Scrub Typhus in Litchfield Park
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Between August 1990 and November 1991, there were five confirmed cases of scrub typhus (*Rickettsia tsutsugamushi*) acquired in Litchfield Park. A further case from Litchfield Park, acquired in October 1993, was diagnosed in a Western Australian tourist (Dr Liam O’Connor, Perth). The case described above from June 1996 is the seventh confirmed case. Until these cases and a case from the Kimberley in July 1993, it was generally considered that scrub typhus in Australia did not extend west of north east Queensland. A mammal trapping survey in areas of Litchfield Park visited by the first two cases showed a high prevalence of the vector mite *Leptotrombidium deliense* infecting three native rat species. Previously this mite had not been found in the Northern Territory. The geographic distribution of scrub typhus is usually patchy; in north Queensland most of the circumscribed foci (“mite islands”) have been humid rainforest areas with annual rainfall exceeding 1500 mm. It is possible that *R. tsutsugamushi* and its vector mite, *L. deliense* have been infesting native mammals in the Litchfield rainforest for even millions of years. The area was opened to the public as Litchfield National Park in 1986. There may be other circumscribed foci of vectors, rodents and rickettsiae in discrete rainforest habitats of northern Australia where humans have so far rarely visited.

Scrub typhus virulence varies between strains of *R. tsutsugamushi*. Two of the cases from Litchfield Park have been critically ill, suggesting a virulent organism. All cases have had a primary eschar (skin ulcer, often with central black crust), corresponding to the site of mite attachment. The mites are under 0.4 mm in length, so are not usually seen. The eschars (4-8 mm) have been on genitals, buttocks or lower abdomen. Incubation period has been 7-14 days. Scrub typhus is an acute febrile illness with headache, profuse sweating, lethargy and sometimes myalgia, conjunctival injection, lymphadenopathy, splenomegaly and a delayed maculopapular rash (usually truncal). Cough and chest x-ray infiltrates are common. White cell count may be normal, but thrombocytopenia and abnormal liver function tests are common. Diagnosis is made by paired serology showing a rise in specific antibodies to *R. tsutsugamushi*. Doxycycline is the treatment of choice. Mortality is higher in older patients, those with underlying chronic illnesses and with delays in treatment. Without treatment mortality can be up to 60% with virulent strains.

Our investigations suggest more than one location within Litchfield Park as infecting sites for scrub typhus. Sitting or lying on the ground without a groundsheet or mat in grassy areas near creeks, especially away from the established day use areas at public amenities locations is a likely scenario for inoculation. DEET-containing insect repellents will help reduce contact with the mite vectors and permethrin impregnated clothing is recommended for those working in areas of scrub typhus transmission.

References

Late Addition
A further case of scrub typhus occurred in late August 1996. The patient was a 38 year old male working in Litchfield Park and he died in intensive care at Royal Darwin Hospital.