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Extended Abstract
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Detection of malaria parasites after treatment in travelers: A 12-months longitudinal study and statistical modelling analysis

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The rapid clearance of malaria parasite DNA from circulation has widely been accepted as a fact without being systemically investigated. In this longitudinal study, we examined the duration of PCR positivity as well as the presence of gametocytes in adult travelers treated for Plasmodium falciparum malaria in a malaria-free setting, using microscopy, species-specific qPCR, merozoite surface protein 2 (msp2)-genotyping PCR, and gametocyte-specific qPCR. Venous blood was collected at the time of admission and prospectively up to one year. Patients were treated with a full regimen of six doses of artemether-lumefantrine (AL). In 31 successfully treated individuals, asexual parasites were seen by microscopy until two days after treatment, whereas parasite DNA was detected by msp2- and species-specific PCR up to days 31 and 42, respectively. Statistical modelling predicted 26% (Â± 0â□¢05 SE) species-specific PCR positivity until day 40 and estimated 48 days for all samples to become PCR negative. Gametocytes were detected by microscopy and PCR latest two days after treatment. CT values correlated well with microscopy-defined parasite densities before but not after treatment started. Duration of PCR positivity was correlated neither with the initial (asexual) parasite densities nor with the initial presence of gametocytes.These results reveal that PCR positivity can persist several weeks after treatment without evidence of viable sexual or asexual parasites, and that the removal of dead parasites and their debris is not as rapid as it is believed, indicating that PCR may overestimate post-treatment parasite prevalence in epidemiological studies, and underestimate drug efficiency in clinical management and trials. This report underlines an important diagnostic matter essentially in infectious diseases and particularly in malaria, and points out the need for detection tool as sensitive as PCR and as accurate as microscopy

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