

Authors: A. Sengoku, Y. Higashi
Institution: Department of Urology, Hyogo Rehabilitation Centre
Title: WAVE FORMS OF THE ISOMETRIC DETRUSOR PRESSURE DURING MICTURITION REFLEX IN CEREBRAL VASCULAR ACCIDENT PATIENTS

Aims of Study:

The definition of overactive bladder is the existence of uninhibitory detrusor contraction during filling phase in urodynamic study (UDS), and it is not referred to an degree of the detrusor contractions during micturition reflex. This study is aimed to evaluate a nature of the detrusor contractions in overactive bladder caused by cerebral vascular accident (CVA).

Methods:

In this study, UDS was performed by ordinary procedures at first, and followed by a measurement of the isometric detrusor pressure (Piso) during micturition reflex, using 7 Fr. three-way catheter with 2ml-cuff. 62 CVA patients (male 47, female 15, mean age 64.5 ± 8.8) and 10 control cases who have neither neurological lesion, bladder outlet obstruction nor uninhibited contraction (UIC) in this UDS (male 4, female 6, mean age 66.4 ± 10.4) were enrolled, while the cases which Piso wave forms were not good for assessment (i.e. in case of not monophasic, or affected by urethral sphincter contractions in the middle of detrusor contractions) were omitted. Parameters to evaluate the Piso wave forms are as follows, Piso max [cmH₂O] ; the maximal value of Piso, T 50% [sec] ; the duration from the beginning to the point of 50% value of the Piso max in the descending phase, T 20% [sec] ; the duration also to the point of 20% value, T>15cmH₂O [sec] : the duration also to the point of the Piso greater than 15 cmH₂O, Slope [cmH₂O/sec] ; maximal value of the Piso slope in the ascending phase. Measurements of the durations were continued until 4 minutes.

Results:

Results of these parameters for CVA group versus control group were demonstrated in Table 1. Compared to control, significantly, Piso max and Slope were greater, and the durations (T50%, T20%, T>15cmH₂O) were shorter, respectively. Among the CVA group, the same analyses were done for UIC (+) group (n=35) versus UIC (-) group (n=27) (Table 2). The results of UIC (+) group compared to UIC (-) group were as well as those of

CVA group compared to control.

Table 1.	CVA group (n=62)	control (n=10)	p value [Mann-Whitney's U-test]
Piso max [cmH ₂ O]	93	58.5	.0004
T 50% [sec]	96.5	212.5	.0008
T 20% [sec]	122.	>240	.0002
T>15cmH ₂ O [sec]	127	>240	.0007
Slope [cmH ₂ O/sec]	11.1	4.5	<.0001

Table 2.	CVA group (n=62)		p value [Mann-Whitney's U-test]
	UIC(+) group (n=35)	UIC(-) group (n=27)	
Piso max [cmH ₂ O]	108	75	.0004

T 50% [sec]	73	148	.0009
T 20% [sec]	98	180	.0018
T>15cmH2O [sec]	105	187	.0058
Slope [cmH2O/sec]	13.4	8.9	.0008

(every figure of the parameters is median value)

Furthermore, each parameter in CVA group was significantly correlative with the effective bladder volume (Piso max, Slope ; negative correlation, T50%, T20%, T>15cmH2O ; positive correlation, $p < 0.001$).

Conclusions:

This results might be due to mechanical changes similar to unstable bladder, which the smooth muscle fibers are easily to be excited simultaneously, or insufficient control of excitatory stimulations from the pontine micturition center in overactive bladder. Wave forms of Piso possibly reflect the degrees of overactive bladder.