The behavior of methicillin-resistant Staphylococcus aureus (MRSA) isolated from central venous catheter-related infection was evaluated to determine its biofilm potential, antimicrobial resistance, and adhesion genes" Sohail and Latif (2018).

Abstract:

INTRODUCTION: The behavior of methicillin-resistant Staphylococcus aureus (MRSA) isolated from central venous catheter-related infection was evaluated to determine its biofilm potential, antimicrobial resistance, and adhesion genes.

METHODS: A total of 1,156 central venous catheters (CVC) were evaluated to screen for pathogens. Antimicrobial sensitivity, biofilm formation potential, and molecular analysis of MRSA were examined following standard guidelines.

RESULTS: Of the 1,156 samples, 882 (76%) were colonized by bacteria or candida. Among the infected patients, 69% were male and 36% were female with median age of 32 years. Staphylococcus aureus infected 39% (344/882) of CVCs in patients. Of the 59% (208/344) of patients with MRSA, 57% had community acquired MRSA and 43% had hospital acquired MRSA. Linezolid and vancomycin killed 100% of MRSA; resistance levels to fusidic acid, doxycycline, clindamycin, azithromycin, amikacin, trimethoprim-sulfamethoxazole, gentamycin, tobramycin, and ofloxacin were 21%, 42%, 66%, 68%, 72%, 85%, 95%, 97%, and 98% respectively. Strong biofilm was produced by 23% of samples, moderate by 27%, and weak by 50% of MRSA. The presence of adhesion genes, sdrC and sdrD (90%), eno (87%), fnbA (80%), clfA and sdrE (67%), fnbB, sdrD (61%), and cna (51%), in most MRSA samples suggested that the adhesion genes are associated with biofilm synthesis.

CONCLUSIONS: The superbug MRSA is a major cause of CVC-related infection. Antibiotic resistance to major classes of antibiotics and biofilm formation potential enhanced superbug MRSA virulence, leading to complicated infection. MRSA causes infection in hospitals, communities, and livestock.

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