

Prevalence of ST239 Clone of Methicillin-resistant *Staphylococcus aureus* in Bamrasnaradura Infectious Diseases Institute by Using Rapid Detection Heteroduplex-PCR

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Methicillin-resistant *S. aureus* infection is still a serious clinical problem worldwide. Investigation of MRSA infection in healthcare setting is important for infection control. In Asia, the most common MRSA clone is ST239. The chromosome of the ST239 MRSA has a mosaic structure, which has evolved by recombining two chromosomal sequences from the ST8 and ST30 ancestors. As these two sequences can be distinguished, primers designed for PCR assay on this mosaic structure can amplify two products of different sizes from ST8 and ST30 chromosomes revealing the identity of ST239 MRSA. This study demonstrated the prevalence of the ST239 MRSA clone circulating in Bamrasnaradura Infectious Diseases Institute (BIDI) from 2004-2009 by heteroduplex-PCR. A retrospective study of 36 non-duplicated MRSA isolates collected from May, 2004 to February, 2009 was performed. There were 4, 25, 6, and 1 isolates from 2004, 2005, 2006, and 2009, respectively. Two primer sets were used to detect ST8/ST30-like mosaic chromosomal structures of the ST239 lineage by heteroduplex-PCR, and amplified

products of different sizes (220 bp for ST-8 like and 484 bp for ST30-like). The presence of both expected amplicons indicated the hybrid genome of ST239 MRSA. Thirty-two of 36 (89%) isolates were positive for heteroduplex-PCR by giving 2 expected bands, while 3 isolates from ICU ward gave only 1 band of ST8 lineage and the remaining isolate gave no PCR product. The ST239 MRSA isolates were predominant in: ward A, 10/10 isolates (100%); ward B, 7/7 isolates (100%); ward C, 6/6 isolates (100%) and ICU ward, 6/9 isolates (66.7%). The only MRSA isolate that was negative for this rapid detection came from ward E. The selection of hetero-duplex PCR test described here, as an initial screening, was established for rapid detection of ST 239 MRSA clone. The majority of MRSA isolates in this study belonged to ST239 clone, which was similarly reported in many hospitals in Asia. A time span from 2004 to 2009 demonstrated that ST239 MRSA clone has still been circulating in BIDI. Implementing the heteroduplex-PCR test for ST239 clone should improve nosocomial infection control for this multi-drug resistant organism.

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