

Clinical and pathological differences related to gender and smoking habit in a cohort of patients with bladder transitional cell carcinoma

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Objectives

The increased incidence of transitional cell carcinoma (TCC) of the bladder in men, generally attributed to greater exposure to the carcinogenic effect. Although it has been reported that cancer-specific outcome can be particularly adverse in women due to socioeconomic or biological factors, clinical-pathological differences of TCC at the time of diagnosis have not been sufficiently studied. The aim of this study is to analyze whether there are gender-related differences in grade and tumor stage in primary bladder TCC.

Methods

From 1990 to 2009, 1196 consecutive patients with primary bladder TCC at our institution were analyzed retrospectively. Patients were characterized by age, smoking, clinical presentation, tumor grade (WHO 1973), tumor size and number, and TNM stage, comparing men and women.

Statistical analysis

Continuous variables were expressed as mean (standard deviation, SD), while qualitative variables were expressed as frequencies. Comparisons between groups were performed using t-test as parametric test, U Mann-Whitney test as nonparametric test and Chi-square test on the comparison of frequencies. For data analysis we used SPSS (r) 10.0 statistical software (SPSS Inc., Chicago, IL).

Results

We analyzed 1196 patients (992 males and 204 females) with a 5:1 ratio. We found significant differences in age (68.7 years vs. 73.1 years), smoking (46.5% vs. 11.2%) and muscle-invasive stage (12.1% vs. 18.1%). Correcting by tobacco consumption, never-smokers women have larger and more aggressive tumors with a frequency of muscle-invasive disease three times higher than male never-smokers and equaling to male current smokers.

Women had statistically fewer tumours affecting the lamina propria (pT1) but more muscle-invasive and locally advanced tumours. Combining grade and stage, a smaller percentage of pT1G3 tumours is seen whereas we have found more pT2-4G3 tumours. In the other clinical and pathological variables analyzed no significant differences were found.

Analyzing smoking habit, we found differences in clinical and pathological characteristics in males, Table 2. More than half of women with bladder TCC were never smokers compared to only 6.8% of men. However, never-smoking women had statistically larger and higher-grade tumours than never-smoking men. Similarly, the frequency of muscle-invasive tumour was almost 3 times higher than never-smoking men (17.2% vs. 5.9%) and even slightly exceeded that of male current smokers (15.2%).

Table I. Clinical and pathological characteristics of 1196 patients with primary TCC of the bladder according to the gender

	Male	Female	p
N (%)	992 (83%)	204 (17%)	Ratio 5:1
Years (mean, range)	68.7 (19-92)	73.1 (23-95)	0.005
Incidental TCC (%)	125 (12.6%)	21 (10.3%)	0.36
Smoking habit			0.0005
- Never	68 (6.8%)	122 (59.8%)	0.00001
- Current	461 (46.5%)	23 (11.2%)	0.00001
- Former	266 (26.8%)	8 (3.9%)	0.0001
- Unknown	197 (19.8%)	51 (25%)	
Grade (WHO 1973)			0.49
- G1	158 (15.9%)	33 (16.1%)	
- G2	427 (43%)	79 (38.7%)	
- G3	407 (41%)	92 (45.1%)	
Stage T			0.02
- pTis	13 (1.3%)	6 (2.9%)	
- pTa	543 (54.7%)	112 (54.9%)	
- pT1	311 (31.3%)	49 (24%)	0.037
- pT2-4	125 (12.6%)	37 (18.1%)	0.02
Association grade + stage			0.05
- pTis	13 (1.3%)	6 (2.9%)	
- pTaG1	158 (15.9%)	33 (16.1%)	
- pTaG2	311 (31.3%)	58 (28.4%)	
- pTaG3	74 (7.5%)	21 (10.3%)	
- pT1G2	116 (11.7%)	21 (10.3%)	
- pT1G3	195 (19.6%)	28 (13.7%)	0.04
- pT2-4G3	125 (12.6%)	37 (18.1%)	0.035
Size			0.43
- < 3 cm	696 (70.2%)	136 (66.6%)	
- > 3 cm	306 (29.8%)	68 (33.3%)	
Multiplicity			0.61
- Unique	622 (62.7%)	124 (60.1%)	
- Multiple synchronous	370 (37.3%)	80 (39.9%)	

Table II. Clinical and pathological characteristics according to the smoking habit between genders

	Male		Female	
	Current	Never	Current	Never
N	461	68	23	122
Years (mean, range)	68.9 (26-89)	66.5 (19-92)	71.9 (23-88)	73.5 (30-95)
Grade (WHO 1973)				
- G1	73 (15.8%)	14 (20.6%)	5 (21.8%)	13 (11.6%)
- G2	185 (40.1%)	37 (54.4%)	8 (34.7%)	60 (53.6%)
- G3	203 (44%)	17 (25%)*	10 (43.5%)	49 (43.7%)*
Stage T				
- pTis	7 (1.5%)	1 (1.5%)	1 (4.3%)	
- pTa	237 (51.4%)	47 (69.1%)	12 (52.2%)	69 (56.5%)
- pT1	147 (31.9%)	16 (23.5%)	6 (26.1%)	32 (26.2%)
- pT2-4	70 (15.2%)	4 (5.9%)**	4 (17.4%)	21 (17.2%)**
Association grade + stage				
- pTis	7 (1.5%)	1 (1.5%)	1 (4.3%)	
- pTaG1	73 (15.8%)	14 (20.6%)	5 (21.8%)	13 (11.6%)
- pTaG2	130 (28.2%)	29 (42.6%)	4 (17.4%)	44 (36.1%)
- pTaG3	34 (7.4%)	4 (5.9%)	3 (13%)	12 (9.8%)
- pT1G2	55 (11.9%)	8 (11.8%)	4 (17.4%)	16 (13.1%)
- pT1G3	92 (19.9%)	8 (11.8%)	2 (8.7%)	16 (13.1%)
- pT2-4G3	70 (15.2%)	4 (5.9%)**	4 (17.4%)	21 (17.2%)**
Size				
- < 3 cm	320 (69.3%)	53 (78%)	15 (65.2%)	79 (64.7%)
- > 3 cm	141 (30.7%)	15 (22%***)	8 (34.8%)	43 (35.2%***)
Multiplicity				
- Unique	308 (66.8%)	43 (63.2%)	14 (60.9%)	72 (55.4%)
- Multiple synchronous	153 (33.2%)	25 (36.8%)	9 (39.1%)	50 (44.6%)

*p=0.04

**p=0.02

***p=0.05

Conclusion

TCC of the bladder is more frequent in males than in females. In this series, women are older at the time of diagnosis and most often affected by muscle-invasive disease particularly in never-smokers. We need studies to analyze the potential impact of passive smoking to justify these results.