UPPER URINARY TRACT TUMOR IN A YOUNG PATIENT: A CASE REPORT

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ABSTRACT

Tumors of the upper urinary tract (UUT) are growths that develop in the upper urinary system, including the calyces, renal pelvis, and ureter. Although rare, these tumors are not uncommon, and they are most often of urothelial origin. The average age at diagnosis in Europe is approximately 73 years.

Hematuria is the primary indicative symptom, and the diagnostic process involves morphological examinations such as ultrasound and computed tomography, endoscopic procedures like cystoscopy and ureteroscopy, and biological investigations such as urinary cytology. Total nephro-ureterectomy with excision of the bladder cuff remains the reference oncologic intervention.

Despite recent technical advances in the treatment of this condition, conservative treatment, whether endoscopic or surgical, is not routine. We present the case of a 36-year-old patient, a smoker for 10 years at a rate of 10 packs per year. Clinically, he presented with hematuria and left lumbar pain evolving for 3 months. Computed tomography (CT) confirmed the presence of a budding tumor in the left pyelocalyceal cavities.

The patient underwent a left nephro-ureterectomy with excision of the bladder cuff, and histological examination revealed an infiltrating urothelial carcinoma involving the chorion.

Keywords : *Tumor, upper urinary tract, nephro-ureterectomy, urothelial carcinoma ,Mauritania*

INTRODUCTION

Tumors of the upper urinary tract (UTT) account for 5% of urothelial carcinomas [6]. The average age at diagnosis in Europe is around 73 years [4], with a male-to-female ratio close to 2 to 1. UTTs are diagnosed at an invasive stage in 60% of cases [3]. CT urography (CTU) is the reference imaging modality for the diagnostic assessment of UTTs [4]. The standard treatment remains total nephroureterectomy (TNU) with excision of a peri-meatal bladder cuff due to the high rate of recurrences, significant risk of multifocality, and low rate of contralateral tumor recurrences [10].

In this study, we present a case of UTT in a young patient observed at the urology department of Friendship Hospital in Nouakchott, aiming to describe the clinical and therapeutic aspects.

CLINICAL CASE

The patient was a 36-year-old male, a smoker for 10 years at a rate of 10 pack-years, with no significant medical history. He presented with left lumbar pain associated with total macroscopic hematuria evolving for 6 months. Clinical examination revealed tenderness in the left lumbar fossa, and ultrasound showed a heterogeneous left renal pelvis image. Cystoscopy did not reveal any bladder lesions.
Computed tomography (CT) confirmed the presence of a 3.5 cm left renal pelvis tumor (**fig 1, fig 2**).

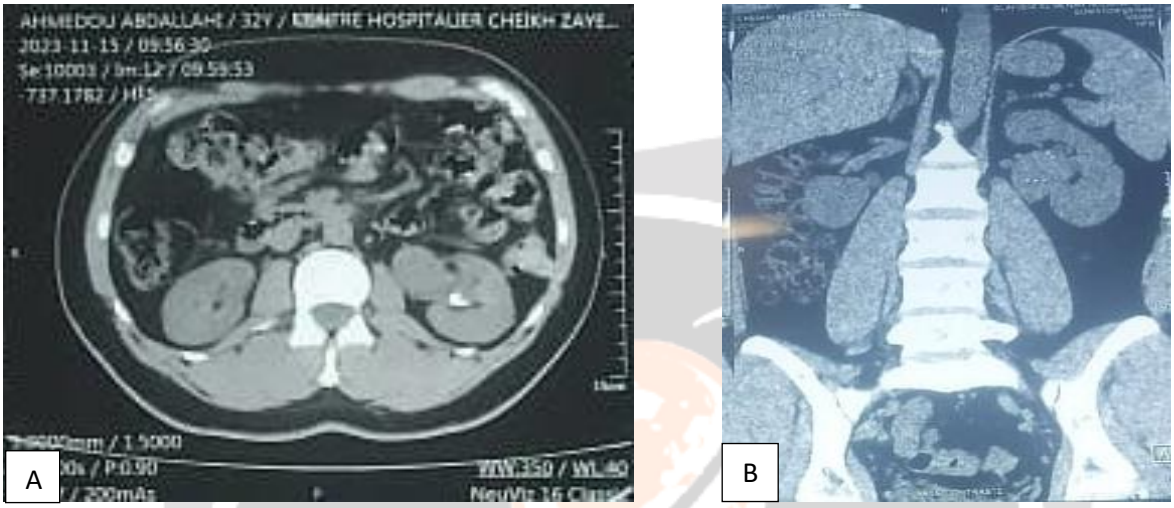

Fig 1 : A. Axial section of the non-contrast-enhanced URO CT scan showing a 3.5 cm left renal pelvis tumor.
B. Sagittal section of the non-contrast-enhanced URO CT scan demonstrating a 3.5 cm left renal pelvis tumor.

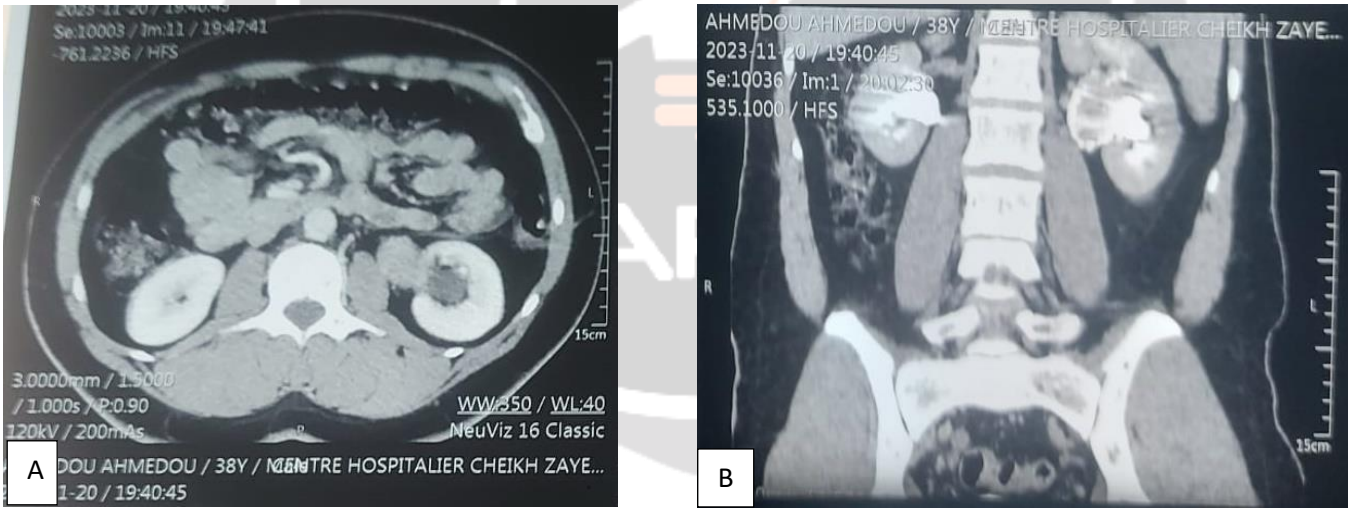

Fig 2 : A. Axial section of the URO CT scan with contrast injection revealing a 3.5 cm left renal pelvis tumor.
B. Sagittal section of the URO CT scan with contrast injection demonstrating a 3.5 cm left renal pelvis tumor.

The coagulation blood tests were normal, and our therapeutic approach involved total nephroureterectomy (TNU) using the pluck technique. This method entails an initial resection of the ureteral orifice via a transurethral approach until visualization of the perivesical fat, followed by performing nephroureterectomy through open surgery.

Fig 3 : Operative specimen of the left nephroureterectomy according to the pluck technique

During the first stage of the operation, an initial cystoscopy revealed a healthy bladder mucosa, followed by peri-meatal endoscopic resection. Subsequently, a transurethral bladder catheter was inserted with the patient in the lithotomy position, under general anesthesia and orotracheal intubation.

The second stage of the operation involved adopting the left lumbotomy position, followed by performing an extended nephroureterectomy, with primary ligature of the ureter.

The postoperative course was uneventful. The patient was discharged from the hospital on the fourth day, and the bladder catheter was kept in place for a period of 15 days.

Histological examination of the operative specimen revealed the presence of infiltrating urothelial carcinoma in the chorion, without involvement of the muscular layer. It is also noteworthy that there was no carcinoma in situ in the ureteral sections.

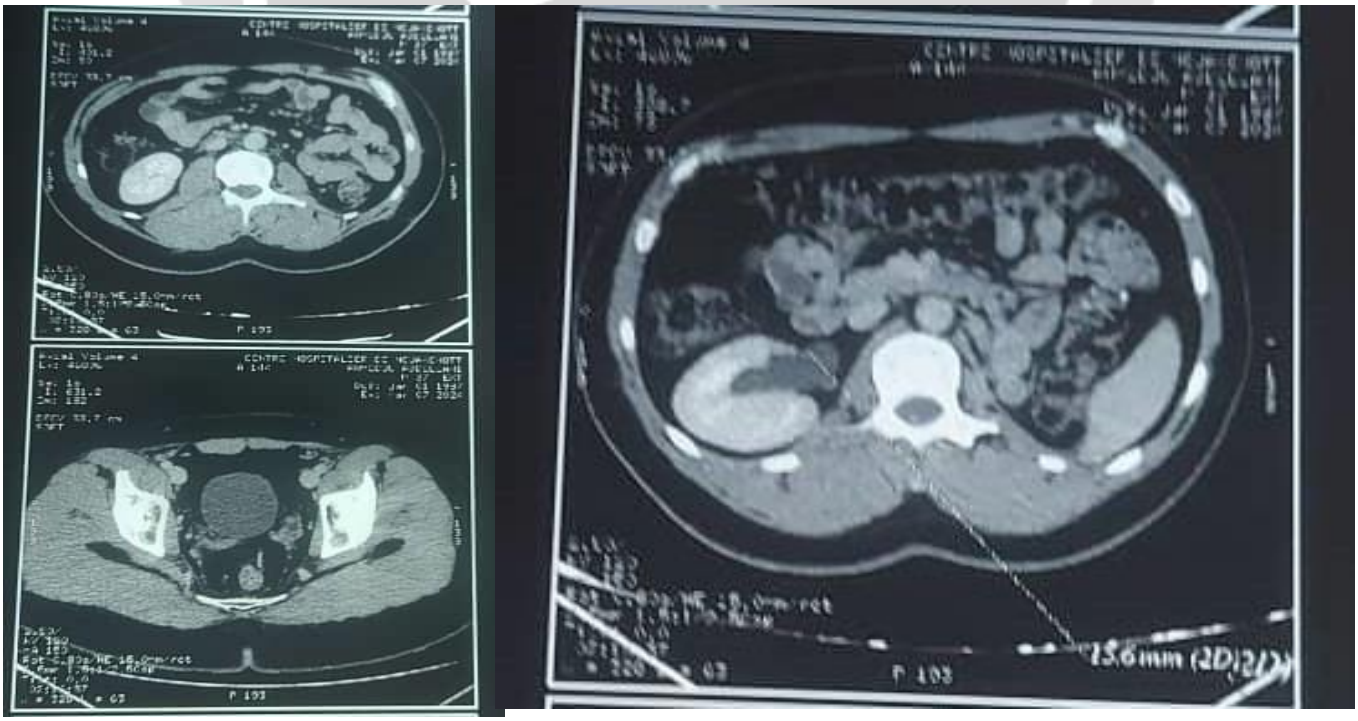

Fig 4 : The postoperative follow-up urological CT scan after 3 months

The evolution was favorable, and the follow-up computed tomography scan performed after three months did not show any recurrence (**Fig 4**).

DISCUSSION

UTTs represent only 5 to 10% of urothelial carcinomas [5, 11]. They are 5 times rarer than kidney tumors and 18 times rarer than bladder tumors [7].
The average age at diagnosis in Europe is around 73 years [12].
In our case, the patient was 36 years old, which contrasts with the data reported in the literature.
Tobacco use is a major risk factor (increased relative risk of 2.5 to 7). This risk is influenced by the intensity of tobacco consumption and decreases after cessation of tobacco exposure. Continuing consumption after diagnosis would constitute an unfavorable prognostic factor [3, 9].
In the case of our patient, he had been a smoker for 10 years, at a rate of 10 pack-years.
The most frequent presenting circumstances are hematuria and lumbar pain [7]:
- Hematuria is the major clinical sign revealing the disease. It is generally total, sometimes terminal for tumors of the lower ureter or prolapsed tumors in the ureteral orifice, or due to associated bladder lesions [7].
- Lumbar pain is the second symptom after hematuria, present in 30% of cases according to Michel [2], and in 60% of patients in the series by DJOKIV [8].
In our case, the simultaneous presence of these two symptoms prompted the patient to seek medical attention.
CT urography (CTU) is the reference imaging modality for the diagnostic assessment of UTTs in patients with a creatinine clearance > 30 mL/min. It evaluates the entire urinary system through multiple acquisitions performed before and after contrast injection, and necessarily includes a study during the excretory phase of contrast agent elimination [12].
In our patient, CTU allowed for the diagnosis by revealing a 3.5 cm left renal pelvis tumor.

Since its establishment by KIMBAL and FERRIS in 1934, nephroureterectomy has been the standard technique for treating UTTs. It consists of en bloc resection of the kidney, entire upper urinary tract, and bladder cuff [7].
Primary ligature of the ureter below the level of the tumor may reduce the risk of intravesical recurrence, especially for pyelocalyceal tumors [12]. Various techniques exist to avoid the morbidity of a second incision. The endoscopic approach is primarily used with the "pluck" technique (perimeatal incision until the intramural ureter is detached), but with more favorable perioperative parameters (especially the duration of the procedure). Its feasibility has also been demonstrated through a laparoscopic approach with primary ureteral ligation.
Conversely, ureteral stripping and its removal via the urethral route have been less well studied, with few publications reporting significant failure rates (approximately 20%) and local recurrences because it requires opening the urinary tract [1].
In our case, the patient underwent total nephroureterectomy according to the pluck technique.

UTTs are urothelial carcinomas in over 95% of cases. They are either non-invasive lesions (exophytic papillary proliferation of the urothelium with three distinct entities defined by the 2022 WHO classification, reflecting variable evolutionary potential) or invasive lesions (lesion crossing the basement membrane and reaching at least the lamina propria) [12].
Histological analysis of the operative specimen revealed an infiltrating urothelial carcinoma in the chorion without reaching the muscular layer.

CONCLUSION

UTTs are rare lesions, accounting for only 5% of all urothelial tumors. They have benefited from advances in imaging, which have reduced the frequency of late-diagnosed tumors and increased the percentage of tumors detected at an early stage.
The cornerstone of curative treatment for UTTs remains extended total nephroureterectomy with excision of the bladder cuff.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

REFERENCES

1. **A. Arvin-Berod.** Tumeurs de la voie excrétrice urinaire supérieure : à propos de 181 cas : série rétrospective des CHU de Grenoble et Lyon Sud de 2000 à 2010. Médecine humaine et pathologie. 2011.
2. **A. Michel.** Tumeurs des voies excretrices superieures. Encycl Med Chir. 1995 ; 82 : 432-7.
3. **A. Ouzzane , M. Rouprêt, P. Leon , David R Yates , P. Colin.** Épidémiologie et facteurs de risque des tumeurs de la voie excrétrice urinaire supérieure : revue de la littérature pour le rapport annuel de l'Association française d'urologie. Progres En Urol J Assoc Francaise Urol Soc Française Urol. 2014 ; 24 : 966-76.

4. **B. Almås, OJ Halvorsen, TB Johannesen, C Beisland.** Higher than expected and significantly increasing incidence of upper tract urothelial carcinoma. A population based study. World J Urol. 2021 Sep ; 39 (9) : 3385-3391.
5. **C. Gregory L, Demetrius H, Bagley.** Surveillance of the upper urinary tract transitional cell carcinoma: the rôle ureteroscopy retrograd pyelography cytology and urinary J. Urol. 2000 ; 164: 1901-4.
6. **E. L. M. Baboudjian, F. Michel, K. Ben Othman, T. Martin, E. Di Crocco, A. Akiki, S. Gaillet, V. Delaporte, G. Karsenty, R. Boissier.** L'urétérorénoscopie diagnostique augmente-t-elle le risque de récidive vésicale après néphro-urétérectomie totale ? Une revue de la littérature. Progrès en urologie. 2019 ; 29 : 138-146.
7. **L. Elmesnaoui.** Les tumeurs de la voie excrétrice urinaire supérieure : étude rétrospective. Université cadi ayyad faculté de médecine et de pharmacie marrakech. 2009.
8. **M. Djokic, J. Hadzi-djokic, J. Nikolic, D. Dragicevic, O. Durutovic, D. Radivojevic.** Tumeurs de la voie excretrice superieure : resultats de la chirurgie conservatrice. progres en urologie. 2001 ; 11 : 1231-8.
9. **M. Rink, E. Xylinas, V. Margulis, EK Cha, B. Ehdaie, JD Raman, FK Chun, K. Matsumoto, Y. Lotan, H. Furberg, M. Babjuk, A. Pycha, CG Wood, PI Karakiewicz, M. Fisch, DS Scherr, SF Shariat.** Upper Tract Urothelial Carcinoma Collaboration. Impact of smoking on oncologic outcomes of upper tract urothelial carcinoma after radical nephroureterectomy. Eur Urol. 2013 Jun ; 63 (6) : 1082-90.
10. **Y. Elbelkasmi, M. Benjelloun, A. Nouri, T. Karmouni, K. Tazi, K. Elkhader, A. Koutani, A. Ibn Attya et M. Hachimi.** Traitement conservateur dans les formes localisées des tumeurs de la voie excrétrice supérieure : Une nouvelle observation et revue de la littérature. African Journal of Urology. 2009 ; 15 (1) : 67-71.
11. **Y. John, Munoz, M. LARS, ELLISON.** Upper tract urothelial neoplasms: incidence and survival during the last 2 decades. J. Urol. 2000 ; 164 : 1523-5.
12. **Y. Neuzillet, T.S., O. Traxer, Y. Allory, F. Audenet, P. Leon, Y. Loriot, B. Pradère, M. Roumiguié, E. Xylinas, A. Masson-Lecomte, M. Roupret.** French AFU Cancer Committee Guidelines - Update 2022-2024: Upper urinary tract urothelial cancer (UTUC). Progrès en urologie. 2022 ; 32 : 1164-1194.