

CHANGES IN EFFICACY OF ARTEMISININ-COMBINATION THERAPIES IN UNCOMPLICATED FALCIPARUM MALARIA PATIENTS IN THAILAND: A 10-YEAR STUDY

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Abstract. Artemisinin-combination therapies (ACTs) have been used for treatment of falciparum malaria for more than 20 years in Thailand. However, efficacy of ACTs has been reducing recently in Southeast Asia. This study determined changes in efficacy of ACTs in treatment of patients with uncomplicated *Plasmodium falciparum* malaria at the Hospital for Tropical Diseases, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand during 2005-2014. Data were retrospectively collected from medical records of patients ≥ 15 years of age who were clinically and microscopically diagnosed as having uncomplicated *P. falciparum* mono-infection and treated with ACTs. Of 380 uncomplicated malaria patients (mean \pm SD 27.3 \pm 10.0 years of age), 29% of patients were treated with artemisinin+piperavaquine (Artekin) and the remaining with artesunate+mefloquine (ASMQ). Overall efficacy of the ACTs during the period of study was 97%, with efficacy of 85%, 97%, 95% and 100% in 2005, 2006, 2012, and the remaining years, respectively. Overall adequate clinical and parasitological responses (ACPR) and late parasitological failure (LPF) was found in 97% and 3% of the patients, respectively. Initial elevated alanine aminotransferase and aspartate aminotransferase levels, fever clearance time (FCT) and parasite clearance time (PCT) are significantly associated with LPF ($p < 0.05$). Artekin treatment is also significantly associated with LPF [odds ratio (OR) = 11.779; 95% confidence interval (CI): 2.502-55.447; $p < 0.001$]. Significant differences in prolonged PCT ($p < 0.05$) were found between the following parameters: gender (OR = 0.478; 95% CI: 0.259-0.883), presence of referral status (OR = 3.449; 95% CI: 1.737-6.850), history of myalgia (OR = 0.530; 95% CI: 0.320-0.877), history of chills and rigor (OR = 0.578; 95% CI: 0.336-0.996), low initial platelet count (OR = 2.378; 95% CI: 1.198-4.719), high total bilirubin (OR = 1.699; 95% CI: 1.010-2.857), and high initial parasite density (OR = 17.449; 95% CI: 3.625-83.991). Type of ACT used and prolonged PCT (> 72 hours) were significant factors associated with treatment efficacy. In conclusion, ACTs were effective in treatment of uncomplicated falciparum malaria in Thailand during 2005-2014.

Keywords: *Plasmodium falciparum*, artemisinin-combination therapy, efficacy, malaria, Thailand

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