

UNUSUAL RESPONSE OF A STRAIN OF P. FALCIPARUM FROM COLOMBIA,
SOUTH AMERICA, TO A SUPPRESSIVE REGIMEN USING TWO 4-AMINOQUINOLINE
DRUGS

by

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The disappointing response to doses of 0.6 g and 1.5 g and even higher doses (2.1 g) of chloroquine of a strain of Plasmodium falciparum originating in Colombia, South America, was recently reported by Moore & Lanier (1961) and by Young & Moore (1961). The response of this strain to amodiaquine (Camoquin^(R)), and hydroxychloroquine (Plaquenil^(R)) has recently been investigated (Young, 1961).

The malaria infections were induced into neurosyphilitic patients either by the injection of infected blood or by the bites of infected Anopheles mosquitos. The drug was given under supervision either during the first part of the primary attack or after several weeks of clinical activity. The results are summarized in Table 1.

TABLE 1. RESPONSE TO 4-AMINOQUINOLINE DRUGS
OF DIFFERENT STRAINS OF PLASMODIUM FALCIPARUM

Strains	Dose in grams	Parasite clearance from blood stream - average range in days
Amodiaquine		
Colombia <u>P. falciparum</u> Susceptible strains*	0.6 single dose	Not cleared in 14 days (3 patients)
	0.6 single dose	1.2 - 5.3
Colombia <u>P. falciparum</u> Susceptible*	1.4 in 3 days	Not cleared in 14 days (3 patients)
	1.4 in 3 days	1.1 - 2.8
Hydroxychloroquine		
Colombia Susceptible*	1.2 single dose	Not cleared in 14 days (4 patients)
	1.25 single dose	1.3 (2 of 70 were failures)

* Compiled from personal experience and the literature

These results show the poor response of the Colombia strain to amodiaquine and hydroxychloroquine as compared to the rapid response of other strains.

Several of the patients received quinine and responded to it normally.

An experiment was carried out to determine if weekly suppressive doses of 300 mg chloroquine or 400 mg amodiaquine, started three days before exposure to the bites of infected mosquitos, would suppress, or suppressively cure, the infections with the Colombia strain of P. falciparum. In one group, three patients received the chloroquine and one did not; all four were bitten by the same group of mosquitos. A similar test was done with the amodiaquine. The patients taking the drug received five weekly doses.

Parasitaemia appeared in both the patients receiving suppressive doses of chloroquine or amodiaquine and in the controls, who took no drug, at about the same time, all within the normal range, and ran similar courses. The fever patterns were similar, also.

The urine of the patients taking chloroquine and hydroxychloroquine showed a positive Haskins test. The plasma levels of chloroquine were in the normal ranges.

Three of the above cases appeared to respond normally to 50 mg single dose of pyrimethamine. Two cases responded normally to a total of 1.5 g proguanil given over a five-day period. This indicates no cross-resistance to these drugs. Six cases appeared to respond normally to a 2.8 g regimen of mepacrine but four have relapsed.

These results indicate that a strain of P. falciparum from Magdalena Valley, Colombia, South America, which is resistant to chloroquine, responds in the same way also to amodiaquine and to hydroxychloroquine, which are other members of the 4-aminoquinoline group of antimalarials. The "resistant" characteristic persisted after a mosquito passage.

Weekly doses of 300 mg of chloroquine or 400 mg of amodiaquine failed to suppress mosquito-transmitted infections of the Colombia strain of P. falciparum.

In cases where proved resistance to one of the above 4-aminoquinolines appears, it would appear unwise to depend upon another of this group for treatment, especially in acute cases; until evidence to the contrary appears, it seems desirable to use some other drug, such as mepacrine and perhaps quinine.

REFERENCES

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