

RELATIONSHIP BETWEEN URINARY VOLUME AND LOWER URINARY TRACT SYMPTOMS ASSESSED BY FREQUENCY VOLUME CHART IN WOMEN IN COMMUNITY-BASED STUDY

Hypothesis / aims of study

The frequency volume chart is an important tool in the investigation of patients with lower urinary tract symptoms (LUTS) (1). Our previous evaluation of the frequency volume chart in 188 healthy older men without prostatic diseases during a mass screening program in Japan revealed that nocturnal urinary volume and nocturnal bladder capacity were the significant determinants of nocturnal urinary frequency (2). However few studies have been done to determine the cause of LUTS using frequency volume chart in women. The aim of this study is to evaluate the relationships between lower urinary tract symptoms and urinary volume of daytime as well as nighttime assessed by frequency volume chart in community-dwelling women examined during a mass screening program in Japan.

Study design, materials and methods

A total of 201 women participated in the study and completed 24 hours frequency volume chart for 3 days and the self-administered questionnaire during community-based study in Japan. Their ages ranged from 41 to 86 years old (mean 62.5 years old). From frequency volume chart, the maximum voided volume of daytime (MVV-day), the maximum voided volume of nighttime (MVV-night), the average voided volume (AVV), 24 hour urine volume (24-UV), daytime urine volume (DUV) and nocturnal urine volume (NUV) were obtained. Nocturnal urinary frequency for each night was defined as the frequency during sleep not counting the morning void. Assessments of LUTS were performed using the International Prostate Symptom Score (IPSS) and the International Consultation on Incontinence Questionnaire Short Form (ICIQ-SF). Assessment of quality of life affected by LUTS was also performed using the IPSS QOL index. The IPSS QOL index of 0-2 was considered good QOL and 3-6 was considered poor QOL.

Results

Of all the subjects 24.5% had increased daytime frequency (8 times or more) and 49.5% had nocturia (1 times or more). Of all the participants 29.5% had had at least 1 episode of urinary incontinence within the previous month. Poor QOL was reported in 31.5% of all the subjects. Significant negative linear relationship was noted between age and daytime frequency ($r=-0.139$, $p<0.05$). Significant positive linear relationships were noted between age and nocturnal frequency ($r=0.349$, $p<0.0001$), as well as between age and NUV ($r=0.221$, $p<0.01$). Simple regression analyses showed that frequency volume chart parameters such as MVV-day ($r=-0.186$, $p<0.01$), AVV ($r=-0.174$, $p<0.05$) and NUV ($r=0.151$, $p<0.05$) correlated significantly with the IPSS QOL index. The storage symptom score (frequency, urgency and nocturia) correlated significantly with MVV-day ($r=-0.293$, $p<0.0001$), AVV ($r=-0.315$, $p<0.0001$) and NUV ($r=0.270$, $p<0.0001$). Comparing good and poor QOL groups, statistically significant differences were noted in MVV-day (371.2 ± 114.1 ml vs 327.6 ± 109.4 ml, $p<0.05$) and AVV (278.5 ± 81.9 ml vs 250.8 ± 78.2 ml, $p<0.05$).

Interpretation of results

The result that the increase of nocturnal urinary frequency with age was also thought to be due to a decrease in nocturnal bladder capacity in older women is compatible with our previous report concerning older men without prostatic diseases. This study suggested that the decreased maximum voided volume of daytime and the average voided volume were risk factors for poor QOL. In addition, these two parameters were associated with the storage urinary symptoms including increased daytime frequency, urgency and nocturia. These findings may indicate that the parameters on frequency volume chart such as the maximum voided volume of daytime and the average voided volume are important factors to evaluate the patients with overactive bladder in women.

Concluding message

The increase of nocturnal urinary frequency with age was thought to be due to a decrease in nocturnal bladder capacity in older women. The maximum voided volume of daytime and the average voided volume on frequency volume chart might be important factors for the patients with overactive bladder in women.

References

1. Scand J Urol Nephrol Suppl 179:47-53, 1996.
2. J Urol 163:81-84, 2000.