

DISCORDANCE BETWEEN THE LEVEL OF INJURY AND EXPECTED URODYNAMIC FINDINGS IN PATIENTS WITH TRAUMATIC SPINAL CORD INJURY

Hypothesis / aims of study

In patients with traumatic spinal cord injury (SCI), most of supra-sacral lesions result in detrusor overactivity (DO) with/without detrusor-sphincter dyssynergia (DSD) and sacral lesions usually produce detrusor underactivity (DU) or areflexia (DA). In clinical practice, however, one can be sometimes faced with the discordance between the level of injury and expected urodynamic findings and more diligent urodynamic evaluation is necessary in these cases because it may be somehow burdensome for the physician to manage lower urinary tract function only with clinical symptoms. We aimed to identify the predictor for this discordance from the review of clinical parameters of the patients with traumatic SCI.

Study design, materials and methods

From January 2004 to June 2014, 149 patients with traumatic SCI received both spinal magnetic resonance imaging and urodynamic study at our institution. Of the patients, excluding 59 patients with unclear level of injury on magnetic resonance image, less than 6 months interval from injury to urodynamic study, multiple levels of injury, or other neurologic or urologic conditions that affect voiding function, 90 patients were enrolled in final analysis.

Results

The mean age was 35.1 years, and 60 (66.7%) of the patients were men. Sixty-two (68.9%) patients had supra-sacral lesions, and 28 (31.1%) had sacral lesions. Bladder management methods at the time of urodynamic study were as follows: spontaneous/reflex voiding in 41 (45.6%), clean intermittent catheterization in 37 (41.1%), chronic urethral catheterization in 9 (10.0%), and suprapubic catheterization in 3 (3.3%). Patients were divided by whether the expected urodynamic findings were coincident with the levels of injury. Group I (discordance group) consisted of 23 (25.6%) patients with DA/DU in the supra-sacral lesions or DO/DSD in the sacral lesions. Group II consisted of 67 (74.4%) patients showing concordance of the expected urodynamic findings with the levels of injury. Age at the injury, sex, completeness of injury, mechanism of injury, and bladder management methods were not different between the groups (Table 1). On the other hand, the interval from injury to urodynamic study was shorter in group I than group II (3.4 vs. 6.9 years, $P=0.037$), and the percent of sacral lesions was statistically higher in group I (47.8 vs. 22.4%, $P=0.025$).

Interpretation of results

Based on our findings, one-quarter of the patients with traumatic SCI demonstrated the discordance between the level of injury and expected urodynamic findings. In these cases, it may be somehow burdensome for the physician to manage lower urinary tract function only with clinical symptoms.

Concluding message

About one-quarter of our patients with traumatic SCI demonstrated the discordance between the level of injury and expected urodynamic findings. When the interval from injury to urodynamic study is short or the sacral lesion is present, one might consider the discordance with urodynamic findings, needing more vigilant urodynamic evaluation on the changes of bladder and urethral function.

Table 1. Differences of clinical parameters between the urodynamic discordance group (n=23) and the concordance group (n=67)

Clinical parameter	P-value
Sex	>0.05
Age at spinal cord injury (SCI)	>0.05
Age at urodynamic study	>0.05
Interval from SCI to urodynamic study	0.037 (3.4 vs 6.9 yrs)
Diabetes	>0.05
Hypertension	>0.05
Level of injury (sacral injury)	0.025 (47.8 vs 22.4%)
Completeness of injury	>0.05
Mechanism of injury	>0.05
Bladder management pattern	>0.05

Disclosures

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