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Paper Poster Session
Gram-positive and Gram-negative bacteremia

Evaluation of empirical antibiotic therapy for suspected Staphylococccus aureus bacteraemia in the era of increasing prevalence of methicillin resistance

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Background: The increasing prevalence of methicillin-resistance in *Staphylococcus aureus* in conjunction with known superiority of β-lactam antibiotics over glycopeptides for Methicillin-susceptible *S. aureus* (MSSA) makes it difficult to choose empirical antibiotics regimen for suspected *S. aureus* bacteremia. Although recent studies suggested that combination of β-lactam antibiotics and vancomycin would be synergistic for Methicillin-resistant *S. aureus* (MRSA), little is known about effect of the antibiotics combination as an empirical regimen for MSSA. To evaluated empirical antibiotics strategy for suspected *S. aureus* bacteremia, we compared three empirical antibiotics regimens in patients with MSSA bacteremia.

Material/methods: A retrospective cohort study was conducted at a 1,950-bed tertiary care university hospital. Electronic medical records of individuals with a positive blood culture for MSSA between January 2005 and February 2015 were reviewed. Identified patients were divided into three groups according to their empirical antibiotics regimen (β-lactam, vancomycin, and combination of β-lactam and vancomycin) and matched by age and source of infection. 30-day survival and days to bacteremia clear-up were compared and adjusted using Cox proportional hazards regression.

Results: During the study period, 561 patients with MSSA bacteremia were identified. After matching age and source of infection, 46 patients for each group were included. Patients in β-lactam group had higher proportion of community-acquired infections compared to vancomycin and combination group (56.5%, 23.9%, and 34.8%, respectively; $P = 0.005$) and less comorbid conditions (the median of Charlson weighted index score of 0, 2, and 2, respectively; $P = 0.003$). Vancomycin group showed delayed clear-up of bacteremia than other groups (2.15, 3.660, and 2.83 days, respectively; $P = 0.010$ in three group comparison and $P = 0.026$ in vancomycin and combination comparison), but there was no statistically difference in 30-day mortality rate (4.3, 6.5, and 8.7%, respectively, $P = 0.909$). In the multivariate analysis, there was no difference in 30-day survival between three groups (in comparison with β-lactam; HR 1.142, 95% CI 0.206-9.683, $P = 0.726$ for vancomycin; HR 1.405 0.242-8.171, 95% CI 0.242-8171, $P = 0.705$ for combination regimen). However, vancomycin monotherapy was associated with delayed clear-up of MSSA bacteremia in the multivariate analysis, while combination regimen did not show statistical significance (in comparison with β-lactam; HR 0.537, 95% CI 0.337-0.856, $P = 0.009$ for vancomycin; HR 0.537, 95% CI 0.536-0.133, $P = 0.547$ for combination regimen).

Conclusions: In a retrospective cohort study, three empirical antibiotics regimen of β-lactam, vancomycin, and combination of them in patients with MSSA bacteremia, there was no statistical difference in 30-day survival. However, delayed clear-up of bacteremia in vancomycin monotherapy was observed compared to other two regimens, which make it cautious to choose vancomycin monotherapy as an empirical regimen in suspected *S.aureus* bacteremia.