AUCTORES
Globalize your Research

International Journal of Clinical Case Reports and Reviews
José Alberto Hermida Pérez *

Open Access

Case Report

A Case of Aggressive, Undifferentiated Urothelial Carcinoma of the Renal Pelvis with Squamous Differentiation and Venous Invasion". A Case Report

José Alberto Hermida Pérez [1]*, Claudia Pérez Hernández [2], María Sandra Batista Hernández [3], Paula Acosta Concepción [4], Nils Fischer [5], Merisis Abreu Acosta [6], Víctor Antonio Ferraz Jerónimo [7], Náyade Jorge Martín [8], Verónica Gómez Rodríguez [9], José Samuel Hernández Guerra[10], Ágata Díaz Sánchez[11]

[1]Department of Urology, Universitary Hospital of La Palma, Santa Cruz of Tenerife, Spain. https://orcid.org/0000-0001-9694-5268

[2]Claudia Pérez Hernández. Nurse. Urology Departament. Universitary Hospital of La Palma. Santa Cruz of Tenerife. Spain. https://orcid.org/0009-0002-7408-7260

[3]María Sandra Batista Hernández. Nurse. Health Center of San Andrés and Sauces. Santa Cruz of Tenerife. Spain. https://orcid.org/ 0009-0008-2729-6071

[4]Paula Acosta Concepción. Nurse. Health Center of Los llanos of Aridane. Santa Cruz of Tenerife. Spain. https://orcid.org/0009-0007-4657-9379

[5]Nils Fischer. Specialist in Family and Community Medicine. Health Center of Los llanos of Aridane. Santa Cruz of Tenerife. Spain. https://orcid.org/0009-0003-5964-7458

[6]Merisis Abreu Acosta. General Medicine. Health Center of Los Llanos of Aridane. Santa Cruz of Tenerife. Spain. https://orcid.org/0009-0006-7661-8853

[7]Víctor Antonio Ferraz Jerónimo. Specialist in Family and Community Medicine. Health Center of Los llanos of Aridane. Santa of Tenerife. Spain. https://orcid.org/0009-0003-0409-9474

[8]Nayade Jorge Martín. Specialist in Family and Community Medicine. Health Center of Santa Cruz de La Palma. Santa of Tenerife. Spain. https://orcid.org/0009-0006-5342-9566

[9]Verónica Gómez Rodríguez. Specialist in Pediatrics and Neonatology. Health Center of Santa Cruz of La Palma. Santa Cruz of Tenerife. Spain. https://orcid.org/0009-0002-9829-7385

[10]José Samuel Hernández Guerra. Specialist in Family and Community Medicine. Health Center of San Andrés y Sauces. Santa of Tenerife. Spain. https://orcid.org/0000-0002-6769-8031

[11]Ágata Díaz Sánchez. Nurse. Urology Departament. Universitary Hospital of La Palma. Santa Cruz of Tenerife. Spain. https://orcid.org/0009-0000-0131-8617

***Corresponding Author:** José Alberto Hermida Pérez, Department of Urology, Universitary Hospital of La Palma, Santa Cruz of Tenerife, Spain. https://orcid.org/0000-0001-9694-5268

Received Date: December 03, 2025 | **Accepted Date:** December 15, 2025 | **Published Date:** December 29, 2025

Citation: Hermida J A, Pérez C, Batista MS, Acosta P, Fischer N, Abreu M, et al, (2025), A Case of Aggressive, Undifferentiated Urothelial Carcinoma of the Renal Pelvis with Squamous Differentiation and Venous Invasion". A case Report, *International Journal of Clinical Case Reports and Reviews*, 32(1); **DOI:**10.31579/2690-4861/1009

Abstract:

Transitional cell carcinoma of the renal pelvis is a rare cancer within the urinary system. However, the prognosis is not entirely satisfactory. We report the clinical case of a 70-year-old male patient presenting with haematuria, mass and pain in the left renal flank, leukocytosis, high C-reactive Protein levels and procalcitonin. Ultrasound and computed tomography detected a tumour in the renal pelvis and left ureter, invasion of the left renal vein, and left paraaortic adenopathic conglomerate. A computed tomography -guided biopsy of the paraaortic adenopathic conglomerate revealed poorly differentiated urothelial carcinoma involving the tissue, with areas of squamous differentiation; immunohistochemistry was consistent with urothelial type/origin. Upper tract transitional cell urothelial carcinoma has a poor prognosis, which is worsened by squamous or sarcomatous differentiation, presence of local or distant metastasis, and renal vein or caval

invasion. The standard treatment is radical nephroureterectomy with partial cystectomy; neoadjuvant chemotherapy based on gemcitabine plus carboplatin and nivolumab as postoperative adjuvant therapy are treatment options used.

Key words: tumor; renal; pelvis; squamous; invasión; vein; metastatic

Introduction

Urothelial carcinoma (UC) is the second most common urological malignancy in developed countries [1]. They can be localised in the lower (bladder and urethra) and/or the upper (pyelocaliceal cavities and ureter) urinary tract. Bladder cancer (BC) accounts for 90–95% of UCs whilst upper tract urothelial carcinomas (UTUC) account for only 5–10% of UCs with an estimated annual incidence in Western countries of almost two cases per 100,000 inhabitants. This rate has risen in the past few decades likely as a result of improved detection and the aging population. The peak incidence is in individuals aged 70–90 years and UTUC is twice as common in men [2]. The diagnosis of UTUC may be incidental or symptom related. Flank pain, due to clot or tumour tissue obstruction can occur in 20–32% of cases. Systemic symptoms (including anorexia, weight loss, malaise, fatigue, fever, night sweats, and cough) in patients with UTUC should prompt evaluation for metastases associated with a worse prognosis. Symptoms at diagnosis are associated with indicate a worse prognosis. Imaging Computed tomography scan (CT) urography has the highest diagnostic accuracy of the available imaging techniques. Rapid acquisition of thin sections allows high-resolution isotropic images that can be viewed in multiple planes to assist with diagnosis without loss of resolution. Epithelial "flat lesions" without mass effect or urothelial thickening are generally not visible with CT [3]. Magnetic resonance urography (MR) urography is indicated in patients who cannot undergo CT urography, usually when radiation or iodinated contrast media are contraindicated (4). 18F-Fluorodeoxglucose positron emission tomography/computed tomography A retrospective multicentre publication on the use of 18F-Fluorodeoxglucose positron emission tomography/ computed tomography (FDG-PET/CT) for the detection of nodal metastasis in 117 surgically-treated UTUC patients reported promising sensitivity and specificity of 82% and 84%, respectively. Cystoscopy Urethrocystoscopy is an integral part of UTUC work-up to rule out concomitant BC [4]. Cytology and urinary markers Abnormal cytology may indicate high-grade UTUC when bladder cystoscopy is normal, and in the absence of CIS in the bladder and prostatic urethra [5]. Retrograde ureteropyelography remains an option to detect UTUCs. The sensitivity of fluorescence in situ hybridisation (FISH) for molecular abnormalities characteristic of UTUCs is approximately 72–84%. Diagnostic ureteroscopy Flexible (URS) is used when necessary to confirm the diagnosis of UTUC by visualising the ureter, renal pelvis and collecting system and perform a biopsy of suspicious lesions. It is also essential for meticulous tumour mapping before considering kidney-sparing options for UTUC. Presence, appearance, multifocality and size of the tumour can be determined using URS. In addition, ureteroscopic biopsies can determine tumour [6, 7]. Transitional cell carcinoma (TCC) of the renal pelvis is a rare cancer within the urinary system. However, the prognosis is not entirely satisfactory. This tumour is an uncommon lesion, accounting for approximately 5% of all urinary tract tumors. Renal vein (RV) and/or inferior vena cava (IVC) tumor thrombus (TT) usually develops in renal cell carcinoma (RCC), and is a rare feature of renal TCC. The management and outcome of RCC and renal TCC are completely different. Occasionally, it can be difficult to distinguish between these two conditions preoperatively. RCC originates from the renal parenchyma, whereas TCC originates from the renal urothelium [8]. Although renal pelvis TCC is relatively rare in terms of urologic malignancies, it is the most common tumor originating in renal pelvis [9, 10]. We present a case of the undifferentiated TCC in the left renal pelvis, with squamous differentiation, it invaded the left RV and accompanied by a left para-aortic lymph node conglomerate. Renal TCC with TT in the RV extending to the IVC, for which the preoperative diagnosis on radiologic evidence was RCC with RV thrombus extending to the IVC.

Case presentation

A 70-year-old male patient, no past medical history. He presented to the Emergency Department with left flank abdominal pain radiating to the left inguinal region, gross haematuria, urinary discomfort and a low-grade fever of 1 month's duration. During physical exploration a hard and painful mass is palpable in the left lumbar fossa and left abdominal flank. Soft abdomen, no signs of peritoneal irritation. Blood test showed alterations of acute phase reactants: leukocytosis 22000/ mm 3, C-reactive Protein (CRP) 6.93 mg/dL, no decline in renal function. Renal ultrasound scan was requested (**Figure. 1**): the left kidney (LK) showed signs of hydronephrosis with dense content in the urinary tract at the proximal pyeloureteral junction, of possible tumorous type (urothelioma). The renal pelvis measures 32 mm. Multiple left paraaortic and locally associated adenopathies were noted. The right kidney (RK) had normal morphology, no urinary tract dilatation. The bladder was poorly distended, without evidence of internal lesions. The prostate was increased in size.

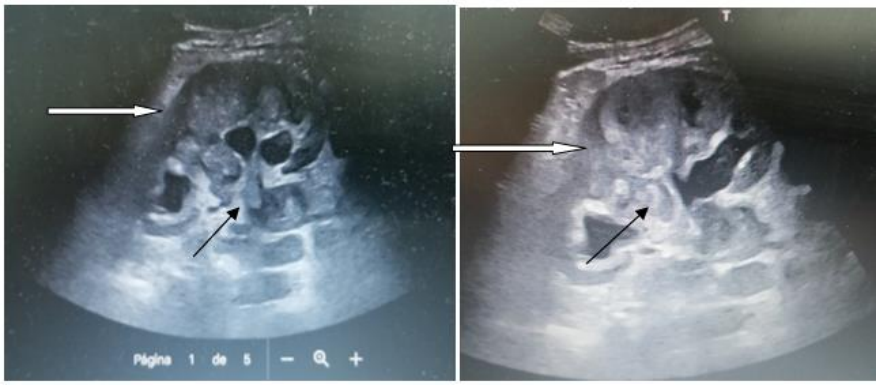


Figure 1: Renal ultrasound scan: LK (White arrow) showed signs of hydronephrosis with dense content in the urinary tract at the proximal pyeloureteral junction, of possible tumorous type (urothelioma) (black arrow)

The patient was admitted under Urology care, and CT scan of thorax, abdomen and pelvis (**Figure.2**) was carried out.

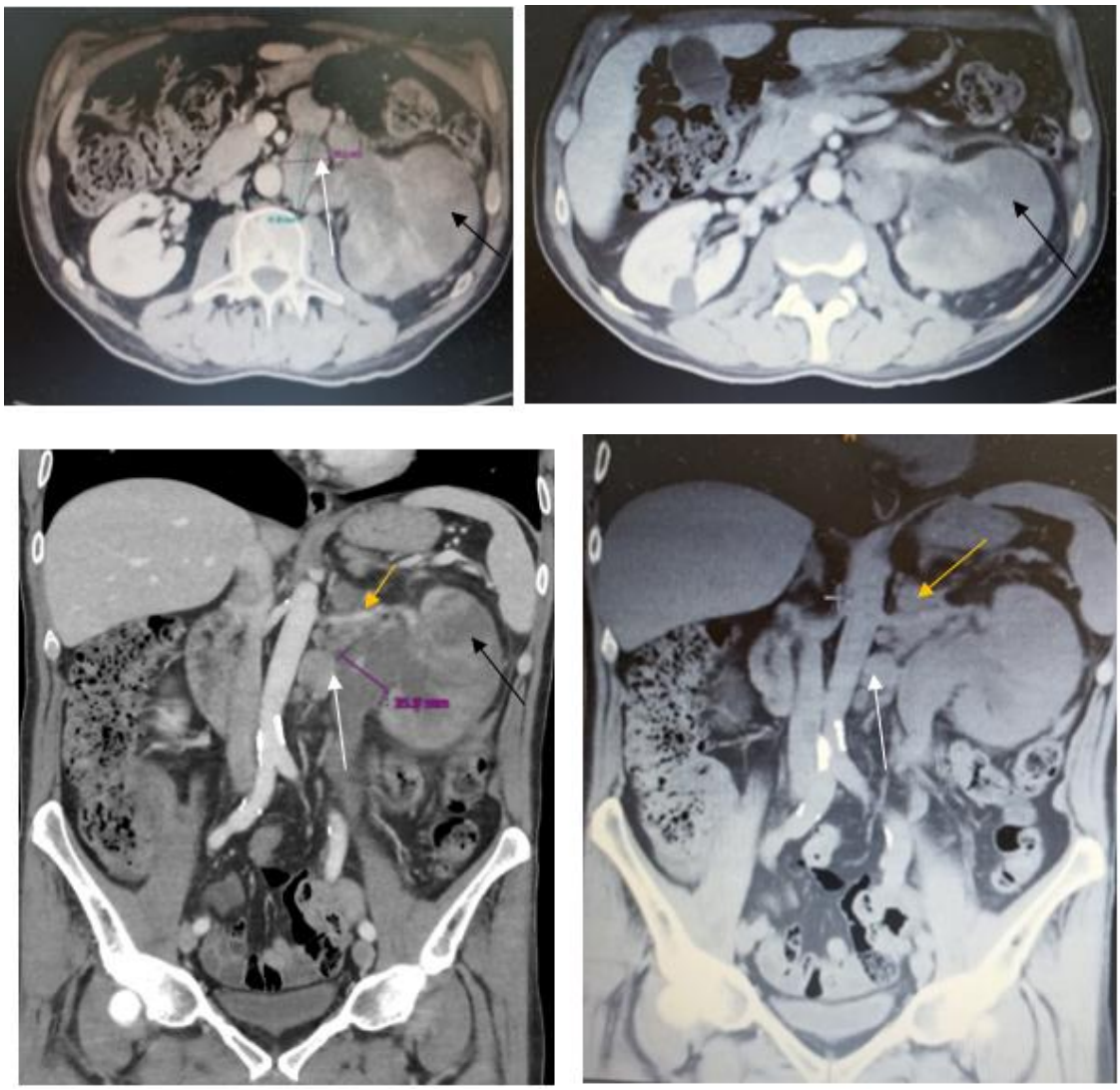
Findings:

Thorax:

Correctly inspired pulmonary parenchyma, with mild emphysematous changes. Solid pulmonary nodule measuring 5 mm in size in the Right Lower Lobe (RLL). Left pleural effusion measuring 2 cm with associated compressive atelectasis. No mediastinal, hilar, or axillary adenopathy was observed.

Abdomen and pelvis:

Diffuse hepatic steatosis, with a 2.5 cm hypervascular lesion in segment IVA and another measuring 11 mm in segment III. Pancreas, right adrenal gland, and RK are unremarkable. Extensive hypodense mass occupying the LK and the proximal portion of the ureter, with signs of invasion of the ipsilateral RV. Left paraaortic mass left measuring 7,7 x 6,5 cm that could correspond with extension of tumour mass versus adenopathic conglomerate. Nodules in left perirenal area with size up to 22 mm suggestive of tumorous implants. Left suprarenal thickening with a nodule measuring 17 mm suggestive of secondary affection. Bladder and prostate without significant alterations. No suspicious characteristic bone lesions. Upper left urothelial neoplasm, locally advanced with signs of left RV invasion, and an extensive left paraaortic adenopathic conglomerate. Left suprarenal thickening with a nodule suggesting metastasis. Focal hypervascular, nonspecific hepatic lesions, to be evaluated by MRI. Solid pulmonary nodule measuring 5 mm in size in the RLL, to be evaluated on follow-ups. Left pleural effusion.



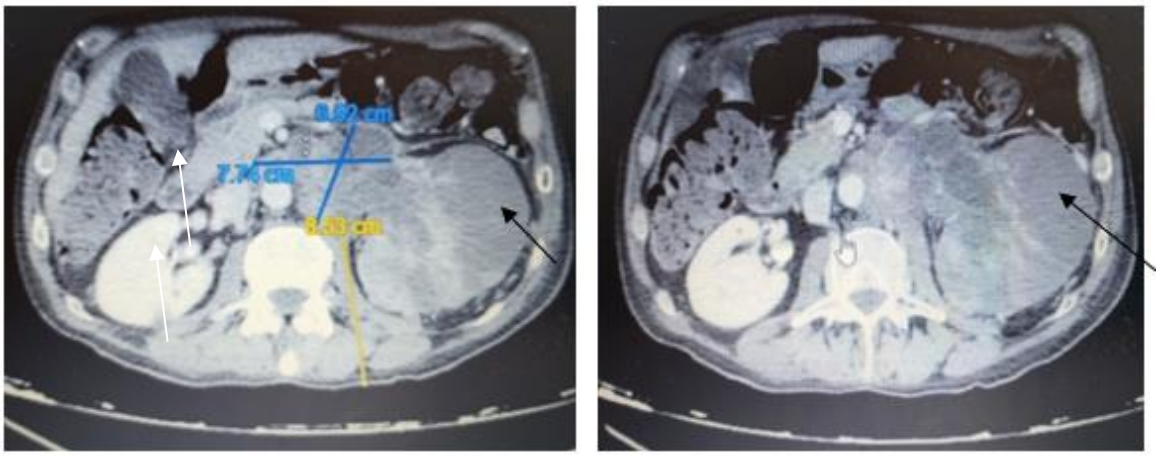


Figure 2: Enlarged LK with areas of hypocaptation of the renal parenchyma, suggestive of areas of necrosis (black arrows).Extensive hypodense mass occupying the LK and the proximal portion of the ureter, with signs of invasion of the ipsilateral RV (yelow arrow). Left paraaortic mass left measuring 7,7 x 6,5 cm (blue arrow). Nodules in left perirenal area suggestive of tumorous implants (white arrow).

A CT-guided biopsy (**Figure. 3**) of the paraaortic adenopathic conglomerate was performed, in which 3 core biopsy specimens were extracted to be studied by histological and immunohistochemical (IHC) analysis: the performed IHC stains show positivity for p63 and focal positivity for Cytokeratin 7 (CK7). CK20 and GATA3 are negative. No native lymph node lymphoid tissue was observed in the submitted material. Ligand 1 of Death programmed (PDL1): proteic expression evaluated by IHQ: antibody anti-PD-L1 (SP263). Result: 1% (positive). Tumor Proportion Score: positive 1% neoplastic cells. This concludes: tissue involvement by poorly differentiated urothelial carcinoma with squamous areas, IHC profile would be consistent with origin/type urothelial. PD-L1 result: 1%. (11),

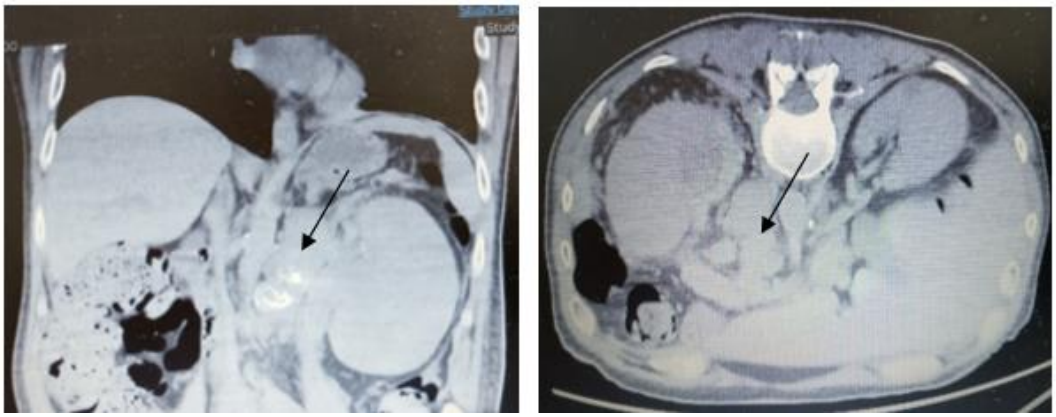


Figure 3: Left para-aortic lymph node conglomerate that has been biopsied (see arrows).

Cystoscopy findings: multiple papillary type lesions were noted in the bladder lumen -fragments found in the bladder, not attached to the bladder walls-. A papillary lesion measuring 7 mm in the left ureteral meatus, appearing to be growing from a ureteral lesion. Correct insertion of pyelography catheter. Unable to get a sample for urine cytology. Ascendent pyelography was performed showing a filling defect occupying the proximal ureter and the left renal pelvis.

The patients clinical state worsened by the urinary left upper tract neoplasm diagnosis, locally advanced with signs of left renal vein invasion, and extensive left paraaortic adenopathic conglomerate, and left suprarenal thickening with a nodule suggestive of metastasis, and a solid pulmonary nodule measuring 5mm in the RLL.

Blood test: leukocytosis increased to 33 000/mm 3 and CRP 120 mg/dl.

Full-body scintigraphy scan findings: no scintigraphy evidence of bone metastasis.

Cerebral MRI: no evidence of expansive intracranial lesions or active intracranial infection.

The patient suffers a severe and rapid clinical deterioration and dies, without options for treatment intended to halt the progression, let alone cure the disease.

Discussion

Analyzing the clinical, histopathological, diagnostic, and therapeutic aspects of TCC renal pelvis that invading the RV and IVC, one important a retrospective study has been carried out Renal Pelvis Carcinoma with RV or Inferior IVC Linked to Early-onset Lung Metastasis Based on CT Scan Diagnosis. In this study this results in the Tumor involvement in the IVC ($p=0.01$) and in the renal vein, these results are statistically significant ($p<0.00001$) were high risk factors for lung metastasis. In which it concludes that tumor involvement of the RV or IVC is linked to early-onset lung metastasis in renal pelvis cancer based on CT scan diagnosis [12]. In the publication of Kawashima A et al (2004) [13] reported clinial cases of a 65-year-old man with right flank abdominal pain and high fever. CT scan showed right renal mass. Magnetic resonance imaging (IMR) revealed tumor thrombus extending into the RV and the IVC. Preoperative diagnosis was RCC with vena caval thrombus. Radical nephrectomy with

thrombectomy and lymphodenectomy was performed. Pathologic evaluation revealed TCC with tumor thrombus into

the vena cava. One course of M-VAC chemotherapy was added and he has been alive for 56 months without recurrence. A literature review of 15 cases of renal pelvic cancer with tumor thrombus in the vena cava in Japan revealed that 7 cases were diagnosed as RCC preoperatively. Other clinical case published is a 68-year-old male, in Contrast-enhanced CT scan revealed a mass in the lower pole of the RK, invaded the perirenal fat tissues, a thrombus extending from the right RV to the IVC was detected. Biopsy of the renal pelvic mucosa revealed urothelial carcinoma (UC), as cT4N0M0 renal pelvic cancer. Is treated five courses of neoadjuvant chemotherapy with gemcitabine plus carboplatin, the patient underwent right nephroureterectomy, has tumor cell dissemination into the abdominal cavity, we removed the thrombus and a portion of the IVC were removed en bloc with the RK without opening the vein. The pathological diagnosis: high-grade UC with sarcomatoid features and squamous differentiation. The tumor invaded the IVC wall through perirenal fat tissues. Although the patient was treated with nivolumab as a postoperative adjuvant therapy, he developed liver metastases and local recurrence on the right psoas muscle 6 months after surgery and is currently receiving chemotherapy with enfortumab vedotin [14]. Preoperative differentiation between RCC and transitional cell carcinoma TCC is of utmost important for determining surgical strategy, whether nephrectomy or nephro-ureterectomy, as well as the necessity for wider lymphadenectomy and subsequent intensive surveillance, as the latter is more prone to recurrence. The characteristics on imaging studies, including greater enhancement and higher tumor-to-kidney attenuation ratio, may provide a clue for diagnosis, but ureteroscopy and histopathology are the criterion standards and should be considered as part of routine preoperative assessment [8]. Rarely, such a tumor may present with signs and symptoms mimicking an inflammatory or infective pathology of the kidney and is diagnosed only on biopsy or on nephrectomy. Three patients presented with signs and symptoms of an obstructed infected kidney with long-standing renal calculi and a forgotten DJ stent in one instance. Nephrectomy for the presumed infected kidney in all three cases revealed high-grade Upper tract urothelial carcinoma [15]. Other authors publish a clinical cases whit renal pelvic cancer with TT in the RV and IVC. Highlight the clinical aspects, the role of CT scan and MRI in diagnosis, as well as neoadjuvant and adjuvant chemotherapy treatment. In their case studies they state that UC of the renal pelvis with RV and IVC tumor thrombus (TT) was extremely rare. We aimed to explore the clinical and pathological characteristics, diagnosis and treatment of renal pelvis UC with RV and IVC TT [16, 17]. Their main symptoms were flank pain and hematuria. Half the patients underwent retroperitoneal laparoscopic radical nephroureterectomy with thrombectomy, and the other underwent open procedures. Pathological outcomes revealed high-grade UC, with positive lymph nodes in 6 cases. Four patients received adjuvant chemotherapy, one target therapy and one adjuvant chemotherapy combined with immunotherapy after surgery. The mean follow-up time was 11.1 months. Three patients are alive, and two of them developed recurrence and lung metastasis. They conclude that preoperative differentiation between renal pelvis UC and RCC with venous TT was very important for the management. Radical nephroureterectomy with thrombectomy might be a reasonable method for renal pelvis UC with venous TT. The prognosis of such cases was poor even if adjuvant therapy was scheduled [16, 17]. One clinic case was reported, it is of Squamous cell carcinoma of the renal pelvis with IVC and iliac vein TT. This is 64-year-old man that developed an aggressive renal pelvic squamous cell carcinoma with extensive IVC and bilateral iliac vein TT [18]. A case has been reported with a Renal pelvis sarcomatoid carcinoma with renal vein TT and multiple pulmonary metastases. The authors say that RPSC is a rare and aggressive malignancy whose diagnosis is difficult because radiological imaging results can lead to misclassification as a more common type of renal tumor. In addition, clinical management of patients with RPSC is difficult because of the limited efficacy of available treatments [19]. Other clinical case published a of a 79-year-old man was referred complaining of various symptoms: anorexia and abdominal pain. A CT scan revealed a right atrial tumor, a 9 cm left renal mass with a RV TT, para-aortic lymphadenopathy, and multiple small lung nodules. He underwent a left nephrectomy. Histological examination revealed two forms of cancer-sarcomatoid UC and conventional high-grade UC. Two months after surgery, the patient was found to have new lung metastases. He underwent chemotherapy with gemcitabine and cisplatin, followed by immunotherapy with pembrolizumab. However, both treatments were ineffective. The patient died of cancer 19 months after his first admission [20]. It is published a rare case of primary renal pelvis melanoma in 47-year-old man. Before surgery a patient was considered to have metastatic UC. A diagnosis of malignant melanoma was based on immunophenotyping and detection of intracellular melanin pigment both in pelvis tumor and lung metastasis. The primary localization in the pelvis was proven by the presence of scattered melanocytes within urothelium.The patient had no previous history ofskin or mucosa melanoma. This is the sixth case of renal pelvis melanoma published in PubMed [21]. A clinical case has been published of a well-differentiated mucoproducing adenocarcinoma of the right renal pelvis in a patient treated for a right renal pelvis lithiatis who was subsequently diagnosed with ultrasound and CT scan showed a hypodense tumor in the lower pole with hyperdense areas in the interior of the right renal pelvis. A right nephrectomy was performed. Biopsy showed a well-differentiated mucoproducing adenocarcinoma of the right renal pelvis [22].

A clinical case has been published of the genitourinary system tumors that metastasize to the renal pelvis and ureter from prostatic cancer. The patient admitted to the hospital with a complaint of gross hematuria. After being studied whit CT scand a Right nephroureterectomy is performed, demonstrated diffuse lymphatic infiltration of PSA-positive cancer cells in the submucosa and muscle layer of the ureter as well as renal pelvis. This is the 6th reported case of metastatic ureteral tumor from prostate cancer in the Japanese literature [23]. It is published a rare and associated with a poor prognosis. We Report a case of metastatic disease occurring in a patient treated for synchronous urothelial tumor of the bladder and left renal pelvis. Is a 61-year-old man was treated for a synchronous urothelial tumor of the bladder and left renal pelvis. The authors conclude that cutaneous metastatic disease of these tumors is a rare entity with poor prognosis. The main treatment remains chemotherapy; however, single-site metastasis should be considered for metastasectomy [24]. Another publication describes a case of metastatic breast carcinoma mimicking urothelial carcinoma. Breast cancer frequently metastasizes to bone, lung, brain, and liver. Renal metastasis from the breast is extremely rare. Here we aimed to report a case of breast cancer with metastasis to bone and left renal pelvis. The left nephroureterectomy procedure was performed, and the pathology revealed that a renal pelvis metastasis secondary to breast cancer [25]. An exceptionally rare case of metastatic high-grade UC renal pelvis to the pancreas diagnosed on endoscopic ultrasound-guided fine-needle aspiration [26]. Hermida et al (2025) [27] report a clinical case of a 56-year-old female patient who presented with right flank pain. A Computed Tomography scan shows the presence of a large staghorn calculus, pelvicalyceal dilatation, functional exclusion of the right kidney, hypoenhancing focal hepatic lesions. An urgent nephroureterectomy was performed. Histopathological examination of the surgical specimen revealed: Invasive urothelial carcinoma, conventional. High grade. Invades renal parenchyma. Lymphovascular invasión, a staghorn calculus. In the postoperative period an unfavorable clinical course and subsequently died.

Conclusions

TCC, with their different histological variants, are rare and very aggressive tumors with a guarded prognosis. They are more common in males. The most frequent presenting symptoms are were flank pain and hematuria, al well as symptoms those caused by metastases. Contrast-enhanced computed tomography is the gold standard for the imaging diagnosis of these tumors and their metastases. When the Tumor involvement in the IVC and in the RV were high risk factors for lung and other metastasis. Renal vein and/or inferior vena cava tumor thrombus usually develops in RCC,

and is a rare feature of TCC of the renal pelvis. The management and evolution of both tumors are completely different. Occasionally, it can be difficult to distinguish between these two conditions preoperatively The standard treatment is retroperitoneal laparoscopic radical nephroureterectomy with partial cystectomy with thrombectomy, and if developed metastases and local recurrence: metastasectomy; neoadjuvant chemotherapy based on gemcitabine plus carboplatin and nivolumab or enfortumab vedotin as postoperative adjuvant therapy are treatment options used.

References

1. Gontero, P., et al. (2024). EAU Guidelines on Non-muscle-invasive Bladder Cancer (T1, T1 and CIS), in EAU Guidelines, Edn. presented at the 39th EAU Annual Congress Paris. EAU Guidelines Office.
2. Shariat SF, Favaretto RL, Gupta A, Fritsche HM, Matsumoto K, Kassouf W, et al. (2011). Gender differences in radical nephroureterectomy for upper tract urothelial carcinoma. *World J Urol*. 29(4):481-486.
3. Baard J, Cormio L, Cavadas V, Alcaraz A, Shariat SF, et al. (2021). Contemporary patterns of presentation, diagnostics and management of upper tract urothelial cancer in 101 centres: the Clinical Research Office of the Endourological Society Global upper tract urothelial carcinoma registry. *Curr Opin Urol.* 1;31(4):354-362.
4. Soria F, Shariat SF, Lerner SP, Fritsche HM, Rink M. et al. (2017). Epidemiology, diagnosis, preoperative evaluation and prognostic assessment of upper-tract urothelial carcinoma (UTUC). *World J Urol.* 35(3):379-387.
5. Malm C, Grahn A, Jaremko G, Tribukait B, Brehmer M. (2017). Diagnostic accuracy of upper tract urothelial carcinoma: how samples are collected matters. *Scand J Urol.* 51(2):137-145.
6. Jin H, Lin T, Hao J, Qiu S, Xu H, et al. (2018). A comprehensive comparison of fluorescence in situ hybridization and cytology for the detection of upper urinary tract urothelial carcinoma: A systematic review and meta-analysis. *Medicine (Baltimore).* 97(52): e13859.
7. Subiela, J.D., *et al. (2020).* Diagnostic accuracy of ureteroscopic biopsy in predicting stage and grade at final pathology in upper tract urothelial carcinoma: Systematic review and meta-analysis. *Eur J Surg Oncol*, 46: 1989.
8. Irama W, Teo JK, Wong KM. (2021). Renal Cell Carcinoma Mimicking Transitional Cell Carcinoma: A Case Report. *Am J Case Rep*. 6;22: e932098.
9. Sheckley F, Nobert C, Stifelman M. (2020). Right Renal Pelvis Renal Cell Carcinoma Mimicking Transitional Cell Carcinoma: Case Report. *J Endourol Case Rep*. 29;6(4):536-539.
10. Singh O, George AJP, Singh JC, et al. (2017). Transitional cell carcinoma of the renal pelvis with venous tumor thrombus. *Rev Urol*. 19(2):145-148.
11. Bajorin DF, Witjes JA, Gschwend JE, Schenker M, Valderrama BP, et al. (2021). Adjuvant Nivolumab versus Placebo in Muscle-Invasive Urothelial Carcinoma. *N Engl J Med*. 3;384(22):2102-2114.
12. Liao TY, Liaw CC, Tsui KH, et al. (2018). Renal Pelvis Carcinoma with Renal Vein or Inferior Vena Cava Involvement Linked to Early-onset Lung Metastasis Based on CT Scan Diagnosis. *Anticancer Res*. 38(5):3187-3192.
13. Kawashima A, Takao T, Takaha N, Nishimura K, Nonomura N, et al. (2024). Renal pelvic cancer with tumor thrombus in the vena cava inferior: a case report. *Hinyokika Kiyo*. 50(12):869-72. Japanese.
14. Yokozeki H, Sumiyoshi T, Yamane T, Hosomi T, Nakagawa H, et al. (2024). Renal Pelvic Cancer with Inferior Vena Cava Tumor Thrombus: A Case Report. *Hinyokika Kiyo*. 70(9):271-276. Japanese.
15. Jena R, Sureka SK, Singh UP. (2021) Upper tract transitional cell carcinoma clinically mimicking inflammatory renal pathology: A report of three cases. *Indian J Urol.* 37(2):169-172.
16. Tian X, Hong P, Tang S, et al. (2021). Urothelial carcinoma of the renal pelvis with renal vein and inferior vena cava tumor thrombus: case series and literature review. *Transl Androl Urol*. 10(7):2879-2888.
17. Li M, Shi A, Kong W, Zhang J, Chen Y, Huang J, et al. (2016). Transitional cell carcinoma with extension of the renal vein and IVC tumor thrombus: report of three cases and literature review. *World J Surg Oncol.* 28;14(1):309 .
18. Corcoran AT, Hayn MH, Zynger DL, Ogagan PD, Navid F. et al. (2009). Squamous cell carcinoma of the renal pelvis with inferior vena cava and iliac vein tumor thrombus. *Can J Urol.* 16(6):4958-4961.
19. Guan HY, Wang J, Wang JX, Chen QH, Lu J. et al. (2023). Renal pelvis sarcomatoid carcinoma with renal vein tumor thrombus: A case report and literature review. *World J Clin Cases.* 6;11(31):7690-7698.
20. Anraku T, Hashidate H, Nakahara A, Imai T, Kawakami Y. (2023). Sarcomatoid urothelial carcinoma of the renal pelvis treated with immunotherapy. *BMC Urol.* 18;23(1):38.
21. Abdullin II, Grigoriev NA, Gaydamaka NV, Drozdova YY. (2022). Primary melanoma of renal pelvis]. *Urologia.* (4):56-59. Russian.
22. Ochoa O, Acosta I, Hermida JA, Chavez R, Bastian L. (2000). Well differentiated mucus-producing adenocarcinoma of the right renal pelvis. Presentation of a case. *Arch Esp Urol.* 53(7):645-648. Spanish.
23. Maeda N, Yoshida T. (1999). Metastatic tumor of renal pelvis and ureter from prostatic cancer: a case report. *Hinyokika Kiyo*. 45(4):273-5. Japanese.
24. Ghalleb M, Ayadi MA, Slim S, Zemni I, Doghri R. et al. (2019). Multiple cutaneous metastasis of synchronous urothelial carcinoma of the bladder and the renal pelvis: a case report. *J Med Case Rep*. 14;13(1):34.
25. Shbair AT, Yasin AI, Topçu A, Coban G, Uzunoglu GD. et al. (2022). Metastatic Breast Carcinoma Mimicking Urothelial Carcinoma. *Int J Surg Pathol.* 30(4):466-469.
26. Koyuncuer A, Sayar S, Zemheri IE, Özdil K, Özçelik M. (2022). An exceptionally rare case of metastatic high-grade urothelial carcinoma of the renal pelvis to the pancreas diagnosed on endoscopic ultrasound-guided fine-needle aspiration: A diagnostic challenge. *Diagn Cytopathol*. 50(10): E295-E300.
27. Hermida JA, Mesa AL, Cabrera MY, Vilar M, Medina AR, et al. (2025). Invasive Urothelial Carcinoma of the Renal Pelvis,

Staghorn Calculus, Right Renal Pyo nephrosis, and Hepatic Necrosis: Review and Case Report, *Int JClin C Rep Rev.* 31(1).

DOI:10.31579/2690-4861/1009