Predicting Factors of Methicillin-resistant *Staphylococcus aureus* Bacteremia among Hospitalized Patients in a Tertiary-care Hospital: A Case-control Study

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**Background:** Methicillin-resistant *Staphylococcus aureus* (MRSA) has become a major nosocomial pathogen in community hospitals, long-term-care facilities, and tertiary care hospitals. The data regarding predicting factors of MRSA in Thailand is limited. We aimed to determine the rate and predicting factors of MRSA bacteremia among hospitalized patients with *S. aureus* in Ramathibodi Hospital where is a tertiary-care setting.

**Methods:** A case-control study was conducted among adult patients with *S. aureus* bacteremia who were admitted at the Department of Medicine, Ramathibodi Hospital between January 2008 and December 2012. Clinical characteristics and culture results of *S. aureus* isolates and antimicrobial-susceptibility testing were studied. MRSA was defined as *S. aureus* isolates that were resistant to methicillin. The factors associated with MRSA bacteremia was assessed by multivariate logistic regression analysis.

**Results:** The prevalence of MRSA bacteremia among patients with *S. aureus* bacteremia during study period was 42.3% (267 of 632 patients). A total of 156 patients with *S. aureus* bacteremia were studied. 52 patients had MRSA bacteremia and 104 patients had methicillin-susceptible *S. aureus* (MSSA) bacteremia. The mean age of patients was 63.5 years and 56.4% of patients were males. There were no differences of demographics and underlying diseases between the two groups (*p* > 0.05). Length of hospital stay and period from admission until positive blood cultures result for *S. aureus* were significantly longer among MRSA bacteremia patients (*p* < 0.05). In multivariate logistic regression analysis, hospitalization within the past 6 months (Odds ratio (OR) 3.514; 95% confidence interval (CI), 1.319-9.363, *p* = 0.012) and duration of admission prior to *S. aureus* bacteremia (OR 1.044; 95% CI, 1.015-1.075, *p* = 0.003) were significantly associated with MRSA bacteremia. MRSA susceptibilities were as follows: 98.1% to fusidic acid, 71.2% to trimethoprim-sulfamethoxazole and to vancomycin. Of all patients with MSSA, 43.3% were treated with cloxacillin. Of all patients with MRSA, 82.7% were treated with vancomycin. Of all, 61.4% of patients were discharged with improvement. The overall mortality rate was 17.3% and was significantly higher in patients with MRSA bacteremia (26.9%) when compared with patients with MSSA bacteremia (12.5%) (*p* < 0.05).

**Conclusion:** The prevalence of MRSA among patients with *S. aureus* bacteremia at a tertiary-care hospital is high. Prior hospitalization and prolonged duration of admission were significant predicting factors for MRSA bacteremia.