

Detection of antibodies against *Anaplasma phagocytophilum* from patients with rickettsiosis-like symptoms

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In Japan, Japanese spotted fever (JSF) caused by *Rickettsia japonica* and Tsutsugamushi disease caused by *Orientia tsutsugamushi* are well known as tick- or mite-borne rickettsiosis. However, there are clinical cases with unknown fever similar to, but not, JSF. We suspect that possible causative agents may be unknown spotted fever group (SFG) rickettsiae, *Ehrlichia chaffeensis*, and *Anaplasma phagocytophilum*. *E. chaffeensis*, and *A. phagocytophilum* are obligatory intracellular bacterium, which infects primarily macrophage, monocyte and neutrophils, cause febrile illnesses Human monocytic ehrlichiosis (HME) and Human granulocytic anaplasmosis (HGA), respectively. These diseases were first described in 1990s in the United States. However, little is known about HME and HGA in Japan. In this study, we investigated the possibility of *E. chaffeensis*, and *A. phagocytophilum* infection in human patients with unknown fever with rickettsiosis-like symptoms.

In last year, we successfully detected *A. phagocytophilum* p44 multigene family encoding multiple 44-kDa outer membrane proteins from the blood samples at acute phase from 2 out of 18 patients with rickettsiosis-like symptoms in Kochi prefecture where JSF is endemic. In one of these blood samples, 16S rDNA of *R. japonica* was also detected, suggesting the dual infection. However, 16S rDNA of *O. tsutsugamushi* was not detected from the blood samples.

In this year, we analyzed antibodies against *A. phagocytophilum* and *R. japonica* in sera from these 2 patients. By indirect fluorescent antibody assay (IFA), IgM and/or IgG antibodies to *A. phagocytophilum* and/or *R. japonica* were detected in their convalescent sera. Western blot analysis confirmed that the IgM and/or IgG antibodies in the patient's sera reacted to P44 proteins of *A. phagocytophilum*.

These findings suggest that *A. phagocytophilum* human infection potentially exist in Japan, and HGA will become the public health significance.