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LETTER TO THE EDITOR

Co-infection with *Orientia tsutsugamushi* and *Mycoplasma pneumoniae* in a traveler

Dear Editor,

We read with great interest the article in the *Journal of Microbiology, Immunology and Infection* by Wei et al, reporting that a case of scrub typhus co-infection with leptospirosis, complicated by acute respiratory failure and septic shock, where the patient was successfully treated with combination therapy.[1] However, the co-infection of scrub typhus and leptospirosis may be overestimated in endemic areas, and the incidence of co-infection was only about 6% of the case series study in Southeast Asia.[2] Scrub typhus is a zoonotic disease caused by *Orientia tsutsugamushi*, and co-infection with *Mycoplasma pneumoniae* is extremely rare. Here, we report a traveler who presented with an eschar of the left thigh, concurrent with cough, fever, and headache. She was confirmed as having a co-infection of *O. tsutsugamushi* and *M. pneumoniae* by real-time polymerase chain reaction (PCR) and serologic tests.

The patient was a 21-year-old female, who traveled to Orchid Island (Lanyu) 10 days before admission to hospital. She complained of fever, chills, cough, arthralgia, and headache. The physical examination revealed an eschar with surrounding erythematous color over the left thigh (Fig. 1A). Her body temperature was 39°C with relative bradycardia. She received a chest X-ray examination, which shows mild infiltration of the right lower lobe (Fig. 1B). Initially, she was prescribed oral doxycycline 100 mg twice a day for 3 days, but the fever persisted. The results of laboratory data were as follows: white blood cell count 2760 cells/mL, platelets 60,000 cells/mL, and hemoglobin 12.3 g/dL. The biochemistry findings revealed glutamic oxaloacetic transaminase (GOT) 126 U/L,

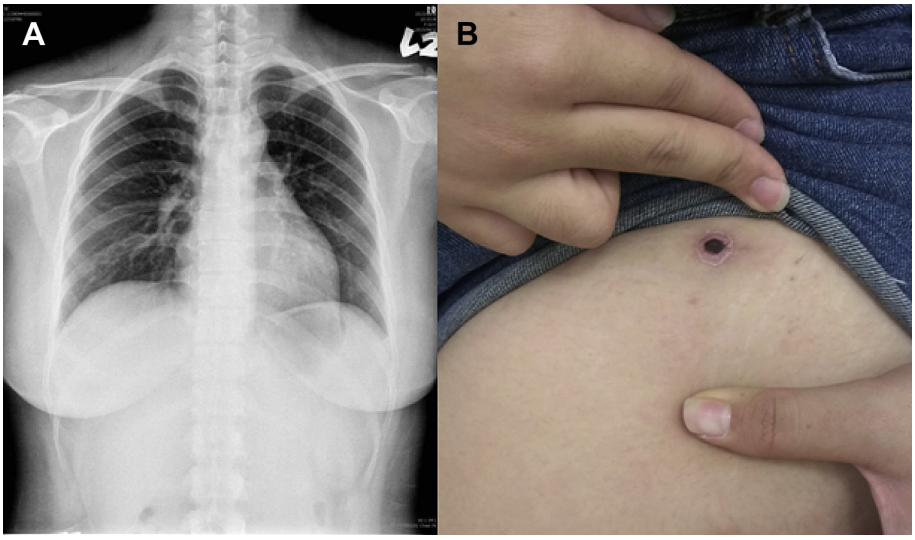

Figure 1. (A) Chest X-ray revealed mild infiltration of the right lower lobe of the lung. (B) An eschar with surrounding erythema over the left thigh.

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glutamic pyruvic transaminase (GPT) 85 U/L, total bilirubin 2.24 mg/dL, and alkaline phosphate 156 U/L. The serologic test of serum showed that the mycoplasma IgG was 1:160 at admission, which became elevated to 1:640 at convalescent stage, and the real-time PCR of *O. tsutsugamushi* showed a positive reaction according to the Taiwan Center of Disease Control (CDC). Therefore, she was confirmed to have a co-infection of scrub typhus and *Mycoplasma* pneumonia. She received combination antibiotic therapy with 100 mg doxycycline (orally) twice a day and 750 mg levofloxacin (intravenously) once a day. Defervescence of body temperature and the clinical symptoms improved after combination therapy for 3 days. Then, she received both oral antibiotics for a 7-day complete treatment and recovered well.

Scrub typhus, Dengue fever, and leptospirosis have similar clinical manifestations, and which are endemic infectious diseases in tropical and subtropical areas.[1–4] Scrub typhus co-infected with other pathogens, such as *Arsenophonus nasoniae*, *Leptospira* spp., and dengue fever have been sporadically reported in the literature.[1–4] The two combined regimens of penicillin, levofloxacin, or doxycycline for co-infection have been suggested by others.[1–4] Su et al reported 261 patients with scrub typhus in Kinmen, Taiwan.[5] Common clinical manifestations include fever (97%), eschar (93%), and relative bradycardia (67%), but lymphadenopathy (18%) and skin rash (8%) are infrequent.[5] Elevated C-reactive protein levels, abnormal liver functions, and thrombocytopenia are frequent findings in laboratory tests.[5] Younger patients have better outcomes than the elderly.

In conclusion, eschar is a particular characteristic of scrub typhus, but co-infection with other pathogens may occur. Clinicians should be aware of the possibility of co-infection in endemic areas. Combination antibiotic therapy may be an alternative choice for established treatment-refractory patients.

Conflicts of interest

The authors declare that they have no conflicts of interest related to the content in this letter.

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