Antimicrobial Susceptibility and Clinical and Genetic Analysis of Methicillin-Resistant Staphylococcus aureus Invasive Isolates

Shu-Ying Liu, Yu-Shan Yan, Hao-Yuan Lee, Sih-Ru Wu, Tzou-Yien Lin, Ming-Yu Hsieh, CH Chiu

E-mail: syliu@mail.dyu.edu.tw

ABSTRACT

Antimicrobial Susceptibility and Clinical and Genetic Analysis of Methicillin-Resistant Staphylococcus aureus Invasive Isolates

Ruirui Liu, Yu-Shan Yan, Hao-Yuan Lee, Sih-Ru Wu, Tzou-Yien Lin, Ming-Yu Hsieh, CH Chiu

1Department of Molecular Biotechnology, Da-Yeh University, Changhua, Taiwan

2Molecular Infectious Disease Research Center, Chang Gung Memorial Hospital, Taoyuan, Taiwan

Backgrounds: The purpose was to analyze the antimicrobial susceptibility and clinical presentations of methicillin-resistant Staphylococcus aureus (MRSA) invasive infections. Materials and Methods: A total of 203 clinical MRSA isolates derived from sterile sites (89.7% from blood) and their clinical presentations in Chang Gang Memorial Hospital in 2010 were collected. E-test strips were applied to determine minimum inhibitory concentration (MIC) and polymerase chain reaction (PCR) used to detect staphylococcal cassette chromosome mec (SCCmec) types and the presence of Panton-Valentine leukocidin (PVL) gene. Risk factors for acquiring hVISA, defined by macromethod, were analyzed by comparing 15 patients infected by hVISA with those with non-hVISA MRSA infection. MIC of MRSA were correlated with SCCmec types and PVL gene types. Results: The MIC range of vancomycin, teicoplanin, linezolid and daptomycin in all MRSA were 0.75-3, 0.38-12, 0.5-3, and 0.09-2 mg/L, whereas those in hVISA were 1.5-3, 2-6, 1-1.5, and 0.5-1.5 mg/L, respectively. The 15 hVISA isolates had significantly higher rate of high MIC level for vancomycin (MIC> 2 mg/L), teicoplanin (MIC≧ 6 mg/L), and daptomycin (MIC≧ 1 mg/L) than other isolates (all p<0.05). Patients infected with hVISA had a significantly higher 30-day mortality than those with non-hVISA (p=0.008). Prior use of glycopeptides, fluoquinolones or taz...

Keywords: Antimicrobial Susceptibility, Methicillin-Resistant Staphylococcus aureus Invasive Isolates

REFERENCES