

Antibiotic Treatment for Uncomplicated Urinary Tract Infections in the Elderly: A Comparison of 3-Day and 7-Day Courses

Vogel T, Verreault R, Gourdeau M, et al. Optimal duration of antibiotic therapy for uncomplicated urinary tract infection in older women: a double-blind randomized controlled trial. *CMAJ* 2004;170:469–73.

Study Overview

Objective. To compare the safety and efficacy of 3-day and 7-day courses of oral ciprofloxacin for uncomplicated urinary tract infection (UTI) in elderly women.

Design. Randomized, controlled, double-blind, noninferiority trial with an intention-to-treat analysis.

Setting and participants. Participants were recruited from ambulatory and hospital acute care units in the Quebec City area. Potential patients were initially identified through daily monitoring of acute care hospital microbiology laboratories. Patients were eligible if they were women aged 65 years or older with an uncomplicated symptomatic UTI. A UTI was defined as significant bacteriuria ($\geq 10^5$ colony-forming units/mL of a single organism) detected by urine culture, with 1 of 6 possible symptoms (ie, dysuria, frequency, urgency, suprapubic pain, burning on micturition, or onset or aggravation of urinary incontinence). Exclusion criteria included signs of pyelonephritis or urosepsis, use of antibiotics 3 days prior to recruitment, renal insufficiency, known allergy to fluoroquinolones, significant urinary retention, structural abnormalities of the genitourinary tract, immunodeficiency, diabetes mellitus, or presence of an indwelling catheter.

Intervention. Patients were randomly assigned to receive either oral ciprofloxacin 250 mg twice per day for 3 days followed by 4 days of twice daily matching placebo or oral ciprofloxacin 250 mg twice per day for 7 days.

Main outcome measures. The primary outcome measures were (1) antimicrobial efficacy at 2 days after completion of treatment and (2) risk of relapse and reinfection at 6 weeks after completion of treatment. Urinalysis (day 5 for the 3-day group and day 9 for the 7-day group) and urine cultures were collected at 2 days and 6 weeks after treatment to assess these outcomes. Secondary outcomes included adverse events and clinical improvement from baseline at 2 days after completing treatment. At baseline, days 5 and 9, and 6 weeks, patients were interviewed to determine functional status and presence of UTI symptoms.

Main results. Of 183 recruited patients, 93 were randomized to 3-day ciprofloxacin and 90 to 7-day ciprofloxacin. 95% (88/93) of participants randomized to the 3-day treatment and 83% (75/90) randomized to the 7-day arm completed the trial. Demographic and baseline characteristics were similar between the 2 groups. The most common bacterial isolate was *Escherichia coli*, representing 71% of all bacterial pathogens. No significant differences in rates of bacterial eradication 2 days after completing therapy were seen in the 3-day and the 7-day treatment arms (98% versus 93%; $P = 0.16$). No differences between groups were seen in rates of reinfection (14% versus 18%; $P = 0.54$) or relapse (15% versus 13%; $P = 0.83$) at 6 weeks. Improvement in reported symptom scores was similar in the 2 groups except for urgency, where 73% reported symptom improvement in the 3-day group versus 88% in the 7-day group ($P = 0.05$). Adverse events that were less frequent in the 3-day group included drowsiness, loss of appetite, and nausea or vomiting at day 9. No significant differences were seen in the rates of other reported side effects.

Conclusion. Treating elderly women with uncomplicated UTIs with a 3-day course of oral ciprofloxacin is as efficacious as a 7-day course and is associated with fewer drug adverse effects.

Commentary

UTIs are responsible for nearly 7 million ambulatory visits a year [1]. As women age, UTIs become increasingly associated with significant morbidities [2]. Although randomized controlled studies have documented that in younger women shorter courses of antibiotics (3 days) are as efficacious as prolonged courses [3], few studies have selectively evaluated elderly women. With the increasing sensitivity to adverse drug effects and greater opportunities for potential drug-drug interactions that comes with age, minimizing unnecessary exposure to antibiotics in elderly women is important. This well-designed study by Vogel et al provides convincing evidence that a longer duration of antibiotics for uncomplicated UTIs in older women does not improve clinical outcomes. Furthermore, it suggests that longer durations may

be associated with more adverse side effects.

Overall, this study was adequately powered as a noninferiority trial and had satisfactory follow-up. Because the risk factors that predispose older women to UTIs were exclusion criteria of the study (eg, urinary tract abnormalities, decline in immune status, coexisting illness), it is important not to overgeneralize these results to other groups of older women who might be frail or debilitated. Furthermore, nursing home and institutionalized patients were excluded. Regardless, in a selected set of healthy, community-dwelling older women, the shorter course of antibiotic therapy is likely to be beneficial.

Applications for Clinical Practice

Shorter (ie, 3-day) courses of antibiotic therapy in older

women with uncomplicated UTIs are not inferior to standard 7-day courses. Furthermore, the 3-day course appears to be better tolerated than the longer course. In elderly women with no comorbidities, clinicians can treat uncomplicated UTIs using a strategy similar to that for younger women.

—Review by Harvey J. Murff, MD, MPH

References

1. Foxman B. Epidemiology of urinary tract infections: incidence, morbidity, and economic costs. *Dis Mon* 2003;49:53–70.
2. Nicolle LE. Urinary tract infection in the elderly. *J Antimicrob Chemother* 1994;33(Suppl A):99–109.
3. Stamm WE, Hooton TM. Management of urinary tract infections in adults. *N Engl J Med* 1993;329:1328–34.

Copyright 2004 by Turner White Communications Inc., Wayne, PA. All rights reserved.