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ORIGINAL ARTICLE

Stand up urgency: Is this symptom related to a urethral mechanism?☆

Évaluation du caractère positionnel de l'urgenturie : l'urgenturie au passage à l'orthostatisme relève-t-elle d'un mécanisme urétral ?

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KEYWORDS
Female urinary incontinence;
Overactive bladder;
Urge urinary incontinence;
Patient positioning;
Stand up urgency;
Urethral sphincter

Summary
Objective. — To study the role of women's position as a stimulus of urgency, and specifically the change of position, i.e. to stand up form a lying or sitting position. Thus, we compared clinical and urodynamics characteristics among women with overactive bladder syndrome (OAB) depending of the position which could trigger urgency.
Methods. — Thirty-eight females with complaints of urgency, without urinary infection, neurological or urological diseases, were prospectively enrolled. Patients completed a study-specific questionnaire asking about urgency and urge incontinence when in three different positions (standing up, sitting, and standing position). We named stand up urgency (SUU) an urgency, which was defined thanks to this questionnaire, according to the presence of urgency triggered by the change from sitting or lying to a standing position. All patients underwent cystometry in the standing position, urethral closure pressure measurement (MUCP) and Valsalva leak point pressure (VLPP) tests. Urodynamics characteristics were compared in the groups defined by the questionnaire.

Abbreviations: OAB, overactive bladder syndrome; SSU, stand up urgency; SUUI, stand up urgency incontinence; DO, detrusor overactivity; VLPP, Valsalva leak point pressure test; PFE, pelvic floor exercises; UPP, urethral pressure profile; CLPP, cough leak point pressure test; MUCP, maximum urethral closure pressure; ISD, intrinsic sphincter deficiency; SUI, stress urinary incontinence; SST, supine stress test.

☆ Level of evidence: 4.

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Results. — SUU was associated with lower MUCP (57 vs. 77 cm H_2O; $P = 0.017$), but not with positive VLPP or DO. Among females with SUU, those with stand up urge incontinence (SUUI) also had lower MUCP (46 vs. 73 cm H_2O; $P = 0.019$) and more positive cough stress tests (73 vs. 13%; $P = 0.019$). Conversely, urge incontinence in the sitting position was associated with DO (46% vs. 0%; $P = 0.02$), but not with lower MUCP or positive VLPP.
Conclusion. — SUU appeared to be related to impaired urethral closure mechanisms (lower MUCP), but future studies are needed to confirm this hypothesis.

MOTS CLÉS
Incontinence urinaire féminine ;
Hyperactivité vésicale ;
Incontinence urinaire sur urgenturies ;
Position de la patiente ;
Urgenturies à l'orthostatisme ;
Sphincter urétral

Résumé
Objectif. — Étudier le rôle du changement de position dans le déclenchement d'une urgenturie chez les femmes, et spécifiquement lors du passage de la position couchée ou allongée à la position debout. Une comparaison des données cliniques et urodynamiques chez des femmes présentant un syndrome clinique d'hyperactivité vésicale dépendant de la position a été effectuée.
Méthode. — Trente-huit femmes sans pathologie neurologique ou urologique connue, se plaignant d'urgenturie, sans cause infectieuse urinaire, ont été inclues de manière prospective. Dans le but de définir différents groupes de patientes, ces dernières devaient remplir un questionnaire spécifique les interrogeant sur le caractère positionnel de leur urgenturie et/ou incontinence urinaire associée, en fonction de trois positions différentes (au lever). L'urgenturie au passage à l'orthostatisme (UPO) était définie comme la présence d'une urgenturie apparaissant au lever (c'est-à-dire au changement de position de la station assise ou allongée à la position debout). Toutes les patientes avaient une cystomanométrie en position debout, une mesure de la pression de clôture urétrale maximale (PCUM) ainsi qu'un *Valsalva leak point pressure* (VLPP). Les données urodynamiques étaient comparées entre les différents groupes définis par le questionnaire.
Résultats. — L'UPO était associée avec une diminution de la PCUM (57 versus 77 cm d'H_20 ; $p = 0{,}017$), mais sans corrélation avec un VLPP positif ou une hyperactivité détrusorienne. Parmi les femmes avec une UPO, celles présentant une incontinence urinaire associée avaient également une PCUM diminuée (46 versus 73 cm d'H_20 ; $p = 0{,}019$) et des tests de provocation d'incontinence urinaire à la toux positifs (73 % vs 13 % ; $p = 0{,}019$). À l'inverse, la présence d'une incontinence urinaire en position assise était corrélée avec la présence d'une hyperactivité du détrusor (46 % versus 0 % ; $p = 0{,}02$), mais sans corrélation avec une diminution de la PCUM ou un VLPP positif.
Conclusion. — L'UPO semble être en rapport avec une défaillance sphinctérienne urétrale (diminution de la pression de clôture urétrale maximale), cela nécessitant d'être confirmé ultérieurement par de futures études.

Introduction

Overactive bladder syndrome (OAB) is defined as urgency, with or without urge incontinence, and is usually associated with increased daytime frequency and nocturia [1]. Different stimuli can lead to urgency via a variety of mechanisms. As well as key stimuli (e.g. close proximity to the toilet, hearing flowing water or heightened emotion), patient position during urgency should be considered. Indeed, many females complain of urgency, or urge incontinence, only when in a specific position, such as standing or upon standing from a lying position, but never whilst lying or sitting. We have noted this condition commonly in our clinical practice and termed this 'Stand Up Urgency' (SUU). SUU could be related to detrusor overactivity (DO) induced by a change in position, as well as insufficiency of the sphincter and urethral closure mechanisms. Mattiasson et al. [2] suggested a primary neuromuscular disorder in the urethra in urge incontinent women, with urethral pressure falling during or immediately after exercise. Gunnarson et al. [3] described decreased electromyographic (EMG) pelvic floor muscle activity measured by vaginal surface EMG in females with urge, stress and mixed incontinence compared to healthy volunteers, suggesting the role of pelvic floor muscles in urge incontinence. Thus, as well as other OAB pathophysiological mechanisms (e.g. DO, sensory dysfunction), a urethral sphincter origin may be considered. Several studies have shown that anticholinergics often do not improve OAB [4]. Pelvic floor exercises (PFE) improve both urge and stress incontinence, primarily acting on pelvic floor and urethral striated sphincter muscles [5]. A detrusor inhibition reflex induced by PFE may be a factor, but since many OAB patients do not have DO, urge incontinence improvement by PFE could be related to the action on the striated urethral sphincter.

We researched the *Medline* database by searching for keywords comprising 'overactive bladder/urgency/female urinary incontinence/urge incontinence' and

cross-referencing these with 'position/posture/standing position/stand up/changing position/patient positioning'. We found many studies focusing on urodynamic data and patient position, but no specific study regarding female SUU.

This study was designed to analyse the role of women's position as a stimulus of urgency, and specifically the change of position, i.e. to stand up form a lying or sitting position. Thus, we compared clinical and urodynamics characteristics among women with overactive bladder syndrome (OAB) depending of the position which might trigger urgency (standing up, sitting, and standing position). We hypothesised that SUU, with or without incontinence, was related to a urethral and sphincter mechanism, which we analysed using maximum urethral closure pressure (MUCP) and Valsalva leak point pressure (VLPP) tests.

Patients and methods

Thirty-eight females complaining of urgency presenting at our clinic for an urodynamic evaluation were enrolled into this prospective study, which was conducted from July 2008 to March 2009. The study was approved by the national ethics committee (2008-11-06.2 CPP X Paris Île-de-France) and all patients provided written informed consent prior to any study-related procedures. Urodynamic testing was conducted using the laboratory's standard procedures, and patients did not receive any financial compensation.

Study inclusion criteria comprised females aged 18—75 years complaining of urgency, urge incontinence or mixed urinary incontinence. Older females were excluded due to difficulties with identifying MUCP cut-off values in this population. Patients were excluded if they presented with untreated urinary tract infection, neurological disorders or abnormal neurological examination. Patients suffering urinary retention, pelvic organ prolapse more or equal to grade 2 according to the Baden and Walker classification, or with a history of surgery for urinary incontinence or any urological diseases were also excluded. Any patients receiving medication with an action on the lower urinary tract (e.g. antimuscarinics, alpha-blockers, cholinomimetics) were also excluded.

A study-specific self-administered symptom questionnaire was developed for SUU in order to standardise the collection of these particular urgency symptoms related to patient position (Appendix A). Questions were asked about urgency triggered in different positions: sitting, standing, and change from sitting or lying to standing position. Answers were either 'Yes' or 'No', and 'With' or 'Without incontinence'. Patients were then grouped according to:

- 'stand up urgency' according to the presence of urgency triggered by the change from sitting or lying to a standing position;
- 'sitting urgency' according to the presence of urgency when remaining in a sitting position;
- 'standing urgency' according to the presence of urgency when remaining in a standing position.

Six main groups were thus defined thanks to the questionnaire's answers, depending of the urgency triggered in different positions:

- women with SUU (SUU group) and without (no SUU group);
- women with sitting urgency and without (no sitting urgency group);
- women with standing urgency and without (no standing urgency group).

Patients were also categorised according to the presence or absence of incontinence for each of the three conditions.

Menopausal status, age, associated stress urinary incontinence (SUI) and obstetric history were recorded for each patient. A physical examination was also performed, including pelvic organ prolapse assessment, urethral mobility evaluation, and a supine stress test (SST) (bladder filled at 300 mL whilst in a semi-supine position). Urodynamic assessments were performed according to the International Continence Society recommendations [6,7]:

- 'free flow' uroflowmetry, with a post-void residual measurement performed by catheterisation;
- urethral pressure profile (UPP) was performed with the patient in a lying position after bladder emptying, using a catheter perfused at 2 mL/min with sterile water, with a transurethral 8F double-lumen water catheter according to the Brown and Whickham method [8]. Three successive UPP assessments were performed for reproducibility, and maximal urethral and intravesical pressure were measured to calculate maximum urethral closure pressure (MUCP). A mean of the three MUCP measurements was taken. Intrinsic sphincter deficiency (ISD) was defined as MUCP less than 30 cm H_2O. Three UPP measurements were repeated after seven coughs and a decrease of MUCP greater than 20% after cough comprised the definition of urethral fatigue [9];
- filling cystometry was performed in the standing position using a transurethral 8F double-lumen water catheter at a filling rate of 50 mL per minute. Ten coughs and 10 squats in order to mimic standing were performed at the end of bladder filling. The standing position was chosen as this proved the best position to determine DO [10]. DO was defined as an involuntary detrusor contraction during the filling phase, which may be spontaneous or provoked, without lower limit of amplitude, as defined by the ICS [1];
- Valsalva leak point pressure (VLPP) test was performed with the patient in a semi-supine position with the bladder filled to 400 mL at the end of cystometry. The cystometry catheter was removed and abdominal pressure measured using an intrarectal catheter. Leakage was detected by inspection of the external urethral meatus. VLPP was defined as the lowest intra-abdominal pressure, which produced leakage with the bladder filled to 400 mL. The cut-off values analysed for VLPP were 30, 60 and 90 cm H_2O;
- cough leak point pressure (CLPP) test was performed under the same conditions as VLPP.

Clinical and urodynamic variables were compared inside the groups defined above, i.e. between women with and without SUU, with and without standing urgency, and with and without sitting urgency. Secondarily, the three groups of women with urgency in the three different positions were analyzed depending of the presence of incontinence in these positions. The primary urodynamic variable was the MUCP value, with the secondary variable being VLPP. Urodynamic

Table 1 Distribution of urgency according to patient position.

	Yes (%)	No (%)
Stand up urgency (SUU)	23/38 (61)	15 (39)
With incontinence	15/23 (65)	
Sitting urgency	20/38 (53)	18 (47)
With incontinence	11/20 (55)	
Standing urgency	30/38 (79)	8 (21)
With incontinence	23/30 (77)	
Associated SUI (i.e. mixed urinary incontinence)	30/38 (79)	8 (21)

SUI: stress urinary incontinence.

results were reviewed in a blinded and independent fashion by an investigator unaware of the clinical findings.

Statistical analysis

Quantitative between-group comparison was performed using the Student test, and qualitative testing was conducted using the Chi^2 test (Statview 5© software). Values were considered statistically significant when the *P* value was < 0.05. Results are presented as means and standard deviations. Spearman correlation coefficient was performed to confirm association between age and MUCP in the study population.

Results

Thirty-eight women with a median age of 53 years (± 10 years) were prospectively included in this study; patients had a mean parity of 2.3 (± 1.8), and 54% were postmenopausal. Among these women, 79% complained of mixed urinary incontinence and 21% of isolated OAB. Distribution of baseline symptoms according to answers provided to the SUU questionnaire are provided in Table 1, however, these groups are not mutually exclusive because women can complain of urgency in different positions. The SUU group consisted of 23/38 women who described this specific symptom in the questionnaire, 15 out of theses 23 had associated SUU incontinence. Women without SUU on the questionnaire were 15/38 and were defined as the ''no SUU'' group.

With respect to urodynamic data at baseline, 21% (8/38) of patients had DO on cystometry whilst in the standing position. VLPP was positive for 29% (11/38) of the women, and urethral fatigue was found in 16% (6/38). Mean MUCP was 64 cm H_2O (± 27), and 8% (3/38) had an ISD, defined by MUCP less than 30 cm H_2O.

Urodynamic results for the three groups (as defined by the baseline questionnaire) are summarised in Tables 1—5. Univariate analysis revealed that women with SUU had a significantly lower MUCP than those without ($P = 0.017$), and were significantly older and postmenopausal. No differences were found between the SUU group and the no SUU group concerning VLPP, CLPP, urethral fatigue, or DO according to urodynamic data (Table 2). Results for VLPP showed no significant differences between the groups. For simplification, results are presented for VLPP positive values of less than 60 cm H_2O only. MUCP is known to decrease with age [11] and menopause, and the Spearman correlation coefficient confirmed this finding (Rho = -0.45 [$P = 0.002$]) in our population.

In the SUU group, women with 'Stand up urge incontinence' (SUUI) also had a significantly lower MUCP compared to those without incontinence ($P = 0.019$). There were no differences for age and menopausal status between these two groups (Tables 2 and 3). SUUI was found mostly in mixed urinary incontinent women (87%) and was significantly associated with a positive SST (11/13). However, SUU without incontinence was also frequently associated with SUI (63% of mixed incontinence), but not with a positive SST (Table 3).

Analysis of sitting urgency showed no differences between the groups regarding urodynamic data (Table 4) or for clinical data (i.e. age, menopausal status, SUI, urethral hypermobility, SST). Among women with complaints of sitting urgency, those with sitting urge incontinence had significantly more DO found on cystometry ($P = 0.02$). Clinical and urodynamic data were not significantly different for women with or without standing urgency, or with or without standing urge incontinence (Table 5).

Table 2 Urodynamic results for SUU and SUUI.

Urodynamic data	Women with SUU ($n = 23$)	No. SUU ($n = 15$)	Women with SUU ($n = 23$)	
			SUUI ($n = 15$)	No. SUU incontinence ($n = 8$)
MUCP (cmH_2O)	57 (± 28)*	77 (± 19)	46 (±27)**	73 (± 21)
ISD: MUCP < 30	3 (13%)	0 (0%)	3 (20%)	0 (0%)
Urethral fatigue	4 (17%)	2 (13%)	2 (13%)	2 (25%)
Positive VLPP (cmH_2O)	34 (± 24)	62 (± 43)	37 (± 23)	22
Positive VLPP < 60 cmH_2O	7/19 (37%)	4/11 (36%)	6/13 (46%)	1/6 (17%)
DO in standing position	4 (17%)	4 (27%)	2 (13%)	2 (25%)

SSU: stand up urgency; SUUI: stand up urgency incontinence; DO: detrusor overactivity; VLPP: Valsalva leak point pressure test; MUCP: maximum urethral closure pressure; ISD: intrinsic sphincter deficiency
*$P = 0.017$; **$P = 0.019$.

Table 3 Clinical parameters for SUU and No. SUU groups according to age and menopausal status.

Clinical data	Women with SUU ($n = 23$)	No. SUU ($n = 15$)	Women with SUU ($n = 23$)	
			SUUI ($n = 15$)	No SUUI ($n = 8$)
Age	57 (± 9)**	47 (± 9)	57 (± 11)	56 (± 6)
Menopause	18 (78%)***	3 (20%)	11 (73%)	7 (88%)
Parity	2.7 (± 2)	1.8 (± 0–8)	2.5 (± 1–1)	2.9 (± 3)
Associated SUI	18 (78%)	12 (80%)	13 (87%)	5 (63%)
Urethral hypermobility	20 (87%)	11 (73%)	14 (93%)	6 (75%)
Positive supine stress test (SST) = cough stress test	12 (52%)	6 (40%)	11 (73%)*	1 (13%)

SSU: stand up urgency; SUUI: stand up urgency incontinence; SUI: stress urinary incontinence; SST: supine stress test.
*$P = 0.019$; **$P = 0.002$; ***$P = 0.0013$

Table 4 Urodynamic parameters for patients with and without sitting urgency.

Urodynamic data	Women with sitting urgency ($n = 20$)	No sitting urgency ($n = 18$)	Women with sitting urgency ($n = 20$)	
			Sitting urge incontinence ($n = 11$)	No sitting urge incontinence ($n = 9$)
MUCP (cmH_2O)	61 (± 28)	68 (± 25)	67 (±28)	69 (± 24)
ISD: MUCP < 30	1 (5%)	2 (11%)	1 (9.1%)	0 (0%)
Urethral fatigue	3 (15%)	3 (17%)	2 (18%)	4 (44%)
Positive VLPP < 60c m H_2O	6/15 (40%)	5/15 (33%)	3/6 (50%)	3/9 (33%)
DO in standing position	5 (25.0%)	3 (17%)	5 (46%)*	0 (0%)

DO: detrusor overactivity; VLPP: Valsalva leak point pressure test; MUCP: maximum urethral closure pressure; ISD: intrinsic sphincter deficiency
*$P = 0.02$.

Table 5 Urodynamic parameters for patients with or without standing urgency, and with or without standing urge incontinence.

Urodynamic data	Women with standing urgency ($n = 30$)	No standing urgency ($n = 8$)	Women with standing urgency ($n = 30$)	
			Standing urge incontinence ($n = 23$)	No standing urge incontinence ($n = 7$)
MUCP (cm H_2O)	64 (± 26)	68 (± 29)	67 (± 27)	53 (± 28)
ISD: MUCP < 30	2 (7%)	1 (13%)	1 (4%)	1 (14%)
Urethral fatigue	6 (20%)	0 (0%)	5 (22%)	1 (14%)
Positive VLPP < 60cm H_2O	9/23 (39%)	2/7 (29%)	7/17 (41%)	2/6 (33%)
DO in standing position	7 (23%)	1 (13%)	6 (26%)	1 (14%)

DO: detrusor overactivity; VLPP: Valsalva leak point pressure test; MUCP: maximum urethral closure pressure; ISD: intrinsic sphincter deficiency

Discussion

In this study, different types of urgency were observed: sitting urgency, standing up urgency and standing urgency. To our knowledge, this was the first clinical study to investigate female position during urgency or urge incontinence, and its correlation with urodynamic data. The specific symptom of standing up urgency was frequent among women with OAB complaints (61% in our population), and our results indicated that asking questions about women's position during urgency seems to be significant. Indeed, the pathophysiology of these various types of urgency could be different depending on the stimuli. Motor abnormality associated with DO was one of the most well-known and widely described mechanisms, but often not found. Our study found that SUU and SUUI were associated with lower MUCP, and SUUI correlated with

a positive SST. Both results suggested that a failure in urethral closure mechanism might be implicated in urgency and urge incontinence that was triggered upon standing.

One of the main limitations of our study was the small number of females included; nevertheless we found links between symptoms studied and urodynamic data. The body mass index was also an important data for MUCP analysis, and unfortunately has not been analysed in our study. This could be a bias in our result and should be taken in account in future studies. However, women with SUU and SUUI had significantly lower MUCP than those without, but no significantly demonstrable difference in DO. Women with SUU had lower MUCP and were also older, and this difference of age could explain this difference in MUCP. But among the SUU group, SUUI was specifically associated with lower MUCP, but without any age difference (Table 4). Thus, these results suggested that the pathophysiology of SUU and SUUI could be due to a failure of the urethra and sphincter closure mechanisms, and this corroborates the improvement of urgency and urge incontinence after SUI surgery [12—14]. However, our study suggested that possibly not every kind of urgency might be improved, specifically urgency due to a urethral mechanism, such as SUU or SUUI. We made the hypothesis that identifying the type of urgency in mixed incontinence or in SUI with urgency alone (without incontinence) could help in understanding why some women with urgency improve after SUI treatment, while others worsen.

Urge incontinence in the sitting position was more commonly associated with DO, which was not the case for urge incontinence in the standing position or during standing up. However, our study was conducted to analyse the association between SUU and MUCP-VLPP, rather than to investigate the presence of DO in sitting urge incontinence.

Indeed, this is a preliminary study, and our results and hypothesis need to be confirmed in future studies, including a larger sample size to allow multivariate analysis and more reliable results.

Urethral closure pressure was an overall reflection of the urethral striated sphincter and pelvic floor muscles for approximately one-third, another third of the urethral vascular bed, and the remaining third is related to the smooth musculature and connective tissues in the urethra and periurethral tissues [15]. In the female urethra, the relative volume of striated muscle and blood vessels decreased with age, while the relative volume of connective tissue increased [16,17]. According to published literature, the fact that SUU was related to age, as well as lower MUCP as evidenced by our study, a weakness in the urethral striated sphincter and pelvic floor muscles, as well as decreased blood vessels, could be hypothesised in the SUU population as being key factors affecting urethral pressure.

Females with SUUI had significantly more positive SST and lower MUCP. A positive SST was correlated with intrinsic urethral sphincter dysfunction, higher incontinence severity, and lower MUCP in some studies [18—20]. Thus, we could hypothesize a common urethral sphincter dysfunction in SUUI and SUI in females with mixed incontinence. SUUI was most commonly noted during the morning when getting out of bed, or when standing up from a chair with an empty bladder, and was associated with a desire to void which becomes urgent only when standing up. Our results indicated that this kind of urgency or urge incontinence seems to be related to a urethral sphincter dysfunction rather than DO. DeLancey recently described equally low MUCP values in SUI and urge incontinent women suggesting that, in white women, decreased urethral function contributes to incontinence, regardless of the type of symptoms [21]. We believe this urethral mechanism was involved only in some forms of urge incontinence, such as SUUI.

We performed UPP in a lying position because the variability of MUCP was higher when in the standing position and the results therefore became less accurate [22]. However, we did not perform UPP during standing because it was extremely difficult to maintain the urethral catheter in the same position while moving and to obtain a valid measure. When MUCP was measured in the lying position, this reflected the passive forces acting upon the female urethra at rest, and our hypothesis was that if these passive forces were weaker, it could explain the presence of symptoms during standing, whatever the active forces acting upon the urethra.

We could postulate that, when women stand up, bladder neck or sphincter deficiency could lead to an inflow of urine into the immediate proximal urethra which might subsequently induce a sensory stimulation of the urethral mucosa leading to urge sensation (with or without an apparent leakage). It would be interesting to confirm this hypothesis by conducting a video-urodynamic study [23]. We hypothesized that this inflow of urine into the urethra could be induce by the change of position (standing up), among women with lower MUCP, because of the natural increase of abdominal pressure while women stand up. Thus, lower MUCP could ease this inflow of urine into the urethra while standing up, and lead to SUU or SUUI.

This study showed there was no correlation between VLPP and SUU symptoms; although this test evaluated sphincteric deficiency, which was our hypothesis for SUU. One explanation might be that the VLPP test studied a different area of sphincter competence and was not directly correlated to MUCP since the continence mechanisms explored by these two tests were different [24]. Correlation was found only between very low values of VLPP and MUCP, and no strict correlation was found to exist between both measures. In reality, a definition of ISD relied on both parameters; it was mostly defined as low MUCP, although low VLPP was also used, or a combination of both [25,26].

Thus, analysis of the women's position during urgency and urge incontinence should be conducted clinically because it seemed to be related to different urodynamic findings. Our study found that SUU, and more specifically SUUI was associated with lower MUCP, but not demonstrable DO. SUUI was associated with lower MUCP and positive SST. These preliminary results suggested a urethral mechanism could be associated with SUU symptoms, but they have to be confirmed in future studies.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

Appendix A. Self-administered symptom specific questionnaire for 'stand up urgency'.

When does urine leak? Do you leak before you can get to the toilet (''urgency'')?

☐ Yes ☐ No

Which circumstances (changing position) may induce a sudden and urgent desire to void for you?

- When I stand up from a sitting or a lying position, I can feel a sudden and urgent desire to void:

  ☐ Yes ☐ No
  With urine leakage: ☐ Yes ☐ No
- When I remain in a sitting position, I can feel a sudden and urgent desire to void:

  ☐ Yes ☐ No
  With urine leakage: ☐ Yes ☐ No
- When I remain in a standing position, I can feel a sudden and urgent desire to void

  ☐ Yes ☐ No
  With urine leakage: ☐ Yes ☐ No

Appendix B. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.purol.2012.04.011.

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