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MOLECULAR EPIDEMIOLOGY OF METHICILLIN RESISTANT *STAPHYLOCOCCUS AUREUS* (MRSA) ISOLATED FROM A MALAYSIAN UNIVERSITY TEACHING HOSPITAL

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Background:

MRSA is one of the major human pathogen and causes of infections among health care settings and community. It was first reported in the UK and Europe in the 1960's and in the US in 1968. In this study, we characterized the *mec* and *ccr* elements and also the determined the carriage of four virulence genes (*cna*, *seh*, PVL and TSST-1) of each index MRSA strain isolated from our hospital in 2009..

Materials & Methods:

Index strains of each MRSA infection in 2009 at our hospital were collected. A modified multiplex PCR was carried out to determine *mec* and *ccr* elements carried by each strain. Antimicrobial Susceptibility Testing was performed for all MRSA strain using disks diffusion method. Carriages of *cna*, *seh*, PVL and TSST-1 virulence genes were determined using PCR.

Results:

In 2009, a total of 306 cases of MRSA infection were recorded in our hospital. 73.5% of the index strains carried SCC*mec* type III-SCC*mercury* which harbours *ccrAB3*, *ccrC* and class A *mec* complex. Some strains harboured SCC*mec* type 4 (2.3%), SCC*mec* type 5 (1.3%) or SCC*mec* type 2 (0.3%). SCC*mec* type 1 was not detected, though we noted that a few strains (10.5%) might be harbouring new SCC*mec* types. 12.1% of the strains were untypeable. Almost all strains were resistant to ciprofloxacin, erythromycin and gentamicin, while maintaining varied susceptibilities towards fucidic acid, clindamycin, mupirocin, rifampicin and chloramphenicol. From the virulence gene typing, 93.97% of the strains carried *cna*, 22.70% harboured *seh*, and 3.35% of the strains carried PVL. No TSST-1 gene was detected among our collection of MRSA.

Conclusion:

Most of our university hospital MRSA strains carried the SCC*mec* type III-SCC*mercury*, were resistant to commonly used antibiotics such as ciprofloxacin, erythromycin and gentamicin, and harboured the *cna* gene.

Keywords:

MRSA, molecular epidemiology, PCR