Emergence of Stenotrophomonas Maltophilia Bacteremia; Clinical Outcomes, Factors Influencing Mortality and Antimicrobial Resistances

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Background: Stenotrophomonas maltophilia has increasingly recognized as an important nosocomial pathogen worldwide. Despite substantial mortality caused by emergences of this organism, the epidemiology, microbiological data, and clinical characters have not yet been established.

Objective: To elucidate those issues, focusing on clinical outcomes, factors influencing mortality, and antimicrobial resistance.

Methods: We conducted a retrospective cohort study of nosocomial S. maltophilia bacteremia at Songklanagarind Hospital, a tertiary-care hospital in southern Thailand. Logistic regression model was used to investigate the effect of each independent variable on mortality and emergences of antimicrobial resistances. Survival analysis with Cox proportional hazard regression was used to assess the differences in the durations of survival after infection development.

Results: A total of 64 unique cases with S. maltophilia bacteremia were identified between January 2009 and December 2013. Thirty-five patients (55%) were admitted in medical wards, while only 30 patients (47%) were admitted in intensive care units. Thirty-nine patients (61%) were implanted with medical devices and 38 patients (59%) were underwent invasive procedures. The mortality was 50%. Antimicrobial susceptibility showed 100% resistant to imipenem and meropenem, but 95%, 82% and 56% susceptible to trimethoprim/sulfamethoxazole, ciprofloxacin and colistin, subsequently. The factors influencing 30-day mortality were infection with colistin-resistant strains (hazard ratio, 1.12; 95% confidence interval, 1.03 to 2.51; P=0.007), inappropriate empirical antimicrobial therapy (HR, 1.75; 95% CI, 1.06 to 2.79; P=0.008), and higher acute physiology and chronic health evaluation II (APACHE II) score (HR, 1.35; 95% CI, 1.10 to 2.19; P<0.001). The survival rates among patients infected with colistin-resistant strains was lower than those with colistin-susceptible strain infection (P<0.001, log-rank test). Previous administration with any carbapenems was significantly associated to infection with colistin-resistant strains, following the adjusted odd ratio (OR) of 1.27(CI, 1.02 to 1.94; P = 0.016).

Conclusion: S. maltophilia bacteremia yields a high clinical impact. Susceptibility suggests the appropriated empirical therapy to reduce mortality. Emergences of colistin-resistant influence mortality and associated with previous carbapenems use.

Keywords: Stenotrophomonas maltophilia, Bacteremia, Colistin