

Predictive Model for Systemic Recurrence Following Cisplatin-Based Neoadjuvant Chemotherapy and Radical Nephroureterectomy for Upper Tract Urothelial Carcinoma

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DATA

- Retrospective evaluation of multi-center database
 - Study period: 2004-2018
 - UT Southwestern, MD Anderson, Penn State, Hopkins
 - 110 patients
- UTUC patients who had cisplatin-based NAC followed by nephroureterectomy
- Final pathology dichotomized: $pT < 2$ vs $pT \geq 2$
- “Systemic Recurrence” defined as any recurrence outside the urinary tract.
- Factors identified on UV analysis as significant were grouped into 3 groups:
 - 0, 1-2, and 3 risk factors
- Recurrence-free survival evaluated using the Kaplan-Meier analysis and log-rank test.

Table 1. Patients Clinicopathologic Characteristics

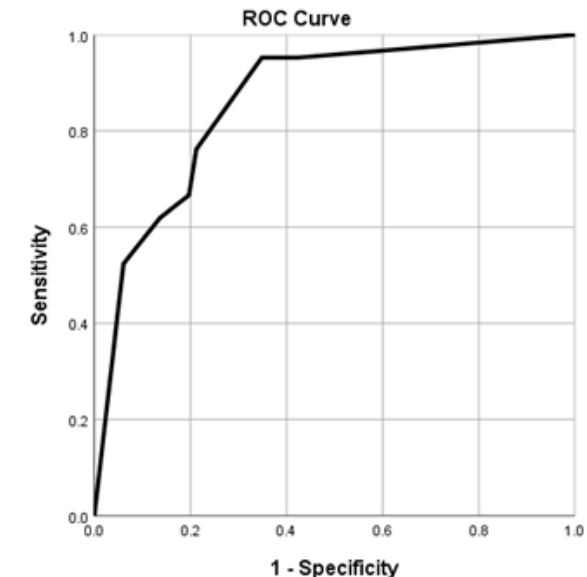
		Number of Patients (%)	
Age [IQR], years		67.0	[61.0-73.3]
Gender	Male	80	(72.7)
	Female	30	(17.3)
Race	White	93	(84.5)
	Non-white	13	(11.8)
ECOG PS	0-1	68	(61.8)
	2-3	6	(5.5)
Hydronephrosis	None or mild	62	(56.4)
	Moderate to severe	38	(34.5)
NAC Agent	MVAC	59	(53.6)
	GC	51	(46.4)
Tumor Stage	pT0	15	(13.6)
	pTa-Tis-T1	44	(40)
	pT2	14	(12.7)
	pT3	30	(27.3)
	pT4	7	(6.4)
Tumor Grade	Low	3	(2.7)
	High	95	(86.4)
Tumor Location	Renal pelvis/calices	48	(43.6)
	Ureter	27	(24.5)
	Both	16	(14.5)
Tumor Focality	Unifocal	59	(53.6)
	Multifocal	27	(24.5)
pLVI	Yes	30	(17.3)
	No	64	(58.2)
pN stage	pN0	71	(64.5)
	pN1-3	31	(28.2)
Surgical Margins	Positive	8	(7.3)
	Negative	101	(91.8)
Surgical Approach	Open	40	(36.4)
	Minimally Invasive	63	(57.3)
	Combined	7	(6.4)
History of Bladder Cancer	No	68	(61.8)
	Yes-Synchronous	7	(6.4)
	Yes-Prior	33	(30)

PREDICTIVE MODEL OF SYSTEMIC RECURRENCE

		Univariate Analysis			Multivariate Analysis		
		OR	[95% CI]	p-value	OR	[95% CI]	p-value
pT	Less than pT2						
	pT2 or more	10.4	3.28-33.2	<0.001	5.30	1.24-22.7	0.024
pLVI	No						
	Yes	11.0	3.66-33.4	<0.001	3.56	0.95-14.0	0.059
pN	pN0						
	pN1-3	9.56	3.44-26.5	<0.001	3.59	0.93-13.8	0.064
Surgical Margins	Negative						
	Positive	3.59	0.83-15.5	0.087	0.77	0.09-6.53	0.81

Table 2. Univariate and Multivariate Logistic Regression Analysis for Predictors of Systemic Recurrence

- ROC curve for model: AUC = 0.86, $p < 0.001$



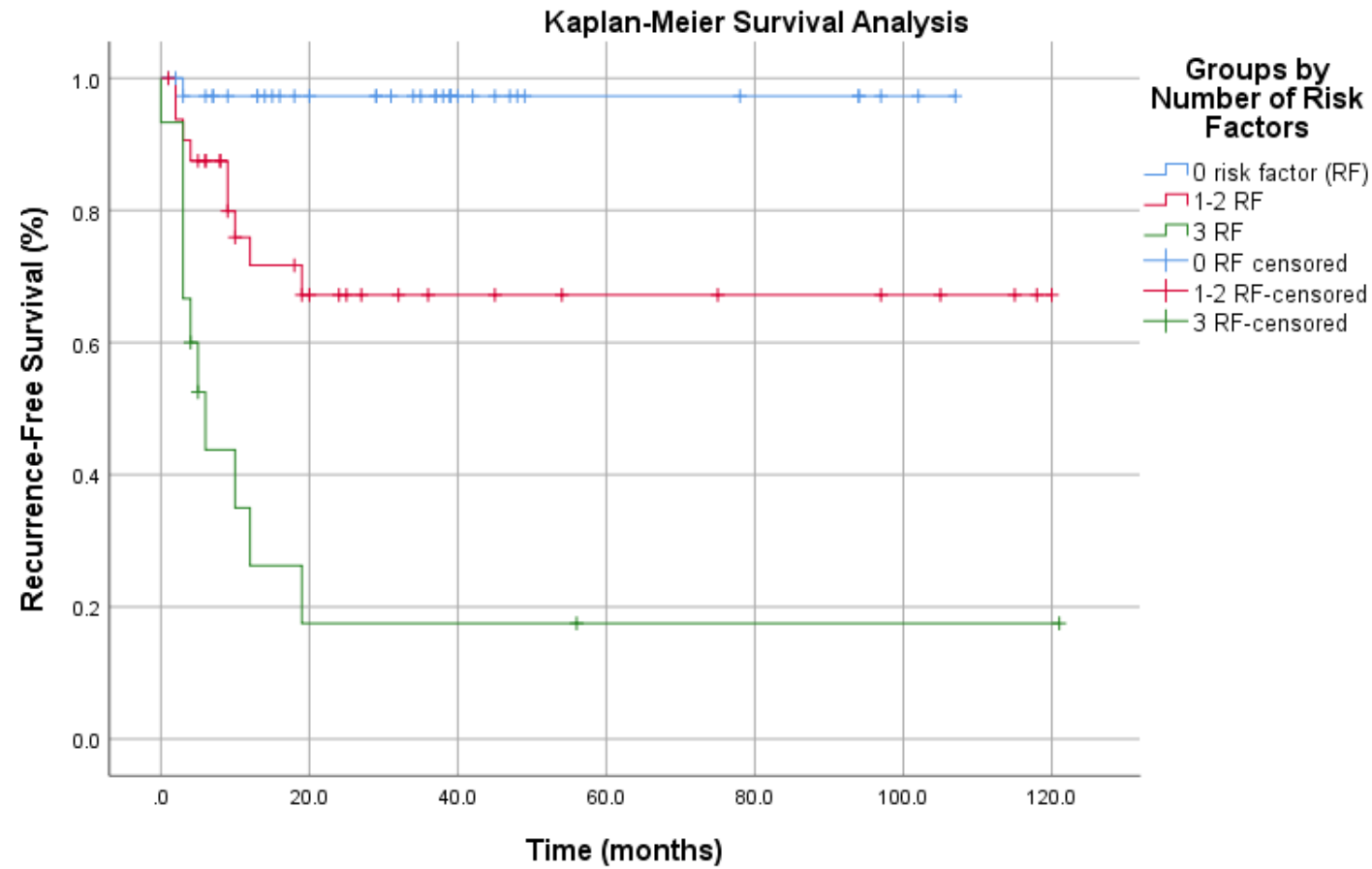


Figure 1. Kaplan-Meier curves for recurrence-free survival in groups stratified according to risk factors for systemic recurrence (log-rank < 0.001)

RESEARCH SUMMARY

● Results:

- Overall 23.6% (26/110) had SR, 24 of those were within 19 months.
- On Univariable analysis, final specimen variables associated with higher recurrence:
 - T-stage ≥ 2 ; LVI; nodal involvement; tumor size
- Multivariable model including the identified pathological risk factors:
 - area under the curve of 0.86 (95% CI [0.77-0.95]; $p < 0.001$)
 - $pT \geq 2$ OR=5.3 (95% CI 1.24-22.7; $p = 0.024$)
- Stratifying according to number of risk factors, the 2-year recurrence-free survival:
 - 97.4%, 72.7%, and 26.7% for 0, 1-2 and, 3 risk factors respectively (log-rank < 0.001).

● Conclusion:

- Pathology of muscle invasive UTUC is a strong predictor of SR.
- The model combining T-stage ≥ 2 , LVI, and nodal involvement can predict the risk of SR with good accuracy.



Thank you