EV0292
ePoster Viewing
Resistance surveillance & epidemiology: MRSA, VRE & other Gram-positives

Nosocomial spread of ST72-SCCmec type IV methicillin-resistant Staphylococcus aureus in a neonatal intensive care unit at a tertiary hospital in Daejeon, Korea

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Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) is a major nosocomial pathogen in many hospitals worldwide. Recently the emergence and increasing prevalence of community-associated MRSA (CA-MRSA) in hospitals make molecular epidemiology of MRSA more complex. Likewise in neonatal intensive care unit (NICU), similar changes were observed but there is little information on the molecular epidemiology of MRSA in Korea. In this study, we investigated molecular epidemiology of MRSA isolated in NICU and conducted surveillance culture for healthcare workers and the environmental sites.

Material/methods: A total of 75 MRSA isolates (18 community-acquired and 56 hospital-acquired) and 23 MRSA isolates from 15 environmental sites and 8 samples from healthcare workers were investigated. Bacterial identification and antimicrobial susceptibility testing were performed by Vitek 2 automated system (bioMerieux, Mercy l'Etoile, France). For molecular study, staphylococcal cassette chromosome *mec* (SCC*mec*) typing, Panton-Valentine leukocidin (PVL) gene detection, multilocus sequence typing, *spa* typing, and pulsed field gel electrophoresis (PFGE) were performed.

Results: Antimicrobial susceptibility testing showed that the rates of nonsusceptibility to gentamicin and mupirocin were higher in HA-MRSA, while nonsusceptibility to erythromycin was higher in CA-MRSA ($P < 0.05$). The clinical isolates were identified as sequence type 72-SCC*mec* IV, without the PVL gene. The distributions of *spa* types were t664 (38.9%), t324 (33.3%), and t2431 (16.7%) in the CA-MRSA isolates, or t324 (73.2%), t2431 (16.1%), and t664 (7.1%) in HA-MRSA isolates ($P < 0.05$). PFGE showed 3 major pulsotypes, of which pulsotype A included most isolates from HA-MRSA (45/56), CA-MRSA (15/18) and the surveillance study (14/23).

Conclusions: Our data showed that PVL-negative ST72-SCC*mec* IV spread in the NICU, which was transmitted nosocomially; thus, strict infection control measures must be enforced to control the spread of infections.

Table 1. Comparison of patient characteristics and antimicrobial susceptibility between CA-MRSA and HA-MRSA

	CA-MRSA (n=18)	HA-MRSA (n=56)	p value
Gestational age (weeks)	38.1 ± 1.7	32.7 ± 5.3	<0.001
Birth weight (g)	3286.7 ± 601	1968.8± 1090	<0.001
Caesarian section (n, %)	6 (33.3%)	47 (82.5%)	<0.001
Outborn (n, %)	18 (100%)	12 (21.4%)	<0.001

True infection (n, %)	0	13 (23.2%)	<0.05
t324	6 (33.3%)	41 (73.2%)	<0.01
t2431	3 (16.7%)	9 (16.1%)	
t664	7 (38.9%)	4 (7.1%)	
t451	0	0	
nontypeable	2 (11.1%)	2 (3.6%)	
Ciprofloxacin	0	0	NS
Clindamycin	0	0	NS
Trimethoprim-sulfamethoxazole	0	0	NS
Erythromycin	6 (33.3%)	4 (7.1%)	<0.05
Gentamicin	2 (11.1%)	26 (46.4%)	<0.05
Mupirocin	3 (16.7%)	34 (60.7%)	<0.05
Rifampin	0	0	NS
tetracycline	3 (16.7%)	8 (14.3%)	>0.05

Abbreviations : CA-MRSA; community-associated methicillin-resistant *Staphylococcus aureus*, HA-MRSA; HA-MRSA; healthcare-associated methicillin-resistant *Staphylococcus aureus.*