

**Relationship between urodynamic findings and bowel function in multiple sclerosis patients with lower urinary tract dysfunction: Results from an Italian Cross-Sectional Study**

R.Balsamo 1-2, D.Arcaniolo 2, E.Illiano 3, F.Natale 4, E.Costantini 3, M.De Sio 2

1. Magna Graecia University of Catanzaro, 2. Università degli Studi di Napoli Luigi Vanvitelli, 3. Department of Urology and Andrology Clinic, Department of Surgical and Biomedical Sciences, University of Perugia, Perugia, Italy, 4. Urogynecology San Carlo –IDI-Hospital Rome, Italy

**Hypothesis and aims of the study**

Patients with multiple sclerosis (MS) often experience severe debilitating lower urinary and bowel dysfunction in addition to the physical disabilities. However, only the bladder has received the attention of medical providers with neurogenic bowel being poorly understood. The aim of this observational, cross-sectional study was to determine the relationship between bowel dysfunction, neurological disability and urodynamic alterations in patients with MS and lower urinary tract dysfunction (LUTD).

**Materials and methods**

From January 2015 to January 2017, consecutive patients with MS in remission phase and lower urinary tract symptoms (LUTS), who underwent urodynamic examination for the first time were recruited from our neurological department. LUTS were evaluated with the International Prostate Symptoms Score (I-PSS), neurological impairment was assessed using the Expanded Disability Status Scale (EDSS) and bowel dysfunction was investigated with the Neurogenic Bowel Dysfunction score (NBDs). The examination included urinalysis, ultrasonography and an urodynamic test according to International Continence Society (ICS)-criteria.

No. Of subjects, n (%)	
male	35
female	75
MS phenotype, n (%)	
Relapsing-remitting	80(72%)
Primary progressive	10(9.09%)
Secondary progressive	20(18.18%)
Age, years, mean	41.2 ± 11.6
Duration of MS, months, mean	11.5±7.5
Edss, mean	3.77 ± 2.01
NBD score	16.0 ±1.39
Detrusor Overactivity (DO), n (%)	70(63.6%)
P det max IDC (cmH20), mean	34.7 ±20.5
Mcc (ml), median (IQR)	153.5±100.2
Compliance (ml/cmH20), mean	10.2±20.1

NBD (Neurogenic Bowel Dysfunction), DO (Detrusor Overactivity), P det max IDC (detrusor pressure during involuntary detrusor contraction), MCC (maximum cystometric capacity)

**Results**

110 patients (35 (31.8%) men and 75 (68.18%) women) completed the study. Mean age was 41.2 ± 11.6 years and mean duration of the disease was 11.5±7.5 years. Mean EDSS score was 3.77 ± 2.01 and mean NBD score was 16.0 ±1.39 (severe), with no significant difference between the types of clinical course of the disease. Detrusor Overactivity (DO) was found in 25 (22.7%) males and 45 (40.9%) females. Subjects with maximum detrusor pressure during involuntary detrusor contraction (PdetmaxIDC) ≥20.0 cmH2O and maximum cystometric capacity (MCC) ≤135 ml had higher NBD score. On multivariate logistic regression analysis, continuous EDSS (odds ratio (OR) = 1.54; P <0.03), P det max IDC (odds ratio (OR) 6.7; P < 0.05), MCC (OR 6.80; P < 0.05) were predictors of moderate-severe Neurogenic bowel dysfunction (NBD >9), after adjusting for age, MS variants, EDSS and duration of MS.

	NBD score <9	NBD score >9	P value
No. Of subjects, n (%)			
male	20(18.8%)	15(13.6%)	
female	30(27.2%)	35(31.8%)	
MS phenotype, n (%)			
Relapsing-remitting	35(31.8%)	45(40.9%)	0,07
Primary progressive	4(3.6%)	6(5.4%)	
Secondary progressive	5(4.54%)	15(13.6%)	
Age, years, mean	47±9.7	40,2±10,2	0,15
Duration of MS, months, mean	168±80,1	72±100,5	<0,01
Edss, mean	3,2±1,7	4,5±1,5	<0,03
P det max IDC (cmH20), mean	6,5±3,1	53,1±20,1	<0,05
Mcc (ml), mean	153±120	70±50	<0,05

**Conclusion**

Bowel dysfunction is common among patients with neurogenic bladder. Those with worse bladder symptoms also experience worse bowel dysfunction. This highlights the importance of addressing both bowel and bladder dysfunction in this often poorly understood population.