



**RESEARCH ARTICLE**

**GENITO-URINARY TUBERCULOSIS AND UROTHELIAL MALIGNANCY - A CASE REPORT**

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**ABSTRACT**

Extra-pulmonary tuberculosis comprises 20-25 % total burden of the disease in which genito-urinary tuberculosis is 4%. We present a case coexisting urinary tuberculosis and urothelial malignancy.

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**INTRODUCTION**

Extra-pulmonary tuberculosis comprises 20-25 % total burden of the disease in which genito-urinary tuberculosis is 4%. And it is the second most common form of extra pulmonary tuberculosis after lymph node involvement<sup>[1]</sup>. Chronic urinary tract infection like tuberculosis can cause chronic inflammation, lead to obstructive uropathy, and potentially contribute to the development of urinary tract malignancy. However, the association between urinary TB and urinary malignancy has not been studied<sup>[2]</sup>. We present a case coexisting urinary tuberculosis and urothelial malignancy. This is the first case report in literature where kidney, ureter and bladder were involved in same patient.

**Case Report**

A 54-year-old man presented with history of recurrent irritative LUT (frequency, urgency and dysuria) symptoms with fever with chills and rigors occasionally since two months he had history of dull aching loin pain on left side with multiple episodes painless hematuria of mild degree and he had recent history of significant loss of weight and appetite. He was diagnosed to be diabetic recently, was on oral hypoglycemic medications.

He had history of urinary tuberculosis/ GU kochs with secondary PUA obstruction for which he was treated with anti tubercular therapy (ATT) for six months and DJ stenting for two years. His fifteen months follow-up he had no urinary symptoms, biochemical parameters were within normal limits. DJ replacement was done every three months on day care basis. CT scan revealed there is thickening and enhancement of the entire length of left ureter, few intermittent heterogeneously enhancing mass lesions in the upper and mid ureter approximately measuring 6 cms, with adjacent ill defined fat planes with moderate degree dilatation of pelvi-

calyceal system (Fig 1 A). Mild periureteric and perinephric fat stranding noted. The urinary bladder showed few local heterogeneously enhancing nodular lesions approximately measuring about 1 cm noted along right lateral wall (Fig 1 B). Gross specimen of left kidney with entire ureter-kidney was measuring about 11\*7 cms, (Fig 2A) and Gross specimen of bladder with prostate, both lower ureters and seminal vesicles. (Fig. 2B). Urine cytology was negative for malignancy. TUR-BT was done histology revealed high grade urothelial malignancy with invasion of lamina propria. With these finding the patient underwent radical cysto prostatectomy with left total nephro-ureterectomy with bilateral ilio inguinal block dissection with creation of ileal conduit. post operative period was uneventful. Pelvic and peritoneal drains were removed on fourth post operative day. Skin sutures were removed after two weeks. Histopathological examination revealed a high grade urothelial tumour (TCC) infiltrating up to serosa of left ureter and tumour is seen to extend in to renal pelvis and renal parenchyma (Fig. 3A&B), bladder showed residual malignant urothelial tumour involving the dome and trigone with invasion of lamina propria (Fig. 3 C) and bilateral inguinal lymphnodes showed reactive hyperplasia with no evidence of malignancy. A year after the patient was well with no evidence of local recurrence or distant / contra lateral metastasis.

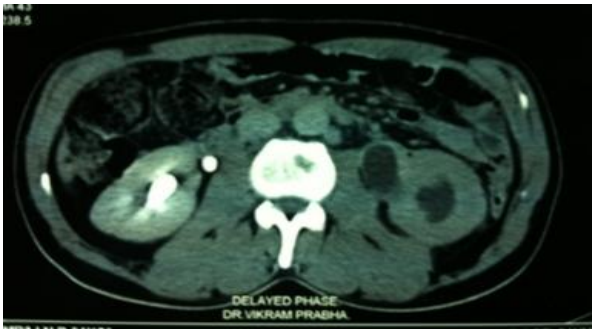
**DISCUSSION**

The co-existence of TB and cancer has attracted attention for several years and has remained controversial. The association of TB and cancer is intriguing and diverse. Simultaneous occurrence of both TB and cancer in the same organ causes a diagnostic dilemma<sup>[8]</sup>. The occurrence of TB and urothelial cancer in the same individual is rare. Till date only three case reports were published in all English language articles. [Table.1]

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Feeney *et al.* reported first case, he estimated that the likelihood of these diseases occurring simultaneously in an individual is approximately 1 in 10 billion<sup>[3]</sup> occurrence in the same kidney would be even more rare.



**Figure 1A** Computed tomography revealing left kidney measures 10\*8 ×6\*4 cms, showing moderate degree dilation of pelvi-calyceal system and upper ureter. There is thickening and enhancement of the entire length of ureter due to few intermittent heterogeneously enhancing mass lesions in upper and mid ureter with adjacent ill-defined fat planes. Mild periureteric and perinephric fat stranding seen.



**Figure 1B** Computed tomography revealing few focal heterogeneously enhancing small polypoidal lesions along the right lateral aspect of urinary bladder largest measuring 1×1 cm, with diffuse wall thickening (1cm) in the anterior aspect.



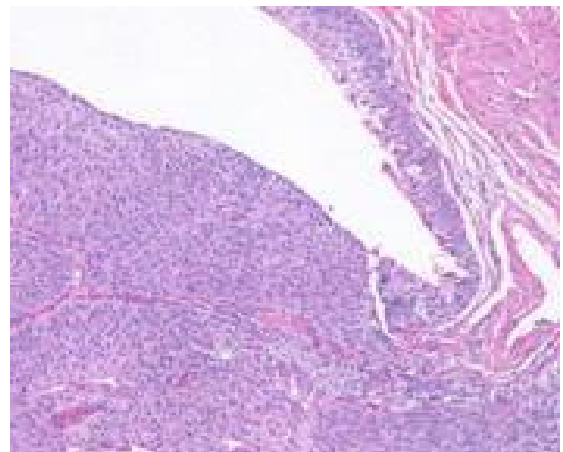
**Figure 2 A** Gross specimen of left kidney with entire ureter-kidney was measuring about 11\*7 cms, Cut section showed dilated calyces. Ureter was dilated and thickened, measures about 9 cms in length, showed stricture at lower end.

The specific association between urinary tuberculosis and urinary tract cancer had not been reported thereafter. Second case was recently a cohort study from Taiwan showed that urinary tuberculosis is associated with the development of urothelial carcinoma but no association with renal cell carcinoma<sup>[2]</sup>. Third case was reported by Sheray N. Chin *et al.* he found to have coexisting tuberculosis and urothelial cancer in same kidney<sup>[4]</sup>.

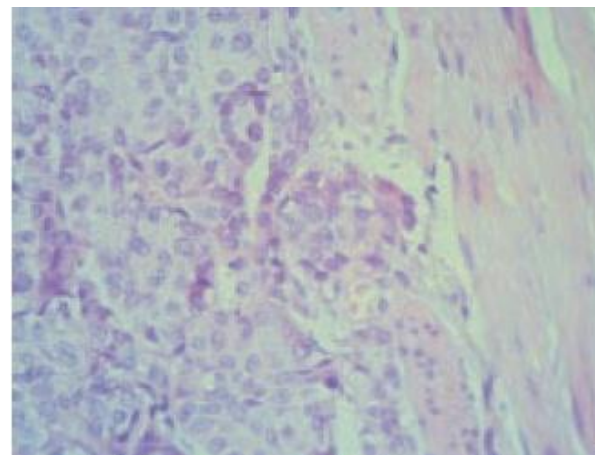
Even though the relationship between chronic inflammation and cancer is well established, causal relationship between TB and cancer is not well understood<sup>[8]</sup>. It's a two edged sword because Chronic inflammation due to TB is thought to be responsible for the genesis of cancer and Patients with cancer are vulnerable to develop active TB because of immunosuppressant due to malnutrition, or due to the use of intensive treatment modalities, such as aggressive chemotherapy.



**Figure 2 B** Gross specimen of bladder with prostate, both lower ureters and seminal vesicles



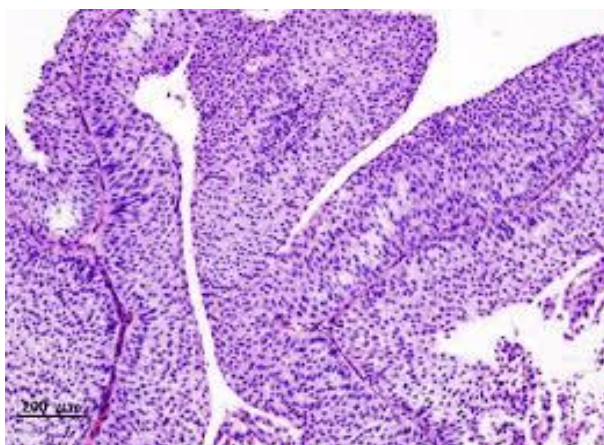
**Figure 3A** Histopathology of left kidney showing high-grade urothelial tumour with pyelonephritic changes in both cortex and medulla.



**Figure 3B** Histopathology left ureter showing a high-grade urothelial neoplasm that had invaded/infiltrated up to serosal layer.

After reviewing literature extensively, there is possibility of an etiological relationship between coexisting carcinoma and

tuberculosis<sup>[5]</sup>. This relationship may be explained the chronic inflammatory mucosal damage initiating a sequence of metaplasia and dysplasia resulting in neoplastic change<sup>[5]</sup>.



**Figure 3C** Histopathology of bladder showing high-grade urothelial tumor with invasion in to lamina propria in the dome and trigonal region

**Table1**

Literature	Organ involvement
Feeney <i>et al.</i> (1994)	Kidney
Y. C. Lien, <i>et al.</i> (2013)	Bladder
Sheray N. Chin <i>et al.</i> (2014)	Kidney

Other possibility is the cancer-associated altered host immunity can increase susceptibility to active tubercular infection<sup>[6]</sup>. Occurrence of both diseases can be explained by invasion of a dormant tubercular lesion by carcinoma causing activation and endogenous reinfection<sup>[6]</sup>. After the completion of anti-TB treatment, tissue scarring can still predispose to obstructive uropathy and subsequent urinary tract infection/inflammation which predispose to cell dysplasia and ongoing cancer formation<sup>[7]</sup>. Locally produced tumor peptides or antigens may also upset the milieu of a granuloma and allow the TB organisms to proliferate. It is impossible to say which disease preceded the other.

**CONCLUSION**

Urinary tuberculosis had a strong association with urothelial carcinoma.

Urinary tuberculosis coexisting with urothelial carcinoma of kidney, ureter, and bladder in a same patient is rare. A chronic urinary tract infection like tuberculosis or obstructive uropathy was independent risk factors and increases the risk of urinary tract malignancy. A high index of clinical suspicion and a focused diagnostic approach is essential to establish the diagnosis early. In tuberculosis endemic areas, the urinary tract of all infected (GU-TB) patients should be examined and followed-up carefully in the post-treatment period.

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