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WHEN TO DO THE FIRST URODYNAMIC TESTS AFTER SPINAL CORD TRAUMA

Hypothesis / aims of study

After spinal cord lesion a period of spinal shock usually starts during which the bladder is areflexic. There is no contraction of the urethral sphincter, no desire to void and a normal detrusor tone. It is unclear when this stage comes to an end. Somatic reflexes of the very distal spinal cord usually return early while lower extremity reflexes often take months to reappear. What happens to the bladder is uncertain. Waiting for several months or until leakage between catheterizations occurs might not be the best approach. We investigate if early urodynamic testing is worthwhile.

Study design, materials and methods

We included 32 patients with traumatic spinal cord lesion, 6 women and 26 men. Lesions were cervical in 9, thoracic 1 to 9 in 13, thoracic 10 –lumbar 1 in 7 and lower than lumbar 1 in 3. They underwent a urodynamic testing within 1 month posttrauma: during week 3 to 5. A 6 channel urodynamic video equipment was used and water cystometry performed at 20 ml/min in the supine position with water at body temperature. We evaluated detrusor activity, bladder neck activity, compliance, sensation of filling. This last was graded absent, present if at least one sensation and normal if all 3 sensations were reported. Sensory thresholds towards electrical constant current stimulation in the bladder/urethra were determined in a number of patients. Electrosensation was graded absent, present if reported either in bladder or urethra, normal if reported both in bladder and urethra. Tests were done when no urinary infection was present.

Results

Detrusor activity was present in several patients. These data and the evolution of the detrusor activity in the following 6 months is given in table 1. All, apart of 2 patients had areflexia of the lower limbs.

Data on sensation of filling and electrosensation are given in table 2 and 3.

Bladder compliance on total bladder filling was available in 28 patients and was between 25 and 55 ml/cm H2O in 10 patients, below 25 ml/cm H2O in 3 patients (lesion at C2, T2, T8) and above 55 ml/cm H2O in 15 patients. During the first year postinjury the patient with low compliance of 8 ml/cm H2O (T2 lesion) kept a low compliance (20 ml/cm H2O) at 1 year. Four more patients developed a compliance decrease below 25 ml/cm H2O. Twenty three developed a normal or high compliance. On video bladder neck problems were seen in 7: Constantly open bladder neck with inflow of contrast into the urethra in 2 patients with cervical lesion, 2 with lesion T10-L1 and 2 with lesion below L1. One patient with T6 lesion had no opening of the bladder neck during strong detrusor contraction. Nineteen patients had started clean intermittent selfcatheterization while the other were on indwelling catheter.

Table 1: detrusor activity

	< 1 month		Follow-up	
	overactive	areflex	overactive	areflex
cervical	4	5	6	3
T1-9	9	4	12	1
T10-L1	2	5	2	5
< L1	1	2	1	2

Table 2: Filling sensation within 1 month postinjury (n = 30)

	Normal	Present	Absent
Cervical	1	3	3
T1-9		2	11
T10-L1		3	4
< L1	1	2	

Tabel 3: electrosensation (n = 12)

	Normal	Present	Absent
Cervical	2	1	1
T1-9	1		1
T10-L 1	2	1	1
< L1	2		

Interpretation of results

Our data show that early urodynamics can give important information on urodynamic function in patients with new spinal cord lesion, information which is not available from clinical data. Within one month after trauma bladder reflex activity was present in 50% and this overactivity remained during the following months. Forty % had bladder filling sensation and 9/12 had sensation of local electrical stimulation. Lower compliance can be present already within one month.

Concluding messages

1. We advocate to perform urodynamic tests within 3 – 4 weeks after new traumatic spinal cord lesions. As time allowed for primary rehabilitation does seem to decrease this is therapeutically useful.
2. Bladder activity during spinal shock can be very different from somatic areflexia.
3. Sensation in the lower urinary tract needs specific evaluation.