

## **THE NATURAL HISTORY OF URINARY STORAGE DISORDER IN OLDER WOMEN IN THE COMMUNITY; A THREE YEAR PROSPECTIVE COHORT STUDY**

### **Hypothesis / aims of study**

The ICS suggests that within the overall group of urinary storage symptoms there exist the distinct syndromes of Overactive Bladder (OAB) and Stress Urinary Incontinence (SUI) linking to the underlying conditions of Detrusor Overactivity (DO) and Urodynamic Stress Incontinence (USI) (1). The two syndromes OAB and SUI show different patterns of prevalence with age (2,3); the prevalence of OAB rises with age while that of SUI does not, suggesting their natural histories (i.e. changes in average severity of cases with advancing age) may also differ. This study aims to develop and validate symptom severity scores and describe the natural history patterns for these recognised syndromes.

### **Study design, materials and methods**

Two separate but related studies were involved (i) a prospective cohort study (N=12,750) with baseline measures and 3 years of follow-up and (ii) a clinic sample (N=2052) from a randomised controlled trial. Subjects were community-living women aged 40 or more, approached using postal questionnaires. Measures included standardised urinary symptoms of frequency, nocturia, urgency and leakage. From the clinic sample, symptom category and severity scores were derived for SUI and OAB from weightings obtained from logistic regression models of symptoms in relation to urodynamic (UD) diagnoses and severity scores were validated against 24-hour pad test and 3-day diary measures. Categorisation models predicted USI with a sensitivity and specificity of 76.9% and 56.3% respectively, and DO with a sensitivity and specificity of 63.1% and 65.1%. In the prospective cohort, the syndromes were categorised using the logistic regression models developed in the clinic sample. Mean severity scores for each syndrome were then plotted in each 10-year age band for baseline and 3 years of follow-up, to demonstrate the changes in severity with age of the two syndromes.

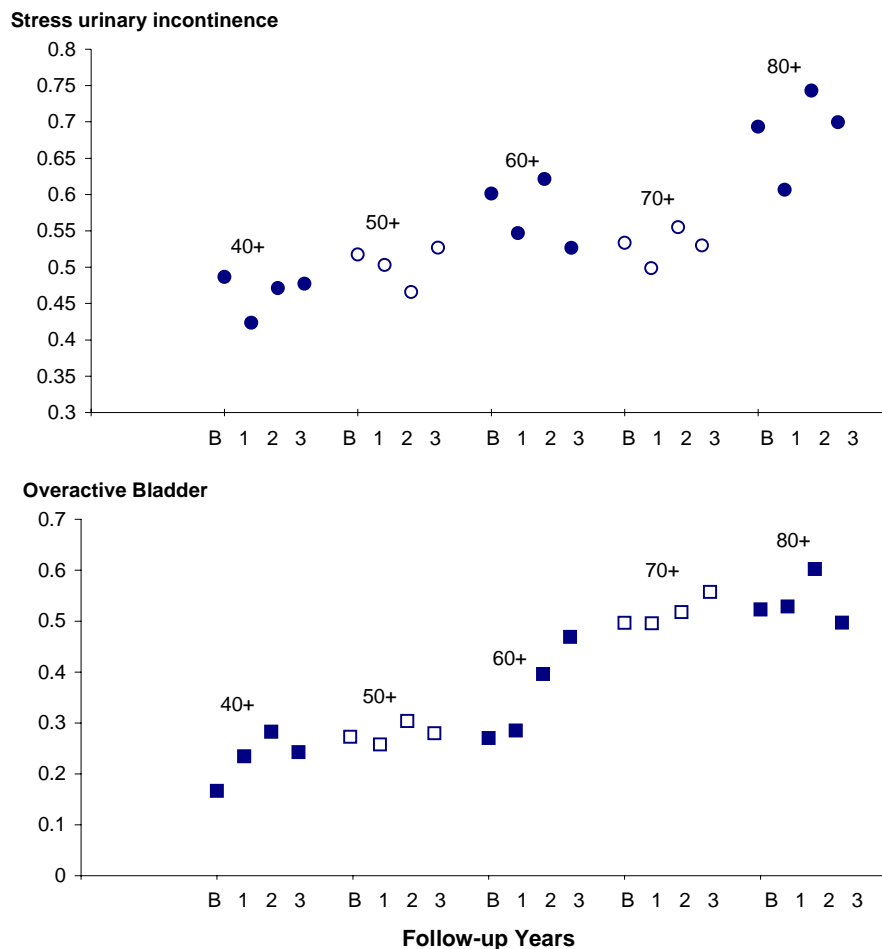
### **Results**

Symptoms included in the OAB severity score were: frequency of urge leakage; frequency of micturition; nocturia; and strength of urgency. Symptoms in the SUI severity score were frequency of stress leakage and amount of leakage. OAB and SUI severity scores showed the expected relationships with relevant clinical measures. SUI showed a stronger relationship with volume than did OAB, while OAB showed a strong correlation with frequency and SUI showed none. The severity of SUI showed a peak around age 60 followed by a decline and another peak in old age but little evidence of age related progression (Figure). The severity of OAB demonstrated an age-related progression accelerating in the 60's age group and continuing to rise through the 70's and 80's. SUI severity showed considerably more variation between follow-ups than OAB severity.

### **Interpretation of results**

These contrasting patterns of progression are consistent with SUI and OAB representing different conditions and suggest different aetiological processes. For example, the age-specific peak in the severity of SUI coincides with the population peak for obesity, a recognised risk factor for SUI. The acceleration of OAB severity in the 60's age group also coincides with the steep increase in prevalence of type II diabetes, a specific risk factor for OAB. The categorisation method used in this study has the advantage of relating symptoms to the gold standard of UD diagnoses thereby providing a greater degree of accuracy, although there is some residual misclassification indicated by the levels of sensitivity and specificity. In addition, the severity scores were composed of symptoms weighted according to their relationship with UD giving more emphasis to symptoms with the strongest, positive relationships

**Figure: Progression of severity in cases of the two syndromes**



**Concluding Message**

This is the first study to explore natural history for the syndromes of SUI and OAB. It shows reasonable validity of the severity rating and differentiation between patterns for SUI and OAB. Although the two syndromes demonstrate different patterns of natural history, they share an increase in deterioration in the 60's suggesting that this age may be a crucial time for women for both syndromes. These severity scores offer an opportunity for further modelling of change in order to explore the drivers for the natural history patterns.

1. The standardisation of terminology of lower urinary tract function: report from the Standardisation Sub-committee of the International Continence Society. *Neurourol Urodyn* 2002; 21:167-78.
2. A community-based epidemiological survey of female urinary incontinence: The Norwegian EPINCONT Study. *J Clin Epidem* 2000; 53:1150-7.
3. A detailed description, by age, of lower urinary tract symptoms in a group of community-dwelling women. *BJU International* 2000; 82:19-24.

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