

## BLADDER DIARY MEASUREMENTS AND THEIR CORRELATES TO LOWER URINARY TRACT SYMPTOMS IN WOMEN WITH DIABETES MELLITUS (DM)

### Hypothesis / aims of study

DM has reached epidemic proportions worldwide. Botherome lower urinary tract symptoms (LUTS) are highly prevalent in women with DM and are often attributed to polyuria and accepted as part of the disease process. This has been the received wisdom, but without scientific basis<sup>1</sup>. The aims of this study are to assess bladder diary measurements in women with DM and their correlates to lower urinary tract symptoms (LUTS)

### Study design, materials and methods

A prospective observational study of 110 women with DM (43 had type 1 and 67 had type 2 DM). LUTS and their impact on quality of life were assessed using the King's Health Questionnaire and the International Consultation on Incontinence Questionnaire-Female Lower Urinary Tract Symptoms (ICIQ-FLUTS). Three day bladder diary measurements were obtained. Differences in bladder diary measurements between women with bothersome and non-bothersome LUTS were assessed. Correlation between diary measurements and duration of DM, degree of control, and domains of King's Health Questionnaire and ICIQ-FLUTS were also measured.

### Results

Women with bothersome LUTS had lower functional bladder capacity (471 vs 634,  $p=0.013$ ), higher nocturia rates (2.6 vs 1.4,  $p=0.007$ ) lower mean voided volumes (228 vs 303,  $p=0.015$ ), mean voided volume during the day (228 vs 303,  $p=0.04$ ), mean voided volumes during night (294 vs 463,  $p=0.018$ ) and higher number of incontinence episodes (3.3 vs 0.4,  $p=0.028$ ). There were no differences in total urine production, day time urine production and nocturnal urine production between women with bothersome and non-bothersome LUTS. Domains of the King's Health Questionnaire (except general health) significantly correlated with nocturia, lower functional bladder capacity, lower nocturnal voided volumes, and incontinence episodes. Duration of DM had no correlation with bladder diary measurements. Higher HbA1c correlated with higher nocturnal urine production and larger average voided volumes.

### Interpretation of results

Bladder diary measurements in women with DM suggest that bothersome LUTS are due to bladder overactivity. Women with bothersome LUTS had lower functional bladder capacity, average voided volume, and higher nocturia rate and number of incontinence episodes per 24 hours. Day time, nocturnal and total urine production had no correlation to quality of life scores and the degree of bother due to LUTS.

### Concluding message

Polyuria associated with DM should not be assumed to be the cause of bothersome LUTS.

### References

1. Journal of the American Geriatrics Society. 2005 Nov;53(11):1851-7.

<b><i>Specify source of funding or grant</i></b>	<b>None</b>
<b><i>Is this a clinical trial?</i></b>	<b>No</b>
<b><i>What were the subjects in the study?</i></b>	<b>HUMAN</b>
<b><i>Was this study approved by an ethics committee?</i></b>	<b>Yes</b>
<b><i>Specify Name of Ethics Committee</i></b>	<b>Lancashire and Cumbria Local Research Ethics Committee</b>
<b><i>Was the Declaration of Helsinki followed?</i></b>	<b>Yes</b>
<b><i>Was informed consent obtained from the patients?</i></b>	<b>Yes</b>