**Scrub Typhus Mimicking Deep Neck Infection**

Chen-Chi Tsai¹, Dung-Hung Chiang² and Ruay-Wang Duh²

---

**Abstract**

Scrub typhus is not uncommon in Asia and it is life threatening without correct treatment. The presentation of scrub typhus mimicking deep neck infection is rarely encountered by clinical physicians and delays the determination of the correct diagnosis. Here, we report a case of scrub typhus presenting symptoms like deep neck infection. The patient was admitted due to fever and a tender swelling on left side of his neck, which progressed to respiratory failure and acute renal failure under empirical use of ceftriaxone and metronidazole. After repetitive physical examinations, an eschar was found on his scalp. Finally he was successfully treated with tetracycline antibiotics.

**Key words:** scrub typhus, deep neck infection, eschar

(DOI: 10.2169/internalmedicine.47.1441)

---

**Introduction**

Scrub typhus is an acute febrile disease caused by *Orientia tsutsugamushi*. This organism is transmitted by infected trombiculid mites, especially *Leptotrombidium deliense* in Taiwan (1, 2). This infection is endemic across much of Asia and the Western Pacific region (3). When humans are bitten by infectious mites, they commonly present with fever, skin rash, lymphadenopathy, headache, back pain and chills. If the diagnosis is delayed, the scrub typhus can cause acute renal failure, myocarditis, septic shock, meningencephalitis, and acute respiratory distress syndrome and it may lead to death (4). Because symptoms for scrub typhus are not specific, an eschar at the wound site is the single most useful diagnostic clue for early diagnosis. Here, we report a case of scrub typhus who presented with fever and a tender swelling on left side of his neck, mimicking deep neck infection and whose eschar was on his scalp and hidden in his hair.

---

**Case Report**

A 72-year-old man with good past health was admitted with a 7-day history of fever, chills and a tender swelling extending from left retroauricular to submandibular area. The patient was a teacher and had been retired for 10 years. He had not taken any medicine or received any invasive procedures before. He had been to Chimen for a memorial commemoration at a grave two weeks prior to admission.

His body temperature was 38.5°C, blood pressure 100/60 mmHg, respiratory rate 22 cycles/min and heart rate 110 beats/min. A tender swelling extending from his left retroauricular to submandibular area was noted with palpable lymph nodes. The swelling was red and hot without a clear margin. There were no rashes or other skin manifestations. Auscultation of the chest revealed bilateral diffuse fine crackles during his inspiration. His hemogram revealed a leukocyte count of 5.9×10³/μL with 78.6% neutrophils, a hemoglobin level of 14.1 g/dL, and a platelet count of 85×10³/μL. Prothrombin and activated partial thromboplastin time were measured at 13.4 and 39.7 seconds (reference range, 12.2 and 24.8 seconds). Electrolyte levels were within normal limits. Serum aspartate aminotransferase was 151 IU/L, alanine aminotransferase 135 IU/L, urea nitrogen 11 mg/L, creatine 1.1 mg/dL and C-reactive protein 15.23 mg/dL. Computed tomography demonstrated a soft tissue swelling over his left neck (Fig. 1a). A chest film showed increased interstitial infiltration over bilateral lung fields (Fig. 1b).

The patient was treated by parenteral ceftriaxone of 2 g every 12 hours and metronidazole of 500 mg every 6 hours but his neck swelling became larger with persistent fever.

---

¹Section of Infectious Disease, Department of Medicine, Buddhist Dalin Tzu Chi General Hospital and Tzu Chi University, Chiayi, Taiwan and ²Section of Infectious Disease, Department of Medicine, Taipei Veterans General Hospital and National Yang-Ming University, Taipei, Taiwan  
Received for publication June 22, 2008; Accepted for publication August 11, 2008  
Correspondence to Dr. Chen-Chi Tsai, antibody_1@msn.com
Dyspnea occurred on the fourth day of hospitalization and arterial blood gas showed severe hypoxia. His leukocyte count increased to 14.9×10^3/μL with 90% neutrophils and serum creatine became 3.5 mg/dL. A chest film showed progressively increased infiltration with bilateral pleural effusions (Fig. 1c). He was intubated and transferred to the intensive care unit. An eschar on his scalp was found after repetitive physical examinations (Fig. 2). Antibiotics were shifted to parenteral ceftazidime of 1 g every 8 hours and minocycline of 100 mg every 12 hours on the 5th day of hospitalization. Fever subsided on the 8th day and the neck swelling disappeared on the 10th day. His endotracheal tube was removed on the 13th day of hospitalization. Antibody titer against the Karp, Kato, and Gilliam strains of Orientia tsutsugamushi showed 1:16 in the serum sample collected on the 5th day of hospitalization and increased to 1:128 on the 13th day. After three weeks of therapy, his symptoms resolved and he was discharged without any sequela.

**Discussion**

Scrub typhus is commonly found in Asian countries and West to Pakistan and Afghanistan, East to Japan, and South to Australia (1, 2). It was first described in Taiwan by Hatori (5) and had been well documented by Japanese workers before 1940 (6). In Taiwan, the cases were about 200-500 per year according to Centers for Disease Control of Republic of China, especially in Hualien County, Taitung County, Chiimen County, Nantou County and Penghu County. Although this patient went to Chimen for a short visit, he was infected by scrub typhus and experienced a life-threatening course of disease.

The scrub typhus is a systemic disease that causes a generalized vasculitis in small blood vessels. The variable clinical manifestations may be correlated with the variant pa-
thologic changes ranging from focal to disseminated multiorgan involvement. The definitive diagnosis of scrub typhus infection requires laboratory confirmation (7). Unfortunately, although serologic methods are widely available, they seldom yield diagnostic results immediately. The present patient presenting with fever and a tender swelling of his left neck was misdiagnosed to have deep neck infection first. Although the tender swelling of the neck was a kind of neck lymphadenitis caused by scrub typhus, severe inflamed lymph nodes caused swelling of peripheral soft tissue which made it difficult to differentiate lymphadenitis from soft tissue infection. Incorrect antibiotics made the course of disease progress to acute renal failure and acute respiratory failure.

Fortunately, the hidden eschar was found on his scalp upon repetitive physical examinations which saved this patient’s life. Although some rapid methods such as molecular methods are available (8, 9), as the symptoms mimicked deep neck infection the physicians did not place scrub typhus upon repetitive physical examinations which saved this patient may confuse clinical workers and result in a disastrous prognosis. Early diagnosis and treatment are the most important for scrub typhus to prevent serious complications. In conclusion, a rare case of scrub typhus mimicking deep neck infection is presented. An eschar is the only clue to make the correct diagnosis for this kind of patient presenting atypical symptoms. Because the eschar is always located on the proximal part of lymphatic drainage which passes through the retroauricular area from the scalp, the scalp is an important area for searching eschars when the patient presents neck swelling and fever. If not treated appropriately for picking deep neck infection is presented. An eschar is the most possible area for the eschar to hide. Careful and repetitive physical examinations are especially important for an early diagnosis of this kind of scrub typhus.

References