Efficacy of teicoplanin for E. faecium: a post-hoc analysis of a nationwide retrospective study

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Background/Aims: Vancomycin and teicoplanin are both glycopeptides with activity against Enterococcus faecium. However, information regarding the clinical efficacy of teicoplanin is limited, as teicoplanin is not authorized in the United States. This study compared the therapeutic efficacy of teicoplanin and vancomycin in E. faecium bacteremia.

Methods: Patients with bloodstream infections have been identified prospectively from Jul 2015 through Dec 2016 in 14 hospitals as a part of a multicenter nationwide surveillance. Patients with E. faecium monomicrobial bacteremia were selected, and the medical records of the patients were reviewed for demographic, clinical, microbiologic characteristics and patient outcome. Teicoplanin and vancomycin groups were defined as the patients who were treated with either agent for 48hours and for 50% of the treatment duration. Primary outcome was 30-day in-hospital mortality, and adjusted odds ratios (aORs) were examined using logistic regression.

Results: Among 97 patients identified with E. faeciumn bacteremia, 33 (34%) was classified to the teicoplanin group and 64 (66%) to the vancomycin group. There were no significant differences in 7-day mortality (23.4% vs. 18.2%, P=0.552), 30-day in-hospital mortality (23.4% vs. 18.2%, P=0.552), and infection attributable mortality (15.6% vs. 9.1%, P=0.533). Multivariable analysis showed that the use of teicoplanin was not significantly associated with mortality (aOR, 0.98; 95% confidence interval [95% CI],0.24-3.92; P=0.980). Ventilator use (aOR, 5.70; 95% CI, 1.52-21.29; P=0.010) and renal failure (aOR, 5.38; 95% CI, 1.27−22.71; P=0.022) were identified as significant risk factors for mortality.

Conclusions: No significant difference in clinical outcome was observed between the treatment with teicoplanin and vancomycin for E. faecium bacteremia. Teicoplanin could be a useful alternative to vancomycin.

Table 1. Treatment outcome by teicoplanin use

Outcome measure	Vancomycin use group (n=64)	Teicoplanin use group (n=33)	P value
30 day in-hospital mortality	15 (23.4%)	6 (18.2%)	0.552
Infection attributable mortality	10 (15.6%)	3 (9.1%)	0.533
7 day mortality	15 (23.4%)	6 (18.2%)	0.552
Failure to improve at 72 hr	10 (15.9%)	1 (3.0%)	0.091
Clinical response at 7 day	13 (20.6%)	5 (15.2%)	0.592
Days to blood culture conversion (median, IQR)	3 [1 ; 4] (n=63)	2.5 [1.75 ; 5.25] (n=30)	0.394
Length of hospital stay after bacteremia (median, IQR)	21 [10 ; 40] (n=63)	19 [9.0 ; 30.5] (n=29)	0.509

Table 2. Risk factors for 30-day in-hospital mortality. OR, odds ratio. CI, confidence interval. Multivariable analysis was conducted using logistic regression to adjust for potential confounders.

Characteristic	Survival (n=76)	Death (n=21)	Univariate		Multivariable	
			P	OR (95% CI)	P	Adjusted OR (95% CI)
Teicoplanin use	27 (35.5%)	6 (28.6%)	0.552	0.72 (0.25-2.08)	0.981	0.98 (0.24-3.92)
Cardiovascular diseases	40 (52.6%)	7 (33.3%)	0.117	0.45 (0.16-1.23)	0.075	0.29 (0.07-1.13)
Malignancy	37 (48.7%)	13 (61.9%)	0.283	1.71 (0.63-4.60)	0.446	1.65 (0.45-6.10)
Hospital admission	43 (56.6%)	14 (66.7%)	0.406	1.53 (0.55-4.23)	0.260	2.05 (0.58-7.21)
Surgery or invasive procedure	23 (30.3%)	3 (14.3%)	0.174	0.38 (0.10-1.43)	0.113	0.28 (0.05-1.35)
Ventilator use	18 (23.7%)	9 (42.9%)	0.083	2.41 (0.87-6.65)	0.010	5.70 (1.52-21.29)
Renal failure	14 (18.4%)	7 (33.3%)	0.142	2.21 (0.75-6.50)	0.022	5.38 (1.27-22.71)
Neutropenia	12 (15.8%)	6 (28.6%)	0.182	2.13 (0.68-6.60)	0.150	2.97 (0.67-13.11)
Septic shock	37 (48.7%)	7 (33.3%)	0.211	0.52 (0.19-1.45)	0.012	0.17 (0.04-0.67)