

EXPLORING THE BACTERIAL URINARY ECOLOGY IN PATIENTS WITH OVERACTIVE BLADDER SYMPTOMS

Hypothesis / aims of study

There is growing interest in chronic cystitis in the aetiology of overactive bladder (OAB). The tests used routinely to exclude urinary tract infection (UTI) have been discredited, catalysing a critical analysis of our assumptions (1, 2). The enhanced sediment culture is a validated method used to isolate urinary bacteria from shed urothelial cells in patients with lower urinary tract symptoms (3). We looked to explore the urinary bacterial ecology found in patients with symptoms of OAB as compared to healthy asymptomatic controls.

The Aim of this study was to explore if the urinary ecology in patients with OAB symptoms was significantly different to healthy asymptomatic controls.

Study design, materials and methods

A prospective blinded observational cohort study was conducted from April 2011 to September 2013. Patients presenting with OAB were recruited from incontinence clinics and control volunteers from hospital staff. Symptoms were collected using validated questionnaires and clean-catch midstream urine samples obtained. Light microscopy was performed by blinded researchers, on fresh urine, for leucocytes and urothelial cell counts. Enhanced sediment cultures were performed on spun urinary sediment and plated on chromogenic agar for bacterial enumeration and identification.

Results

In contrast to 253 age and menopausal matched controls, 282 patients demonstrated significantly greater bacterial growth ($Z = -5.981$, $p < .0001$) (figure 1). The microbial diversity was distinctly different between patients and controls. In patient cultures, recognised uropathogens predominated (figure 2). Using multinomial logistic regression, E Coli and other coliforms and no growth should a significant between group difference ($\chi^2 = 82.8$, $p < .0001$).

Figure 1 - Total microbial growth from spun urinary sediment cultures from patients and controls

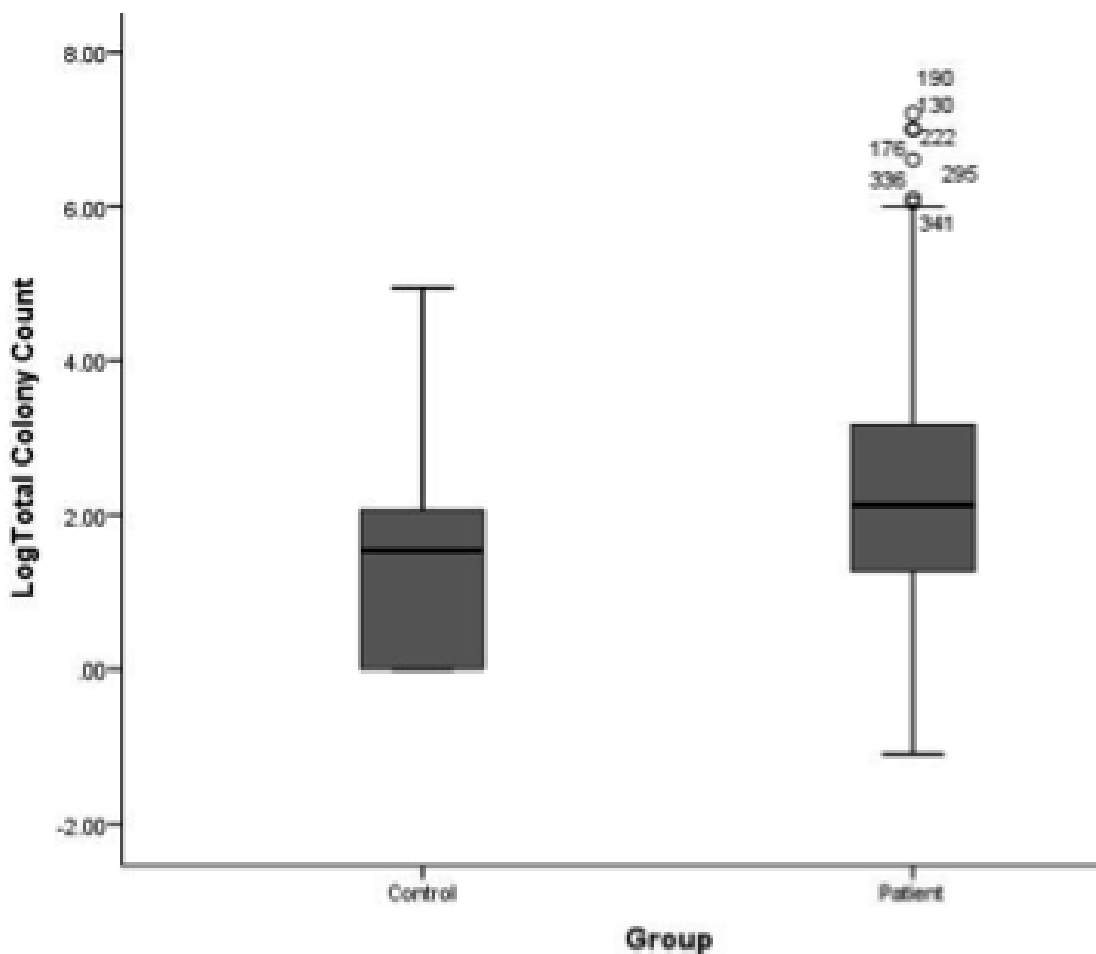
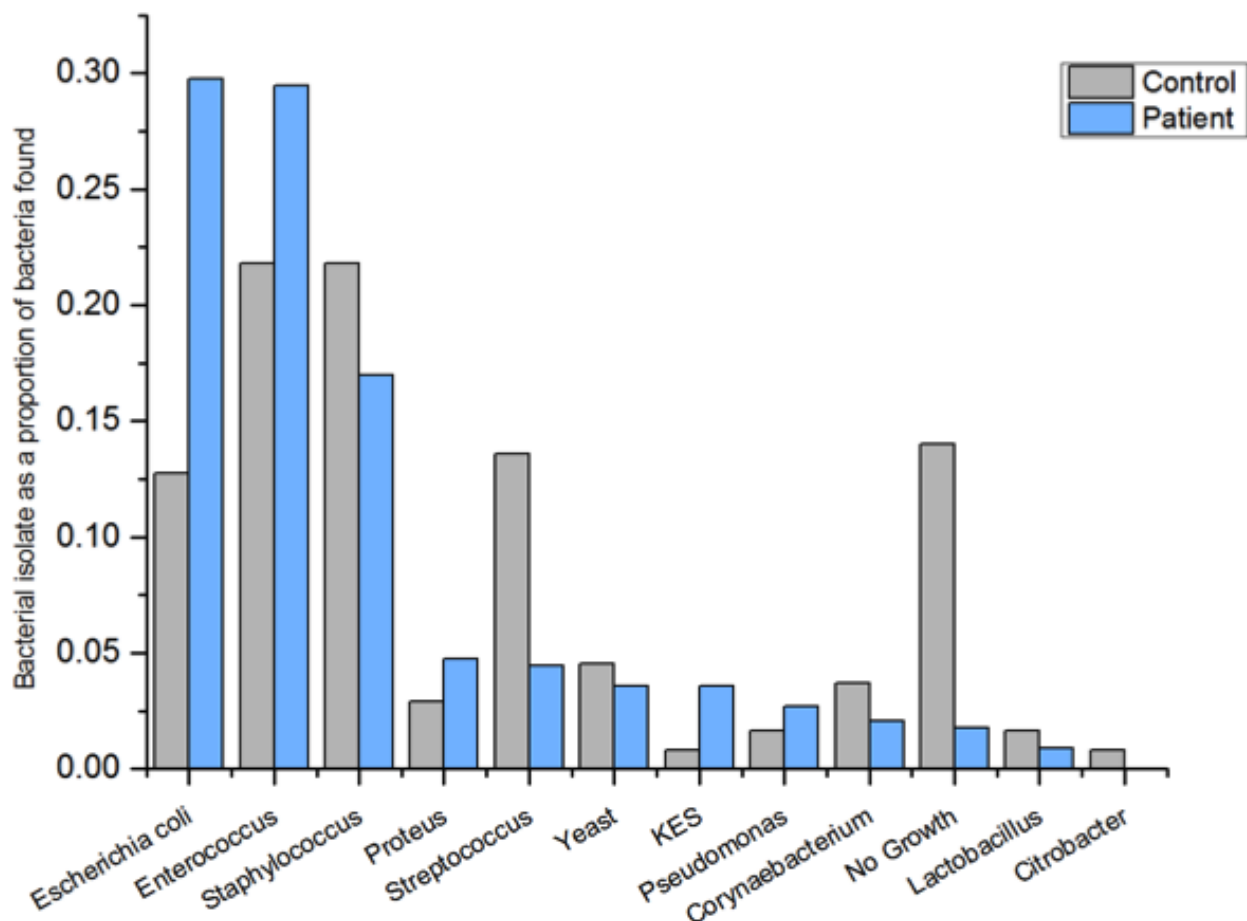


Figure 2 – Microbial distribution between patient and controls for each bacterial genus isolated.

Bacterial Isolates as proportion of all bacteria isolated within each cohort



Interpretation of results

These data indicate that the urinary bacterial diversity found in patients with symptoms of overactive bladder is distinctly different to that in control subjects, with a predominance of pathogenic bacteria found in OAB patients.

Concluding message

The urinary ecology in patients with OAB symptoms is different to that in healthy asymptomatic controls patients. There needs to be further explorations to whether this may be contributing to the symptomatology in this cohort of patients and hence may be a new therapeutic avenue.

References

1. JUrol. 2010;183(5):1843-7.
2. PLoS medicine. 2007 Dec;4(12):e329. PubMed PMID: 18092884
3. J Clin Micro 2013: PubMed PMID: 23596238

Disclosures

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