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T1 substage in superficial bladder urothelial carcinoma can predict progression free survival

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Introduction

For urothelial bladder cancer, the depth of tumor invasion and tumor grade affect prognosis significantly. Among non-muscle invasive bladder urothelial carcinomas (UC) of the urinary bladder, T1 stage have much variable clinical presentation and course. 2016 World Health Organization (WHO) classification recommended the use of substaging, but there is no consensus in optimal system. We analyzed the outcomes of focal and extensive T1 substaging according to the depth of lamina propria invasion (**1.0 mm as cut off value**) in our institute.

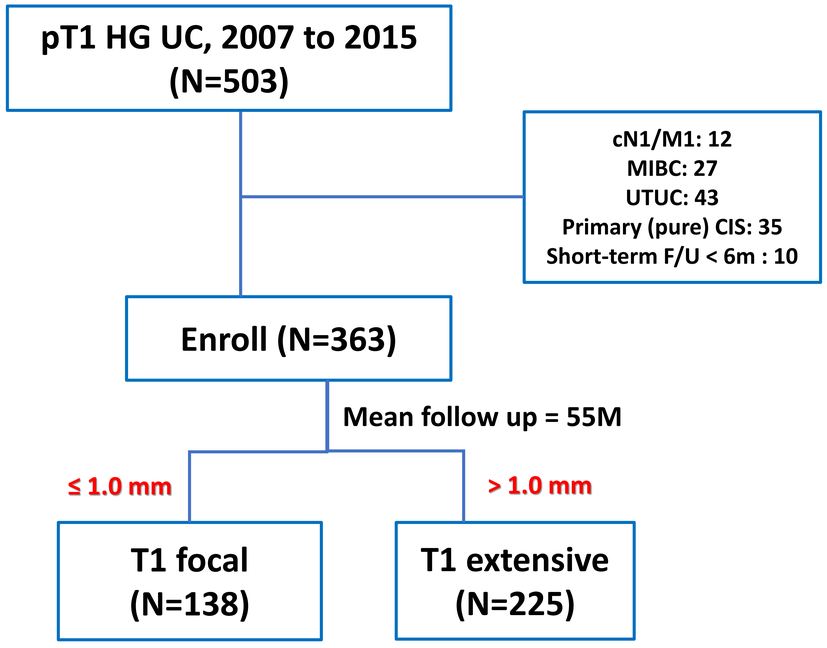
Materials & Methods

From 2007 to 2015, patients with pathology report of focal (≤ 1.0 mm) and extensive (>1.0 mm) T1 high grade bladder urothelial carcinoma (UC) were enrolled retrospectively. Patients with history of (pure) CIS, muscle invasive or upper tract UC were excluded (**Figure 1**). The pathological grading and staging were reported by two pathologists with consensus. The definition of recurrence was reappearance of UC in the bladder, and progression was advancing in stage, metastasis or death caused by UC. Outcomes including recurrence free survival (RFS), progression free survival (PFS), cancer specific (CSS) and overall survival (OS) were analyzed with Kaplan-Meier method.

Results

A total of 363 patients were in the cohort, with 55-month follow-up in average. The mean age was 74 (±12.0) years old. One hundred and thirty-eight (38%) patient were classified as T1 focal substage, and 225 patients were T1 extensive. There were no significant differences in the demographic variables including sex, age, smoking or medical comorbidity

Figure 1: Inclusion algorithm



HG UC, High grade urothelium carcinoma; MIBC, muscle invasive bladder cancer; UTUC, upper tract urothelium carcinoma; CIS, carcinoma in situ.

Results (Cont'd)

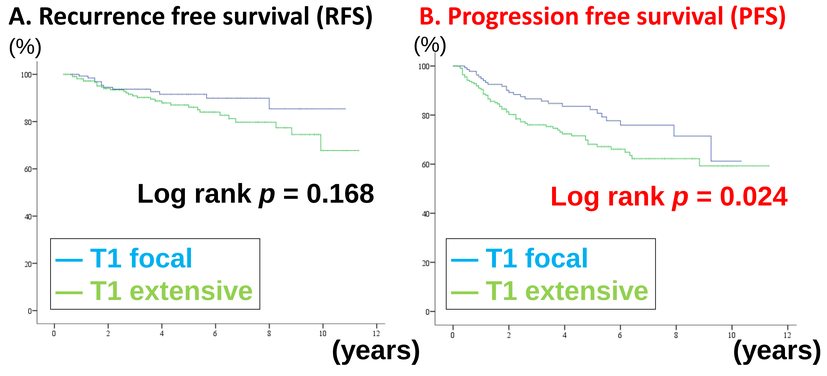
between the two groups (**Table 1**). With Kaplan-Meier survival analysis (**Figure 2**), PFS was significant shorter (p=0.024, log-rank test, figure) in T1 extensive group, but we were unable to demonstrate a difference in RFS (p=0.168), CSS (p=0.102) or OS (p=0.515) between two groups. After multivariate adjustment with concurrent CIS, tumor size, focality and recurrent status, extensive T1 also showed a poor PFS (HR=1.95, p=0.007), but still no significant difference in RFS (HR=1.35, p=0.061), CSS (HR=1.49, p=0.242) or OS (HR=0.74, p=0.12).

Table 1: patient characteristics of T1 focal and extensive group

	All pT1 HG	Focal (≤ 1.0 mm)	Extensive (> 1.0 mm)	P value
N (%)	363	138	225	N/A
Age, mean (SD)	74.0 (±12.0)	75.1 (±11.6)	73.6 (±12.3)	0.261
Sex (Male)	292 (80.4%)	112 (81.2%)	180 (80%)	0.892
Smoking	122 (33.6%)	41 (29.7%)	81 (36%)	0.253
Concurrent CIS	42 (11.6%)	20 (14.5%)	25 (11.1%)	0.412
Mortality	115 (31.7%)	50 (36.2%)	65 (28.9%)	0.163
Primary occur	99 (27.2%)	40 (28.9%)	59 (26.2%)	0.627
IVes chemotherapy	106 (29.2%)	43 (31.2%)	63 (28%)	0.553
IVes BCG	83 (22.9%)	42 (30.4%)	41 (18.2%)	0.128

IVes, Intravesical; BCG, Bacille Calmette-Guérin

Figure 2: Kaplan-Meier survival analysis of RFS and PFS



Conclusions

In our single institute cohort, using **1.0 mm as a cut-off value of lamina propria invasion, extensive T1 predicted shorter progression free survival as compared with focal T1**.