

Virulence factors and genetic characteristics of methicillin-resistant and -susceptible staphylococcus aureus isolates in Myanmar

Abstract

Staphylococcus aureus produces virulence factors, including various exotoxins and adhesins, which are associated with a variety of symptoms caused by its infections. In the present study, the prevalence of these virulence factors was analyzed for 23 *S. aureus* strains isolated from wound infections in hospitals, nasal swabs, or vomit from patients and cooks in a food poisoning case and from healthy adults in Yangon, Myanmar. Among these strains, five were methicillin-resistant *S. aureus* (MRSA) derived from pus (four strains, SCCmec III, ST239) and a healthy adult (one strain, SCCmec-IVa, ST5). The Pantone-Valentine leukocidine (PVL) gene was detected in five methicillin-susceptible *S. aureus* (MSSA) clinical strains belonging to ST121 (CC121). The MRSA clinical strains had only a few or no staphylococcal enterotoxin (SE) genes, whereas PVL-positive MSSA and an MRSA strain from a healthy adult possessed an enterotoxin gene cluster (*seg*, *sei*, *sem*, *sen*, *seo*, and *selu*). Strains from the food poisoning case had either SE genes or only *etd* and *edin-B*. Adhesin genes, which are associated with binding to fibronectin, fibrinogen, and elastin, were detected in all the MRSA and most of the MSSA strains examined. However, the bone sialoprotein-binding protein gene (*bbp*) and the variant form of the elastin-binding protein gene (*ebpS-v*) with an internal 180 bp deletion were identified only in the MSSA strains harboring the PVL gene. These findings suggest that those genetic traits are characteristic of PVL-positive ST121 *S. aureus* strains in Myanmar.