

## URINARY INCONTINENCE- THE ROLE OF MENOPAUSE

### Hypothesis / aims of study

The prevalence of urinary incontinence increases with age, with a broad peak around the time of menopause (1). Estrogen deficiency is widely considered to aggravate symptoms of both stress urinary incontinence (SUI) and urge incontinence (UII), although several studies have shown negative results (2). There is accumulating evidence that systemic hormone replacement may in fact worsen symptoms of incontinence (3). The aim of the present study was to explore the effect of menopause duration and hormone replacement therapy (HRT) on symptoms and signs of and SUI / UII.

### Study design, materials and methods

In this retrospective study we reviewed the records of patients who had attended a tertiary urogynecological unit for investigation of lower urinary tract or pelvic floor disorders between April 2012 and January 2013. A standardised interview included menopausal age, i.e. the number of years since the last period or onset of menopausal symptoms in women with previous hysterectomy, use of systemic hormone replacement therapy (HRT) and local estrogen. We also obtained physician-administered visual analogue scales (VAS) for symptoms bother. Multichannel urodynamic testing was used to assess objective measures of bladder function. Maximum urethral pressure (MUP) was obtained with a single lumen fluid-filled catheter using a freehand pull-through technique. Statistical analysis was undertaken using SAS v 9.3. For continuous data, univariate analysis was performed using linear regression and multivariate analysis, using multiple regression. For categorical data, chi-squared analysis and logistic regression were performed.

### Results

During the inclusion period, 382 patients were seen. Mean age was 56 years (SD 14.0) and average body mass index (BMI) was 28.7 kg/m<sup>2</sup> (SD 5.9). 236 women (62%) were postmenopausal, with a median menopausal age of 5 years (IQR, 0-17). Only 25 women (7%) reported current systemic HRT use, and 23 (6%) had used local estrogen for 3 months or more prior to the date of assessment. In a subgroup of 151 women we were able to account for the duration of past HRT use, obtaining a corrected median menopausal age (time of estrogen deprivation) of 2 years (IQR, 0-12). In this subgroup 48 women (32%) had ever used HRT, with an average duration of 8 years. 288 women (76%) reported symptoms of SUI (mean bother 5.7), and 273 women (72%) UII symptoms (mean bother 6.4). Menopausal age was not associated with SUI or urodynamic stress incontinence (USI), but was **negatively** associated with VAS scores for SUI bother. UII symptoms and bother as well as detrusor overactivity were **positively** associated with menopausal age. However, in a multivariate model, controlling for calendaric age, none of these relations remained significant (Table 1).

Current HRT use was positively associated with the symptom of Nocturia (p=0.02), and local estrogen use with a lower "first desire to void" volume ( $\beta$ =-50 ml, p=0.04), only. In the subgroup of women with known past HRT use, HRT use of more than one year was positively associated with UII (p=0.04) and the urodynamic finding of a low pressure urethra (p=0.0002) and negatively with bladder capacity ( $\beta$ =-37ml, p=0.03).

	Menopausal age			Calendaric age		
	a		P	a		P
<b>Symptoms of USI</b>	288/381	76%	0.98 (0.96, 1.01)	0.1	0.99 (0.98, 1.01)	0.5
<b>Bother of USI (VAS 0-10)</b>	4.3	3.5	-0.05 (-0.08, -0.02)	0.001 <sup>b</sup>	-0.4 (-0.0, -0.01)	0.005
<b>USI</b>	254/369	69%	1.01 (0.99, 1.03)	0.2	1.02 (1.01, 1.04)	0.03
<b>MUP&lt;=20 cm H2O</b>	42/370	11%	1.07 (1.04, 1.10)	<0.001 <sup>b</sup>	0.08 (1.05, 1.11)	<0.001
<b>Symptoms of UII</b>	274/381	72%	1.04 (1.01, 1.06)	0.002 <sup>b</sup>	1.03 (1.02, 1.05)	<0.001
<b>Bother of UII (VAS 0-10)</b>	4.7	3.7	0.05 (0.01, 0.8)	0.007 <sup>b</sup>	0.05 (0.02, 0.07)	0.001
<b>Detrusor overactivity</b>	107/369	29%	1.03 (0.01, 1.05)	0.003 <sup>b</sup>	1.02 (1.01, 1.04)	0.01
<b>First desire to void (ml)</b>	211	115	1.02 (-0.06, 2.10)	0.06	0.78 (-0.08, 1.64)	0.07
<b>Maximal bladder capacity (ml)</b>	447	92	-0.67 (-1.53, 0.19)	0.13	-0.44 (-1.13, 0.25)	0.21

**Table 1 : Symptoms and signs of USI and UII.** Data is given as number (percent) or mean (SD), <sup>a</sup> Univariate analysis using Odds Ratio (95% CI) for categorical data and linear regression  $\beta$  (95% CI) for continuous data, each for one increase in year; <sup>b</sup> this relationship did not remain significant after controlling for calendaric age

### Interpretation of results

In this retrospective study on women attending a tertiary urogynecological unit, symptoms and signs of UUI increased with increasing calendaric and menopausal age, whereas both of USI decreased. However, length of menopause had no age-independent effect on symptoms and signs of urinary incontinence. Current or past HRT use was positively associated with symptoms and signs of UUI.

### Concluding message

Hormone deficiency following menopause does not seem to have a major age-independent effect on stress and urge urinary incontinence.

### References

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