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POST-STROKE URINARY INCONTINENCE WITH IMPAIRED AWARENESS: CLINICAL AND URODYNAMIC FEATURES

Hypothesis / aims of study
Urinary incontinence (UI) is common after a cerebral stroke and a negative prognostic factor. By now there is no evidence of sustained treatment effects; this may partly be due to an insufficient clinical classification. In a recent prospective investigation of 315 patients with acute stroke, we found two incident UI-types: a) urge-UI (n=27) and b) UI with impaired awareness of the need to void (IA-UI, n=38). In regression analysis, the latter was a strong predictor of poor outcome (death or nursing-home placement) after one year whereas urge-UI was not. As IA-UI has not been described earlier, its clinical and neuroradiological features are presented, including urodynamic results in seven individuals.

Study design, materials and methods
Prospective observational study of 38 stroke patients with incident IA-UI. Between day 7 and 12 after hospital admission, the patients underwent a comprehensive clinical assessment including cerebral CT, urine analysis, residual urine measurement, and bladder diary and micturition observation chart for five days. The following assessment tools were applied: Barthel Index for activities of daily living, Mini Mental State Examination (MMSE), Informant Questionnaire on COgnitive Decline in the Elderly (IQCODE), and patient interview about bladder symptoms and bother. Cysto-urethrometry was performed at a mean of 24 days after symptom onset. With the patients in supine position, the bladder was filled with room-tempered saline at a rate of 25 ml/min. Symptoms and urodynamic observations were defined according to the ICS Terminology Report (2002). After one year, the patients were re-assessed for UI by carer interview.

Results
Mean age of the 38 patients (19 women) was 81(67-91) years, with no sex-related age difference. Their Barthel score on admission was poorer than in the 27 urge-UI patients ($p<0.001$*), and they also tended to have declined cognitively more often before the stroke ($p=0.06$*). Sixteen IA-UI patients were partially aware of leakage, but not of bladder fullness; only two felt strongly bothered. The remaining 22 patients denied leakage or having any urinary problem at all. The denial group was older and had a poorer MMSE score ($p=0.01$*) than the group with partial awareness.
Twenty-four cases had visible stroke-related CT lesions (17 right-sided) in the frontoparietal lobes, basal ganglia, thalamus or internal capsule. Ten of 12 cases with parietal lobe involvement denied leakage; there was no particular lesion pattern in those with partial awareness. Subjects without new lesions showed more old lesions (nine of 14 vs. one of 24) and had more often declined mentally before the stroke (ten of 14 vs. five of 24) than those with new lesions.
Three patients who denied leakage, but acknowledged it after information underwent cysto-urethrometry: two had normal findings, but poor bladder perception; in the third, urethra pressure was low (5-10 cm H2O), falling repeatedly to zero with detrusor contractions resulting in leakage, and no bladder perception. The four urodynamically assessed patients with partial awareness showed terminal detrusor overactivity at a mean volume of 304 ml (120-500 ml) without experiencing a strong desire to void.
After one year, only two of the surviving 27 patients had regained continence. These two were the only ones who had felt bothered in the postacute phase. In contrast, 13 of the 27 patients with urge-UI had become continent, six had improved, and only one had died after one year.
* Chi square test

Interpretation of results
Our study is small, but includes all individuals with new-onset UI in a prospective cohort. UI with impaired awareness implicates not only poor attention and perception, but also poor apprehension of bladder needs and leakage in various degrees, irrespective of bladder/urethra behaviour. UI denial represents a particular kind of anosognosia. This phenomenon is known to be related to right parietal lobe dysfunction. Extensive strokes are likely to damage multiple bladder control areas and pathways; older stroke victims with poor brain reserves may decompensate even by a minor vascular event. Thus, UI with impaired awareness is rather a marker of severe brain dysfunction than a risk factor per se.

Concluding message
New-onset post-stroke UI with impaired awareness is a clinically important symptom. A careful assessment could contribute to a better management of incontinent stroke survivors. Those with partial awareness may be helped by prompted voiding or even benefit from additional medical treatment if detrusor overactivity is present; those with denial or lack of concern will truly not respond to any measures. A better clinical classification – along with urodynamic assessment – is likely to improve design and validity of future intervention trials.

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