Journal of the Formosan Medical Association (2020) 119, 662–663

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Australian case of scrub typhus contracted while hiking in northern Taiwan

Scrub typhus is a vector-borne rickettsial disease caused by *Orientia tsutsugamushi* and transmitted by trombiculid (*Leptotrombidium*) chigger mites. Chiggers are found on low-lying vegetation, where they incidentally infest humans. Except for atypical cases, a pathognomonic eschar is the first sign to develop at the site of inoculation but is painless, nonpruritic, and likely to go unnoticed. After 6–10 days of incubation, scrub typhus presents with a fever with or without chills, headache, myalgia, lymphadenopathy, rash, and eschar.[1] With the exception of fever, these

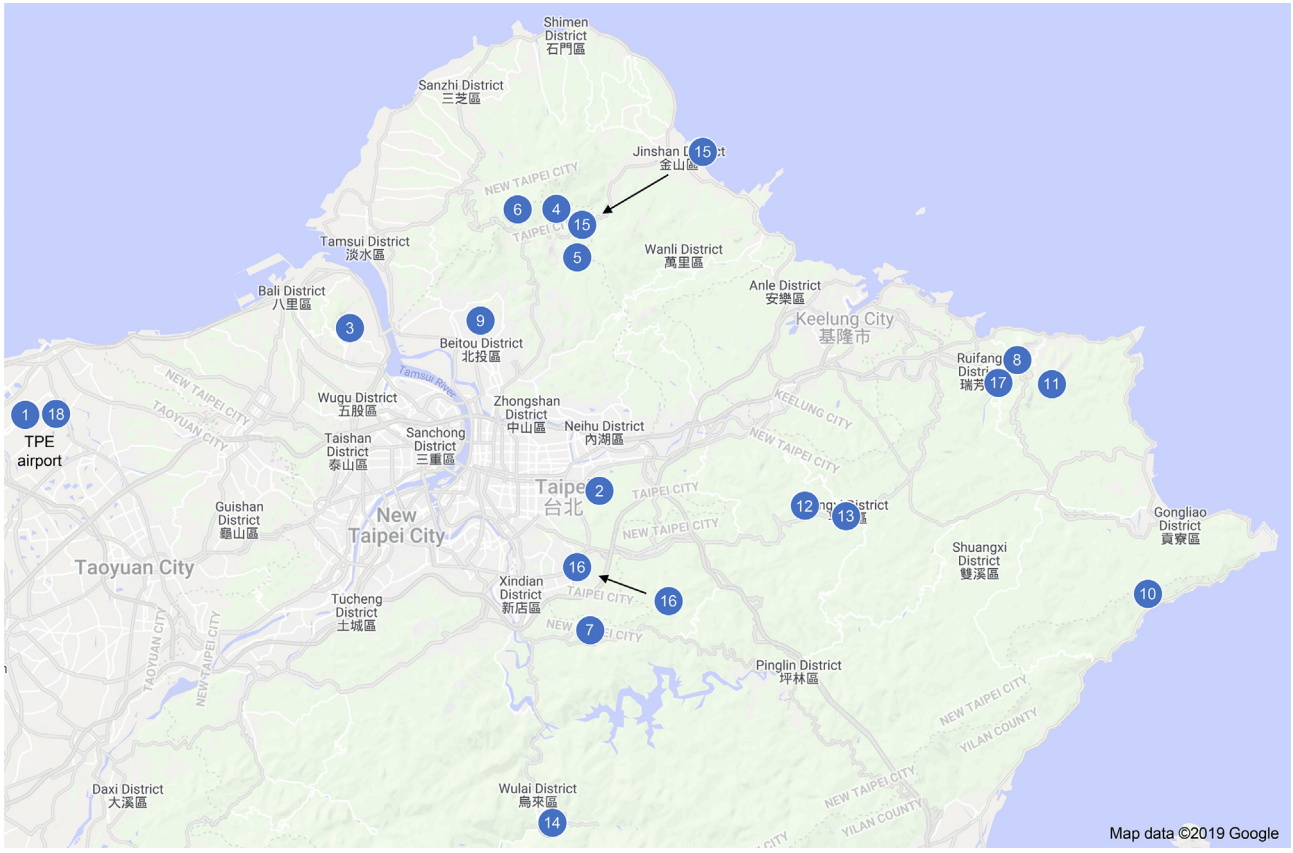

Figure 1 Map of travel history in Taiwan (day number indicated). TPE = Taoyuan International Airport. Black arrows indicate same-day travel. The base map is from Google Maps (www.google.com.tw/maps).

https://doi.org/10.1016/j.jfma.2019.08.036

clinical features have been reported at different rates throughout Taiwan.[2]

A 66-year-old Caucasian male initially presented to general practitioners in Sydney, Australia one week after returning from a hiking trip in northern Taiwan after noticing an insect bite on his left ankle and a rash on his upper arms, which spread to his entire body. The patient was afebrile and sent home provisionally without treatment. The next day, he developed a fever. The second day of fever, he returned to the same medical center and was diagnosed with measles and sent home with antipyretics, which temporarily alleviated the fever. On fever day four, he presented to the Royal Prince Alfred Hospital emergency department with a high-grade fever (39.2 °C), systemic maculopapular rash, mild headache, an eschar on his left medial ankle, and elevated C-reactive protein (114.5 mg/L). His chest X-ray revealed very mild bilateral lower lobe peribronchial thickening. He was diagnosed with an undifferentiated rickettsiosis, admitted as a patient, and treated with doxycycline (200 mg for one dose followed by 100 mg twice daily) and paracetamol (1 g four times a day). Defervescence was achieved within 48 h, and the patient was discharged after 72 h with oral doxycycline (100 mg twice daily to complete seven days).

Upon hospitalization, acute-phase serum was sent to the Australian Rickettsial Reference Laboratory (www.rickettsialab.org.au) for serological analysis using indirect immunofluorescence assay (IFA) against a panel of rickettsial antigens. IFA endpoint titers were 1:4096 against *O. tsutsugamushi* serotype Kato, 1:256 against Karp, and 1:128 against Gilliam. Convalescent serum obtained 17 days after the acute-phase serum revealed a greater than four-fold increase in titer against Kato (≥1:16,384) and Karp (1:8192) and 1:256 against Gilliam with no cross-reactivity to *O. chuto* or other rickettsiae detected.

This was a classic case of scrub typhus contracted in northern Taiwan that presented to physicians in Sydney, Australia where scrub typhus is non-endemic (Fig. 1). In Australia, scrub typhus is endemic in northern tropical regions, including the Kimberly region of Western Australia, the Top-End of the Northern Territory, and Far North Queensland.

Despite the initial delay in diagnosis, the patient received appropriate treatment within four days of fever onset. This compares to a mean of 5.7—6.9 days of fever before admission in southern Taiwan and 3.7 days in Kinmen, a hyperendemic focus.[3—5] He responded rapidly to treatment with doxycycline, achieving defervescence within 48 h and complete resolution of symptoms within two weeks of fever onset.

Scrub typhus is prevented by avoiding chigger bites with protective clothing and DEET-based repellents.[1]

Conflicts of interest

The authors have no conflicts of interest to declare.

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29 July 2019