

Influence of vancomycin minimum inhibitory concentration on the treatment of methicillin-resistant *Staphylococcus aureus* bacteremia.

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BACKGROUND: Vancomycin treatment failure in methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia is not uncommon, even when MRSA is susceptible to vancomycin. The aim of our study was to evaluate whether vancomycin minimum inhibitory concentration has any influence on the mortality associated with MRSA bacteremia. **METHODS:** A total of 414 episodes of MRSA bacteremia were prospectively followed-up from 1991 through 2005. MIC of vancomycin for the first isolate was determined by E-test. Clinical variables recorded were age, comorbidity, prior administration of vancomycin, use of corticosteroids, prognosis of underlying disease, source of bacteremia, the need for mechanical ventilation, shock, and mortality. A "treatment group" variable was created and defined as follows: (1) receipt of empirical vancomycin and an isolate with a vancomycin MIC of 1 microg/mL (38 episodes), (2) receipt of empirical vancomycin and an isolate with a vancomycin MIC of 1.5 microg/mL (90 episodes), (3) receipt of empirical vancomycin and an isolate with a vancomycin MIC of 2 microg/mL (40 episodes), and (4) receipt of inappropriate empirical therapy (246 episodes). Univariate and multivariate analyses were performed. **RESULTS:** Episodes caused by strains with a vancomycin MIC of 2 microg/mL were independently associated with a lower risk of shock (odds ratio [OR], 0.33; 95% confidence interval [CI], 0.15-0.75). Multivariate analysis selected receipt of empirical vancomycin and an isolate with a vancomycin MIC of 2 microg/mL (OR, 6.39; 95% CI, 1.68-24.3), receipt of inappropriate empirical therapy (OR, 3.62; 95% CI, 1.20-10.9), increasing age (OR, 1.02; 95% CI, 1.00-1.04), use of corticosteroids (OR, 1.85; 95% CI, 1.04-3.29), an ultimately (OR, 10.2; 95% CI, 2.85-36.8) or rapidly (OR, 1.81; 95% CI, 1.06-3.10) fatal underlying disease, high-risk (OR, 3.60; 95% CI, 1.89-6.88) and intermediate-risk (OR, 2.18; 95% CI, 1.17-4.04) sources of bacteremia, and shock (OR, 7.38; 95% CI, 4.11-13.3) as the best predictors of mortality. **CONCLUSIONS:** Mortality associated with MRSA bacteremia was significantly higher when the empirical antibiotic was inappropriate and when vancomycin was empirically used for treatment of infection with strains with a high vancomycin MIC (>1 microg/mL).

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