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Incidence and oncological outcome of urothelial carcinoma in kidney transplant recipients

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Introduction

• We investigated to determine if there is an increased rate of urothelial carcinoma (UC) and to compare treatment outcomes of UC in kidney transplant (KT) recipients with non-KT patients.

Materials and methods

• A total of 2,186 patients who underwent KT in our institute from February 1995 to December 2016 were investigated for incidence analysis.

• Age-standardized rates (ASRs) were calculated to compare incidence rates of UC between KT patients and the general population from national statistics.

• Using a generalized estimating equation (GEE), the treatment outcomes of bladder cancer and upper urinary tract UC (UTUC) were compared between KT recipients and "matched" non-KT patients.

RESULTS

• Baseline characteristics of UC developed KT recipients

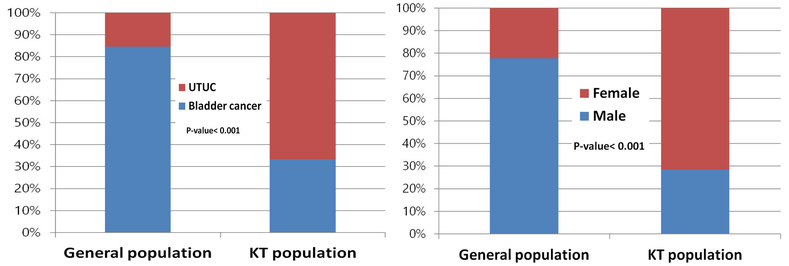
		Bladder cancer (n=5)	UTUC (n=9)	Total (n=14)
Age at KT (years)		52.6 (11.7)	45.9 (6.6)	48.3 (8.9)
Age at UC (years)		59.2 (14.9)	57.2 (4.2)	57.9 (9.0)
KT-UC duration (months)		79.9 (58.6)	135.5 (66.7)	115.6 (67.5)
Gender	Male	3	1	5 (35.7%)
	Female	2	8	9 (64.3%)
KT type	Living donor	3	4	7
	Cadaveric donor	1	4	5
First presentation	Gross hematuria	3	4	7 (50%)
	Flank pain	0	2	2 (14%)
	Others	2	3	5 (36%)
Death (cancer-specific /other cause)		4 (4/0)	2 (1/1)	6 (5/1)
F/U duration from KT (months)		124.2 (74.2)	213.0 (53.0)	181.3 (73.3)
F/U duration from UC (months)		45.9 (84.1)	77.9 (46.5)	66.5 (61.4)

RESULTS

• Among 2,186 patients, nine patients who developed UC after KT

ASRs (per 100,000 persons)	General population	KT population	Inter-population Ratio
Bladder cancer	4.8	122.2	25.5
UTUC	0.9	114.0	129.5

• Proportional disparity between General population vs. KT population



• Treatment for Urothelial carcinoma in KT recipients

Bladder cancer in KT recipients	
TUR-BT	
NMIBC (n=5)	Intravesical chemotherapy (n=4)
	Intravesical BCG instillation (n=0)
	Concurrent chemoradiotherapy (n=1)
MIBC (n=2)	Radical cystectomy (n=0)
	Palliative chemotherapy for metastatic bladder cancer (n=1)

UTUC in KT recipients	
Radical Nephroureterectomy	
pT1 (n=4)	No further treatment (n=4)
≥ pT2 (n=6)	Adjuvant chemotherapy and/or radiation therapy (n=3)

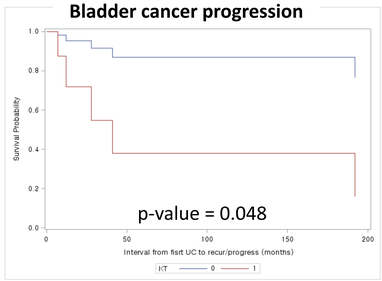
RESULTS

• Comparing treatment outcomes between KT recipients vs. non-KT patients

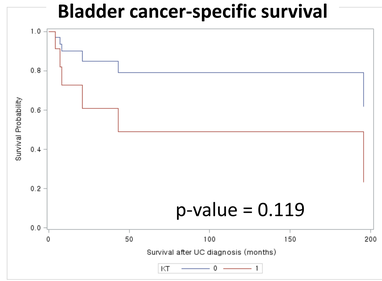
Bladder cancer		KT recipients	Non-KT patients	*P* value
Progression rate	per 100,000 person year	112.8	10.71	0.0481
	Relative risk	10.53	1	
Cancer specific survival rate	per 100,000 person year	99.74	22.15	0.1186
	Relative risk	4.5	1	

Upper urinary tract urothelial carcinoma		KT recipients	Non-KT patients	*P* value
Recurrence rate	per 100,000 person year	72.21	78.04	0.8915
	Relative risk	0.93	1	
Progression rate	per 100,000 person year	39.06	43.61	0.8806
	Relative risk	0.8958	1	
Cancer specific survival rate	per 100,000 person year	23.2	18.93	0.8116
	Relative risk	1.23	1	

Bladder cancer progression



Bladder cancer-specific survival



CONCLUSIONS

• Incidence of UC was much higher in KT recipients compared to the general population.

• Treatment outcomes for UC in KT recipients were not inferior to those of non-KT patients, except in the aspect of progression of bladder cancer.

• Special attention should be paid to UC in KT recipients, including urologic screening, and active treatment could benefit to these patients.