

FACTORS DISTINGUISHING CONTINENT VS. INCONTINENT OLDER ADULTS WITH DETRUSOR OVERACTIVITY

Aims of Study

In the traditional paradigm, urge incontinence is ascribed to detrusor overactivity (DO). However, recent data reveal that DO occurs in one-third of **continent** older adults, which poses a potential problem for the traditional paradigm. We reasoned that in older adults DO might still be central to urge incontinence but that differences in the characteristics of the DO or in an individual's ability to suppress or compensate for it might account for the apparent paradox.

We postulated that:

ability to avert leakage associated with DO during urodynamic testing is positively associated with continence;

mechanisms underlying the ability to avert leakage are also associated with continence;

functional bladder capacity is negatively associated with continence;

warning (the difference in bladder volume between first desire to void and strong desire to void during urodynamic testing) is positively associated with continence.

Methods

Blinded analysis of multichannel videourodynamic data. Studies had been performed by an experienced urodynamicist in 56 consecutively-evaluated community-dwelling older adult volunteers with proven DO. The study group comprised 52% women, and the mean age was 76 ± 8 y (SD). Twenty-two (39%) of the subjects were continent. The studies were conducted previously for an ultrastructural study, prior to generation of the present study's hypotheses.

The ability to inhibit DO was assessed during filling by use of the "two-minute test." This test was developed to assess the mechanism(s) employed to avert leakage. At the onset of involuntary detrusor contraction, with a trilumen catheter in place, subjects were told to "try to prevent urinating." Responses were assessed by measuring concurrent pressures in the bladder and urethra, along with simultaneous fluoroscopic imaging. Results were categorized on a three point ordinal scale: "able to avert leakage for 2 minutes," "able to avert leakage but for less than two minutes," and "unable to avert leakage." The mechanism(s) by which subjects averted leakage was categorized as "suppression of detrusor contraction", "activation of striated sphincter/pelvic musculature", both detrusor suppression and sphincter activation, or neither.

Warning was assessed from subjects' statements about sensation during standard filling cystometry. Functional capacity was taken as the maximum volume voided on a multi-day bladder diary. Non-parametric methods (Wilcoxon rank-sum and Pearson chi-square tests) were used to detect statistically significant differences between the continent and incontinent groups. Two-sided p values <0.05 were considered significant.

Results

Functional capacity tended to be larger in the continent group (379 ± 142 ml vs. 347 ± 175 ml), but this was not significant ($p=0.18$). Neither was there a clear association between warning and continence status: 120 ± 94 ml in the continent group vs. 107 ± 110 ml in the incontinent group ($p=0.54$). However, results from the 2 minute test were more illuminating:

Diagnosis	Avert leakage ≥ 2 minutes during UDS	Avert leakage < 2 minutes during UDS	Unable to avert leakage at all	Totals*
Continent	11	7	3	21
Incontinent	5	15	11	31
Totals	16	22	14	52

*4 data points missing

Diagnosis	Detrusor suppression	Sphincter activation	Both	Neither	Totals*
Continent	4	5	9	3	21
Incontinent	6	11	3	11	31
Totals	10	16	12	14	52

* 4 data points missing

The ability to avert leakage was significantly associated with continence ($p=0.0076$). The mechanism by which leakage was averted was also significantly associated with continence ($p=0.035$): the combination of detrusor suppression with sphincter activation was the most important factor ($p=0.005$).

Conclusions

Ability to avert leakage for at least two minutes during involuntary contraction and the ability to do so by the combination of suppressing detrusor contraction and activating sphincter contraction were both significantly associated with continence.

In this group of older adults with detrusor overactivity, functional bladder capacity did not predict continence status. The amount of warning from first desire to strong desire to void also was not significant.

These data suggest that, among older adults, urge incontinence is multifactorial even among those with DO. This fact likely accounts for the success of behavioral therapy. It also suggests that therapy of geriatric urge incontinence should not be focused solely on DO.