

IS "ASYMPTOMATIC" BACTERIURIA ALWAYS ASYMPTOMATIC? ASSOCIATIONS BETWEEN INDIVIDUAL FEMALE LOWER URINARY TRACT SYMPTOMS AND SUB-CLINICAL BACTERIAL INFECTION IN RANDOM URINE SAMPLES

Hypothesis / aims of study

Acute urinary tract infection (UTI) may be associated with severe but transient lower urinary tract symptoms (LUTS), including urethral pain, urgency, frequency, and urgency incontinence. However, longitudinal studies have also reported that incident UTI may be more common among women with chronic LUTS, while a history of one or more lifetime UTIs may be associated with incident urinary incontinence [1,2]. Much recent attention has focused on chronic urothelial bacterial colonization as one precipitant of overactive bladder (OAB) symptoms. In this study we aimed to assess the prevalence of bacteriuria among random urine samples collected for a biobank from women without overt UTI, and test for associations between individual lower urinary tract symptoms and sub-clinical bacterial infection using the ICIQ-Female Lower Urinary Tract Symptoms questionnaire (ICIQ-FLUTS).

Study design, materials and methods

Between October 2012 and March 2013 we recruited adult women from general gynaecology and urogynaecology hospital outpatient clinics presenting with a variety of benign gynaecological conditions. We excluded women with urinary calculi, urinary tract malignancy, neurological disease, current pregnancy or breast feeding. After informed consent women completed the 12 item ICIQ-FLUTS, including questions on incontinence, storage and voiding symptoms assessed by recall over the previous month. Most items from this questionnaire are scored on a five point scale following the response categorisation of the stress incontinence item "Does urine leak when you are physically active, exert yourself, cough or sneeze?" (five responses: "never", "occasionally", "sometimes", "most of the time", "all of the time"). For maximum power, and direct comparability between symptoms we treated each score as continuous variable. Participants provided a clean catch mid-stream urine specimen, and one aliquot was sent for microscopy and culture. For this analysis we defined bacteriuria as $>10^4$ colony forming units of a specific organism. Symptom scores between women with and without bacteriuria were compared, with analyses conducted using SPSS v19.

Results

We recruited 142 women, of mean age 49 (range 22-82) and median parity 2 (range 0-5). Eleven of 142 urine samples (7.7%) demonstrated significant bacteriuria, growing a range of organisms including Proteus, Coliforms, E coli, and Enterococci. Women with bacteriuria had elevated scores for all symptoms (see table), reaching statistical significance for nocturia, urgency, bladder pain, and daytime frequency. Women with bacteriuria were on average five years younger (44 vs 49, $p=0.29$) with similar parity (1.7 vs 1.4, $p=0.61$).

Interpretation of results

These results indicate that among a heterogenous population of care seeking women incidental bacteriuria may be associated with all major incontinence, storage, and voiding LUTS, but the strongest associations are with bladder pain and the overactive bladder symptoms.

The cross-sectional nature of these data preclude conclusions about temporal associations. These findings may represent chronic bacterial colonization among women with chronic LUTS, or transient prodromal LUTS among women with sub-clinical or incipient UTI. These data support previous findings of low count bacteriuria as a common finding in women presenting for treatment of incontinence[3]. It also suggests that bladder pain associated with overactive bladder symptoms may be a marker for infection.

		Bacteriuria	No Bacteriuria	
ICIQ-FLUTS Symptom Item		Mean (SE)	Mean (SE)	p
2a	Nocturia	2.56 (0.48)	1.52 (0.12)	0.02
3a	Urinary Urgency	3.11 (0.31)	1.77 (0.12)	0.002
4a	Bladder Pain	2.33 (0.50)	0.83 (0.11)	<0.0001
5a	Daytime Frequency	2.00 (0.58)	1.02 (0.12)	0.03
6a	Hesitancy	1.00 (0.47)	0.78 (0.11)	0.57
7a	Straining	1.00 (0.44)	0.51 (0.09)	0.16
8a	Intermittency	1.11 (0.35)	0.95 (0.11)	0.69
9a	Urgency Incontinence	1.89 (0.42)	1.15 (0.12)	0.08
10a	Incontinence Episode Frequency	2.44 (0.58)	1.65 (0.15)	0.15
11a	Stress Incontinence	1.56 (0.58)	1.39 (0.15)	0.77
12a	Unconscious Incontinence	0.67 (0.33)	0.62 (0.10)	0.88
13a	Nocturnal Enuresis	0.78 (0.40)	0.33 (0.08)	0.12

Table: Symptom scores among women with and without an incidental finding of bacteriuria

Concluding message

Incidental bacteriuria is associated with a range of LUTS including nocturia, urgency, bladder pain, and daytime frequency, supporting a role for bacterial colonisation in the pathogenesis of overactive bladder.

References

1. Obstet Gynecol. 2008;111(2 Pt 1):317–323.
2. BMC Med. 2011;9:57
3. Int Urogynecol J. 2011;22(10):1267-72

Disclosures

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Ethics Committee: Chelsea London REC **Helsinki:** Yes **Informed Consent:** Yes