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**Application of high resolution melting to methicillin resistant *Staphylococcus aureus* and *Shigella sonnei* genotyping for epidemiological purposes**

**Introduction:** High resolution melting (HRM) analysis has been used in laboratory medicine as accurate, rapid and cost effective scheme method. Methicillin resistant *Staphylococcus aureus* (MRSA) infections impose huge risk to public health in healthcare and community settings worldwide. *Shigella sonnei* has been predominantly responsible for dysentery worldwide. The organism has only one serotype and is genetically homogeneous. We evaluated MRSA *spa* typing and introduced new tools for *Shigella sonnei* genotyping using HRM analysis for epidemiological purposes.

**Methods:** Fifty clinical MRSA isolates were selected randomly from Scotland, Brazil, Sudan and Saudi Arabia. Methicillin-resistant phenotype was determined in accordance with BSAC standards using the Vitek 2 system. Ten *Shigella sonnei* DNA samples were provided by Institut Pasteur, France. Primers for the polymorphic X region of the *spa* gene and the six single nucleotide polymorphisms (SNPs) within *kduD*, *deoA*, *emrA*, *fdX* and *menF* were amplified by colony PCR using the SensiMix HRM kit, and the melting temperature ( $T_m$ ) and melting curves of the amplicons were analyzed in close tubes using a Rotor-Gene 6000 instrument.

**Results:** Fifteen *spa* types detected each had a distinct melting temperature ( $T_m$ ) that unambiguously assigned 44 isolates. Both t008 and t2770, as well as t311 and t021 *spa* types, shared the same  $T_m$ . The first set run separated lineages I, II and III with distinctive melting curves and the  $T_m$  of each allele was at least a half degree away from that of other alleles. The second set run distinguished the sublineages IIIa, IIIb and IIIc with distinctive melting curves.

**Conclusion:** HRM analysis is accurate, rapid and cost effective scheme method for identification of MRSA and *Shigella sonnei* for epidemiological purposes

**Biography**

Waleed A Mazi is a regional Director for Infection Prevention and Control, King Abdul Aziz Specialist Hospital, Taif – Saudi Arabia. He also worked in Philosophy of Medical Science, Clinical Microbiology, Karolinska Institutet, Sweden. He has published international articles on prevention of central line –associated bloodstream infection, WHO-Hand Hygiene implementation program, prevention sharp injuries in healthcare settings and molecular genotyping for epidemiological purposes and participated as a poster and oral presenters in many international conferences.

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