Molecular Characterization of Methicillin Resistant Staphylococcus aureus in West Bank-Palestine

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Methicillin-resistant Staphylococcus aureus (MRSA) is a public health threat and a major cause of hospital-acquired and community-acquired infections. This study aimed to investigate the genetic diversity of MRSA isolates from 2015 to 2017 and to characterize the major MRSA clones and anti-biogram trends in Palestine. Isolates were obtained from 112 patients admitted to different hospitals of West Bank and East Jerusalem, originating from different clinical sources. Antibiotic susceptibility patterns, staphylococcal chromosomal cassette mec (SCCmec) typing, and Staphylococcus aureus protein A (spa) typing were determined. Also, a panel of toxin genes and virulence factors was studied, including: Panton-Valentine Leukocidin (PVL), ACME-arcA, Toxic Shock Syndrome Toxin-1 (TSST-1), and Exfoliative Toxin A (ETA). Of the 112 confirmed MRSA isolates, 100% were resistant to all β-lactam antibiotics. Resistance rates to other non- β-lactam classes were as the following: 18.8% were resistant to trimethoprim-sulfamethoxazole, 23.2% were resistant to gentamicin, 34.8% to clindamycin, 39.3% to ciprofloxacin, and 63.4% to erythromycin. All MRSA isolates were susceptible to vancomycin (100%). Of all isolates, 32 isolates (28.6%) were multidrug-resistant (MDR). The majority of the isolates were identified as SCCmec type IV (86.6%). The molecular typing identified 29 spa types representing 12 MLST-clonal complexes (CC). The most prevalent spa types were: spa type t386 (CC1)/(12.5%), spa type t044 (CC80)/(10.7%), spa type t008 (CC8)/(10.7%), and spa type t223 (CC22)/(9.8%). PVL toxin gene was detected in (29.5%) of all isolates, while ACME arcA gene was present in 18.8% of all isolates and 23.2% had the TSST-1 gene. The two most common spa types among the TSST-1positive isolates were the spa type t223 (CC22)/(Gaza clone) and the spa type t021 (CC30)/(South West Pacific clone). All isolates with the spa type t991 were ETA positive (5.4%). USA-300 clone (spa type t008, positive for PVL toxin gene and ACME-arcA genes) was found in nine isolates (8.0%)

Biography

kifaya azmi has completed her PhD from Charite University School of Medicine, Berlin. She is one of staff member of A-Quds University, faculty of medicine. Teaching biochemistry and molecular biology. Recently working on MRSA project, published more than 40 papers in reputed journals.