

BLADDER SYMPTOMS AND URODYNAMIC OBSERVATIONS OF PATIENTS WITH BLADDER ENDOMETRIOSIS

Hypothesis / aims of study

Deep infiltrating endometriosis (DIE) is a particular form of endometriosis that penetrates deeply under the peritoneal surface. These lesions are strongly associated with chronic pelvic pain symptoms [1]. Lower urinary symptoms (LUTS) are quite frequent before surgery in patients with endometriosis [2]. At present little is known about the mechanism of these urinary problems. We hypothesize that improved characterisation of preoperative urinary problems associated with the location of endometriosis lesions would give greater insight into their pathophysiology. The present study aimed to describe the characteristics of lower urinary tract symptoms (LUTS) and urodynamic observations in patients with posterior endometriosis versus those with posterior and anterior endometriosis.

Study design, materials and methods

Prospective observational study of 30 patients from two French gynaecologic surgical settings with experience of DIE surgery. All patients were subjected to preoperative standardized investigation including detailed evaluation of LUTS with standardized questionnaires and urodynamic studies. All urodynamic studies were performed in standardised fashion by two investigators. Terminology for all symptoms, signs and urodynamic investigations complied with ICS committee recommendations. During surgery, endometriosis locations were recorded and correlated to the symptoms and urodynamic observations. Anterior DIE was defined when the endometriotic lesion deeply penetrated the vesico-uterine space with involvement of the bladder wall with or without complete infiltration of the muscular layer of the bladder. Posterior DIE was defined when uterosacral ligaments (USL), torus uterinum, vagina, rectovaginal septum or rectosigmoid were involved by DIE lesions.

Results

23 patients (76.7%) had one or more LUTS symptoms and 29 patients (96.7%) had one or more abnormalities at urodynamic examination. At surgery all patients had posterior endometriosis and ten of them also had anterior endometriosis. Patients with anterior endometriosis had increased bladder sensation (90.0% versus 45.0%, $p=0.024$) and painful bladder filling (70.0% versus 30.0, $p=0.04$) compared to the patients with posterior endometriosis only. Voiding symptoms (60.0%), impairment of flowmetry (30.0%) and increased maximum urethral closure (90.0%) were very frequent and were not correlated to any specific location (Table).

Interpretation of results

Endometriosis infiltrating the bladder wall is associated with painful bladder symptoms (i.e. bladder pain, urgency and/or urinary frequency) and specific urodynamic sensory alterations (i.e. painful bladder filling and/or increased bladder sensation). These bladder-specific symptoms of DIE are consistent with the diagnosis of bladder pain syndrome (BPS) [3]. The second profile involved dysfunctional voiding including voiding symptoms, impaired bladder emptying and increased maximum urethral pressure. The latter condition was frequent in our patients with DIE but was not specifically related to the anterior location, which suggests an impairment of the inferior hypogastric plexus by the deeply infiltrating lesions.

	Anterior and posterior endometriosis (N=10)	Posterior endometriosis only (N= 20)	Total (N=30)	p value
Symptoms				
No. with Urgency, n/N (%)	8/10 (80.0)	8/20 (40.0)	16/30 (53.3)	0.060
Mean Score of Urgency \pm 1 SD*	1.7 \pm 1.8	1.4 \pm 2.2	1.5 \pm 2.1	0.207**
No. with urinary frequency, n/N (%)	6/10 (60.0)	9/20 (45.0)	15/30 (50.0)	0.439
Mean score of frequency \pm 1 SD*	1.4 \pm 1.6	0.9 \pm 1.4	1.1 \pm 1.5	0.536**
No. with voiding symptoms, n/N (%)	7/10 (70.0)	11/20 (55.0)	18/30 (60.0)	0.69
Mean score of voiding symptoms \pm 1 SD*	1.6 \pm 1.3	1.2 \pm 1.3	1.3 \pm 1.3	0.463**
No. with bladder pain, n/N (%)	6/10 (60.0)	5/20 (25.0)	11/30 (36.7)	0.060
Urodynamic observations				
Normal urodynamic examination, n/N (%)	1/10 (10.0)	2/20 (10.0)	3/30 (10.0)	1.000
Maximum urine flow rate ml \pm 1SD	22.8 \pm 6.4	23.2 \pm 9.3	23.1 \pm 8.3	0.927**
Weak flow ***, n/N (%)	2/10 (20.0)	4/19 (21.1)	6/29 (20.7)	>.999****
Post-voiding residual > 10%	1/10 (10.0)	3/20 (15.0)	4/30 (13.3)	>.999****
Impaired bladder emptying****, n/N (%)	3/10 (30.0)	6/20 (30.0)	9/30 (30.0)	>.999****
First sensation of bladder filling (ml \pm 1 SD)	90 \pm 57.9	141.2 \pm 96.9	124.1 \pm 88.3	0.173**
First desire to void (ml \pm 1 SD)	134.3 \pm 50.3	202.9 \pm 113.5	179.3 \pm 101.0	0.066**
Strong desire to void (ml \pm 1 SD)	284 \pm 139.2	330.3 \pm 154.7	314.8 \pm 149.0	0.441**
Increased bladder sensation*, n/N (%)	9/10 (90.0)	9/20 (45.0)	18/30 (60.0)	0.024****
Painful bladder filling, n/N (%)	7/10 (70.0)	6/20 (30.0)	13/30 (43.3)	0.04
Detrusor overactivity, n/N (%)	1/10 (10.0)	1/19 (5.3)	2/29 (6.9)	>.999****
Maximum cystometric capacity (ml \pm 1 SD)	358.1 \pm 137.5	405.7 \pm 174.3	389.8 \pm 162.2	0.482**
Maximum cystometric capacity <350 ml, n/N (%)	6/10 (60.0)	9/20 (45.0)	15/30 (50.0)	0.439
Compliance (ml/cm \pm 1 SD)	70.537 \pm 63.763	207.958 \pm 344.614	162.151 \pm 288.809	0.3222**
Compliance < 40 ml/cm, n/N (%)	5/10 (50.0)	5/20 (25.0)	10/30 (33.3)	0.171
Maximum urethral closure pressure (CmH20 \pm 1SD)	101.9 \pm 35.2	99.6 \pm 25.2	100.4 \pm 28.3	0.965**
Increased maximum urethral closure pressure, n/N (%)	9/10 (90.0)	18/20 (90.0)	27/30 (90.0)	>.999****

* Based on the Measurement of Urinary Handicap scale

** Non parametric Mann-Whitney U Test p Value

***Velocity below 10th percentile at the Liverpool diagram

**** Fischer exact test

*****Include patients with weak-flow, post-voiding residual > 10% or altered pattern at flowmetry

Concluding message

Preoperative documentation of bladder function, including urodynamic studies, should be proposed before surgery to patients with extensive DIE with or without involvement of the bladder. Inversely, patients consulting with LUTS in a context of chronic pelvic pain and having bladder dysfunction at urodynamic investigation should be referred for a gynaecologic evaluation.

References

1. Fauconnier A, Chapron C (2005) Endometriosis and pelvic pain: epidemiological evidence of the relationship and implications. Hum Reprod Update 11 (6):595-606
2. Bonneau C, Zilberman S, Ballester M, Thomassin-Naggara I, Bazot M, Darai E (2013) Incidence of pre- and postoperative urinary dysfunction associated with deep infiltrating endometriosis: relevance of urodynamic tests and therapeutic implications. Minerva Ginecol 65 (4):385-405
3. Hanno PM, Chapple CR, Cardozo LD (2009) Bladder pain syndrome/interstitial cystitis: a sense of urgency. World journal of urology 27 (6):717-721. doi:10.1007/s00345-009-0439-4

Disclosures

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Helsinki: Yes **Informed Consent:** Yes