Female Urinary Incontinence at Orgasm: A Possible Marker of a More Severe Form of Detrusor Overactivity. Can Ultrasound Measurement of Bladder Wall Thickness Explain It?

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ABSTRACT

Introduction. Coital incontinence (CI) during orgasm is a form of urinary incontinence possibly because of detrusor overactivity (DO), as the underlying pathophysiological condition. Women with this symptom usually show a pharmacological lower cure rate than those with DO alone. The ultrasound measurement of the bladder wall thickness (BWT) allows an indirect evaluation of detrusor muscle thickness, giving a potential index of detrusor activity.

Aim. We wanted to understand if CI at orgasm could be a marker of severity of DO by comparing BWT in women with both DO and CI at orgasm vs. women with DO alone. In addition we aimed to confirm if CI during orgasm is related to antimuscarinics treatment failure.

Methods. This is a prospective cohort study performed in two tertiary urogynecological referral departments, recruiting consecutive patients seeking treatment for symptomatic DO.

Main Outcome Measures. All patients were thoroughly assessed including physical examination, urodynamic evaluation, and BWT measurement according to the International Continence Society/International Urogynecological Association and ICI recommendations. Solifenacine 5 mg once daily was then prescribed and follow-up was scheduled to evaluate treatment. Multiple logistic regression (MLR) was performed to identify risk factors for treatment failure.

Results. Between September 2007 and March 2010, 31 (22.6%) and 106 (77.4%) women with DO with and without CI at orgasm were enrolled. Women complaining of CI at orgasm had significantly higher BWT than the control group (5.8 ± 0.6 mm vs. 5.2 ± 1.2 mm [$P = 0.007$]). In patients with CI at orgasm, the nonresponder rate to antimuscarinics was significantly higher than controls ($P = 0.01$). After MLR, CI at orgasm was the only independent predictor decreasing antimuscarinics efficacy (odds ratio [OR] 3.16 [95% CI 1.22–8.18], $P = 0.02$).

Conclusions. Women with DO and CI at orgasm showed a significantly higher BWT values and worse cure rates than women with DO alone. CI at orgasm could be a marker of a more severe form of DO. **Serati M, Salvatore S, Cattoni E, Siesto G, Soligo M, Braga A, Sorice P, Cromi A, Ghezzi F, Cardozo L, and Bolis P. Female urinary incontinence at orgasm: A possible marker of a more severe form of detrusor overactivity. Can ultrasound measurement of bladder wall thickness explain it? J Sex Med 2011;8:1710–1716.**

Key Words. Coital Incontinence; Orgasm; Detrusor Overactivity; Overactive Bladder; Antimuscarinics; BWT

Introduction

Coital incontinence (CI) was first defined as the "complaint of involuntary loss of urine with coitus" [1] by the joint International Urogynecological Association (IUGA) and the International Continence Society (ICS) standardization committee in 2010. Moreover CI can be divided into two different forms: at penetration and at orgasm. Some studies showed that, in several

cases, CI at orgasm could have an underlying pathophysiological mechanism of detrusor overactivity (DO) [2–4].

When CI at orgasm is associated to DO, antimuscarinic treatment has a significantly lower efficacy compared with DO but without this specific symptom [3]. For this reason, it seems quite intuitive that CI can cause further deterioration in the quality of life of these women already suffering for a widespread and surely still underestimated disorder like the overactive bladder (OAB) syndrome [5–7].

Different hypotheses regarding the possible underlying pathophysiological mechanism of CI have previously been formulated without overwhelming evidence [8]. In our previous research study, we speculated that it is possible that incontinence at orgasm may be a marker of a more severe form of DO or a late onset symptom of a long-lasting untreated DO, making its management more difficult [3]. Alternatively, Kuo suggested a totally different pathophysiological mechanism to explain the association between CI at orgasm and DO, defining the orgasm itself as a trigger of a particular form of DO in which the detrusor contraction is mediated by stimulation of vanilloid receptors located in the bladder's trigone rather than the involvement of the muscarinic receptors [9,10].

Several papers have reported that bladder wall thickness (BWT) is significantly greater in women with DO compared with women without this condition. In 1994 Kullar et al. demonstrated that detrusor hypertrophy may be the result of an increased muscle workload as a result of DO; therefore, the transvaginal ultrasonographic assessment of BWT allows an indirect measurement of the detrusor muscle thickness, providing a potential index of detrusor activity [11–14].

Taking this into account, we hypothesized that CI at orgasm could really be a marker of more severe DO; thus, in women with both DO and CI at orgasm, the ultrasound BWT value could be higher compared with that measured in women with DO but without CI, reflecting a greater detrusor workload.

The aims of our prospective study were the following:

- to compare BWT in women with both DO and CI at orgasm vs. women with DO but without CI;
- to confirm if patients with DO associated with CI at orgasm are more often nonresponders to traditional antimuscarinic treatment, evaluating also several other possible risk factors of therapy failure.

Materials and Methods

All consecutive sexually active women referred to our urogynecology unit from September 2007 to March 2010 for symptoms of OAB and urodynamically proven pure DO (i.e., without concomitant urodynamic stress incontinence) were included in this prospective study. We included women who had sexual intercourse including penetration and not only the masturbation. We excluded women with documented recurrent urinary tract infections, previous or concomitant antimuscarinic treatment, previous pelvic surgery, neurological disease, vaginal prolapse > I stage, symptoms or clinical and/or urodynamic signs of voiding dysfunction (as no standard definitions for voiding dysfunction have been established, we considered as urodynamic criteria the following: an intermittent flow pattern or a maximum flow rate [Qmax] less than 15 mL/s, or a maximum detrusor pressure [pdet.max.] greater than 60 cmH2O [14]).

Clinical evaluation included medical history, physical examination, frequency-volume chart and urine analysis. All the women were asked about any experience of urinary incontinence during sexual intercourse. Pelvic organ prolapse was assessed in the lithotomic position, with the patient exerting a maximal Valsalva maneuver, and was described according to the Pelvic Organ Prolapse Quantification system [15].

All women were studied with urodynamics, using a standardized protocol in accordance with the Good Urodynamic Practices Guidelines of the ICS [16]. Each woman was asked to attend for urodynamic studies with a comfortably full bladder. Uroflowmetry was performed with the woman voiding in private and recorded on a gravimetric flowmeter. Cystometry was performed with the woman supine: her bladder was filled through a 10 F filling catheter, and two fluid-filled 4.5 F catheter were used to measure the intravesical (vesical catheter) and abdominal (rectal catheter) pressures. The bladder was filled with room temperature saline at 100 mL/minute. The filling catheter was removed when the patient developed a strong desire to void or 500 mL had been infused into the bladder. Provocative maneuvres were employed with the woman standing, asking her to cough once, thrice, and five times with maximal