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Epidemiology and clinical features of scrub typhus in Hainan, China

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Objective: To identify the epidemiology and clinical features of scrub typhus in Hainan Province, China.

Methods: A total of 258 patients with acute febrile illness were recruited from four hospitals in Hainan between 1st June 2018 and 31st August 2019. *Orientia tsutsugamushi*-specific IgM/IgG and DNA were detected by gold-immuno-chromatographic assay and PCR on the patients' serum samples. The clinical and epidemiological characteristics of the laboratory-confirmed cases were recorded using a predesigned database.

Results: The positive rates of IgM and IgG were 22.5% (58/258) and 39.9% (103/258), respectively, and the positive rate of PCR was 19.37% (50/258). There were 55 males and 48 females among the 103 IgG-positive patients. Patients of all age groups were affected (10 to 86 years); 65.0% of the adults aged 41 to 70 years (67/103); 64.1% of the patients were farmers (66/103). The patients resided in 12 counties and cities of Hainan, and the highest number of cases being reported among residents in Qiongzong County and Haikou City (54/103, 52.4%). Seasonal variations in the incidence rate of scrub typhus was observed, with the peak incidence (53/103, 51.5%) occurring in the summer (June to August). The common presenting symptoms were fever (103/103, 100.0%), eschar or skin ulcer (38/103, 36.9%), and chills and rigors (30/103, 29.1%). The major complications were liver dysfunction (9/103, 8.7%). Four genotypes of *Orientia tsutsugamushi* were identified among these patients, including Karp, Kato, Gilliam and Ta763. The predominant genotype was Karp (33/51, 64.7%).

Conclusions: Scrub typhus is endemic in Hainan, which predominantly affects residents with prolonged outdoor activities such as farming.

Keywords: Scrub typhus; *Orientia tsutsugamushi*; Hainan; Epidemiology

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