

Abstract

Although *Serratia marcescens* is a common cause of nosocomial infection in Taiwan, strains producing extended-spectrum beta-lactamases (ESBLs) are rarely reported. We previously detected four clinical isolates of *S. marcescens* that exhibited resistance to cefotaxime and cefepime, but were susceptible to imipenem and meropenem. All four isolates had significant MIC reductions for cefepime in the presence of clavulanic acid, compatible with the presence of ESBL. Experiments including isoelectric focusing, plasmid conjugation, PCR and DNA sequencing revealed one major transferable beta -lactamase (pI 8.4, CTX-M-3).

On the basis of these findings a large-scale surveillance effort for ESBL detection among 123 non-repetitive isolates of *S. marcescens* were undergone, of which 43% were non-susceptible to cefotaxime (CTX-R). CTX-M-3 was identified in all 15 ESBL-producers (12% of all, 28% of CTX-R isolates), 12 of which had cefepime zone size within susceptible range (18-23 mm). Since CTX-M-3 has well hydrolytic activity against cefepime, there is potential treatment failure if apparent susceptible cefepime were used to treat *S. marcescens* carrying CTX-M-3. There were no evidence of outbreak or clonal spreading of these CTX-M-3 producing isolates by molecular epidemiology using RAPD method.

NCCLS ESBL-reporting guidelines are currently issued for *Klebsiella* spp. And *E. coli* only, this study highlights the need to expand efforts to detect ESBL production among *S. marcescens*. We recommend routine screen for ESBL focusing on CTX-R *S. marcescens* with cefepime zone size less than 24 mm. After confirming the ESBL-producing isolates, enforced infection control practice including handwashing, isolation precaution and antibiotic control should be implemented to contain the highly resistant strains.

Keywords : *Serratia marcescens* ; isoelectric focusing ; ESBL