Prognostic Value of Lower Urinary Tract Symptom in Non-Muscle Invasive Bladder Cancer: Multicenter Study

Introduction and Objective: Non-muscle invasive bladder cancer (NMIBC) is usually known to have a recurrence rate from 50% to 70% and a progression to muscle invasive disease rate from 10% to 15%. Although several factors have been regarded as risk factors of recurrence and progression of NMIBC, the effect of lower urinary tract symptom (LUTS) was not well investigated. Bladder urothelium may contact longer with urinary carcinogen in bladder cancer patients with LUTS. We investigated whether LUTS has a prognostic impact in patients with NMIBC.
Materials and Methods: From January 2000 to July 2010, 843 patients with an initial diagnosis of NMIBC in three different medical centers were included. We retrospectively evaluated prognostic value of various parameters including smoking, T stage, grade, size and number of tumor, concomitant carcinoma in situ (CIS), intravesical BCG instillation and the presence of LUTS on the recurrence and progression of bladder cancer by multivariate logistic regression analysis.
Results: The recurrence rate was 40.2% (339 of 843) and progression rate was 23.0% (78 of 339). The mean follow-up was 72.7 months. Patients' characteristics were compared between recurrence (+) and recurrence (-) groups (Table 1). Multivariate logistic regression showed that the presence of LUTS, history of smoking, concomitant CIS, intravesical BCG instillation and number of tumor were independent predictors of bladder cancer recurrence. When recurrence (+) group was subdivided into progression (+) and progression (-) groups, smoking (p=0.008, HR 2.19, 95% CI 1.22-3.92), presence of LUTS (p=0.013, HR 2.20, 95% CI 1.18-4.10), and grade (p=0.006, HR 2.52 95% CI 1.30-4.90) were independent predictors of bladder cancer progression. In patients with LUTS, medication of alpha blocker to release LUTS significantly reduced the risk of bladder cancer recurrence (p=0.021, HR 0.584, 95% CI 0.37-0.92) and progression (p<0.001, HR 0.145, 95% CI 0.05-0.38).
Conclusions: Our results suggest that LUTS is important risk factor of recurrence and progression in NMIBC and medication of alpha blocker may reduce the risk of recurrence and progression in bladder cancer patients with LUTS.

Table 1. Preoperative clinical and oncologic characteristics between patients with and without recurrence

	Recurrence (n=339)	Non-recurrence (n=504)	P value	HR (95% CI)
Age (year)	65.9±10.7	65.1±12.2	0.967	1.00 (0.98-1.01)
Sex (M/F)	242/97	407/97	0.005	1.69 (1.17-2.41)
Body mass index (kg/m^2)	23.2±2.9	23.0±3.2	0.650	1.01 (0.96-1.06)
Presence of LUTS (%)	209 (61.7)	286 (56.7)	0.010	1.50 (1.10-2.06)
Presence of Carcinoma in situ (%)	26 (5.2)	62 (18.3)	<0.001	4.42 (2.63-7.44)
Tumor size (%)			0.841	
<1 cm	88 (26.0)	119 (23.6)		-
1-3 cm	113 (39.2)	191 (37.9)		0.91 (0.62-1.34)
>3 cm	118 (34.8)	194 (38.5)		0.89 (0.59-1.33)
No. of tumor (%)			<0.001	
1	158 (46.6)	299 (59.3)		-
2-7	149 (44.0)	188 (37.3)		1.68 (1.22-2.30)
>8	32 (9.4)	17 (3.4)		3.09 (1.57-6.09)
Intravesical BCG instillation (%)	159 (46.9)	322 (63.9)	<0.001	0.31 (0.21-0.45)
Smoking (%)	159 (46.9)	230 (45.6)	0.048	1.37 (1.00-1.87)
Histologic Grade			<0.001	
Low	167 (49.3)	270 (53.6)		-
High	172 (50.7)	234 (46.4)		2.02 (1.443-2.843)
T stage (%)			0.001	
Ta	164 (48.4)	238 (47.2)		
T1	175 (51.6)	266 (52.8)		0.55 (0.39-0.79)