Background & Objective

Community-onset methicillin-resistant Staphylococcus aureus (CO-MRSA) has become a worldwide phenomenon. This global change in MRSA epidemiology has resulted in a marked increase in the prevalence of staphylococcal community onset infections ranging from mild skin and soft-tissue infections (SSTI) to severe invasive infections including necrotising fasciitis and rapidly progressive necrotising pneumonitis. Although focal, five major community-associated MRSA (CA-MRSA) clones have been described: ST5-MRSA-II (Europe), ST30-MRSA-IV (Western Pacific Region); ST8-MRSA-IV (USA300); ST1-MRSA-IV (USA400); and ST1-MRSA-IV [USA4000] (United States of America), ST59-MRSA-V (Asia) and ST36-MRSA-II (Western Pacific Region). Australia has a unique experience with CO-MRSA caused by CA-MRSA in that the ST93-MRSA-IV epidemic was documented earlier than in most countries. It was initially due to a PVL-negative ST8-MRSA-IV clone and subsequently due to multiple CA-MRSA clones, including some that are PVL-positive. The objective of this study is to describe the prevalence and epidemiology of the PVL-positive ST93-MRSA-IV (Queensland OQ CA-MRSA) clone in the Australian community.

Materials & Methods

In 2008 the 5th biannual community S aureus surveillance programme (SAP08) was performed by the Australian Group for Antimicrobial Resistance (AGAR). Up to 100 clinically significant consecutive, non-duplicate outpatient isolates of S aureus were collected by 31 laboratories located throughout Australia. Of the 3,075 S aureus isolated 18.0% (553) were identified as MRSA. 547 of the 553 MRSA were characterised by pulse-field gel electrophoresis (PFGE) and clonality determined by multilocus sequence typing (MLST) and staphylococcal chromosomal cassette mec (SCC mec) typing. The presence of PVL determinants was detected by PCR.

Results

For CA-MRSA the proportion of PVL-positive CA-MRSA strains peaked in the 30 – 39 age group, and apart from the 70-79 age group, fell steadily in the older decades. The mean age of patients with infections due to CA-MRSA strains (40 years; median 35 years) was significantly lower (p<0.001) than the mean age of patients with infections due to HA-MRSA strains (69 years; median 14 years).

Proportion of PVL-positive & PVL-negative CA-MRSA per patient decade

This predominance of ST93-MRSA-IV (Qld CA-MRSA) has resulted in a significant change in the percentage of CA-MRSA in Australia that are PVL positive and the number of SSTI in young Australians.

Conclusion

The rapid geographical expansion and epidemiology of ST93-MRSA-IV (Qld CA-MRSA) in Australia has parallels with the CA-MRSA epidemic in the USA. ST93-MRSA-IV (Qld CA-MRSA) has become the Australian equivalent of the USA300 clone.