

Human Anaplasmosis in Acute Febrile Patients during Scrub Typhus Season in Korea

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Dear Editor,

Scrub typhus is an infectious disease caused by *Orientia tsutsugamushi*, and has become one of the most prevalent human diseases in Korea; since 2004, the disease has spread widely in the southwestern provinces of the country and is becoming endemic [1]. Anaplasmosis is caused by the bacterium *Anaplasma phagocytophilum*, and leads to human granulocytic ehrlichiosis (HGE) (human granulocytic anaplasmosis). *A. phagocytophilum* has been detected in *Haemaphysalis longicornis*, *Ixodes nipponensis* and *I. persulcatus* ticks in Korea [2].

The clinical presentations of scrub typhus/anaplasmosis are similar; symptoms that typically develop within 1-2 weeks of infection include fever, headache and malaise. Evidence has been suggesting the presence of *A. phagocytophilum* infections in South Korea [3]. Although scrub typhus is very common, to date, there has been only one confirmed report of anaplasmosis in Korea [4].

Serum specimens from 100 patients (≥ 18 years old) with acute febrile disease were studied using indirect immunofluorescence assay against *O. tsutsugamushi* for scrub typhus and

real-time PCR for human anaplasmosis. The serum enrolled in this study was collected during the scrub typhus season in Korea from September 2011 to December 2012. The mean age of patients with febrile disease was 57.3 years. Forty-one acute febrile illness patients were positive for *O. tsutsugamushi* (41%), but none tested positive for *A. phagocytophilum*.

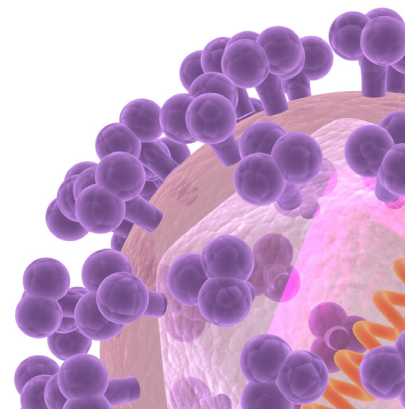
HGA was first identified in the United States in 1994 [5] and subsequently in countries in Europe and Asia. A high percentage of Korean water deer (63.6%) were found to host *A. phagocytophilum* [6]. In a previous study, 1.8% of serum samples from patients with acute fever were positive for *A. phagocytophilum* on immunofluorescence antibody test [7]. The number of anaplasmosis cases reported to the CDC has increased steadily since the disease became reportable, from 348 cases in 2000, to 1,761 cases in 2010. The incidence of anaplasmosis has also increased, from 1.4 cases per million persons in 2000 to 6.1 cases per million persons in 2010 [8]. Since the presence of human anaplasmosis has been confirmed in Korea, this information provides a basis for treating and monitoring febrile patients with a history of contact with ticks. As both scrub typhus and anaplasmosis are potentially serious

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illnesses, urgent medical attention is required on suspicion of infection.

In this study, we found acute febrile illness patients in Korea to have scrub typhus, with no evidence of anaplasmosis. Detailed studies are needed to isolate and identify *Anaplasma* spp. from humans, animals and vector ticks/mites in Korea from different regions to confirm their presence and capacity to cause disease.

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