

Incidence and Predictors of Upper Urothelial Cancer Recurrence in Patients with Non-muscle Invasive Urinary Bladder Cancer: A Retrospective Analysis with 1570 Patients at a Tertiary Urology Institute



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Objectives

Till date, no agreement regarding possible risk factors of UTUC with non muscle invasive bladder cancer (NMIBC) and no consensus in the follow up regimen. We aimed to study the predictors of UTUC recurrence and their survival in patients with NMIBC.

Material and Methods

A retrospective study, from 2004-2018. Patients with NMIBC were reviewed to identify who developed UTUC.

Results

Complete data for 1570 were eligible for review. The mean age was 58+11y and 86% were male. Nearly half of the patients (51%) had single bladder tumor, and (53%) had tumors less than 3cm in diameter and of GII.

At a median follow up of 21(6-210m), UTUC developed in 59 patients (3.7%), most of the patients were symptomatic and hematuria was in 64%, while UTUC was discovered on routine follow-up imaging in 30% .

Bivariate analysis of the risk factors showed neither gender, tumor size, site, and tumor stage of grade were predictors for the development of UTUC recurrence. Only bladder tumor number and the number of previous recurrences were the predictors for UTUC recurrence ($p= 0.02$ and 0.01 respectively). [Table](#)

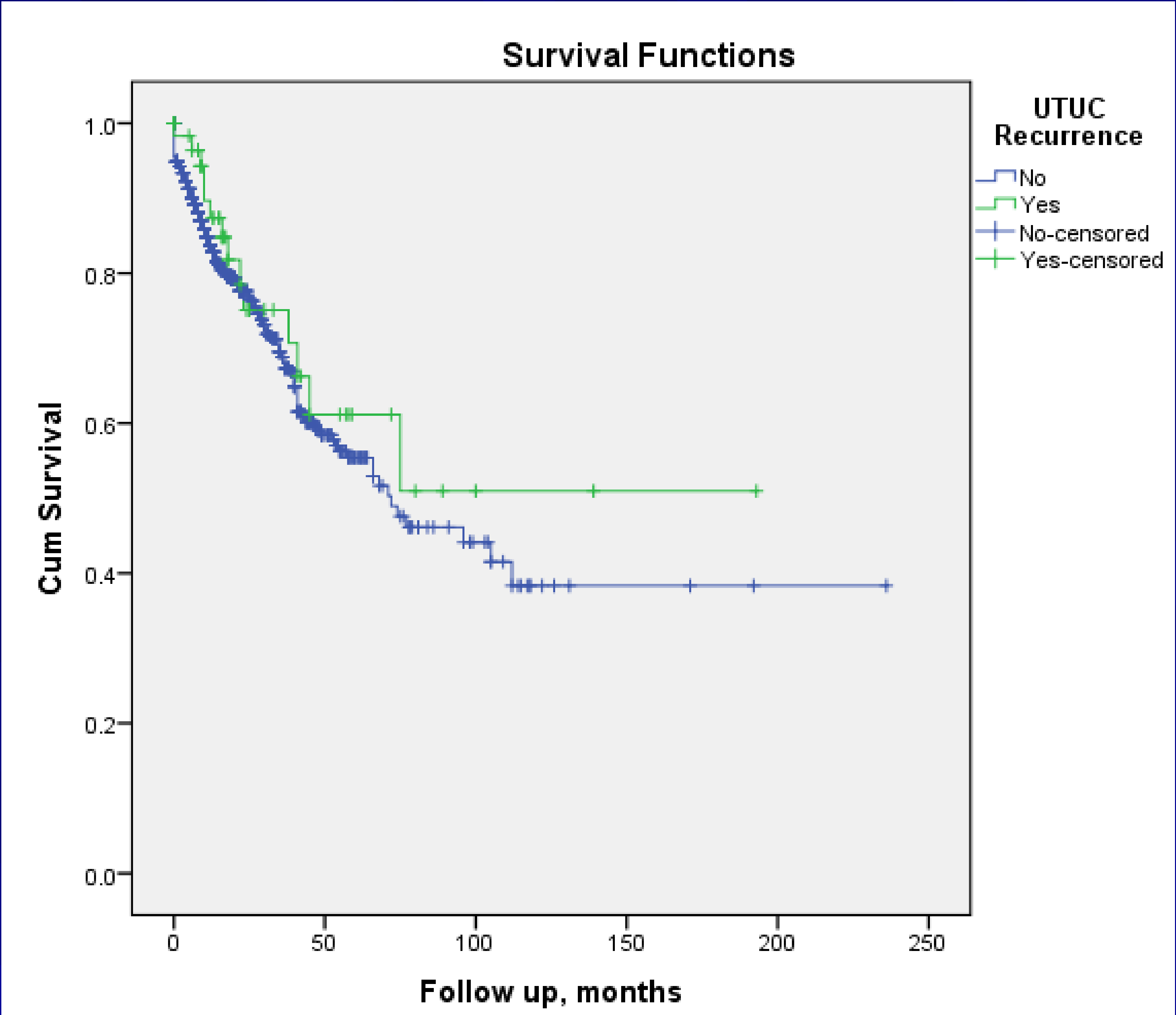
In multivariate analysis, 3 or more previous recurrences were the only predictors that sustained there significance ($p= 0.03$ and 0.001 respectively).

UTUC recurrence does not affect the overall survival.

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Variable	Development of UTUC, (#1570)				p-Value
	No#1511		Yes #59		
Tumor size					0.7
Less than 3cm	796	(97)	24	(3)	
3cm or more	715	(95)	35	(5)	
Tumor site					0.6
Posterior	335	(96)	11	(4)	
Lateral walls	496	(95)	25	(5)	
Multicentric	452	(96)	14	(4)	
Others	228	(96)	9	(4)	
Tumor number					0.02
Single	776	(97)	21	(3)	
Multiple	735	(94)	38	(6)	
Tumor stage					0.1
Ta	74	(99)	1	(1)	
T1	1417	(95)	58	(5)	
Primary CIS	20	(100)	--	--	
Tumor grade					0.6
Grade I	178	(95)	10	(5)	
Grade II	804	(96)	28	(4)	
Grade III	529	(97)	21	(3)	
Number of recurrences					0.01
First time	832	(97)	17	(3)	
Previous 1 recurrence	317	(96)	13	(4)	
Previous 2 recurrences	184	(96)	10	(5)	
Previous 3 recurrences	94	(92)	8	(8)	
More than 3 recurrences	84	(90)	11	(12)	



Conclusion

UTUC develops in 3.7% with NMIBC, and 30% diagnosed with routine follow up imaging, so regular surveillance of the upper tract is still recommended to all patients. More strict surveillance is advised for 3 or more bladder recurrences, yet the optimum protocol is to be determined by future prospective studies