# Bacteriological and Molecular Aspects of *Staphylococcous aureus* Clinical Isolates Carrying Genes for Exfoliative Toxins and Panton-Valentine Leukocidin

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Abstract

Within the genus *Staphylococci**,** Staphylococcus aureus* (‹S', *aureus)* is the causal agent of most staphylococcalinfections and is associated with serious community-acquired and nosocomial diseases, ***s.*** *aureus* toxins are considered the main effector molecules in a wide variety of human skin infections. This work aims to investigate the presence of exfoliative toxins (ETs) and panton-Valentine leukocidin (PVL) encoding genes *(eta, etb* and *lukS-lukF-VY)* in ***s.*** *aureus* clinically isolated from patients with furuncles, impetigo (bullous and non-bullous) and staphylococcal scalded skin syndrome (SSSS) by using PCR and to determine the antimicrobial susceptibility patterns of these clinical isolates. The study included 80 patients with skin infections. In this work, a total of 56 ***s.*** *aureus* isolates were revealed from all patients. Among the 21 isolates from patients with furuncles, 20 (95.2%) carried *lukS-lukF-YW* and only one (4.8%) carried *eta*. Of the 18 isolates from patients with bullous impetigo, 6 (33.3%) carried *eta,* 10 (55.6%) carried *etb* and 2 (11.1م/م) carried both *eta* and *etb*‹ Of the 12 isolates from patients with non-bullous impetigo, 3 (25%) were *eta* positive, 7 (58.3%) were *etb* positive and one (8.3%) was positive for both *eta* and *etb.* Among the 5 isolates from patients with SSSS, *eta* was detected in one (20%) isolate, while each of *etb* and both *eta* and *etb* were detected in 2 (40%) isolates. Among the 56 ***s.*** *aureus* isolates, 10 (17.9%) isolates were metoicillin-resistant ‹S'. *aureus* (MRSA), of which 7 (70%) carried *lukS-lukF-?V* and 3 (30%) carried *etb*. Most isolates were resistant to penicillin (98.2%)), cephalosporins (76.8% for cephalothin and 73.2% for cefotaxime), rythromycin (51.8%), sulphamethoxzole-trimethoprim (48.2%). Whereas, the resistance to rtfampicin, chloramphenicol, gentamycin, ciprofloxacin, fuisidic acid and mupirocin were 25%, 21.4%, 14.3%, 10.7%, 7.1% and 5.3%ا respectively. No resistance was detected to v^comycin. In conclusion, PVL-encoding gene is not only a possible virulence factor associated with staphylococcal necrotic lesions of the skin and subcutaneous tissues but also a stable genetic marker of MRSA isolates responsible for primary skin infections. The staphylococcal ETs are important factors in the development and progression of SSSS and impetigo. Monitoring of the drug resistance of £ *aureus* clinical isolates and establishment of an appropriate antibiotic therapy guideline for the treatment of staphylococcal skin infections are definitely required to control the dissemination of the emerging PVL- or ET-positive MRSA isolates. Further studies are recommended for identifying additional virulence factors of PVL- positive *S. aureus* isolates, as this may lead to specific therapeutic approaches targeting PVL in severe PVL-related staphylococcal infections.

References

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