

A Case of Co-Infection with *Orientia Tsutsugamushi*, Acute Hepatitis B, and *Mycoplasma Pneumoniae* in a Child with Fever and Systemic Rash

Eun Lee^{1*} and Nae-Yun Heo²

¹Department of Pediatrics, Chonnam National University Hospital, Gwangju, Korea

²Department of Internal Medicine, Haeundae Paik Hospital, Inje University College of Medicine, Busan, Korea

Abstract

Background: Systemic rash combined with prolonged fever requires a differential diagnosis of possible diseases including infectious diseases. Although scrub typhus can cause co-infection with leptospirosis, co-infection with *Orientia tsutsugamushi* and *Mycoplasma pneumoniae* is thought to be rare, with only one case reported in a young adult. However, to date, there have been no reports of simultaneous co-infection with three pathogens, including *Orientia tsutsugamushi*, hepatitis B, and *Mycoplasma pneumoniae*.

Case: We report a child simultaneously co-infected with *Orientia tsutsugamushi*, acute hepatitis B, and *Mycoplasma pneumoniae*, which made her prolonged fever and systemic rash with mild itching. On day 2 of hospitalization, an eschar on the left inguinal area became prominent and antibodies against *Orientia tsutsugamushi* showed levels $\geq 1:1520$. Owing to an elevation in the levels of liver enzymes at admission, IgM for hepatitis B surface antigen was positive and IgG for hepatitis B surface antigen was negative. Following two days of tetracycline administration, the fever subsided and the systemic area skin rashes gradually improved.

Conclusion: Proper evaluation based on the presenting symptoms during the illness is important to ensure that the differential diagnosis is not overlooked.

Keywords: *Orientia tsutsugamushi*; *Mycoplasma pneumoniae*; Hepatitis

Introduction

Systemic rash combined with prolonged fever requires a differential diagnosis of possible diseases including infectious diseases. When combined with multiple cervical lymphadenopathies, evaluation of the causes of generalized infection is inevitable [1]. To prevent overlooking a combined diagnosis, the possibility of co-infection should be examined when suspicious symptoms develop, even during the illness.

Although scrub typhus can cause co-infection with leptospirosis in approximately 6% [2], co-infection with *Orientia tsutsugamushi* and *Mycoplasma pneumoniae* is thought to be rare, with only one case reported in a young adult [3]. However, to date, there have been no reports of simultaneous co-infection with three pathogens, including *Orientia tsutsugamushi*, hepatitis B, and *Mycoplasma pneumoniae*.

Here, we report a child simultaneously co-infected with *Orientia tsutsugamushi*, acute hepatitis B, and *Mycoplasma pneumoniae*, which made her prolonged fever and systemic rash with mild itching. To the best of our knowledge, this is the first report of co-infection with three pathogens, including *Orientia tsutsugamushi*, acute hepatitis B, and *Mycoplasma pneumoniae*, in a child manifesting prolonged fever and systemic rash.

Case Report

A 12-year-old, previously healthy girl presented with a 7-day fever. The child complained of mild nausea, but did not experience vomiting. In addition, she did not exhibit any respiratory symptoms such as a cough and sputum during the illness. Upon physical examination, she showed an acutely ill-looking appearance. There were erythematous nodular rashes with mild itching all over the child's body, including the face and trunk. Multiple cervical lymph nodes sized approximately 1.0 cm to 1.5 cm was palpable on both the neck and supraclavicular areas. However, there was no hepatomegaly or splenomegaly. She was vaccinated as scheduled. She lived with her parents and one elder brother. Her family belonged to the middle class. The child had no

history of travel or animal contact. She did not take any medicines except antipyretics before admission (Figure 1).

At admission, the child's body temperature was 40.0°C, blood pressure was 100/60 mmHg, and respiratory rate was 20/min. To differentiate the possible diseases, such as viral infection, bacterial infection or immune-related diseases, we performed chest CT including neck and abdominal CT. There were no abnormal findings on her chest computed tomography (CT). The neck CT revealed multiple ovoid-shaped lymph nodes in both the cervical and supraclavicular areas (Figure 1). On

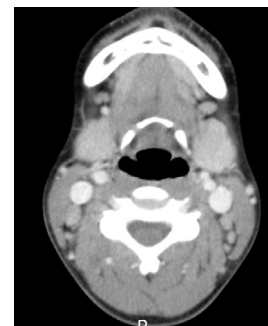


Figure 1: On neck computed tomography, multiple lymph nodes less than 2 cm-size in both cervical chain and supraclavicular area were observed.

***Corresponding author:** Eun Lee, MD, PhD, Department of Pediatrics, Chonnam National University Hospital, 42, Jebong-ro, Dong-gu, Gwangju, 61469, Korea, Tel.: 82-62-222-6649; FAX: 82-62-222-6103; E-mail: unelee@daum.net

Received August 10, 2017; **Accepted** August 23, 2017; **Published** August 28, 2017

Citation: Lee E, Heo N (2017) A Case of Co-Infection with *Orientia Tsutsugamushi*, Acute Hepatitis B, and *Mycoplasma Pneumoniae* in a Child with Fever and Systemic Rash. J Clin Case Rep 7: 1004. doi: [10.4172/2165-7920.10001004](https://doi.org/10.4172/2165-7920.10001004)

Copyright: © 2017 Lee E, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

and systemic area skin rash as having a co-infection with hepatitis B, *Mycoplasma pneumoniae*, and *Orientia tsutsugamushi*. Physicians should be aware of the possibility of coinfection in patients presenting nonspecific symptoms, such as fever and rash. Proper evaluation based on the presenting symptoms during the illness is important to ensure that the differential diagnosis is not overlooked.

References

1. Leung AK, Robson WL (2004) Childhood cervical lymphadenopathy. J Pediatr Health Care 18: 3-7.
2. Wei YF, Chiu CT, Lai YF, Lai CH, Lin HH (2012) Successful treatment of septic shock and respiratory failure due to leptospirosis and scrub typhus coinfection with penicillin, levofloxacin, and activated protein c. J Microbiol Immunol Infect 45: 251-254.
3. Lee WS, Ou TY, Chen FL, Hsu CW, Jean SS (2015) Co-infection with *Orientia tsutsugamushi* and *Mycoplasma pneumoniae* in a traveler. J Microbiol Immunol Infect 48: 121-122.
4. Spuesens EB, Fraaij PL, Visser EG, Hoogenboezem T, Hop WC, et al. (2013) Carriage of mycoplasma pneumoniae in the upper respiratory tract of symptomatic and asymptomatic children: An observational study. PLoS Med 10: e1001444.
5. Waites KB, Talkington DF (2004) *Mycoplasma pneumoniae* and its role as a human pathogen. Clin Microbiol Rev 17: 697-728.
6. Razin S, Yogev D, Naot Y (1998) Molecular biology and pathogenicity of mycoplasmas. Microbiol Mol Biol Rev 62: 1094-1156.