

EFFECTIVENESS OF LONG-TERM MALARIA CHEMOPROPHYLAXIS AMONG FRENCH EXPATRIATES RESIDING IN RWANDA

by

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Existence of chloroquine-resistant *Plasmodium falciparum* malaria in Rwanda has been well documented since 1984 (2, 3, 7). The usefulness of malaria chemoprophylaxis for expatriates during prolonged stays in areas endemic for chloroquine-resistant malaria has not been established (6). Consequently, various chemoprophylactic regimens have been proposed.

In order to document the efficacy of prophylactic antimalarial drugs recommended to French expatriates residing in Kigali, Rwanda, for more than one year, we interviewed between July 1990 and May 1991, 284 of those attending the Medical Centre of the French Cooperation for a medical problem unrelated to malaria. The questionnaire dealt with their behaviours and practices with regard to malaria prophylaxis. We then compared the informations collected from the interviews with the medical records available at the Medical Centre.

We looked for the occurrence of malaria episodes according to the type of chemoprophylaxis reported, computing, the attack rate per 100 person-years for each group with their 95% confidence interval. These incidence density rates were compared using an extension of the chi-square test.

The use of bed nets or diffusable pyrethroids during night time was widespread as more than 95% of the expatriates interviewed complied to at least one of these two prevention methods. However, only 10% used skin topical repellents or wore long sleeves and pants at night.

One hundred thirty-five (48%) respondents did not stick to any chemoprophylactic regimen (group A); 62 (22%) took chloroquine alone (10 mg base/kg weekly; group B), 38 (13%) proguanil alone (3 mg/kg daily; group C) and 49 (17%) both drugs (chloroquine 5 mg base/kg/weekly plus proguanil 3 mg/kg/daily; group D). There were no differences in the use of bed nets or pyrethroids among the various chemoprophylactic groups of respondents. None of these used impregnated bed nets. Forty-three episodes of confirmed malaria were diagnosed over a total of 630 person-years exposure in this cohort.

The malaria attack rate was not significantly reduced in the expatriates following chloroquine or proguanil prophylaxis alone in comparison to the attack rate observed in those who did not take any prophylaxis (Table 1). However the concurrent use of both drugs protected significantly the users of this combination: not a single episode of malaria was documented in this group for a total of 62 person-years of follow-up.

TABLE 1
Malaria attack rates among 284 french expatriates using different chemoprophylactic regimens.
Kigali (Rwanda), 1990-1991

Chemoprophylactic regimen	No. of subjects	No. of person-years of exposure to malaria	No. of confirmed malaria attacks	Attack rate per 100 person-years (95% Confidence Interval)
A. No chemoprophylaxis	135	370	26	7.0 (4.3-9.7)
B. Chloroquine base	62	102	9	8.8 (3.1-14.6)
C. Proguanil	38	96	8	8.3 (2.6-14.1)
D. Chloroquine base plus proguanil	49	62	0	0 (0-5.0)
Total	284	630	43	

Statistical analysis: A versus B or C, $p > 0.50$; A versus D, $p = 0.03$; B or C versus D, $p = 0.02$.

Our findings clearly show that in Rwanda, the use of paludrine 3 mg/kg/day or chloroquine base 10 mg/kg/week as malaria chemoprophylactic regimens are no more effective than absence of chemoprophylaxis. Accordingly, chemoprophylaxis with one of these drugs should be abandoned.

As suggested by our observations and others (5) further prospective studies, preferably randomized and with large sample sizes, are warranted in order to confirm the efficacy of combined drugs in the prevention of malaria in Rwanda.

If so, the association of proguanil with chloroquine could become the recommended schedule of chemoprophylaxis in Rwanda not only in expatriates but also in groups of subjects requiring prolonged antimalarial chemoprophylaxis such as pregnant women, since these drugs are also free of side effects, and cheap.

However, similar chemoprophylactic regimens have been assessed in other parts of the world and have not been as successful as in Rwanda (1, 4).

In all instances, the use of bed nets and pyrethroids, best bed nets impregnated with pyrethroids, should be highly promoted.

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