

# Screening of Chikungunya virus infection among blood donors in Mandalay General Hospital in 2019: Do we really need it?

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Abstract :

Chikungunya virus (CHIKV) infection is an emerging mosquito-borne viral disease and circulating in Myanmar. Arboviral infection can also be transmitted through blood transfusion as a transfusion-transmitted infection. Safe blood is important for transfusion services and World Health Organization (WHO) also recommended for deferring the CHIKV infected patients up to six months. CHIKV infection is not checked among routine screening tests in Myanmar. Therefore, a cross-sectional descriptive study was conducted in Blood Bank, Mandalay General Hospital to find out the proportion of CHIKV viral RNA as well as serological tests positive rate and to identify the genotypes of CHIKV among donors. Total 500 voluntary donors were recruited during the peak seasons of arboviral infections (June to September) in 2019. For IgM and IgG antibody detection, Quick Profile TM Chikungunya IgM/IgG combo test (LumiQuick, Diagnostics, Inc, USA) was used and viral genome was detected by conventional one-step Reverse Transcription Polymerase Chain Reaction (One-step RT-PCR) method. Sequencing and phylogenetic analysis based on gene encoding envelope protein (E1 gene) and non-structural protein-1 (NSP-1 gene) was done on RT-PCR positive cases. Fifteen out of 500 cases (3.0%, 95% CI: 1.7-4.9%) showed positive on Anti-CHIKV IgM Ab and 135 cases (27.0% 95% CI: 23.2-31.1%) were Anti-CHIKV IgG positive. CHIKV viral RNA was detected in two cases (0.4%, 95% CI: 0.05-1.4%). In this study, 17/500 cases (3.4%, 95%CI: 2.0-5.4%) of laboratory confirmed CHIKV infection was identified based on serology and molecular tests. Within four months of study period, the detection rate of CHIKV infection was significantly high up to 6.86% (95% CI: 3.6-11.7%) in September. According to phylogenetic analysis using Maximum Likelihood Method (MLM), the virus strains circulating in the study area belonged to East Central South African (ECSA) genotype and revealed close similarity to the strains circulating in India and Thailand. This study highlighted that there was high prevalence of CHIKV infection rate during outbreak in 2019 and there is a need to screen the CHIKV among donors for reducing the risk of transfusion-transmitted infection.