



#411 Role of bladder sensations and detrusor overactivity on overactive bladder symptoms in patients with multiple sclerosis

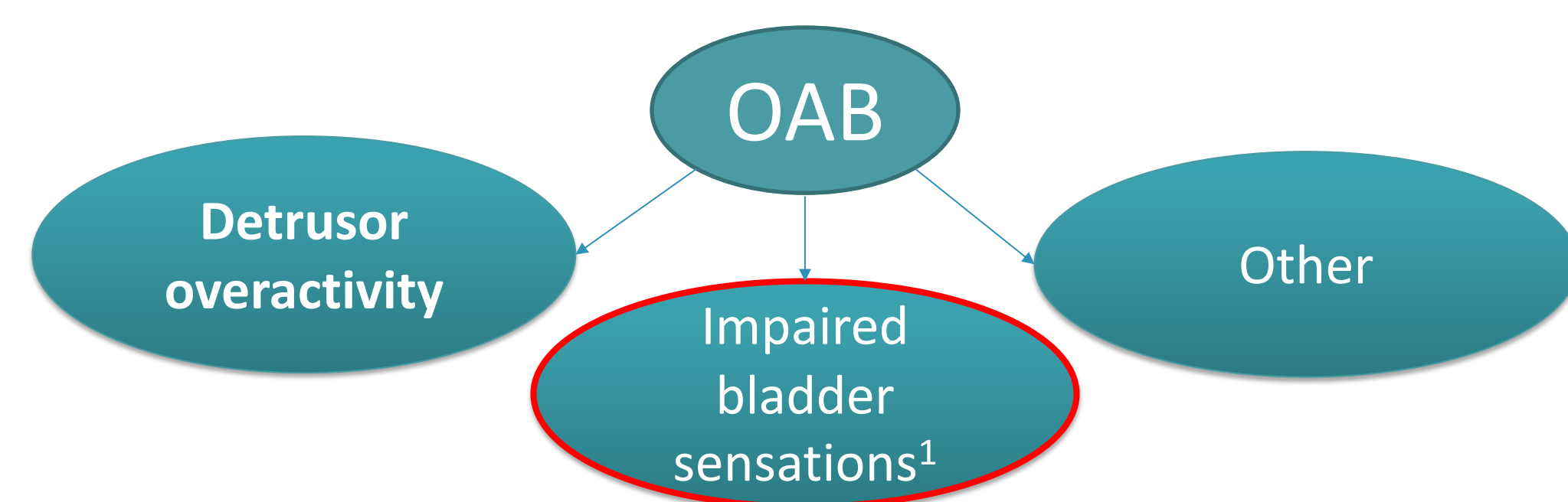


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Introduction

Lower urinary tract (LUT) symptoms are common in patients with multiple sclerosis (PwMS), especially overactive bladder symptoms (OAB).



Aims:

- To assess the relationship between the kinetics of bladder sensations appearance using the volume between first desire to void (FDV) and strong desire to void (SDV) during cystometry, and the severity of OAB symptoms.
- To assess the impact of detrusor overactivity (DO) on the perception of bladder sensations.

Methods and Materials

Retrospective study – all PwMS who underwent a standardized urodynamic test between June 2020-October 2022

Urodynamics

- 20 ml/min
 - first desire to void (FDV)
 - strong desire to void (SDV)
- 100 ml/min
- 100 ml/min with 4°C fluid (Ice water test)

FDV-SDV volume

DO?

LUT symptoms

- Urinary Symptom Profile (USP) and
- Bladder diary
 - voids volume
 - intensity of desire to void (4-level Likert scale)

Primary criterion: OAB USP score with the sub-scores to the different questions

Secondary criteria: data from bladder diaries (voids volume, number of voids, percentage of voids at normal and strong or urgent need to void).

As DO is known to impact bladder sensations, a comparison between patients with and without DO was performed, followed by analyses in the sub-group without DO.

Results

Patients

- 202 PwMS included, 74.3% of women
- mean age 47.4 ± 11.8 years
- median EDSS 3; IQR [2-5]

DO vs no-DO

- DO: 104 (51.5%) patients
- Association between FDV-SDV volume <50 ml and DO (27% vs 5%; p < 0.0001)
- Earlier sensations during cystometries in patients with DO
 - FDV: 167±88ml vs 204±109ml; p=0.02
 - SDV: 285±131ml vs 353±116ml; p<0.001

no-DO 98 patients (48.5%)

- Correlation between FDV-SDV volume and (Table 1):
 - voids frequency
 - mean voided volume
 - USP OAB sub-score
 - item related to the warning time
- 19 patients with FDV-SDV volume < 100 ml: association with increased OAB USP sub-score and reduced void volume (Table 2)

Table 1: Correlation between FDV-SDV volume and symptoms severity in patients without DO

| FDV-SDV | *Rho | p |
|---|-------|------------------|
| Bladder diary | | |
| Voids per day | -0.30 | 0.03 |
| Voided volume | 0.52 | <0.001 |
| Percentage of voids at normal to important desire | 0.05 | 0.73 |
| Percentage of voids at urgent desire | -0.23 | 0.11 |
| USP OAB sub-score | | |
| Q.2 Urgencies frequency | -0.18 | 0.16 |
| Q.3 Warning time | -0.38 | <0.01 |
| Q.4 Leakages frequency | -0.21 | 0.09 |
| Q.4b Leakages abundancy | -0.19 | 0.13 |
| Q.5 Interval between micturition | -0.20 | 0.12 |
| Q.6 Nocturia | -0.15 | 0.23 |
| Q.7 Leakages at night | 0.01 | 0.94 |

USP: Urinary Symptom Profile; FDV-SDV: volume between First and Strong desire to void. *Spearman correlations

Table 2: Comparison of patients without DO, with a low FDV-SDV volume or high FDV-SDV volume

| | FDV-SDV < 100 n = 19 | FDV-SDV > 100 n = 70 | p |
|--|-------------------------|-------------------------|--------------------|
| USP OAB sub-score (median [IQR])† | 9 [5.5-11] | 5 [3-8] | < 0.01 |
| Voids per day (mean (SD))‡ | 9.6 (2.9) | 8.1 (3.5) | 0.10 |
| Voided volume (mean (SD)) ‡ | 118 (30) | 230 (114) | < 0.0001 |
| Percentage of voids at urgent desire (mean (SD)) ‡ | 40.7 (32.5) | 23.6 (27.0) | 0.07 |

USP: Urinary Symptom Profile; FDV-SDV: volume between First and Strong desire to void

†Wilcoxon rank test; ‡Welch t-tests

Discussion

The impact of DO on the volume of bladder sensations has been previously highlighted in non-neurogenic women, showing reduced bladder capacity and increased bladder sensations in patients with DO². The warning time is one of the parameters that can be used to define urgency, and has been used as a criterion to assess treatment efficacy in patients with OAB^{3,4}.

We found a link between the warning time assessed with the specific question of the USP questionnaire, and the kinetics of bladder sensations perception during urodynamics using the FDV-SDV volume in patients with multiple sclerosis. Previously, a correlation was found between the Bladder Urgency Velocity⁵, defined as (cystometric capacity – FSF), and the Urgency Perception Scale, used to quantify the severity of urgency, with a similar strength (0.30)⁵. Bladder sensations are supposed to gradually increase, and 8 to 9 different sensation events have been reported during bladder filling⁶. This progressive awareness of bladder sensations could play a role in continence, as it provides gradual information to the individual to manage bladder emptying according to the level of filling and the social constraints. The low correlations found are probably explained by the role of other factors participating in the control of micturition as emotions, anxiety, or stress, and other sensory parameters such as volume at first sensation of filling (FSF), FDV, or SDV may also play a role in the severity of OAB symptoms.

Conclusions

Detrusor overactivity has an impact on the volume of occurrence of bladder sensations during cystometries in patients with multiple sclerosis. In the absence of detrusor overactivity, a reduced volume between first and strong desire to void may have a significant impact on overactive bladder symptom severity, especially in reducing the warning time.

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