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The value of urodynamic findings in female patients with bladder pain syndrome



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Hypothesis / aims of study

Patients with chronic pelvic pain are often classified as having bladder pain syndrome (BPS). Given the highly heterogeneous (clinical) nature of BPS, with a range of subtypes, it can be challenging to implement the appropriate treatment for each patient.

Additionally, the majority of patients diagnosed with BPS lack cystoscopic and pathological evaluation to differentiate interstitial cystitis (IC) with or without Hunner's lesions (HL) from other inflammatory and non-inflammatory subtypes of BPS. Previous research on chronic pelvic pain illustrated the difficulty in distinguishing patients with IC from patients with detrusor overactivity based on urodynamic studies.[1] Some studies on the other hand, did show significant differences in specific urodynamic parameters, such as reduced cystometric capacity in patients with BPS/IC compared to patients with overactive bladder.[2] Nevertheless, the exact relationship remains unclear.

The aim of this study was to evaluate whether urodynamic findings differ between patients with self-reported different types of BPS, and between patients with and without macroscopic inflammatory and non-inflammatory types of BPS.

Study design, materials and methods

A retrospective patient file study

All patients who underwent invasive urodynamics between 2005 and 2023 for chronic pain related to the urinary tract (N=206).

Female patients(N=78).

Compared the results of the urodynamic studies of patients who consulted with bladder-filling-related pain (reported bladder-filling-related pain) with those with non-filling-related pain.

- Parameters of filling cystometry were analyzed and correlated with cystoscopic findings:
- cystometric bladder-filling-related pain
  - maximum cystometric capacity (MCC)
  - impaired bladder compliance (value <25 mL/cm H20)
  - presence of detrusor overactivity.

SPSS was used for descriptive and comparative statistics. Data are presented as N(umber)(%) or mean (±Standard Deviation). Chi square test was used to evaluate categorical variables (with Fisher's exact where necessary), and independent student's t-test and analysis of variance (ANOVA) with post-hoc Bonferroni for continuous variables. Statistical significance was set at p<0.05.

Results and interpretation

In this analysis, we compared female patients with reported bladder-filling-related pain with patients with non-filling-related pain.

78 female patients were included (mean age of 59.4±16.1 years)  
31 reported bladder-filling-related pain  
47 reported non-filling-related pain

In 81% of patients with reported bladder-filling-related pain, pain was reproduced during filling cystometry (p=0.031).  
In 56% of female patients reported non-filling-related pain, cystometric bladder-filling pain was found.

The micturition frequency was significantly increased in patients with non-filling-related pain, compared to patients with reported bladder-filling-related pain, with a daytime frequency of 14±7 (vs 10±5 –p=0.015) and a nighttime frequency of 4.4±4.0 (vs3.7±2.2- p=0.005).

In patients with reported bladder-filling-related pain, we observed significantly less detrusor overactivity (15% versus 38%) compared to those with non-filling-related pain (p=0.037), potentially explaining why medication aimed at detrusor relaxation is less effective in this group.

- Urodynamic and cystoscopic findings were better associated than reported pain and cystoscopic findings.
- All patients with HL experienced cystometric bladder-filling-related pain→ 25% of them had reported bladder-filling-related pain in daily life.
  - 83% of patients with bladder wall erythema on cystoscopy experiences cystometric bladder-filling-related pain → 43% of these patients also reported bladder-filling-related pain in daily life.

This could be an important finding to allow urodynamic differentiation between BPS subtypes.

A limitation of this study are the missing data due to its retrospective nature.

	Total  (N = 78)	Pain related to bladder filling  (N = 31)	Pain in lower abdomen not related to bladder filling (N = 47)
Age (year) (SD)	59 (16)	57 (17)	60 (15)
Surgical history (%) <ul style="list-style-type: none"><li>Gynecological Surgery</li><li>Abdominal Surgery</li></ul>	55 (n= 43) 40 (n=31) 15 (n=12)	58 (n=18) 42 (n=13) 16 (n=5)	53 (n=25) 38 (n=18) 15 (n=7)
Cystoscopic findings(%) <ul style="list-style-type: none"><li>Hunner’s lesions</li><li>Erythema</li><li>No abnormalities</li></ul>	N = 62  13 (n=8) 34 (n=21) 53 (n=33)	N = 27  7 (n=2) 33 (n=9) 59 (n=16)	N = 35  17 (n=6) 34 (n=12) 49 (n=17)
Daytime frequency (number) (SD)	12,6 (6,6)	10,3 (4,5)	14,0 (6,6)
Nighttime frequency (number) (SD)	4,1 (3,4)	3,7 (2,2)	4,3 (3.9)
Urodynamic findings <ul style="list-style-type: none"><li>Cystometric capacity mL (SD)</li><li>Compliance normal (%)</li><li>Detrusor overactiviy (%)</li></ul>	349 (215) 90 (n=54) 29 (n=19)	360 (187) 92 (n=23) 15 (n=4)	340 (233) 89 (n=31) 38 (n=15)

Tabel 1 baseline characteristics

Conclusions

This study indicates a clear association between reported bladder-filling-related pain, cystoscopic and urodynamic findings in women.

Women with reported bladder-filling-related pain had a very low prevalence of detrusor overactivity, suggesting that bladder relaxing drugs may be less effective in this population.

Signs of bladder wall inflammation were often found in women with cystometric bladder-filling-related pain, and these patients also had a significantly smaller maximal bladder capacity

Therefore, cystoscopic findings appear to relate better with urodynamic findings than with reported pain symptoms.

References

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