INFILTRATING UROTHELIAL CARCINOMA ALONG THE URINARY TRACT OF A YOUNG ADULT

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ABSTRACT

Objective: *To present a rare case of infiltrating urothelial carcinoma along the urinary tract on a young adult.* ***Case(s) Presentation:*** *A 39 year old Asian male patient with > 20 pack-year smoking history, came to the hospital with a chief complaint of hematuria and flank pain since two weeks ago. Physical examination revealed Eastern Cooperative Oncology Group (ECOG) Performance Status 1, the right kidney was palpated, no tenderness on fist percussion. Abdominal ultrasound (USG) revealed 1.5 cm and 0.5 cm masses located in the urinary bladder. The CT scan show mass in the bladder was exophytic, > 3 cm in size, and occupying lesion was located on the right posteroinferior and left lateral bladder wall accompanied with dilatation of pelvic calyces and right ureter. Histopathology of the specimen revealed low-grade infiltrating urothelial carcinoma of bladder and right ureter. The pathological stage was pT2NxMx, The patient refused neoadjuvant chemotherapy and surgery. Four months after TURBT, he came with weakness and right flank pain. The patient consent to surgery and underwent the right nephroureterectomy. Histopathology of the specimen showed infiltrating urothelial carcinoma of right kidney, ureter, Gerota fascia with lymphovascular invasion (pT3NxMx).* ***Discussion:*** *Urothelial carcinoma (UC) is commonly arising in the urinary bladder, but it can develop along the urinary tract. Cigarette smoke contains a lot of carcinogenic agents and stimulates DNA damage.* ***Conclusion:*** *Upper tract urothelial carcinoma (UTUCs) is subset of UC with a poor prognosis. Cigarette smoking is the main risk factor that induces DNA damage.*

Keywords: *Urothelial carcinoma, smoking, young adult.*

ABSTRAK

Tujuan: *Menyajikan kasus infiltrating urothelial carcinoma yang melibatkan saluran kemih pada dewasa muda.* ***Presentasi Kasus:*** *Kandung kemih merupakan predileksi utama UC, meskipun dapat berkembang pula pada pelvis ginjal, ureter, atau uretra. Kelainan ini sering ditemukan pada usia dekade ke-6. Seorang pasien pria Asia berusia 39 tahun dengan riwayat merokok > 20 bungkus/tahun, datang ke rumah sakit dengan keluhan utama hematuria dan nyeri pinggang sejak dua minggu lalu. Pemeriksaan fisik menunjukkan Eastern Cooperative Oncology Group (ECOG) Kinerja Status 1, ginjal kanan teraba, disertai nyeri tekan. Ultrasonografi menunjukkan massa ukuran 1.5 cm dan 0.5 cm di kandung kemih. Pemeriksaan CT -Scan menunjukkan massa eksofitik, ukuran > 3 cm terletak di posteroinferior kanan dan lateral kiri dinding kandung kemih disertai dengan dilatasi pelvic calyces dan ureter kanan. Histopatologi spesimen menunjukkan low grade infiltrating urothelial carcinoma kandung kemih dan ureter kanan (pT2NxMx). Pasien menolak kemoterapi neoadjuvan dan operasi. Empat bulan setelah TURBT, pasien datang dengan keluhan lemah badan dan nyeri pinggang kanan. Pasien menjalani nephroureterectomy kanan dengan histopatologi menunjukkan infiltrating urothelial carcinoma ginjal kanan, ureter, fascia Gerota, dengan invasi limfovaskular (pT3NxMx).* ***Diskusi:*** *Karsinoma urothelial biasanya timbul di kandung kemih, tetapi dapat pula berkembang di sepanjang saluran kemih. Asap rokok mengandung substansi karsinogenik yang dapat merangsang kerusakan DNA.* ***Simpulan:*** *Upper tract urothelial carcinoma adalah subset dari UC dengan prognosis yang buruk. Merokok adalah faktor risiko utama yang menyebabkan kerusakan DNA.*

Kata Kunci: *Urothelial carcinoma, merokok, dewasa muda.*

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INTRODUCTION

Urothelial carcinoma (UC) also termed transitional cell carcinoma is a major cause of morbidity and mortality throughout the world. Urothelial carcinoma typically presents in patients over the age of 50 years and is approximately three times more common in males as in females. There

are so many factors that can contribute to this disease, but smoking is considered an important risk factor. The majority of patients present with symptoms of haematuria (blood in the urine) and/or dysuria (painful urination). UC most commonly arises in the urinary bladder but can develop in the renal pelvis, ureters, or urethra.[1]

CASE(S) PRESENTATION

A 39 year old Asian male patient with > 20 pack-year smoking history, no family history of genitourinary cancer came to the hospital with a chief complaint of hematuria and flank pain since two weeks ago. Physical examination revealed Eastern Cooperative Oncology Group (ECOG) Performance Status 1, the right kidney was palpated, no tenderness on fist percussion. Abdominal ultrasound (USG) revealed 1.5 cm and 0.5 cm masses located in the urinary bladder. CT showed enlargement of right kidney, with the exophytic mass on the pelvis, obstruction of the right ureter, mass on the right posteroinferior and left lateral side of the bladder, no mass was found on the visceral organ, and no enlargement on local lymph node. There was no sign of metastases from the chest x-ray and bone scan examination.

The patient underwent trans–urethral resection of bladder tumor (TURBT) of the tumor. From cystoscopy examination the mass in the bladder was exophytic, more than 3 cm in size and occupying lesion located on the right posteroinferior and left lateral bladder wall accompanied with dilatation of pelvic calyces and right ureter. Histopathology of the specimen revealed low grade infiltrating urothelial carcinoma of the bladder and right ureter. The pathological stage was pT_2NxMx, The patient refused neoadjuvant chemotherapy and surgery. Four months after TURBT, he came with weakness and right flank pain. The patient consent to surgery and underwent right nephroureterectomy. Histopathology of the specimen showed infiltrating urothelial carcinoma of right kidney, ureter, Gerota fascia with lymphovascular invasion (pT3NxMx). The patient passed away four weeks later.

DISCUSSION

On gross section, we found the nephrectomy specimen measured 13 x 8 x 5 cm are brownish white and springy on palpation. The cut surface of the kidney appears a dense white mass resembling cauliflower, partly fragile. The mass filled the kidney cavity extending to the pelvic region. In one part of the kidney, the ureter attaches with a length of 11 cm and diameter 1 - 2 cm, brownish white. The urether lumen cut surface contains a fragile, partially solid white mass.

On histological examination, the tumor consists of round to oval cells with papillary growth. The nuclear appearance was pleomorphic, hyperchromatic dan high mitotic activity.

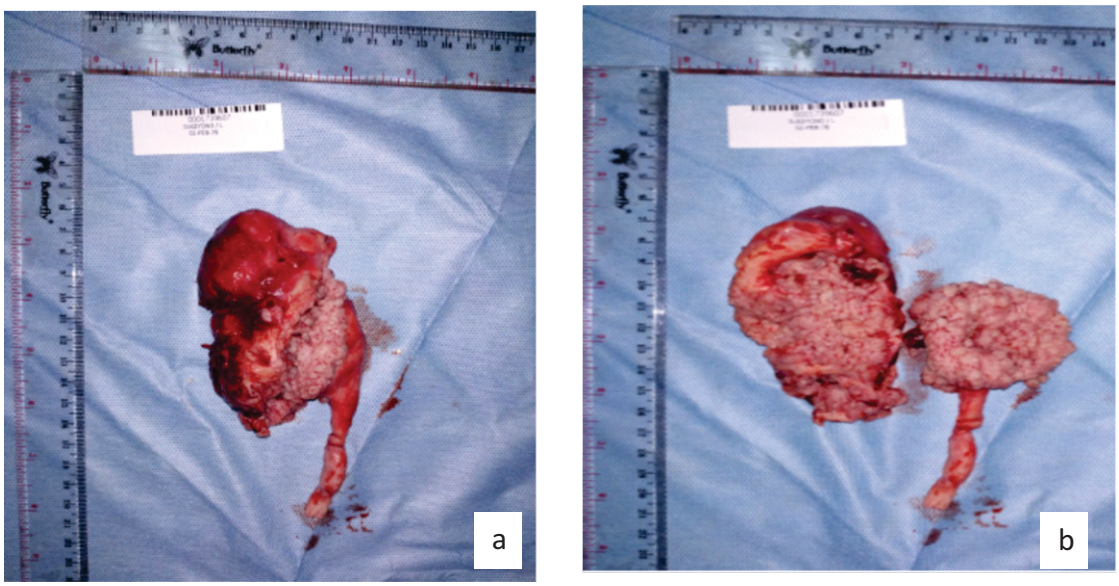

Figure 1. Gross section of right kidney and ureter indicating mass infiltration to the whole part of kidney.

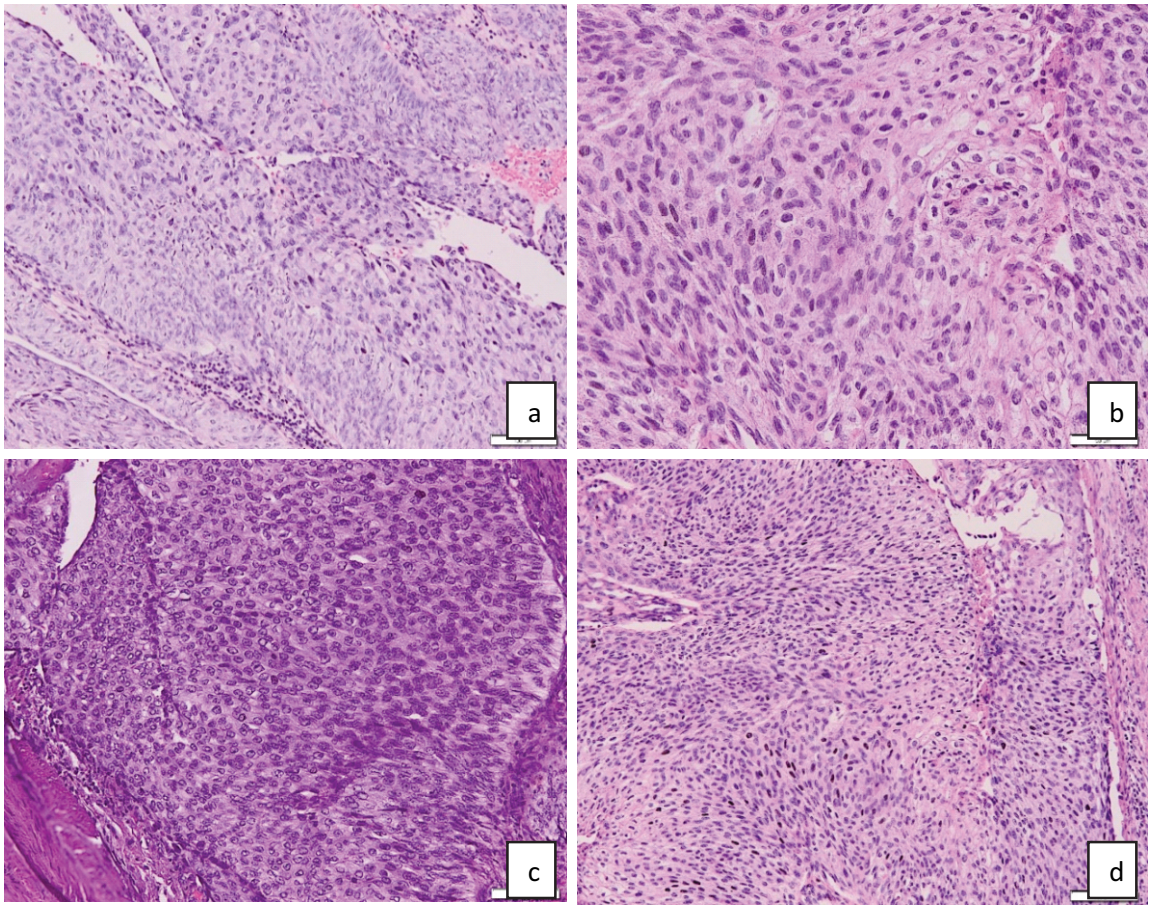

Figure 2. Mass on cystectomy (a,b): ureterotomy (c): nephrectomy (d): hematoxylin and eosin stain showing the infiltrating pattern and urothelial tumor cells with marked nuclear pleomorphism and abnormal mitotic activity.

Urothelial carcinomas (UCs) are the fourth most common tumors.[2] They can be located in the lower (bladder and urethra) or upper (pyelocaliceal cavities and ureter) urinary tract. The bladder is the majority originating tumors account for 90-95% of UCs and are the most common malignancy of the urinary tract.[2-3] However, UTUCs are uncommon and account for only 5-10% of UCs.[2-3] The genetic effects might play role in the pathogenesis of urothelial carcinoma. Cigarettes, occupational exposures, chemicals, urinary tract infections, and chronic inflammation, irradiation, and some medicine are the risk factors of this disease. It is also evident that cigarette smoke can induce changes in the DNA damage response machinery, which can additively or synergistically impair the host response to carcinogens, and also it contains a lot of carcinogenic agents and reactive oxygen species (ROS).[4]

According to the morphological appearance, UC can be divided into papillary and non-papillary tumors. Approximately 25% of all urothelial tumors are non-invasive papillary tumors with 10-15% of these patients is going to develop an invasive tumor. The TNM-based classification and tumor morphological features provide important prognostic information and guide further treatment. The majority of the upper urinary tract tumors are urothelial with a small percentage being either squamous or glandular.[5] In a study by Olga et al. most of the renal pelvis neoplasms were found to be high grade.[6]

CONCLUSION

Infiltrating urothelial carcinoma may affect the along the urinary tract. Upper tract urothelial carcinoma is subset of urothelial cancers with a poor

prognosis. Urinary bladder cancer is the most common malignancy involving the urinary system. Cigarette smoking and occupational exposure are the main risk factors.

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