

Short Report

Potentially pathogenic spotted fever group rickettsiae present in Western Australia

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Rickettsiae are obligate intracellular bacteria that are maintained and propagated in a vector-vertebrate host life cycle. Although humans are usually accidental hosts, some rickettsial species are capable of causing zoonotic disease of varying severity. Typically, these diseases are characterised by influenza-like clinical signs, an eschar and rash; however, they can manifest with a wide range of often non-specific clinical signs and the eschar and rash that aid in diagnosis might not always be present. The rickettsioses Queensland tick typhus and Flinders Island spotted fever occur in the eastern states and circumstantial evidence suggests that similar rickettsial infections occur in Western Australia but that they go undiagnosed because of lack of awareness. Although rickettsioses are often mild and self-limiting they might account for discomfort and loss of productivity that could be easily treated with a relatively inexpensive antibiotic.¹

A study was performed using ectoparasites (ticks and fleas) that were collected opportunistically off people who were working, living or participating in activities in rural areas and from native and feral animals. Rickettsiae were detected using polymerase chain reaction and identified by sequencing of polymerase chain reaction products.^{2,3}

Two novel species of spotted fever group rickettsiae have so far been identified. One of these, *Rickettsia gravesii* sp. nov., was found to be widespread in the south-west of the state and on Barrow Island in the Pilbara region. It was detected in several different tick species, including *Amblyomma triguttatum* (the 'ornate kangaroo tick'), which feeds voraciously on people. The distribution of *R. gravesii* established thus far coincides with that of *A. triguttatum*.⁴ This finding emphasises the

potential importance of *A. triguttatum* in the transmission cycle of *R. gravesii*. The other novel *Rickettsia* species, Candidatus '*Rickettsia antechini*', was only detected in Dwellingup in the state's south-west, and its immediate surrounds; this is also the only location in Western Australia where its potential vector, *Ixodes antechini* has been reported (Owen 2003, unpubl. data). *I. antechini* is a non-anthropophilic tick species so *R. antechini* is less likely to be of zoonotic importance.

These results, together with previous molecular and serological studies, demonstrate that spotted fever group rickettsiae are present in Western Australia; however, although suspected cases have been diagnosed, no human cases have been confirmed to date.^{5,6} It is important therefore that physicians consider rickettsioses as a differential diagnosis for non-specific illness, especially in the south-west of the state and in patients who live, work or undertake recreational activities in rural areas where they are more at risk of tick bites.

Future work will involve determining the pathogenic potential of the isolates and further defining their distribution, together with that of their potential vectors across the state. This information can then be used to identify the areas of highest risk for people and to prioritise the implementation of prevention strategies.

References

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