (b) the left kidney appearance during the surgery; (c) the surgical specimen



**Figure 2:** The immunohistochemical examination revealed positivity of the stromal component for (a) estrogen receptor; (b) progesterone receptor; (c)  $\alpha$ smooth muscle actin; (d) vimentin; (e) common acute lymphoblastic leukemia antigen 10. In the cystic areas, the cysts are lined by a single cuboidal and hobnail cells (H&E,  $\times 40$ )

The diagnosis of MESTK usually depends on histological characteristics and immunohistochemical staining of the tumor. The pathogenesis of MESTK remains unknown but suggesting that estrogen may be related to the pathogenesis of MESTK.<sup>[1,3,4]</sup> Immunohistochemically, the epithelial components are usually positive for epithelial membrane antigen and cytokeratin. Spindle cells usually show diffusely and strongly positive immunostaining with desmin, smooth muscle actin, and vimentin. There is a high frequency of estrogen and progesterone receptor present in the nuclei of the spindle cells.<sup>[3]</sup> Most cases are benign, but the malignant transformation has been reported, and in malignant cases, focal progesterone receptor was expressed, but the estrogen receptor was a negative expression in almost all malignant cases.<sup>[1]</sup>

MESTK is a generally benign renal tumor with rarely malignant potential. Most of them were incidentally detected as in our case. In our case, the laparoscopic nephroureterectomy and bladder cuff resection for the MESTK is a safe, applicable method with less morbidity and rapid recovery. We believe that the fact that the MESTK can mimic the urothelial-cell carcinoma of the kidney in radiological appearance, as seen in our case, should be taken into consideration.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and

other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

#### Conflicts of interest

There are no conflicts of interest.

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