

The difference between women and men in muscle-invasive bladder tumors: A retrospective analytical study of a French regional population

Charlotte Poli^a, Brigitte Trétarre^{bf}, Stéphanie G Trouche-Sabatier^b, Anne Sophie Foucan^b, Nicolas Abdo^c, Grégoire Poinas^d, David Azria^e, Xavier Rébillard^d, François Iborra^{cb}

^a Département d'urologie, centre hospitalier universitaire Carémeau Nîmes, France ; ^b Registre des tumeurs de l'Hérault, 208 rue des Apothicaires, 34298 Montpellier Cedex, France ; ^c Département d'urologie, centre hospitalier universitaire Lapeyronie, Montpellier, France ; ^d Département d'urologie, Clinique Beau Soleil, Montpellier, France ; ^e Institut national de la santé et de la recherche médicale U 1194, institut du cancer, université Montpellier, France ; ^f Centre d'épidémiologie et de recherche en santé des populations (CERPOP), Toulouse, France

Objectives

We performed a retrospective, population-based, analytic study on Muscle-Invasive Bladder Cancer (MIBC) using data from a cancer registry in a French department, to compare patients, tumors, treatments, and overall and specific survival data in women versus men.

Material and Methods

We included all patients living in the department of Hérault and diagnosed with MIBC between 01/01/2017 and 31/12/2019.

Statistical Analysis

Qualitative variables are presented as number and percentage, and quantitative variables as mean and standard deviation (SD) or median with interquartiles. The alpha risk was set at 5%. The Chi2 test was used to compare patient, tumor and treatment characteristics. Fisher's exact test was used for small expected frequencies, and the Student t test was used to compare quantitative variables. Logistic regression analysis was performed, with death or cystectomy as the outcome variables, and including sex, age at diagnosis, cTNM stage, treatments, and metastatic or locoregional progression. Overall and specific survival was plotted using the Kaplan-Meier method and curves were compared with the log rank test. The study cut-off date was 12/31/2020. Statistical analyses were performed using R software version 3.6.3.

Results

	Women (N = 124) N (%)	Men (N = 432) N (%)	p
Age at diagnosis, Mean (SD)	75.4 (±11.9)	75.3 (±10.6)	0.9134*
History of Pelvic Radiotherapy			0.4740**
No	119 (96.0)	405 (93.7)	
Yes	5 (4.0)	27 (6.3)	
History of NMIBT***			<0.001**
No	113 (91.1)	319 (74.0)	
Yes	11 (8.9)	112 (26.0)	
Hydronephrosis:			<0.0001**
No	60 (53.6)	307 (76.9)	
Unilateral	36 (32.1)	79 (19.8)	
Bilateral	16 (14.3)	13 (3.3)	
Mode of detection:			<0.001**
Hematuria	70 (60.9)	288 (68.4)	
Fortuitous	38 (33.0)	77 (18.3)	
Other	7 (6.1)	56 (13.3)	

Table 1. Univariable analysis of population characteristics by sex.

* Student test, ** Chi2, (N) Number of patients, (%) Percentage of patients, (SD) Standard Deviation, ***NMIBT: non muscle invasive bladder tumor

	N	Deceased	OR	95% CI	p
Sex:					
Women	118	93	1	-	
Men	422	248	0.57	[0.32-0.98]	0.047
Age group (years):					
[30;70[	164	83	1	-	
[70;80[	174	103	1.35	[0.80-2.27]	0.257
≥ 80	202	155	1.35	[0.74-2.47]	0.322
cT:					
cT2	445	267	1	-	
cT3	36	25	1.77	[0.77-4.25]	0.186
cT4	40	36	4.98	[1.77-16.73]	0.005
cTx	19	13	0.98	[0.33-3.14]	0.973
Cystectomy:					
No	285	230	1	-	
Yes	255	111	0.22	[0.14-0.35]	<0.001
Metastatic progression:					
No	404	240	1	-	
Yes	136	101	3.21	[1.95-5.41]	<0.001
Local recurrence:					
No	494	307	1	-	
Yes	46	34	2.08	[0.95-4.85]	0.076

Table 4. Multivariable analysis of the factors associated with death, by logistic regression analysis. (OR) Odds Ratio, (95% CI) 95% confidence interval, (p) p-value

	Women (N = 124) N (%)	Men (N = 432) N (%)	p
Histological type:			<0.001**
Urothelial carcinoma	99 (79.8)	404 (93.5)	
Squamous cell carcinoma	16 (12.9)	13 (3.0)	
Neuroendocrine carcinoma	3 (2.4)	11 (2.5)	
Other	6 (4.9)	4 (0.9)	
cTNM*:			0.6590**
Stage II	77 (62.1)	288 (66.7)	
Stage III	17 (13.7)	47 (10.9)	
Stage IV	26 (21.0)	79 (18.3)	
Unknown stage	4 (3.2)	18 (4.2)	
Primary treatment:			<0.0001***
Cystectomy alone	22 (17.7)	117 (27.1)	
Cystectomy+ neoadjuvant chemotherapy	16 (12.9)	83 (19.2)	
Cystectomy + adjuvant chemotherapy	6 (4.8)	19 (4.4)	
Radiothérapie (+/- chemotherapy)	10 (8.1)	46 (10.6)	
Chemotherapy alone	12 (9.7)	52 (12.0)	
Immediate palliative treatment, no treatment	58 (46.8)	115 (26.6)	

Table 2. Univariable analysis of tumor characteristics and primary treatment by sex.

* cTNM: Stage II : cT2N0M0 ; Stage III : cT3N0M0- T2-3N+M0 ; Stage IV : M+ ; ** Fisher, *** Chi2 test, (N) Number of patients, (%) Percentage of patients

	N	Cystectomy	OR	95% CI	P
Sex:					
Men	414	309	1	-	
Women	120	66	0.48	[0.29-0.78]	0.004
Age group (years):					
[30 ; 75[	265	233	1	-	
[75 ; 80[	82	62	0.44	[0.25-0.76]	0.004
[80 ; 85[	80	51	0.25	[0.14-0.44]	<0.001
≥ 85	107	29	0.06	[0.03-0.11]	<0.001
cTNM*:					
Stage II	365	263	1	-	
Stage III	64	52	1.27	[0.68-2.43]	0.457
Stage IV	105	60	0.09	[0.05-0.17]	<0.001

Table 3. Multivariable analysis of the factors associated with cystectomy by logistic regression (N=534).

* cTNM: Stage II : cT2N0M0 ; Stage III : cT3N0M0- cT2-3N+M0 ; Stage IV : M+ ; (OR) Odds Ratio, (95% CI) 95% confidence interval, (p) p-value

The risk of not having a cystectomy is to be a women, age over 75 years old and stage IV.

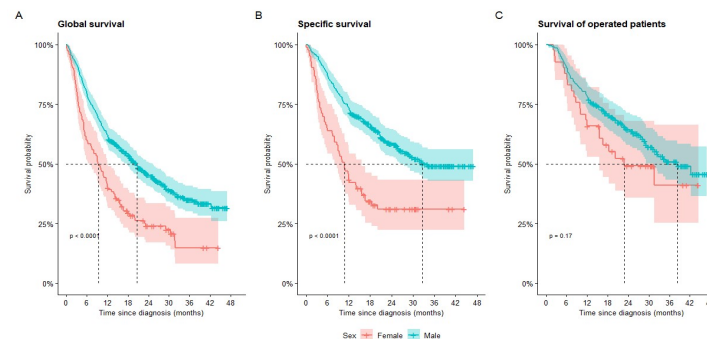


Figure 1: Overall survival (A), specific survival (B) and overall survival of operated patients (C) by sex. p-values from the log rank test.

Conclusions.

Our study shows that women are less often treated with cystectomy and have a worse prognosis than men, all other variables being equal. The reasons for this gender difference are multifactorial and their knowledge could improve the prognosis of MIBC in women.