359 . Exploring the role of Pelvic Neurophysiology Testing for patients with Non-obstructive urinary retention (NOUR)

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Hypothesis / aims of study

- Pelvic neurophysiology testing (PNT) is useful in the investigation of neurological causes for pelvic visceral and pelvic floor dysfunction.
- PNT includes different test examining different pathways. In detail:

1. Electromyography (EMG) is used to assess urethral and anal sphincter activity;

2. Bulbocavernosus reflex (BCR) to assess sensory and motor reflex pathways.

3. Somatosensory Evoked Potentials (SEP) to assess the S2, S3 and S4 sacral sensory nerve roots.

- This study aims at evaluating the usefulness of PNT for patients with unexplained NOUR and identifying those who may respond to sacral neuromodulation (SNM).
- Often in this patient cohort it is uncertain whether the S3/S4 nerve roots, used in SNM therapy, are compromised. PNT may identify sacral nerve root dysfunction and may possibly predict response to SNM.

Study design, materials and methods

- A retrospective review was conducted on all patients with NOUR who had undergone PNT before a trial of SNM by a single surgeon in the U.K. between 2018 and 2023.

- Clinical evaluations including neurological examination, video-urodynamics and urethral pressure profilometry, were performed.

- Women with a presumed diagnosis of Fowler's syndrome underwent Urethral Sphincter EMG. The remaining patients with NOUR of unexplained aetiology were further investigated with PNT in an attempt to establish suitability for SNM.

Results and interpretation (1)

- Total of 34 patients were included: 3 males and 31 females, median age: 32 years (R:19-74)

- Neurological comorbidities were present in 5 patients:
1. Myelin oligodendrocyte disorder (MOGAD)
2. MOG-TM
3. Focal epilepsy
4. HSV myeloradiculitis
5. Trigeminal neuralgia

- MRI spine showed abnormalities in 2 patients (MOG-TM and lumbar spondylolysis).

Results and interpretation (2)

- Voiding LUTS were present in 79.4% of the patient with the rest (20.6%) reporting mixed LUTS.

Table 1 : Video-urodynamic data

	N (%)		Median (IQR)	Range
Detrusor overactivity	6 (17.6)	Capacity(mL)	576 (176.75)	286-802
Urge-incontinence (UUI)	2 (5.9)	Voided volume(mL)	182 (252)	28-734
Stress incontinence (SUI)	1 (2.9)	Qmax(mL/s)	11 (12.25)	1-34
Reduced compliance	3 (15)	PdetQmax(cmH2O)	56 (51.5)	11-650
		MUCP(cmH20)	87±21	41-136

- Bowel dysfunction was reported by 10 patients (8 Constipation/2 diarrhoea).

- 29 women were diagnosed with Fowler's syndrome.

- The remaining 5 patients with unexplained NOUR were investigated with further PNT prior to SNM trial.

Table 2: PNT results of patients with NOUR of unexplained aetiology

Patient	MRI results	Anal sphincter	Tibial	Pudendal	S2	S3	S4	SNM success
1 (M)	MOG +TM	normal	**abnormal**	normal	NA	NA	NA	+
2 (M)	neg	NA	normal	normal	NA	NA	NA	+
3 (F)	neg	normal	normal	normal	**abnormal**	normal	normal	-
4 (F)	neg	**abnormal**	normal	normal	normal	normal	NA	+
5 (F)	neg	normal	normal	normal	normal	normal	normal	-

Conclusions

- As PNT develops and becomes established in urological diagnostic pathways it has the promise to refine patient selection and optimise therapeutic outcomes with SNM.
- Acknowledging the study limitations including its retrospective nature and small sample size; the results indicate 4/5 PNT studies showed a positive correlation in predicting the SNM outcome in patients with NOUR of unknown aetiology.
- PNT has the potential to help identify potential SNM responders and also to identify which side and nerve root should be targeted in the SNM trial, ie S3 or S4.
- Prospective studies with larger cohorts are warranted to validate these findings.