

# Renal patients with asymptomatic bacteriuria do not need to be treated: results of a pilot observational audit

Leyland Chuang<sup>1,2</sup> MBBS, MRCP

Norshima Nashi<sup>3</sup>

Anantharaman Vathsala<sup>1,3</sup> MD, FRCP, FAMS

Paul Ananth Tambyah<sup>1,3,4</sup> MBBS, MD

<sup>1</sup>University Medicine Cluster, National University Health System, Singapore.

<sup>2</sup>Department of Medicine, Alexandra Hospital, Jurong Health Services, Singapore.

<sup>3</sup>Yong Loo Lin School of Medicine, National University of Singapore, Singapore.

<sup>4</sup>Corresponding author. Email: paul\_anantharajah\_tambyah@nuhs.edu.sg

**Abstract.** *Introduction:* Treatment of asymptomatic bacteriuria remains a common cause of inappropriate antibiotic use, particularly among patients with multiple comorbidities such as renal disease.

*Methods:* A pilot, retrospective, observational audit of 200 renal patients was conducted to evaluate significant differences in readmission and mortality rates between patients with asymptomatic bacteriuria (who were not given antibiotic treatment) and patients with symptomatic urinary tract infections.

*Results:* Nineteen (9.5%) patients had bacteriuria: 12 with symptomatic urinary tract infection and 7 with asymptomatic bacteriuria. None of the patients with asymptomatic bacteriuria were treated with effective antibiotics. There was no difference in readmission (42.9% v. 33.3%;  $P = 1.00$ ) or mortality rates (0% v. 8.3%;  $P = 1.00$ ) for patients with untreated asymptomatic bacteriuria when compared with patients with symptomatic urinary tract infections.

*Conclusions:* This pilot study suggests that it is safe not to treat asymptomatic bacteriuria in renal patients.

Received 20 October 2013, accepted 19 December 2013, published online 11 February 2014

## Introduction

Urinary tract infections (UTIs) remain the most common nosocomial infection worldwide and have been estimated to cause ~32% of healthcare-associated infections in the acute-care setting in the United States (US).<sup>1</sup> Treatment of UTIs remains among the commonest reasons for the use of antimicrobials both in the healthcare and community setting.

Unfortunately, despite the availability of international guidelines for the diagnosis and treatment of UTIs,<sup>2–4</sup> unnecessary antibiotic therapy remains common, particularly for the management of asymptomatic bacteriuria.<sup>5,6</sup> This is especially so for positive urine cultures obtained from catheterised specimens.<sup>7–9</sup> Inappropriate antibiotic therapy of asymptomatic patients with positive urine cultures may be attributed to knowledge deficits<sup>10</sup> and fears of adverse outcomes.<sup>11,12</sup> Admittedly, the evidence base is rather scanty but there is a real concern that this would lead to problems of increasing antibiotic resistance rates due to selection pressure from broad-spectrum antibiotic use as many of these cultures show the growth of multi-drug resistant organisms.<sup>13–16</sup>

There have previously been some data to suggest that the restriction of antibiotic therapy in asymptomatic bacteriuria is

safe, even in immunosuppressed hosts.<sup>17</sup> In this pilot study, we examined for significant differences in adverse outcomes due to the non-treatment of asymptomatic bacteriuria in renal patients. These are a group of patients who are both at risk of adverse outcomes from renal disease, as well as at high risk of infection and colonisation with multi-drug-resistant organisms. Differences in 30-day readmission and mortality rates were examined in a cohort of renal patients with culture-proven bacteriuria.

## Methods

### *Study design and patients*

This was a retrospective, observational audit undertaken at National University Hospital, a 1000-bed tertiary-care teaching hospital in Singapore. The study period was from 27 March 2013 to 31 May 2013. All patients admitted to the nephrology service during the study period were included in this study. In cases with multiple admissions within the study period, the first admission with bacteriuria detected was designated as the index hospitalisation episode.

### Implications

- It is safe not to treat asymptomatic bacteriuria in renal patients.
- Avoiding inappropriate use of antibiotics for the treatment of asymptomatic bacteriuria will help prevent the emergence of antimicrobial resistance and reduce antibiotic-related adverse outcomes.

### Follow-up and data collection

The electronic records for each patient were reviewed retrospectively. These included the electronic records of assessment and treatment at the emergency department, the discharge summaries from index hospitalisation episodes, and past hospitalisation records and laboratory results where relevant. The following data were collected: age; sex; presence of bacteriuria during the index hospitalisation; antibiotic treatment records associated with bacteriuria; readmission within 30 days of discharge from the index hospitalisation (a standard quality indicator used by our quality and safety unit); and mortality during subsequent hospitalisations. With regards to the index hospitalisation episode, duration of hospitalisation, urinary catheterisation, incontinence, admission from a nursing home and a recent admission 15 days or less before the index hospitalisation episode were recorded. We also noted the presence of underlying comorbidities, including hypertension, diabetes mellitus and latest glycated haemoglobin levels (HbA1c), hyperlipidaemia, ischaemic heart disease, stroke, retinopathy, liver disease, baseline renal function, urolithiasis, dialysis and renal transplant.

### Definitions

Bacteriuria refers to the presence of microorganisms in aseptically obtained urine culture specimens at numbers greater than  $10^3$  colony-forming units per mL, as reported by the clinical microbiology laboratory, which is a College of American Pathologists (CAP) accredited clinical laboratory. There is some controversy about the appropriate level of bacteriuria required to define a UTI but we adopted the NHSN surveillance definition used for catheterised patients for standardisation purposes for ease of analysis.

Symptomatic UTI was defined as the presence of bacteriuria associated with any typical symptoms, such as dysuria, frequency, urgency, suprapubic pain and costovertebral angle pain and tenderness.<sup>4</sup>

### Statistical analysis

As there were insufficient patients with asymptomatic bacteriuria who were treated in this cohort, patients with symptomatic UTI treated with antibiotics were compared with those who had asymptomatic bacteriuria and were not treated. Readmission rates of patients within 30 days of

discharge from the index hospitalisation, as well as mortality during that episode of readmission, were analysed using two-tailed Fisher's exact tests.

### Ethical considerations

This study was a non-interventional, retrospective audit of data collected on patients admitted to the hospital's nephrology service. According to hospital policies, as this was a clinical audit for practice improvement, it was exempt from ethical review.

### Results

Two hundred patients were admitted to the nephrology service within the study period, of which 19 had culture-proven bacteriuria during the index hospitalisation. Twelve patients with bacteriuria had symptoms consistent with a urinary tract infection. Seven patients had asymptomatic bacteriuria.

Table 1 provides a comparison of the characteristics of patients with and without bacteriuria. Both groups were similar in age and average length of stay, incontinence, and prior nursing home residence. Females had more bacteriuria, and urinary catheter use was also more common among patients with bacteriuria. Both groups had similar comorbidity profiles, with the exception of dialysis, which was less common among patients with bacteriuria.

Among the 19 patients with bacteriuria during the index hospitalisation episode, 12 had symptoms consistent with a UTI, and were all treated with appropriate antibiotics based on culture and sensitivity testing.<sup>18</sup> Seven patients had asymptomatic bacteriuria, all of whom did not receive appropriate antibiotic based on urine culture and sensitivity results. Five patients with asymptomatic bacteriuria were given empiric antibiotics, including antibiotics for other indications which did not cover the organisms grown in the urine cultures, while the remaining two did not receive any antibiotics at all.

As there were no patients with asymptomatic bacteriuria which was specifically treated, in order to estimate the safety of not treating asymptomatic bacteriuria, we compared outcomes between patients with untreated asymptomatic bacteriuria and those with symptomatic urinary tract infections which were treated. Readmission and mortality outcomes of patients with bacteriuria during the index hospitalisation episode are presented in Table 2. Readmission within 30 days of index hospitalisation occurred in four patients with UTI, compared with three with asymptomatic bacteriuria. There was one mortality within 30 days of discharge from the index hospitalisation episode, which occurred in a highly immunosuppressed transplant patient with UTI despite appropriate antibiotic therapy. In contrast, no mortality was observed among patients with asymptomatic bacteriuria. Thirty-day readmission and mortality outcomes were not statistically different between patients with treated UTI and untreated asymptomatic bacteriuria.

Download English Version:

<https://daneshyari.com/en/article/2683358>

Download Persian Version:

<https://daneshyari.com/article/2683358>

[Daneshyari.com](https://daneshyari.com)