Journal of Microbiology, Immunology and Infection (2013) **46**, 315–316

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LETTER TO THE EDITOR

The detection and clinical impact of vancomycin MIC among patients with methicillin-resistant *Staphylococcus aureus* bacteremia

Dear Editor,

We read with great interest the article by Yeh et al, reporting the phenomenon of vancomycin minimal inhibitory concentration (MIC) creep of methicillin-resistant *Staphylococcus aureus* (MRSA) and its clinical impact on patients with MRSA bacteremia in a tertiary hospital of northern Taiwan.[1] Compared with isolates in both 2001 and 2005, Yeh et al found that the vancomycin MICs for MRSA isolates increased significantly in 2009. However, patients with high MICs (MICs $\geq$1.5 μg/mL) did not have higher in-hospital mortality than those with low MICs (MICs $<$ 1.5 μg/mL).[1]

In this study, there were two interesting issues worth further discussion. First, vancomycin MIC of the same isolate would significantly decrease after storage for months, tested by the vancomycin Etest.[2] A prospective study was conducted to measure the vancomycin and daptomycin MICs of MRSA isolates using the Etest. In addition to using the Etest at the time of isolation, they repeated the Etest at 3 months, 6 months, and 9 months after isolation.[2] There were significant declines in both the vancomycin and daptomycin MICs from the same isolates at the 3-month interval. The MIC detection using stored isolates might underestimate the real vancomycin MICs.

Second, concerning the clinical outcomes of patients with MRSA bacteremia, a meta-analysis showed that isolates with high vancomycin MICs contributed to a higher mortality,[3] although a potential intrinsic strain-specific virulence effect was also reported as an independent factor on the clinical outcome.[4] In a medical center of southern Taiwan, we found 8.1% (5/118) patients with heteroresistant vancomycin intermediate *S. aureus* (hVISA).[5] The MICs of these hVISA isolates were 2 μg/mL and patients with hVISA bacteremia had significantly higher in-hospital mortality rates than non-hVISA patients (60% vs. 17.5%). The distribution of hVISA in different vancomycin MIC groups would impact the analysis of clinical outcomes on these infections. So, in the Yeh et al study, a lower hVISA rate in the high MIC group might act as one potential factor leading to no difference in the in-hospital mortality rates between the high and low vancomycin MIC groups.

For surveillance purposes, we suggest that MIC measurements need to be performed near the time of isolation, to reduce the storage effect. The identification of hVISA might be important for an appropriate choice of antimicrobial agents and good clinical outcome in the future.

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26 February 2013