

Impact of Lower Urinary Tract Symptoms on Prostate Cancer Risk Among T1c Biopsy-Referred Japanese Men with Prostate Specific Antigen <10 Ng/ML

Introduction and Objective: To investigate the association of lower urinary tract symptoms (LUTS) evaluated by international prostate symptom score (IPSS) with prostate cancer (PCa) risk and grade at biopsy.

Materials and Methods: A retrospective analysis was performed on 1467 Japanese men with prostate specific antigen (PSA) <10 ng/mL and unsuspicious digital rectal examination (DRE) undergoing initial extended prostate biopsy. IPSS scores <8 were defined as having no LUTS. The association between LUTS and PCa risk and grade at biopsy was examined using logistic regression. Data were also examined stratified by age (year, < 60, 60–70, and > 70) and prostate volume (PV) (cc, < 30, 30–50, and > 50). Cancer grade was classified into low-grade (Gleason score [GS] ≤ 6) and high-grade (GS 7–10).

Results: Of 1467 men, 484 (33.0%) had positive biopsy and 633 (43.1%) were regarded as no LUTS. On multivariate analysis, no LUTS had significant and positive impact on the risk of PCa, both low- and high-grade disease, at biopsy. Despite its significant associations with PCa risk throughout any PV category, no LUTS exhibited higher relative risks with larger PV category. Addition of LUTS status significantly ($P = 0.047$) improved the predictive accuracy of PCa detection by 6.2% in men with PV > 50 cc.

Conclusion: A lack of LUTS is associated with higher risk of PCa in T1c biopsy-referred Japanese men with PSA < 10 ng/mL. This finding might be useful especially in patients with large prostate volumes.

Table 1 Associations of absence of lower urinary tract symptoms with prostate cancer detection and grade among patients undergoing initial extended prostate biopsy

Grade	OR or RR	95% CI	<i>P</i>
PCa (all grades)			
Crude OR	1.85	1.49–2.31	< .0001
Age-adjusted OR	2.11	1.68–2.65	< .0001
Multivariate-adjusted OR [†]	1.70	1.31–2.20	< .0001
Low-grade			
Crude RR	1.52	1.11–2.08	0.0099
Age-adjusted RR	1.71	1.24–2.37	0.0012
Multinomial-adjusted RR [‡]	1.44	1.01–2.06	0.0435
High-grade			
Crude RR	2.08	1.60–2.71	< .0001
Age-adjusted RR	2.38	1.82–3.12	< .0001
Multinomial-adjusted RR [‡]	1.86	1.36–2.54	0.0001
OR, odds ratio; RR, relative risk; CI, confidence interval; PCa, prostate cancer			
[†] Adjusted for age, BMI, PSA, free/total PSA ratio, prostate volume, and number of biopsy cores.			
[‡] RRs are vs no cancer.			

Table 2. Logistic regression analysis predicting overall prostate cancer at biopsy stratified by prostate volume

Variables	Prostate volume (cc)					
	< 30 (n=564)		30–50 (n=611)		> 50 (n=292)	
	OR (95% CI)	<i>P</i>	OR (95% CI)	<i>P</i>	OR (95% CI)	<i>P</i>
Age, year	1.10 (1.08–1.13)	< .0001	1.07 (1.04–1.10)	< .0001	1.01 (0.95–1.07)	0.70
PSA, ng/ml	2.86 (0.78–11.04)	0.11	1.86 (0.38–9.50)	0.45	1.20 (0.068–18.62)	0.84
Free/total PSA ratio	0.45 (0.16–1.27)	0.13	0.13 (0.040–0.42)	0.0006	0.15 (0.009–2.31)	0.18
No. biopsy cores	1.03 (0.98–1.07)	0.25	1.03 (0.99–1.08)	0.18	1.06 (0.98–1.15)	0.18
LUTS						
Yes	Reference		Reference		Reference	
No	1.52 (1.04–2.23)	0.030	1.93 (1.30–2.89)	0.0012	2.54 (1.21–5.25)	0.014
Increment of PA by LUTS (%)	0.9 (70.3–71.2)		1.7 (67.2–66.9)		6.2 (56.8–63.0)	
Mantel-Haenszel test	0.418		0.318		0.047	

CI, confidence interval; LUTS, lower urinary tract symptom; OR, odds ratio; PA, predictive accuracy; PSA, prostate specific antigen