Lower urinary tract symptoms, multiple sclerosis, and urinary tract infection

Lower urinary tract symptoms (LUTS) affect 75-90% of patients with multiple sclerosis (MS) and are associated with a disproportionate effect on disease-related quality of life [1]. Using novel techniques, we have demonstrated greater bacterial colonisation and elevated urothelial inflammation in patients with MS and OAB, in contrast to controls. These findings were largely undiscovered by routine testing [2] which might erroneously attribute LUTS solely to the neuropathology of MS, when infection could be implicated.

When infection is identified on routine culture, the results are often dismissed as asymptomatic bacteriuria (ABU) if acute frequency-dysuria is absent; the notion that UTI is ubiquitously associated with acute symptoms is not grounded in evidence. The problem is confounded further by the expectation of bacteriuria associated with catheter use.

Causation versus association: Are bacteria in the MS bladder generating symptoms?

The key question is whether these patients would benefit from antimicrobial treatment, or whether the occurrence of bacteriuria, irrespective of quantitative microbiological constructs, is simply an epiphenomenon associated with the MS bladder.

We present preliminary data from a prospective study examining the effects of antibiotic treatment in these patients.

Methods

Recruitment, data collection and study processes

Between 2011 and 2012, patients with MS and OAB symptoms, and symptomatic control subjects, were recruited to the study. Control subjects were matched for key demographic characteristics. Patients provided catheter urine (CSU) samples for analysis, whilst control subjects submitted carefully sampled midstream urine (MSU) samples.

All samples were subjected to a specialised microbial culture of the spun urinary sediment. Other laboratory analyses included urine microscopy and routine MSU culture (10^5 cfu ml⁻¹).

Symptom and QoL data were assessed using ICIQ measures and a patient-reported improvement scale.

A blinded clinician treated patients with empirical antimicrobial therapy based on clinical assessment and urine microscopy findings, without access to study culture data. Treatment was continued until microscopy demonstrated clearance of pyuria, and patients reported maximal symptom control defined by a sustained symptom nadir.

Clinical effects of antimicrobial treatment

Between baseline and twelve months, antimicrobial treatment was associated with significant improvements in ICIQ-LUTS and ICIQ-LUTSqol measures.

Ninety-three percent of patients (n=14) reported a marked (n=10) or moderate (n=4) improvement in their bladder condition.

There were no significant changes in any symptom measures in the control group.

Figure 1.

Changes in bacterial growth determined by culture of the spun urinary sediment in patient samples submitted between baseline and 12 months.

Figure 2.

Changes in urinary leucocyte expression in patient samples submitted between baseline and 12 months.

Conclusions

The treatment of bacterial infection, undetected by routine culture, may be associated with the resolution of LUTS, and improvements in QoL, in patients with neurogenic bladder dysfunction attributed to MS.

Bacteriuria in these patients, even when identified by routine culture, is often dismissed as asymptomatic bacteriuria, and of no consequence in the absence of acute symptoms. Our data, from patients with chronic LUTS previously attributed to neuropathology, raise questions about the role of bacterial infection in the generation of these symptoms.

This treatment effect is currently being tested in ongoing observational work, and an RCT.

References


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