

BLADDER FUNCTION PATTERN IN ELDERLY WOMEN WITH SPINAL CORD INJURY

Hypothesis / aims of study

To evaluate urodynamic (UDS) parameters in elderly women with complete suprasacral spinal cord injury (SCI) and compare these to younger women with the same type of injury.

Study design, materials and methods

A total of 149 medical records of women with complete suprasacral SCI presenting bladder overactivity were selected and divided into four groups according to age: <20 years (n 19), 20 to 39 (n 70), 40 to 59 (n 50) and ≥ 60 years (n10). For this distribution, patient age at the time of the first UDS was considered. The UDS evaluation included the reflex volume, the maximum detrusor pressure, the opening pressure, the functional bladder capacity, the maximum cystometric capacity, the bladder compliance and the detrusor sphincter dyssynergia.

Results

Women over 60 years old presented a mean maximum detrusor pressure of 35.1 cm H₂O (SD 9.94) and an opening pressure of 27.1 cm H₂O (SD 11.29). These values were significantly decreased when compared to younger women ($p = 0.005$ and 0.004 respectively). Otherwise, reflex volume, functional bladder capacity, cystometric capacity and bladder compliance showed slightly but not significantly higher values in elderly women when compared to younger women. Detrusor sphincter dyssynergia was noted in all patients; among them, 82 (55%) had a continuous standard of sphincter dyssynergia, although no statistical differences were observed in terms of age or level of SCI (Table).

Table – Urodynamic profile of 149 women with a complete suprasacral spinal cord injury

| Parameter | Groups for age | | | |
|--------------------------------|----------------|---------------|---------------|---------------------------|
| | < 20 years | 20 - 39 years | 40 - 59 years | ≥ 60 years |
| Case (n) | 19 (12.7%) | 70 (47.0%) | 50 (47.0%) | 10 (6.7%) |
| Time till UDS (m) | 8.1 ± 5.4 | 24,8 ± 36.6 | 84,4 ± 120.9 | 75.5 ± 101.7 |
| RV (mL) | 250.6 ± 96.9 | 240.1 ± 90.3 | 276.9 ± 108.9 | 321.0 ± 153.3 |
| FBC (mL) | 366.0 ± 149.1 | 324.5 ± 132.6 | 330.7 ± 138.4 | 391.5 ± 121.0 |
| MCC (mL) | 395.0 ± 153.9 | 339.1 ± 115.8 | 356.0 ± 124.3 | 424.7 ± 122.8 |
| Open Pdet (cmH ₂ O) | 54.5 ± 30.9 | 50.41 ± 21.3 | 56.57 ± 24.8 | 27.10 ± 11.3 ^a |
| Max Pdet (cmH ₂ O) | 61.9 ± 23.0 | 67.16 ± 28.8 | 62.20 ± 24.7 | 35.80 ± 9.3 ^a |
| BC (mL/cmH ₂ O) | 33.9 ± 14.7 | 37.8 ± 20.9 | 37.2 ± 18.1 | 45.4 ± 29.7 |
| DSD (C/I) (n) | 6/ 13 | 25/45 | 31/19 | 5/5 |
| Leakage (%) | 60% | 86% | 80% | 100% |

^aP values < 0.05

UDS, urodynamic; RV, reflex volume; FBC, capacity bladder functional; MCC, capacity cystometric maximum; Open Pdet, opening pressure; Max Pdet, maximum detrusor pressure; BC, compliance bladder; DSD, detrusor sphincter dyssynergia; C, continuous pattern; I, intermittent pattern

Interpretation of results

The low maximum detrusor pressure and opening pressure values observed in women over 60 years old are in line with the literature data and can explain the paradox incontinence and the growth of post void residual found (1). Different from other studies (2), the volumetric parameters and bladder compliance values were similar among the ages which suggests that this abnormalities are not associated to aging, but with to voiding dysfunction of different etiology. Because of this, lower urinary tract symptoms must be early detected in order to start the therapy as soon as possible and to prevent the inflammatory and/or ischemic lesions and fibrosis (3). Moreover, the finding of dyssynergia is relevant to improve the care of patients with neurogenic detrusor overactivity aiming to avoid the late complications such as urinary infections, hydronephrosis, and vesicoureteral reflux, among others.

Concluding message

Results showed that the contractility strength of the detrusor muscle and opening pressure diminished with age in women. However, no differences were observed for detrusor excitability, bladder compliance and cystometric capacity related to aging. Because of the smaller number of aging women included in the present report, others studies with a great sample must be carried out to confirm the results obtained and to improve the understanding and the management of the dysfunctional lower urinary tract symptomatology related to the aging.

References

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3. Metcalfe PD, Wang J, Jiao H, Huang Y, Hori K, Moore RB, Tredget EE. Bladder outlet obstruction: progression from inflammation to fibrosis. *BJU International*. 2010 Dec;106(11):1686-94.

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| <i>Is this a clinical trial?</i> | No |
| <i>What were the subjects in the study?</i> | HUMAN |
| <i>Was this study approved by an ethics committee?</i> | Yes |
| <i>Specify Name of Ethics Committee</i> | Approved by the Ethics Committee of The Sarah Network of Rehabilitation Hospitals |
| <i>Was the Declaration of Helsinki followed?</i> | Yes |
| <i>Was informed consent obtained from the patients?</i> | Yes |