110/A/Poster

Use of molecular markers for monitoring therapeutic efficacy of malaria patients in the malaria prevention of reintroduction phase in Sri Lanka

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In 2016 Sri Lanka became the first major tropical country, within the past 3 decades, to be certified by WHO as having eliminated malaria. Yet, imported malaria cases continue to occur and are treated and followed-up according to National Treatment Guidelines. WHO protocol for monitoring drug efficacy recommends follow-up for 28 days or longer, depending on the half-life of the drug to determine whether an infection has an 'adequate clinical and parasitological response,' or a treatment failure. The interpretation of antimalarial drug efficacy outcomes poses a challenge when a subsequent episode of malaria occurs during the follow-up period, casting doubt of treatment failure against a potential new infection. WHO recommends molecular genotyping in such instances.This study was undertaken to differentiate re-infection and recrudescence of *Plasmodium falciparum* cases reported in 2014-2017 by genotyping according to the WHO protocol. Four persons had subsequent infections during the follow-up period. Genotyping of merozoite surface proteins (msp1, msp2) and glutamate-rich protein (glurp) was carried out for the initial and the recurrent episodes. Out of the four sample sets, only two showed amplification. One patient, with a travel history to the Central African Republic, had an initial (D0) *P. falciparum* mono-infection (176 parasites/µL) and a recurrent *P. falciparum* mono-infection (1415 asexual parasites/µL, 47 gametocytes/µL) after 13 weeks (D105) confirmed by microscopy and nested-PCR. Genotyping showed that the second infection had a N5 allelic family which was not present in the initial sample, indicating a reinfection. He had had a re-visit to the Central African Republic in between. The second patient, having a travel history to Uganda, had a D0 *P. falciparum* mono-infection (25800 parasites/µL), which was followed by a recurrent *P. falciparum* mono-infection on D28 (10000 parasites/µ L) confirmed by microscopy and nested-PCR. Both samples had the same alleles indicating a recrudescence. This study highlights the critical role of genotyping in patient management and maintenance of malaria-free status in Sri Lanka by generating indispensable evidence to exclude the possibility of local transmission in patients with recurrent episodes, who may present with a history of travel to malaria-endemic territories.

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