Subacute painful thyroiditis accompanied by scrub typhus infection

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To the Editor,

Subacute painful thyroiditis occurs in association with viral infections [1, 2]. It has been proposed that many viruses are involved in its pathogenesis, and they include coxsackie, influenza, adenoviruses, and echoviruses. So far, however, no studies have reported the relationship between subacute painful thyroiditis and scrub typhus infection.

We experienced two cases of subacute painful thyroiditis accompanied by scrub typhus infection. The first case is a 69-year-old woman who was admitted to the Department of Gastroenterology in Korea, in autumn. The patient had a 5-day history of myalgia, fever, sore throat, anterior neck pain, and diarrhea. The patient had a hobby of gardening. On history taking, eschar had peeled off several days ago. It is well known that Korea is an endemic area of scrub typhus. Considering her hobby, we checked anti-tsutsugamushi antibody titer by immunofixation assay (IFA). Total amount of antibody (IgM or IgG) to Orientia tsutsugamushi was in the ratio of 1:320. We also evaluated her neck pain. Laboratory findings showed free T4 69.2 pmol/L (normal range: 11.5–22.7), TSH 0.01 uU/mL (normal range: 0.35–5.50), and normal thyroid auto-antibodies (thyroid peroxidase, thyroglobulin, and TSH receptor). There were no antibodies against other viral infections. Neck ultrasound showed a multifocal hypoechoic area in the thyroid gland, accompanied by the decreased vascularity. Thyroid scan showed no increased uptake in both lobes. These findings are suggestive of scrub typhus infection and subacute thyroiditis. She was given doxycycline, β-blockers, and nonsteroidal anti-inflammatory drugs (NSAIDs). After 2–3 weeks, she achieved an improvement in neck pain and generalized illness, and had a decrease in free T4 level to 27.6 pmol/L (Table 1).

The second case is a 57-year-old woman who was admitted in autumn to the Department of Endocrinology in Korea with a chief complaint of a 7-day history of myalgia, fever, sore throat, neck pain, palpitation and decreased oral intake. She had tenderness in the both thyroid lobes, but had no eschar. Considering not only the fact that Korea is an endemic area but also the prevalence of scrub typhus is relatively higher during autumn, we measured anti-tsutsugamushi Ab titer by IFA, and it was 1:640. To evaluate the neck pain and palpitation, we examined the thyroid status. Laboratory findings showed free T4 122.5 pmol/L (normal range: 11.5–22.7), TSH 0.01 uU/mL (normal range: 0.35–5.50), and normal thyroid auto-antibodies. Neck ultrasound showed a mild inflammation of the thyroid, accompanied by the normal vascularity. Thyroid scan showed no increased uptake in both lobes. She was diagnosed with subacute thyroiditis accompanied by scrub typhus infection. She was given doxycycline, β-blockers, NSAIDs, and steroids (10 mg). After 2 weeks, she achieved an improvement in the symptoms, and had a decrease in free T4 level to 80.6 pmol/L (Table 1). On continuing the treatment with doxycycline for several days, anti-tsutsugamushi Ab titer fell to 1:160.

Subacute painful thyroiditis is a transient inflammatory disease, and it is characterized by pain and tenderness of the thyroid gland. To our knowledge, our patients are the...
first cases of subacute thyroiditis accompanied by scrub typhus infection. Scrub typhus is widely endemic in the eastern and southern Asia, and islands of the western Pacific. It is manifested as flu-like symptoms such as fever, headache, myalgia; and other vague symptoms characterized by skin lesion, i.e., eschar. Eschar is a black crust that is formed over the initial sore from the mite bite, and it is a useful diagnostic clue. A diagnosis of scrub typhus is roughly made based on clinical manifestations such as eschar, skin rash, fever, and some serologic markers. However, little is known about the pathogenesis of scrub typhus infection. It has been proposed that an immunopathologic process might be a possible pathophysiology. In other words, its pathophysiology is related to the direct-blood borne spread [3], the immune responses induced by *O. tsutsugamushi* [4], and the action of diverse mediators such as macrophage colony-stimulating factor, interferon-γ, granulocyte colony-stimulating factor, and tumor necrosis factor-α [5]. These mediators are also involved in diverse inflammatory process leading to the occurrence of subacute thyroiditis [6–9]. In this respect, *O. tsutsugamushi* can also be involved in the pathogenesis of subacute thyroiditis. However, little is known about the exact mechanisms and the mediators that are involved in its pathogenesis. The relationship between the two disease entities could be explained based on their coincidental detection of them and the direct involvement of *O. tsutsugamushi* in the pathogenesis of subacute thyroiditis. Unfortunately, we failed to perform a thyroid biopsy to demonstrate that *O. tsutsugamushi* is a definitive cause of subacute thyroiditis. However, we found that our patients achieved a recovery of the symptoms of subacute thyroiditis synchronously when they suffered from scrub typhus infection.

Our cases indicated that scrub typhus could be a cause of subacute thyroiditis. This suggests that clinicians should consider the possibility of scrub typhus being involved in the pathogenesis of subacute painful thyroiditis, in patients from an endemic area of scrub typhus. In addition, further studies are warranted to examine whether scrub typhus infections would also affect the thyroid gland.

**Conflict of interest** Nothing to declare.
References


