Sarcomatoid transitional cell carcinoma of the renal pelvis: a case report with multidetector CT findings

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Authors: A. C. Tsili1, D. Giannakis2, K. Christakis1, A. Charisiadi1, K. Loutsaris2, N. Sofikitis2, K. Tsampoulas11Department of Clinical Radiology2Department of UrologyUniversity Hospital of Ioannina, Ioannina, Greece.

Patient: 60 years, male

Clinical History:
Sarcomatoid carcinoma of transitional cell origin in the renal pelvis is an extremely rare malignancy. We report a case of sarcomatoid carcinoma of the renal pelvis in an elderly man, present the multidetector CT features and discuss differential diagnosis.

Imaging Findings:
A 60 year old man was referred to the urology clinic for gross painless hematuria. He had undergone a total gastrectomy for benign causes 20 years ago and a cardiopulmonary bypass 12 years ago. On clinical examination, no apparent mass was palpable in the abdomen. Laboratory data were within normal range. His urine culture was negative, and urine cytology showed no signs of malignant or atypical cells. Cystoscopy revealed no abnormalities of the urinary bladder. Multidetector CT urography showed the presence of a heterogeneously enhancing left pelvic mass in an atrophic kidney, infiltrating the renal parenchyma (Fig. 1). There was hydronephrosis and delay in the excretion of the left kidney caused by the mass. The left renal vein and inferior vena cava were patent. No signs of lymphadenopathy or metastatic disease were detected.
The patient underwent left radical nephrectomy and ureterectomy. Histologically, the tumor was composed predominantly of sarcomatoid spindle cells, coexisting with a carcinomatous component of transitional cell origin. The diagnosis of sarcomatoid transitional cell carcinoma of the renal pelvis was made. The neoplastic cells infiltrated the atrophic renal parenchyma. Venous involvement was negative. Adjuvant chemotherapy was administered subsequently. The patient had a recurrence in the retroperitoneal space eight months after surgery, detected on follow-up CT (Fig. 2). The patient’s condition deteriorated and he died of disease shortly after.

Discussion:
Sarcomatoid carcinoma is a high-grade epithelial neoplasm, composed of a focal, clearly epithelial component intermixed with extensive areas of sarcoma-like appearance. Transitional cell carcinoma may coexist with a sarcomatous component, although uncommonly [1, 2]. It is an extremely rare neoplasm, associated with a poor prognosis [3-10]. Only 13 cases of sarcomatoid carcinoma of transitional cell origin of the renal pelvis have been reported in the English-language literature, with little emphasis on the imaging features [3-10]. Thiel et al described a case of an early-stage sarcomatoid transitional cell carcinoma of the renal pelvis, detected as a large mass, causing
a renal pelvic filling defect on CT urography [10]. Acikalin et al described an uncommon case of sarcomatoid transitional cell carcinoma of the pelvis, associated with giant cell tumor-like features [9]. This tumor was detected as a pelvic mass, accompanied by extensive retroperitoneal lymphadenopathy [9]. Hisataki et al reported another case of transitional cell carcinoma, with sarcomatous components, involving a duplicated renal pelvis [8]. CT examination in this case demonstrated a large, heterogeneously enhancing cystic renal mass, compressing the renal pelvis [8]. CT urography in our case revealed a large renal pelvic mass, with heterogeneous enhancement after contrast material administration, a finding suggesting of aggressiveness. The tumor invaded both the pelvis and the renal parenchyma, therefore differentiation from an aggressive renal epithelial neoplasm was difficult. Differential diagnosis also included a high-grade transitional cell carcinoma and carcinosarcoma. Carcinosarcoma is composed of both epithelial and sarcomatous components, while sarcomatoid carcinomas are malignant spindle cell neoplasms composed of epithelial components with prominent changes of sarcomatoid morphology. Differential diagnosis based on microscopic findings is usually difficult and immunochemistry is mandatory.

Patients with sarcomatoid carcinoma of the renal pelvis have a very poor prognosis, most of them presenting with metastatic disease or renal parenchyma invasion [5-10]. The mean survival interval is reported less than nine months [5-10]. Our patient, who died eight months after the operation, also was presented with renal parenchymal infiltration and had a very poor prognosis.

**Differential Diagnosis List:** Sarcomatoid transitional cell carcinoma of the renal pelvis

**Final Diagnosis:** Sarcomatoid transitional cell carcinoma of the renal pelvis

**References:**


Description: (a) Transverse and (b) coronal reformatted images (nephrographic phase). (c) Coronal reformation (excretory phase). A multilobular, inhomogeneously enhancing left renal pelvic mass (arrow) was detected. The dimensions of the tumor were 56 X 43 mm. The mass involved both the renal pelvis and the renal parenchyma, causing hydronephrosis in an atrophic kidney. Origin:
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Description: Figure 2. (a, b) Transverse scans (portal phase) depict a large, left retroperitoneal tumor (asterisk). The mass enhances inhomogeneously, and there is infiltration of the spleen (arrow) and the posterior abdominal wall (long arrow). Origin:
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