



Community-Acquired MRSA : Is it a Real Threat?

Donald Lyon

Department of Microbiology
Prince of Wales Hospital, Hong Kong

Methicillin-resistant *Staphylococcus aureus* (MRSA) has been established in hospitals worldwide as a major pathogen for many years. Risk factors for acquisition and infection include surgery, other instrumentation, hospitalization, ICU care, and antibiotic use. In recent years, there have been increasing reports of community acquired MRSA (CA-MRSA) in various patient populations in a number of countries. The definition of CA-MRSA poses considerable challenges since hospital-acquired MRSA (HA-MRSA) may be carried by patients in the community for months or years after discharge from hospital. The majority of patients who are found to be colonized with MRSA on admission to hospital have a history of recent hospitalization, and are assumed to have acquired the MRSA in a previous hospital admission. MRSA are also commonly found in nursing and residential homes for the elderly. Spread of HA-MRSA to non-hospitalised persons in the community may occur, but is thought to be uncommon. Current attention is focused on the emergence *de novo* of CA-MRSA in the community and subsequent spread without any contact with hospitals or healthcare institutions.

One of the earliest and best documented outbreaks of CA-MRSA is the emergence of WA-MRSA in the remote aboriginal communities of the Kimberley in Western Australia.¹ Western Australia had for a number of years been successful in preventing the spread of HA-MRSA (EA-MRSA) from the hospitals of Eastern Australia by intensive surveillance, isolation and decolonisation. From 1991 onwards increasing rates of WA-MRSA have been seen in Western Australia and have involved hospitals. Community acquired MRSA infections have been shown to be significantly more common in aboriginals compared to non-aboriginals. Cities on the east coast of Australia have also documented CA-MRSA, but these strains are distinct from EA-MRSA, and have been shown to be of the Oceania (Western Samoan) strain which was first described in New Zealand. This strain is thought to have originated in Western Samoa, and to have spread throughout the Pacific region with the movement of Polynesian people.

In North America, there have been many recent reports of serious community acquired MRSA infections in patients with no identified predisposing factors for MRSA. Community acquired MRSA appears to be particularly common in the upper mid-West region of the United States (Minnesota, North Dakota & Illinois) and is particularly common in children.² A high prevalence of CA-MRSA in American Indian communities has also been noted.³ Most of the North American reports show a strong association with skin and soft tissue infection.

Elsewhere in the world, a number of reports of CA-MRSA are appearing from countries such as France, Canada, Finland, the United Kingdom, and others. Throughout the world several features of the epidemiology of CA-MRSA infections are consistent; a predilection for skin and soft tissue infection, infection in children, and

infections in indigenous populations. There are probably at least 5 major clones of CA-MRSA in circulation, of which the American mid-Western, WA-MRSA, and the Oceania (Western Samoan) clones are the best described. Organism factors typical of CA-MRSA are low levels of methicillin resistance, methicillin hetero-resistance, lack of multi-resistance, *SCCmec* type IVa, and the production of PV leucocidin and staphylococcal enterotoxins B & C.^{4,5} It is likely that CA-MRSA have emerged from a more diverse collection of methicillin susceptible *S.aureus* populations than have HA-MRSA, and that some of these lineages have high levels of virulence related to production of bacterial superantigens and faster multiplication. Whilst CA-MRSA may still be uncommon in many locations worldwide, the pattern of rapid emergence in certain regions, and global spread of CA-MRSA clones, is cause for concern.

References

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