

LOWER URINARY TRACT DYSFUNCTION IN PATIENTS WITH CEREBELLAR VASCULAR ACCIDENT — A VIDEOURODYNAMIC ANALYSIS

Hypothesis / aims of study

Lower urinary tract dysfunctions (LUTD) frequently developed after the cerebrovascular accident (CVA), and the spectra were different among different lesions. The time-sequential effects of cerebellar infarcts were unclear. We evaluated the LUTD in patients with CVA involving cerebellum on videourodynamic analysis.

Study design, materials and methods

A total of 10 men and 5 women with cerebellar infarct were collected. Videourodynamic studies (VUDS) were performed for LUTD after the CVA event. There were 3 patients presented with urinary retention, and the mean interval between the CVA event and the study of VUDS was 1.2 months (range from 1.0 to 1.5 months). Therefore, we divided the patients into two groups based on the interval below or beyond 2 months.

Results

The mean age was 75.0 ± 13.4 years, and the mean interval was 11.2 ± 17.9 months. Five of 15 patients were in the group of interval below 2 months, and the others were beyond 2 months (Table 1). In VUDS parameters, the group of interval below 2 months had the larger cystometric bladder capacity (CBC, 402.6 ± 50.0 v 243.4 ± 130.1 ml, $p=0.022$), lower detrusor voiding pressure (Pdet, 4.0 ± 5.48 v 29.1 ± 19.8 cmH₂O, $p<0.001$), lower corrected maximal urinary flow rate (CQmax, 0.19 ± 0.33 v 0.64 ± 0.32 , $p=0.024$), and the larger post-void residual (PVR, 380.0 ± 135.1 v 150 ± 113.8 ml, $p=0.004$) than that of interval beyond 2 months. Detrusor overactivity (DO) were more frequently detected in the group of interval beyond 2 months (0% v 80%, $p=0.007$). The sphincter function was distinct in these two groups. The sphincter was poorly-relaxed (40%) or non-relaxed (60%) in the the group of interval below 2 months, and that in the group of interval beyond 2 months was normal (20%), dys-coordinated (60%), or poorly-relaxed (20%). Totally, 6 patients were of hemorrhagic infarcts and the others were of ischemic infarcts. There was no significant difference in the VUDS parameters between the patients with ischemic and hemorrhagic infarcts.

Interpretation of results

Within the first two months after the episode of cerebellar infarct, the majority of the patients presented with urinary retention. Their bladder had a poor sensation and lower detrusor contractility, and the sphincter was poorly-relaxed or non-relaxed. Two months after the cerebellar infarct, most patients had detrusor overactivity and a smaller bladder capacity. The detrusor contractility gradually recovered with increased urinary flow rate and decreased PVR. The spasticity of sphincter improved, but the majority was still presented with dys-coordination.

Concluding message

Lower urinary tract dysfunctions caused by cerebellar infarcts changed with time. In the acute stage (first 2 months), the patient had a stable bladder with poor sensation and impaired detrusor contractility, and a non-relaxed or poorly-relaxed sphincter. After resolution from acute stage (more than 2 months), the sensation and contractility of bladder recovered with the occurrence of detrusor overactivity, and the sphincter became dyscoordinated.

Table 1. The demographic data and parameters in VUDS in patients with cerebellar vascular accident

	Interval < 2 months (N = 5)	Interval \geq 2 months (N = 10)	Overall (N = 15)	P value
Gender: M/F	2/3	8/2	10/5	0.167
Age (years)	72.0 ± 23.3	76.5 ± 5.6	75.0 ± 13.4	0.560
Ischemic hemorrhagic	1 4	8 2	9 6	0.047
Interval (months)	1.3 ± 0.3	16.1 ± 20.4	11.2 ± 17.9	
VUDS parameters				
DO	0 (0%)	8 (80%)	8 (53%)	0.007
CBC(ml)	402.6 ± 50.0	243.4 ± 130.1	296.5 ± 132.8	0.022
Pdet (cmH ₂ O)	4.0 ± 5.48	29.1 ± 19.8	20.7 ± 20.3	0.017
Qmax(ml/sec)	3.0 ± 6.2	7.1 ± 5.5	5.7 ± 5.8	0.209
Cqmax*	0.19 ± 0.33	0.64 ± 0.32	0.49 ± 0.38	0.024
PVR (ml)	380.0 ± 135.1	150 ± 113.8	226.7 ± 161.7	0.004
DO	0% (0)	80% (8)	53.3% (8)	0.007
Sphincter function				0.015
Normal	0 (0%)	(20 %)	2 (13.3 %)	
Dyscoordinated	0 (0%)	6 (60 %)	6 (40 %)	

Poorly-relaxed	2 (40 %)	2 (20 %)	4 (26.7 %)	
Non-relaxed	3 (60 %)**	0 (0 %)	3 (20 %)	

*: CQmax = Qmax / $\sqrt{\text{voided volume}}$

** : The 3 patients with non-relaxed sphincter were presented with urinary retention.

Disclosures

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