

## Unusual Presentation of Urothelial Carcinoma in a Young Patient

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**Abstract:** Urothelial carcinomas of the bladder in young patients is rare with less than 1% of such tumors presenting in the first 4 decades of life. When urothelial carcinomas occur in young adults, it presents as a low grade, non-invasive disease.<sup>2</sup> Here we report a case of a young adult presenting with invasive urothelial carcinoma of the bladder with retrograde metastatic spread to the ureter, kidney and prostate. Young adults are rarely diagnosed with bladder cancer and it is even more unusual to find an invasive urothelial carcinoma with retrograde metastasis among the young individuals.<sup>2</sup>

**Keywords:** urothelial carcinoma, young, metastasis

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### I. Introduction

Urothelial tumors in young patients are mostly noninvasive papillary carcinomas and have an excellent prognosis; and only a small subset of patients may present with high grade invasive urothelial carcinomas that result in poor clinical outcomes.<sup>3</sup> Bladder cancer is the most common malignant disease of the urinary tract.<sup>4</sup> It is a disease that afflicts mostly the elderly as the majority of any other cancer type. The median age of diagnosis of bladder cancer being 69 years in males and 71 years in females, but the disease can occur at any age including children.<sup>5</sup> Bladder cancer in young patients usually have a better prognosis and data on its metastatic potential is limited. Lymph nodes, bones, liver, lungs and peritoneum are the most common sites of metastasis.<sup>4</sup> Awareness of the rare presentation of a common tumour will help us clinch the diagnosis for the better outcome of the patient. The present case is rare due to presence of high grade invasive carcinoma with stage 4 occurring in a young male.

### II. Case Report

A 29 year old male with no history of smoking presented with complaints of loin pain, hematuria associated with generalized weakness. Ultrasonography abdomen revealed hypoechoic lesion in the lower segment of the left ureter involving the left vesicoureteral junction and base of urinary bladder with hydronephrosis and renal parenchymal changes, suggestive of growth. CT scan study following this also revealed left distal ureteric mass involving bladder base also suggestive of a growth. (Figure 1) The biochemical and hematologic parameters were normal except for microcytic hypochromic anemia. The urine examination revealed hematuria with albuminuria (2+). Transurethral resection of bladder biopsy with impression of infiltrating urothelial carcinoma –high grade, preceded the radical procedure which included cystoprostatectomy, left radical nephrectomy and left external iliac region lymph nodes. Gross examination of the bladder showed mucosa to be diffusely shaggy and irregular. (Figure 2a) The specimen of the left kidney had a nodular surface with cut surface exhibiting nodular cortex and dilated pelvicalyceal system. (Figure 2b)

Histopathology demonstrated high grade infiltrating urothelial carcinoma involving bladder, renal pelvis and parenchyma, left ureter and left seminal vesicle along with external inguinal lymph node involvement. (Figure 3 a,b) This led to a differential diagnosis of urothelial carcinoma of the bladder or renal cell carcinoma with the metastasis to be considered based on the primary tumour. The diagnostic dilemma was solved by conducting ancillary studies with immunohistochemical markers Cytokeratin 7 and Cytokeratin 20 and the primary was diagnosed as invasive urothelial carcinoma of the bladder. (Figure 3 c,d) Patient received five cycles of chemotherapy with Gemcitabine and Cisplatin.

### III. Discussion

Urothelial carcinoma of bladder is rare under the age of 40, incidence being 0.8%, and majority of them stem from the bladder base and the remaining from the urachal remnants.<sup>2</sup> According to a study conducted by, Nomikos M et al, younger patients with bladder cancer appear to have a favourable prognosis, since majority of them present with superficial stage and low grade tumors. However, the risk of progression is the

same, influenced by grade and stage at the time of presentation.<sup>5</sup> Kurz et al, stated in his study that 60% of urothelial carcinomas in the young adults were non muscle invasive type, while 16-25% were high grade tumors and metastasis occurred in 10% of the high grade tumors.<sup>6</sup> Urothelial carcinoma is an environmentally driven cancer, with tobacco exposure accounting for two-thirds and one-third cases in men and women respectively.<sup>7</sup> Mutation of TP 53 is typical of carcinoma in situ and high grade invasive carcinoma. According to Giedl et al, high level of TERT (Telomerase Reverse Transcriptase). mRNA level is a marker for biological aggressiveness in early onset bladder cancer.<sup>1</sup> Bladder cancer has a variable metastatic potential and almost any organ can be involved by metastasis. The lymph nodes are the most common site of metastasis of bladder cancer with identification of them elevates the staging to Grade 4. According to study done by Shinnagere et al, of the 139 cases studied for metastasis, only 1 case had renal involvement similar to the present case.<sup>4</sup>

Confusion created by the renal metastasis is solved by panel of IHC markers like CK7, CK20. High molecular weight cytokeratins are positive in urothelial carcinomas and positive markers for renal cell carcinoma (RCC) are CK7, CD10, Vimentin and CD117. All subtypes of RCC's are negative for CK20 whereas urothelial carcinomas express CK7 in majority of cases with variable expression of CK20.

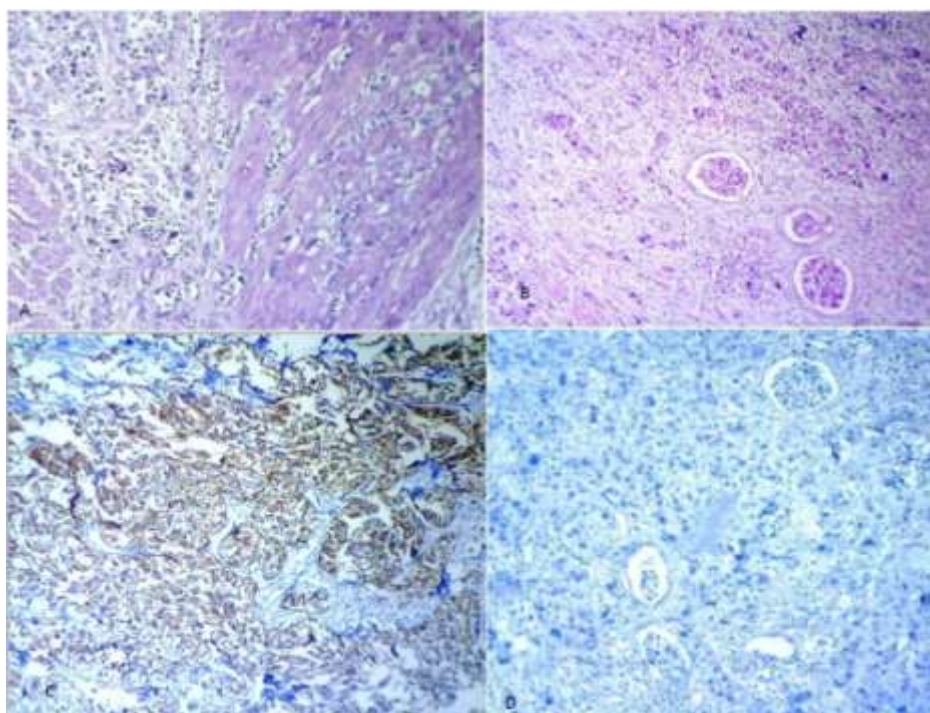
#### IV. Figures



Fig 1: Hypodense lesion in lower segment of left ureter



Fig 2a: Cut surface of bladder shows diffusely shaggy mucosa. Fig 2b: Cut surface of kidney shows dilated pelvicalyceal system and cortex has nodular area



**Fig. 3:** a) Malignant cells infiltrating muscle wall of bladder (H & E, 100x). b) Tumour cells involving renal parenchyma (H & E, 100x). c) CK 7 Positivity in bladder (H & E, 100x). d) CK 20 Negative in Kidney (H&E, 100x)

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