

Evaluation of Efficacy of Chloroquine for *Plasmodium Vivax* Infection Using Parasite Clearance Times: A 10-Year Study and Systematic Review

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Abstract

Introduction: Chloroquine, in combination with primaquine, is used as the firstline treatment for uncomplicated *P. vivax* malaria in Thailand. In view of the declining efficacy of chloroquine in many *P. vivax* endemic areas, the possibility of emergence of chloroquine-resistant *P. vivax* in Thailand is a concern. The aim of this study was to assess the trends in therapeutic efficacy of chloroquine and primaquine for the treatment of uncomplicated *P. vivax* malaria and to assess the utility of parasite clearance times as a measure of efficacy. **Materials and Methods:** This study consisted of: 1) review of medical records of patients who were hospitalised for a period during their treatment for uncomplicated *P. vivax* malaria at the Hospital for Tropical Diseases, Bangkok, Thailand between 2004 and 2013. Treatment consisted of chloroquine (1500 mg base administered over 3 days) or chloroquine (as before) plus primaquine (15 to 30 mg base/daily for 14 days from day 2); and 2) systematic review of the literature in English to assess current standards in the reporting of parasite clearance times. **Results:** The 28-day cure rate was 99.1%. The range of median parasite clearance time over the 10-year period was 46 to 59 hours, and there was statistical evidence for an increasing trend in parasite clearance times between 2009 and 2013. Heterogeneity was noted among previous chloroquine efficacy studies in the measurement and reporting of parasite clearance. **Conclusion:** The treatment of *P. vivax* infection with a combination of chloroquine and primaquine has remained efficacious in Thailand. Increasing rates of parasite clearance in a population over time may be a useful early warning mechanism for the emergence of chloroquine resistance. The utility of monitoring time-trends in parasite clearance to detect resistance may be enhanced if parasite clearance measurements are standardised.

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