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COMPARISON OF BLADDER SENSATIONS BETWEEN SUPINE AND STANDING POSITION IN HEALTHY YOUNG MEN

Hypothesis / aims of study
We investigated bladder sensations in supine and standing position in non-invasive rapid bladder filling in controlled setting in healthy volunteers.

Study design, materials and methods
Ten healthy men with IPSS < 7 and normal BMI were participated in the study. The participants were asked to drink 1,000 ml of water 1 hour before the session and another 200ml every 10 minutes during the session. At the start of the session, bladder was emptied by natural voiding and bladder sensation changes were monitored in supine position and expressed as predefined terms(table 1) in the first session. At each point of sensory changes, bladder volume was measured by bladder scan and followed by uroflometry after the point of strong desire. The same protocol was applied in standing positions in the second session.

Results
Mean age of the participants were 28.8±0.25 (IPSS 3.6±0.5, BMI 23.0±0.48). Bladder volume at strong awareness showed statistically significant increase in supine compared with standing position (table2). Although there were trends for larger volume in supine than standing position, no significant difference was found at all the other sensory points. Uroflowmetric parameters showed no significant difference.

Interpretation of results
Although strong awareness of bladder filling sense was felt with less volume in standing position, other points of bladder sensory are not affected by supine or standing positions in healthy young men. The limitation of this study is small number of subjects and non-physiologic rapid filling with controlled setting.

Concluding message
Bladder volume with strong awareness was large in supine position than in standing position. Other sensations showed no difference with either supine or standing position. Further study with overactive bladder patients would be needed.

Table1. Descriptions of terminology associated with bladder sensation

Bladder sensation	Description
Weak awareness (S1)	Weak awareness of the bladder. Sensation in the background. Not spontaneously noticed. Either pressure or tingling sensation.
Stronger awareness (S2)	Stronger awareness of the bladder but no desire to void. Either pressure and/or tingling sensation
Weak desire (S3)	Weak desire to void. If I would be doing nothing, I would go to the toilet. Either pressure and/or tingling sensation
Stronger desire (S4)	Stronger desire to void. I search a toilet actively. Either pressure and/or tingling sensation

Table2. Bladder volumes at points with sensory changes and uroflowmetric parameters according to supine or standing position (n=10)

position		S1%	S2%	S3%	S4%	VV (ml)	Qmax (ml/sec)	RU (ml)
Supine	mean	6.25	30.5	50.5	100	603	28.3	10.5
	S.E.	1.89	2.92	4.25	0	47.7	2.01	2.75
Standing	mean	6.16	28.5	51.2	100	571	28.9	14.9
	S.E.	1.84	2.71	3.73	0	41.6	1.81	3.96
p-value		0.97	0.038*	0.87	1.0	0.62	0.65	0.24

S1%: relative bladder volume of S1 to S4, S2%: relative bladder volume of S2 to S4, S3%: relative bladder volume of S3 to S4, S4%: relative bladder volume of S4 to S4; S1: bladder volume at weak awareness (ml), S2: bladder volume at stronger awareness (ml), S3: bladder volume at weak desire (ml), S4: bladder volume at stronger desire (ml), VV: voided volume, Qmax: maximum flow rate, RU: residual urine volume (* paired t-test, statistical significance with $p < 0.05$)

Disclosures
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