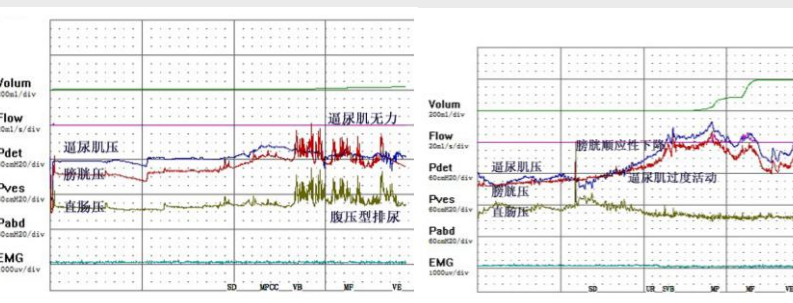


Application of Video Urodynamics in Tethered Spinal Cord Syndrome Complicated by Neurogenic Lower Urinary Tract Dysfunction

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Background

Tethered spinal cord syndrome (TSCS) often results in neurogenic lower urinary tract dysfunction (NLUTD) and defecatory disorders, severely impacting patients' physical and mental health. Symptoms include voiding/storage dysfunction, lower limb sensorimotor deficits, skeletal deformities, and pain. Due to multisystem involvement, it may lead to severe sequelae and high disability rates. However, video urodynamic (VUD) characteristics in TSCS-associated NLUTD remain underreported. This study explores VUD features in TSCS patients with NLUTD.



Methods

Six patients with TSCS secondary to sacral spina bifida occulta or sacrococcygeal tumors, presenting with storage/voiding dysfunction and constipation, were enrolled. All underwent MRI, revealing tethered cords (n=6), including 2 cases with lipomas, 1 with myelomeningocele, and 3 with lumbosacral spina bifida.

Results

Case	1	2	3	4	5	6
Sex	Female	Male	Male	Male	Male	Female
Bladder compliance	Low	Low	Low	Low	Low	Low
Detrusor overactivity	Yes	Yes	No	No	No	No
Bladder neck opening during filling	No	Partial opening	No	No	Partial opening	No
First sensation of bladder filling (ml)	120	370	260	120	100	260
Maximum cystometric capacity (ml)	300	410	410	240	220	460
Maximum flow rate (mL/s)	None	None	6	None	None	5
Maximum detrusor pressure (cmH2O)	None	None	69	None	None	50
Detrusor muscle strength	N/A	N/A	Weak	N/A	N/A	Weak
Post-void residual urine volume (ml)	300	410	300	240	220	400
maximum urethral closure pressure (cmH2O)	62	39	61	65	69	59
Bilateral hydronephrosis	Yes	No	Yes	No	Yes	Yes
Vesicoureteral reflux	No	No	Yes	No	No	Yes

Concluding message

TSCS-associated NLUTD predominantly manifests as reduced bladder compliance, impaired or absent detrusor contractility, low flow rates, and elevated residual urine, often accompanied by detrusor overactivity, decreased urethral closure pressure, and upper urinary tract damage (e.g., hydronephrosis, chronic renal insufficiency). Video urodynamics plays an indispensable role in diagnosing, classifying, and evaluating therapeutic outcomes in these patients