

Rickettsial Seroprevalence In People In Close-contact With Reptiles And Their Ectoparasites

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Title: Rickettsial seroprevalence in people in close-contact with reptiles and their ectoparasites.

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Abstract:

Aim: To determine the seroprevalence and risk factors associated with Rickettsial infections in people in close contact with reptiles, their ectoparasites and their environment in Australia.

Research on vector-borne diseases transmitted by reptile ectoparasites is sparse and focusses primarily on ticks. Haematophagic and lymphophagic mites have the potential to transmit the flora that they carry to the hosts upon which they feed. The introduced snake mite *Ophionyssus natricis* has spread across the globe and into Australia along with the international reptile trade and is commonly found on pet and now wild reptiles. *Rickettsiae* belonging to the Spotted Fever group have been found in reptile ticks in Australia, and in Brazil reptile mites have been implicated as carriers. Mites hosted by rodents have been shown to transmit *Orientia* sp responsible for Scrub Typhus in humans. Mites hosted by reptiles may also have the potential to carry and transmit zoonotic bacteria, such as orientia and rickettsia, to their handlers and carers in Australia but this has not yet been explored.

Method:

A cross-sectional study of 171 people exposed to reptiles regularly at work, at home or while undertaking hobbies, was designed to assess the seroprevalence of the spotted fever, typhus and scrub typhus groups of Rickettsiae, using immunofluorescent antibody assays. Participants recruited self-identified as being exposed regularly to reptiles in Australia. They were asked to complete a questionnaire exploring risk factors for reptile-associated zoonotic bacterial infections, and then to donate a blood sample for serological analysis.

Results: 71% of participants tested were seropositive for Rickettsial antibodies.

Spotted fever group positive 19.9% 34/171

Spotted fever and typhus group cross-reaction 48.5% 83/171

Positive for typhus group 2.9% 5/171

Cross-reactions to spotted fever, typhus and scrub typhus groups 0.58% 1/171

Negative 29% 49/171

These results suggest a high level of exposure to spotted-fever group rickettsia which are commonly tick-borne. Detailed analysis of these findings as related to significant titres will be presented, along with recognised risk factors drawn from the questionnaire results.