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SEASONAL VARIATION IN URINARY FREQUENCY, NOCTURIA, AND OTHER LOWER URINARY TRACT SYMPTOMS IN MEN AND WOMEN

Hypothesis / aims of study

At a population level there are small seasonal effects on the prevalence of clinically relevant lower urinary tract storage symptoms [1], and a significant interaction with overactive bladder treatment response [2]. However, the effect of temperature variation on clinical assessment of lower urinary tract symptoms has not been explored. The aim of this study was to assess the association between atmospheric temperature, bladder diary variables, symptom severity, and urodynamic parameters in men and women with lower urinary tract symptoms.

Study design, materials and methods

Data were collected at two urodynamic units, Centre 1 situated at 55°52′N, equivalent to Moscow, and Centre 2 at 51°30′N, equivalent to Rotterdam, both with maritime temperate climates (Köppen classification Cfb). Consecutive men and women referred for evaluation were asked to complete both a 3 day frequency-volume chart, and a standardised lower urinary tract symptom and quality of life questionnaire (International Prostate Symptoms Score for men, and King's Health Questionnaire for women), before undergoing free uroflowmetry, and where indicated, multichannel saline cystometry. Local mean monthly temperatures for each centre were extracted from national meteorological records. Multivariate logistic regression models adjusting for age, were constructed to test for the effect of mean temperature on recording of daytime frequency ≥8, nocturia ≥2, urinary urgency, urgency urinary incontinence, stress urinary incontinence, and urodynamic diagnosis of detrusor overactivity. Pearson's correlation was used to test for an association of quantitative urodynamic variables with temperature. Analyses were conducted using SPSS v19.0.

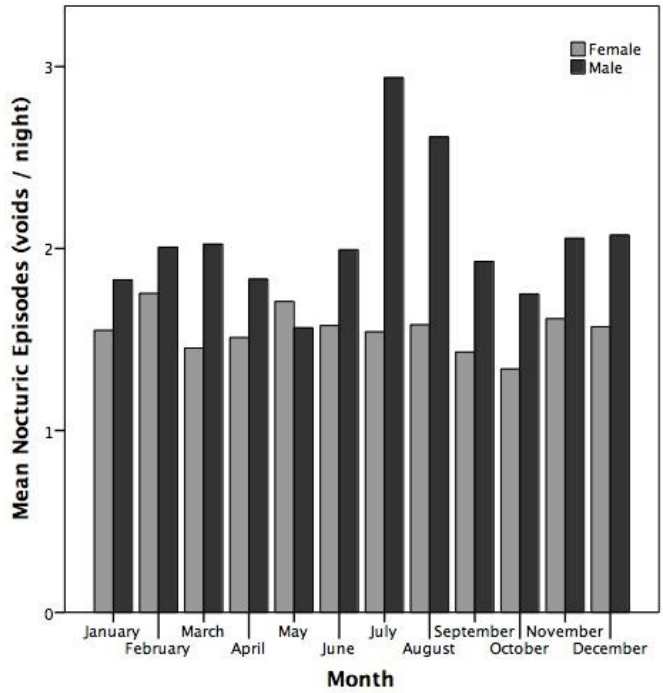

Figure 1. Monthly variation in mean nocturic episodes by sex

Results

2696 patients attending for urodynamics completed bladder diaries. Over the period of study, the coldest month at Centre 1 was January with a mean temperature of 4.7°C, while the coldest month at Centre 2 was February, with a mean temperature of 5.4°C. August was the warmest month for both centres with a mean temperature of 15.8°C and 18.8°C respectively. For both women and men there were no significant differences in mean daytime frequency by season. For men, but not women, there was significant seasonal variation in night time voiding, with increased number of voids over the summer months (p=.021). In multivariate regression for both sexes, there was no effect of mean temperature on frequency ≥8, nocturia ≥2, urinary urgency, urgency incontinence, stress incontinence, or on the diagnosis of detrusor overactivity. After Bonferroni correction, correlation of mean temperatures with cystometry and uroflowmetry parameters, including volumes of first sensation, maximum cystometric capacity, peak flow rate, post-void residual and maximum voiding pressure, did not reveal any significant associations.

Interpretation of results

Seasonal variation in nocturia is significant for male, but not female patients. Such an effect might be explained by seasonal variation in fluid intake, changes in peripheral oedema, or perhaps a direct effect on cold receptors in the detrusor muscle [3]. Temperature variation does not however, have a clinically relevant effect on daytime frequency in men or women, or reporting of other lower urinary tract symptoms and is not associated with variation in urodynamic parameters. Future work should consider the impact of seasonal variation in lower urinary tract symptoms in both sexes across a wider range of climates.

Concluding message

Despite an overall lack of association between lower urinary tract symptoms, urodynamic parameters, and seasonal / temperature variation, identified in our study, further population-based epidemiological studies and interventional trials in patients with lower urinary tract symptoms should consider controlling for atmospheric temperature in order to further define the extent and impact of seasonal variation.

References

1. J Urol 2007;69(5):864-70
2. Neurourol Urodyn 2006;25(6):612-3
3. Br J Urol 1991;67(3):275-9

Specify source of funding or grant	**Salary support from NIHR.**
Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**No**
This study did not require ethics committee approval because	**Retrospective analysis of anonymised routinely collected clinical data.**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**