GENETIC AND ANTIGENIC CHARACTERIZATION OF 2 RICKETTSIAL ISOLATES FROM FEBRILE PATIENTS IN THAILAND

Kityapan M, Rodkvamtook W, Youngrod S, Boonyod W, Gaywee J, and Sirisopana N

Division of Research, Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand

Abstract

Background : Rickettsioses are zoonotic diseases with worldwide distribution including Thailand. Existing of rickettise in Thailand was reported by SEATO Medical Research Laboratory (AFRIMS at present) in 1964. Using isolation technique, two rickettsial isolates were obtained from wild-trapped rats and ticks. Serological tool demonstrated the high reactivity with Rickettsia typhi and spotted fever group rickettsia, respectively. This spotted fever group rickettsial isolates was later called Rickettsia spp., TT118. Until March 1998, two more isolates were successfully obtained from murine typhus sero-positive patients attending the Royal Thai Army Hospital in Bangkok. Due to the cross reactivity problem among rickettsial species, we conducted genetic and antigenic characterization to definitely identify the specific species of these isolates.

Methods: Two rickettsial isolates, AFRIMS 01 and AFRIMS 02 were genetically characterized for rickettsial genus specific 17 kDa, citrate syntase (gltA) and spotted fever group species specific gene, rompA using PCR followed by sequence analysis. IFA technique was used to study their antigen characteristic.

Results : Genetic characterization of AFRIMS 01 and AFRIMS 02 isolates demonstrated that they were 100% identical in rickettsial genus specific genes, 17 kDa and gltA. Sequence analysis revealed that 17 kDa and gltA of these isolates were 99.7% and 99.4% identity with those of Rickettsia typhi, Willmington strain, respectively. Rickettsial spotted fever group species specific gene, ropmA was not found in these isolates. Thus, these human isolates were identified as typhus group rickettsia, R. typhi. Using IFA, antigenic characterization of AFRIMS 01 and AFRIMS 02 isolates was performed with standard R. typhi, Willmington strain. Two hundred and twenty-two sera from Thai febrile patients were tested. One hundred samples (45.04%) were positive and similar activity was observed among these three tested antigens.

Conclusions : Two human isolates were definitely identified as R. typhi, Thai strain. These strains will be useful to develop the diagnostic tool specific for Thailand.

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