

# Correlation between urodynamic and cystography parameters in patients with spina bifida: HWR of cystography may be a screening tool for LCB

## Background

Risk factors for upper urinary tract dysfunction, such as low-compliance bladder (LCB) and detrusor overactivity (DO), must be evaluated using videourodynamics (VUDS) in patients with spina bifida (SB). However, it has been reported that interpretation of urodynamic findings varies among observers. This study aimed to investigate the association between the risk factors for upper urinary tract dysfunction and cystography parameters.

## Methods

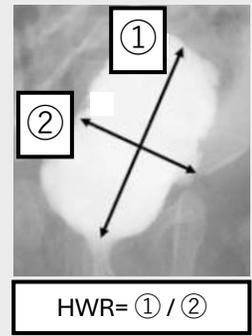
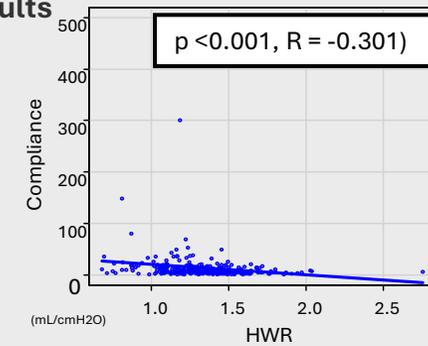
This retrospective study included 50 patients with SB who underwent VUDS at our institution between 2007 and 2024. We investigated the relationship between urodynamic and cystography parameters. The height-to-width ratio (HWR) of cystograms at maximum capacity is reportedly an indicator of a high-pressure bladder; therefore, we measured the ratio. LCB was defined as <10 mL per cm H<sub>2</sub>O.

UDS parameters	Cystography parameters
Bladder compliance	Bladder deformity
DO	Vesicoureteral reflux (VUR)
	MCC / EBC
	HWR

MCC, Maximum cystometric capacity; EBC, expected bladder capacity;

The correlation between the LCB and HWR was examined using Spearman's correlation coefficient. Multivariable logistic regression analysis was performed to evaluate prognostic factors for LCB and DO.

## Results



Multivariate analyses for factors associated with LCB

	OR	95 % CI	P value	
Sex	Male			
	Female	1.10	0.65 – 1.89	0.71
Bladder deformity	Grade <2			
	Grade ≥2	1.80	0.95 – 3.42	0.071
HWR	≤ 1.27			
	> 1.27	2.46	1.44 – 4.19	< 0.001
MCC / EBC	≥ 0.5			
	< 0.5	4.03	1.90 – 8.56	< 0.001
VUR	Grade <3			
	Grade ≥3	1.63	0.17 – 16.0	0.68

Multivariate analyses for factors associated with DO

	OR	95 % CI	P value	
Sex	Male			
	Female	1.09	0.63 – 1.90	0.75
Bladder deformity	Grade <2			
	Grade ≥2	0.56	0.29 – 1.09	0.090
HWR	≤ 1.27			
	> 1.27	1.02	0.59 – 1.78	0.94
MCC / EBC	≥ 0.5			
	< 0.5	4.97	2.64 – 9.34	< 0.001
VUR	Grade <3			
	Grade ≥3	0.21	0.023 – 1.98	0.68

## Implications

The findings suggested that HWR and MCC/EBC were associated with risk factors for upper tract dysfunction in patient with SB.

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