

2015-05

Coital incontinence: what can we learn from urodynamic assessment?

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<http://hdl.handle.net/10026.1/4400>

10.1016/j.urology.2015.02.007

Urology

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Coital Incontinence and lower urinary tract symptoms: is there an association?

Accepted on 09/02/2015 at Urology

Abstract

Introduction

Involuntary loss of urine with intercourse, or coital incontinence (CI), [can be highly](#) bothersome. The pathophysiology of CI is unclear. This study aimed to assess and understand the [association of CI with lower urinary tract symptom \(LUTS\)](#).

Methods

A database of all women who underwent urodynamic testing in a tertiary referral centre in the UK, from Jan 199¹ to Dec 2009 was retrospectively analyzed. All women reporting CI were included in the study. Urodynamic testing and interpretation of results were done in accordance with the recommendations of the International Continence Society.

Results

The prevalence of CI in women undergoing urodynamics was 11.8% and they were significantly younger [than the control group](#). Obesity (BMI>30) (32.5%) and parity (mean= 2.5) were significantly associated with CI (p<0.001). [Women reporting CI significantly](#) smoked cigarettes (26.8%, p<0.001) and used anti-depressants (12.4%, p<0.001). [Compared to the control group,](#) there were fewer post-menopausal women with CI. Previous hysterectomy had a negative association with CI (OR=0.8). [The majority](#) of women had overactive bladder (OAB) symptoms (65%) and stress urinary incontinence (94.8%) (p<0.001). Both urodynamic stress incontinence (UDSI) [and](#) detrusor overactivity (DO) were significantly associated with CI (p<0.001). Detrusor overactivity incontinence (DOI) had a negative correlation (OR=0.65. p<0.001).

Conclusion

CI is not uncommon in women with LUTS and they present earlier [than women with LUTS and no CI](#). CI is significantly associated with risk factors like parity, obesity, cigarette smoking and anti-depressant usage. Coital incontinence is multifactorial and associated with UDSI and DO, but not DOI.

Introduction

Coital incontinence is a complaint of involuntary loss of urine with coitus or sexual intercourse and can be [divided further into](#) that occurring with penetration or [that occurring](#) with orgasm (1). It is reported to occur in up to 60% of sexually active women and is a manifestation of an underlying pelvic floor dysfunction (2). Varied mechanisms including stress incontinence, detrusor overactivity and prolapse have been proposed (3,4). However, coital incontinence can be a challenging condition to manage, as the exact mechanisms of its etiology still remains unclear (2). It is an under-reported problem and may not be readily discussed due to patient embarrassment (5). This makes it difficult to understand and research. Coital incontinence also has a negative impact on a woman's quality of life and sexuality (6). All these factors make it an important condition to understand as it might have an impact on the outcomes of managing other lower urinary tract symptoms (LUTS).

The aim of this study was to evaluate and understand the functional abnormalities associated with coital incontinence. This study is a review of a large database of women undergoing urodynamics for various lower urinary tract symptoms, including coital incontinence.

Methods:

The study was conducted in a tertiary referral centre performing about 1000 urodynamic studies a year, in men and women. All women undergoing urodynamic testing over a 20-year period from Jan 1991 to Dec 2009 were included in the study. Women were referred with various [LUTS](#) for urodynamic investigations. Ethical approval was obtained from the regional ethical committee prior to conducting this study.

A detailed history including demographic details was taken prior to urodynamic testing including LUTS and coital incontinence. All the details were entered on to a specific urodynamic database. Women then underwent urodynamic testing in accordance with the recommendations of the ICS (7). All women underwent

uroflowmetry, filling cystometry and pressure flow studies. Urine dipstick was routinely done to rule out infection and women with infections were treated and rebooked for urodynamic testing. Women on antimuscarinics were also advised to stop the medication for at least a week prior to the test. Urodynamic findings and diagnosis were defined based on the International Continence Society recommendations (8). Women who reported coital incontinence were included in the study group and compared to women who did not have coital incontinence. Women without coital incontinence were the control group. No distinction was made between incontinence on penetration or orgasm. Women were filled in the upright position, starting at 50ml/min using normal saline at room temperature.

Data from the urodynamic database was anonymized and cleaned for clarity, and then analyzed using SPSS (IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp). Student's t-test was used for testing differences in the mean between two continuous variables, while a Chi-square test was used for testing associations between categorical variables. Unless specified otherwise, all tests were made at a 5% level of significance. Whenever appropriate, p-values and 95% confidence intervals were computed and included in the result.

Results:

Data from 11,689 women who underwent urodynamic testing for various LUTS during the study period from Jan 1991 to Dec 2009 were suitable for analysis. 1,391 women with LUTS reported coital incontinence with a prevalence rate of coital incontinence of 11.8%. The demographic details of women in the study are summarized in table 1. The mean age of women reporting coital incontinence in the study group was 45.3 years, which was significantly lower than women in the control group (52.4 years, $p < 0.001$). High BMI was also significantly associated with coital incontinence and was seen in 24.3% cases (OR= 1.4, $p < 0.001$). A significant proportion of women with CI (23.6%) reported cigarette smoking (OR= 1.4, $P < 0.001$). 12.5% women also reported using antidepressant medications, which was statistically significant (OR= 1.4, $P < 0.001$). The mean

parity in women with coital incontinence was 2.5, which was higher than in the control group (2.3, $p < 0.001$). 28.2% of women in the coital incontinence group had had a previous hysterectomy and this had a negative association with coital incontinence (OR= 0.8, $p < 0.001$).

Important LUTS and urodynamic findings in the study are summarized in table 2. There was no statistically important difference noted in the mean daytime frequency. However, women with coital incontinence had significantly lesser mean nocturia episodes (1.1 V 1.2, $p < 0.001$). 65% of women with coital incontinence complained of overactive bladder symptoms (OR= 1.17, $p < 0.001$) and 95% complained of stress incontinence (OR= 3.9, $p < 0.001$). Women with coital incontinence were less likely to have normal urodynamic findings (OR= 0.63, $p < 0.001$). Urodynamic stress incontinence was the most significant urodynamic finding demonstrable in the study and was seen in 68% of women with coital incontinence (OR=2.4, $p < 0.001$). Detrusor overactivity was also significantly associated with coital incontinence and was seen in 47% cases (OR= 1.2, $p < 0.001$). Detrusor overactivity incontinence (DOI) was seen in 9.6% cases in the study group compared to 14.1% in the control group (OR= 0.65, $p < 0.001$). A combination of urodynamic stress incontinence with DOI did not reach statistical significance (OR= 1.1, $p = 0.155$).

Discussion

This study reports risk factors, LUTS and urodynamics findings in women with coital incontinence from a large database. Women with coital incontinence were significantly younger and presented earlier. Higher parity, obesity, cigarette smoking and antidepressant usage were significant risk factors associated with coital incontinence. Most women with coital incontinence presented with mixed storage urinary symptoms (SUI+ OAB). Women with coital incontinence were less likely to have normal urodynamic findings. Urodynamic stress incontinence and detrusor overactivity were both significantly associated with coital incontinence. The database (study) did not differentiate between coital incontinence on penetration and/or with orgasm, which is a limitation of the study. Women were also not followed up to evaluate the outcomes of their

management to correlate their LUTS and urodynamic findings with coital incontinence.

Prevalence of coital incontinence in women presenting with LUTS in the study was 11.8%. There is a wide variation in the literature in the reported prevalence of coital incontinence ranging from 10 to 60% of sexually active women with pelvic floor pathologies (2,5,9,10). These studies vary in their setting and methodology. Coital incontinence is routinely enquired at history taking in our centre and all the details were contemporaneously entered onto a database. Coital incontinence, however may not generally be readily discussed due to patient or physician embarrassment, which will affect reporting and research (5,9). Coital incontinence affects patient quality of life and sexuality, and women with coital incontinence report worse quality of life scores (6). It also has an effect on sexual function outcomes of management of urinary incontinence (11). These factors make it highly relevant to enquire about coital incontinence in women with LUTS. The prevalence rate in this study could be an underestimation as patients might not have revealed it at history taking and use of methods avoiding face-to-face consultation, such as questionnaires, might have shown a higher rate (2). This prevalence rate is also in women who presented with LUTS including incontinence. The 'true' prevalence rate of coital incontinence in women with or without LUTS will need further epidemiological studies.

There was a slightly lesser mean nocturia episode in women with coital incontinence. This small difference is very unlikely to be of clinical significance, particularly as nocturia severity was lower than the threshold of at least 2 episodes of nocturia generally thought to affect health related quality of life (12). High BMI was significantly associated with coital incontinence. Epidemiological studies have shown an increased association of high BMI with urinary incontinence (13). Obesity is associated with a chronic state of increased abdominal pressure, which might stress the pelvic floor (14). Intercourse puts further stress on pelvic floor and also increases the intra-abdominal pressure, resulting in coital incontinence. Women with coital incontinence also had a

slightly increased mean parity in the study, which was statistically significant. Parity is known to be a risk factor for urinary incontinence (15). Parity can be used as an indicator of the combined effects of pregnancy and childbirth on the pelvic floor and its contribution to pelvic floor pathologies.

The women with coital incontinence were significantly younger than the control group possibly suggesting an earlier presentation. Coital incontinence, is known to have a negative impact on a woman's quality of life and sexuality (6), which may have an effect on a woman's health seeking behavior. Hence, women with CI might seek health care advice early. This may also have an effect on patient expectations and outcomes of management.

Cigarette smoking was significantly higher in women with coital incontinence. Smoking is known to be associated with both stress urinary incontinence and detrusor overactivity (16,17). Excessive and violent coughing in smokers, even in the presence of high urethral closure pressures, predisposes to stress urinary incontinence (18), but this logically doesn't suggest it as a mechanism of incontinence with sexual intercourse. Cigarette smoking has anti-estrogenic effects and it also affects collagen synthesis (16), which might explain a higher association with coital incontinence.

Antidepressants were also significantly associated with coital incontinence in our study. The association could be causal or it might suggest an increased antidepressant use in women with coital incontinence due to low mood. Urinary incontinence is known to be associated with anxiety, depression and lower quality of life (19). Coital incontinence in addition to other LUTS also affects a woman's sexuality (6). These factors may contribute to an increase use of antidepressants in women with coital incontinence. Antidepressants may also influence central or local neurological control of bladder function and may cause urinary incontinence (20,21). Serotonin may have a regulatory role in bladder functioning (22). Altered serotonergic pathways could also explain a direct correlation with depression and urinary incontinence or with use of antidepressant use (23).

There were fewer menopausal women reporting CI and a younger cohort of women in the study group could explain this. Estrogen affects the lower urinary tract and menopause is associated with urinary incontinence (24,25). The lower number of menopausal women in the study group suggests a different mechanism of CI, which might not be estrogen dependent. It is also plausible that there were fewer sexually active women in the older group ([data not available from the database](#)). There is a higher risk of urinary incontinence in older women with hysterectomy (26,27). Fewer women with a previous hysterectomy and a younger cohort of patients in the study group might explain the negative correlation of a previous hysterectomy with coital incontinence. There is an increasing trend of hysterectomy with increasing age (28); [the younger mean](#) age of the women in the study group may explain the lower prevalence of previous hysterectomy with coital incontinence.

Both urodynamic stress incontinence and detrusor overactivity were the most significant urodynamic findings noted in women reporting coital incontinence. Some studies have shown a strong correlation with coital incontinence and stress incontinence (10). Deep penetration and increased abdominal pressures have been postulated to cause coital incontinence (29). Anatomical studies have not shown any significant findings to explain coital incontinence (4). Some studies have suggested an association of coital incontinence at penetration with stress incontinence and incontinence at orgasm with detrusor overactivity (3,5). Other studies have debated this simple explanation in the etiopathogenesis of CI (2,4,29). Some studies have also shown an association of CI with detrusor overactivity (3,30). Our study showed a significant association of CI with both urodynamic stress incontinence and detrusor overactivity. However, demonstrable [DOI](#) had a negative correlation with coital incontinence. A combination of DOI with USI also did not reach statistical significance. This indicates USI (and not DOI) as a significant association with CI. We acknowledge the lack of differentiation between incontinence at penetration or at orgasm in this study. The various risk factors and urodynamic findings associated with coital incontinence indicate a multifactorial etiopathogenesis of coital

incontinence. It may be difficult to pinpoint the actual “cause” of coital incontinence, as urodynamics was not done during intercourse. Irrespective of the etiopathology, CI is a bothersome lower urinary tract symptom and should be explored further. It might have an effect on patient expectations and management. Management will however be determined by other bothersome lower urinary tract symptoms. CI might have an impact on outcomes and purposeful enquiry will enable understanding bothersome lower urinary tract symptoms. Follow-up of these patients and to gauge outcomes of any treatment interventions might provide further explanations to understand coital incontinence. Further research is needed to understand the epidemiology, etiopathogenesis and the impact of coital incontinence on women.

Conclusion

CI is not uncommon in women with LUTS and they present at a younger age. CI is significantly associated with risk factors like parity, obesity, cigarette smoking and anti-depressant usage. Coital incontinence appears to be multifactorial and is associated with both urodynamic stress incontinence and detrusor overactivity.

Funding: None

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