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Imanishi R[1], Nakagawa H[2], Matsumoto K[3], Awaji S[4], Nabekura M[5], Kaiho Y[2], Arai Y[2]

1. *Department of Occupational Therapy, Niigata University of Health and Welfare,* ***2.*** *Department of Urology, Tohoku University Graduate School of Medicine,* ***3.*** *Department of physical therapy, Niigata University of health and welfare,* ***4.*** *Nursing home, Madoka Nagamachi,* ***5.*** *Geriatric Health Services Facility, Matsushima Midorinoie*

MICTURITION PATTERNS IN FEMALE RESIDENTS WITH OVERACTIVE BLADDER IN GERIATRIC FACILITIES: A STUDY USING BLADDER SENSATION AND FREQUENCY-VOLUME CHART

Hypothesis / aims of study

Overactive bladder (OAB) is known to be associated with other problems in older patients, especially with a high risk of falls and fractures. However, the micturition patterns- related to bladder sensation in frail elderly patients with OAB remain unknown. We assessed the relationship between voiding patterns and bladder sensation in elderly patients with OAB by using the data recorded in bladder diaries.

Study design, materials and methods

This study included 13 female residents with OAB but without dementia in geriatric facilities. We defined OAB as the presence of 1 or more times urgency and/or urgency incontinence by using a 48-hour complete frequency-volume chart and record of urinary sensation. The mean age of the residents was 81.4±7.1 years (range 68 to 90 years). We monitored incontinence by placing a thin-layer membrane sensor in the diaper or underwear. We replaced the pad and/or diaper after each sensor response and measured the volume of leakage by calculating the weight of the pad and/or the diaper. Moreover, we measured the voided volume during voiding by a urine meter installed in the toilet in the rest room. The participants were asked about the grade of perception of bladder sensation at each voiding and incontinence episode. The perception of bladder sensation was graded as follows: grade 0 , no bladder sensation ; grade 1 , a desire to void but voiding could be easily delayed by more than 60 min (no desire to void) ; grade 2 , a desire to void but voiding could be delayed by at least 30 min; grade 3 , a desire to void but voiding could not be delayed for more than 15 min; grade 4 , a desire to void but voiding could not be delayed for more than 5 min (an urgent desire to void)[1,2]. Each subject was monitored for 48 hours, and the voiding time, incontinence time, volume of voiding and leakage, and the grade of bladder sensation were recorded in bladder dieries.

Results

From the data recorded in the bladder diaries, 5 residents were diagnosed with dry OAB, and 8, with wet OAB. During this study, the volumes of 307 voiding episodes and 89 leakages were measured. The number of daytime voiding episodes was 225, and that of night-time voiding episodes was 82 ; the number of daytime incontinence episodes was 55, and that of night-time incontinence episodes was 34. Table 1 summarises the results from daytime voiding episodes grouped by the grade of perception of sensation: 44.9% of the voiding episodes were of grades 0 and 1, i.e. absence of a desire to void. Only 9.8% of the daytime voiding episodes were of grade 4, i.e. an urgent desire to void. The voided volumes significantly differed between the grades of perception (grade 0 vs. grades 3 and 4 ; $p < 0.05$). The grade of perception of bladder sensation positively correlated with the voided volume. Table 2 summarises the results obtained during night-time voiding episodes according to the grade of perception of sensation: 31.7% of the night-time voiding episodes were of grade 4, i.e. an urgent desire to void. The voided volumes significantly differed between the grades of perception (grade 0 vs. grade 4 ; $p < 0.05$). Eleven subjects (84.6%) experienced 1 or more situations of urinary urgency at night-time. Of the 13 residents, 7 (53.8%) travelled a distance of 20 meters or more from their beds to the rest room at night by themselves by using either a wheelchair or a walker. A comparison between the daytime voided volume and night-time voided volume grouped by the grade of bladder sensation is shown in Figure 1. The night-time voided volume was significantly greater than the daytime voided volume, except in the case of grade-3 bladder sensation.

Table 1. Results from 225 daytime voiding episodes grouped by the grade of bladder sensation

Grade of bladder sensation	Voided volume		Number (%)
	Mean±SD (ml)	Range (ml)	
0	85.6 ± 61.3	10–340	26.7
1	113.8 ± 91.2	10–375	18.2
2	114.3 ± 79.7	10–390	24.0
3	142.3 ± 89.4	15–445	21.3
4	142.6 ± 112.9	12–540	9.8

Table 2. Results from 55 night-time voiding episodes grouped by the the grade of bladder sensation

Grade of bladder sensation	Voided volume		Number (%)
	Mean±SD (ml)	Range (ml)	
0	136.8 ± 110.2	25–300	20.7
1	201.3 ± 92.5	110–320	9.8
2	175.7 ± 96.4	50–383	13.4
3	187.5 ± 116.3	50–445	24.4
4	264.8 ± 147.2	20–570	31.7

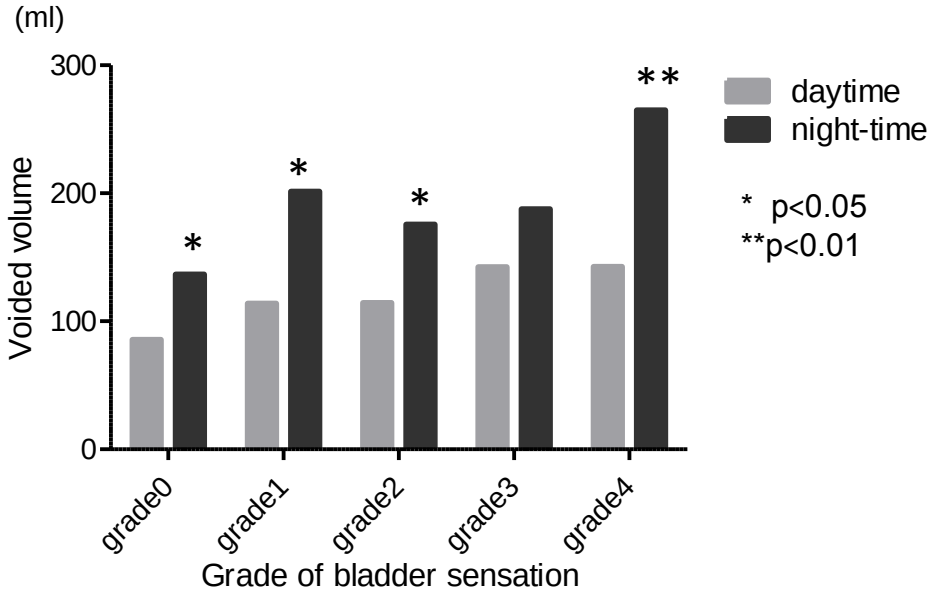

Figure 1. A comparison between daytime and night-time voided volumes grouped by the grade of bladder sensation

Interpretation of results

Higher grades of bladder sensation were associated with greater daytime and night-time voided volumes. However, daytime voided volume was less than night-time voided volume for each grade. Approximately 50% of the voiding episodes were marked by an absence of a desire to void, and only approximately 10% of the voiding episodes were marked by urgency at daytime. On the other hand, one-third of the night-time voiding episodes were marked by urgency; further most of the female subjects with OAB experienced urgency during sleep. It is important to know these fact for using interventional voiding therapy to prevent falls and fractures during night-time in elderly patients with OAB.

Concluding message

We conclude that female residents with OAB experienced more micturition episodes with urgency at night-time than at daytime.

References

1. Neurourol Urodyn.2003 22:638-642
2. Neurourol Urodyn.2008 27:511-514

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Is this study registered in a public clinical trials registry?	**No**
Is this a Randomised Controlled Trial (RCT)?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
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Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**