Evaluation of different methods for detecting methicillin resistant Staphylococcus aureus in Assiut University Hospital

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Abstract:

Methicillin resistance in staphylococcus aureus (MRSA) and in Coagulase negative staphylococci (MRCNS) is wide spread and continues to increase in prevalence particularly in health care settings. MRSA is among the most important causes of nosocomial infections. It possesses a particular ability to spread in hospitals worldwide. Objectives: In this study we aimed to measure the frequency of clinical MRSA infection in Assiut University Hospital among patients and health care workers, and to compare different methicillin susceptibility methods with mecA gene detection by PCR as a gold standard test. In one year duration study, 660 patients admitted to different ICUs in Assiut University Hospital were included, 20% (132/660) of them developed nosocomial infection. Staphylococci accounted for 58.3% (77/132) of these cases, and 94 staphylococcal isolates were detected. MRSA represented 64.9% (61/94). Also health care workers (HCW) and the patient's environment were screened for MRSA nasal carriage and MRSA contamination respectively. It was found that 20.25% of HCW were colonized with MRSA and 12.3% of patient's environment was contaminated with MRSA. The MRSA screen latex agglutination test (Denk Seiken Co, Niiga Ta, Japan) and oxacillin resistance screening agar base (ORSAB) medium were compared with MIC determination and mec A gene detection by PCR assay, the "gold standard test". In an analysis of 61 mec A positive and 11 mecA negative S. aureus patient isolates, both latex agglutination test and ORSAB medium were reliable in detection of oxacillin resistance with 100% sensitivity and specificity for each. Antimicrobial susceptibility pattern of nosocomial MRSA isolates showed high resistance to ampicillin (95.1%), erythromycin (93.4%) and penicillin (93.4%), while low resistance to amikacin (37.7%), imipenen (29.5%) and vancomycin (18%). We concluded that MRSA-Screen test and ORSAB medium are reliable methods for detection of MRSA. Screening for colonization of MRSA is a key aspect of infection control to limit the nosocomial spread of this organism.

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