Lactobacillus probiotics may prevent recurrent UTIs in postmenopausal women

Jeremy P Dwyer,1 Peter L Dwyer2


Context

Urinary tract infection (UTI) is common; over half of all adult women will have a UTI, with a third having recurrent UTI. Women at higher risk of developing recurrence are older, postmenopausal, and incontinent and have cystocele with high postvoid residual volumes.1 Preventative strategies using prophylactic antibiotics may result in adverse side effects, antibiotic resistance and Clostridium difficile colitis. Therefore, women are increasingly looking for safe and effective non-antimicrobial alternatives. A recent systematic review and meta-analysis of randomised studies of products containing cranberry showed a protective effect against UTI, particularly in women with recurrent UTIs, children and subjects using products containing cranberry more than twice daily.2 Intravaginal oestrogens have also been found to reduce the number of UTIs in postmenopausal women with recurrent UTIs presumably by increasing intravaginal lactobacillus counts and decreasing uropathogenic bacteria.3 A recent study using Lactobacillus probiotics by oral administration restored vaginal lactobacilli flora and reduced colonisation of bacterial pathogens.4

Methods

Beerepoot and colleagues conducted a randomised double-blind non-inferiority trial comparing lactobacilli to trimethoprim–sulfamethoxazole (TMP-SMX) in 252 postmenopausal women with a history of at least three self-reported symptomatic UTIs within the preceding year. Eligible patients must have stopped other prophylactic treatment such as cranberries, probiotics or oestrogens 2 weeks prior to the study. Patients with UTI symptoms, antibiotic use within the preceding 2 weeks, renal failure or renal transplant and those with contraindications to TMP-SMX were excluded. Women were randomised to receive 12 months of either TMP-SMX 480 mg at night or a twice daily capsule containing at least 10⁹ colony-forming units of Lactobacillus rhamnosus GR-1 and Lactobacillus reuteri RC-14.

Findings

After 12 months of prophylaxis, the mean number of clinical UTI recurrence (CR) was 2.9 in the TMP-SMX group and 3.3 in the lactobacilli group (p=0.42). The mean number of microbiological recurrence (MR) was significantly less in TMP-SMX group at 1.2 compared with 1.8 in the lactobacilli group (p=0.02). For both CR and MR, a higher proportion of women in the lactobacilli group experienced at least one UTI recurrence and the median time to first recurrence was significantly shorter in the lactobacilli group. In women with complicated UTIs, the mean number of CRs was 4.4 in the TMP-SMX group compared with 3.4 in the lactobacilli group (p<0.001), suggesting a favourable effect of lactobacilli in this subgroup. With regard to adverse events, there were no significant differences between groups, although the lactobacilli group had a non-significantly higher number of treatment-related withdrawals with gastrointestinal side effects being the most common.

Resistance to TMP-SMX, TMP and amoxicillin increased from 20–40% to 80–95% in faeces and urine of asymptomatic women after 1 month of antibiotic prophylaxis and all urinary Escherichia coli isolates

1Department of Medicine, Royal Melbourne Hospital, Parkville, Victoria, Australia
2Mercy Hospital for Women and University of Melbourne, Melbourne, Victoria, Australia

Correspondence to: Peter L Dwyer
Mercy Hospital for Women and University of Melbourne, 13 Brunswick St, Fitzroy, Melbourne, VIC 3065, Australia; pdwyer@connexus.net.au
after 12 months. Resistance rates for fluoroquinolones ciprofloxacin and norfloxacin were also increased in the antibiotic group. There was no change in antibiotic resistance in the lactobacilli group.

**Commentary**

Following menopause, commensal vaginal lactobacilli may be replaced by coliform uropathogens secondary to oestrogen depletion. Re-establishing vaginal colonisation either by administering oestrogen or lactobacilli may prevent UTIs. An important limitation in this study was the failure to demonstrate that orally administered lactobacilli established vaginal colonisation. In both groups, *L reuteri* was not identified on vaginal swabs at baseline or after 12 months. Perhaps local delivery of an intravaginal lactobacilli suppository together with vaginal oestrogens to provide the appropriate environment to maintain the lactobacilli would be more effective. A recent randomised trial of *Lactobacillus crispatus* intravaginal suppository in premenopausal women demonstrated a reduction in recurrent UTIs with high level of vaginal colonisation demonstrated throughout follow-up. As with any prophylactic therapy, careful consideration should be given to cost-effectiveness and duration of therapy. However, in this case as the intervention is inexpensive and safe, despite the weaknesses in evidence to support the widespread use of lactobacilli in postmenopausal women with recurrent UTIs, probiotics may be a reasonable alternative for women wishing to avoid long-term antibiotic use and minimise antimicrobial resistance.

**Competing interests** None.

**References**