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MEDICINE

RESPONSE OF FALCIPARUM MALARIA IN VIVO TO CHLOROQUINE IN KUMASI/GHANA

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ABSTRACT

In 50 patients, who presented with malaria, the presence of Plasmodium falciparum was confirmed in thin and thick blood films. They were treated with a total dosis of 25mg/kg chloroquine base. It was noticed that in Kumasi, Ashanti Region:

a) there is a clear evidence of decreased sensitivity of P. falciparum to chloroquine.

b) chloroquine is still effective in the treatment of malaria and remains the drug of first choice unless there is history of allergy.

In 30 (60.0%) patients parasitaemia cleared within 3 days. In 18 (36%) patients clearance of parasitaemia was between day 4 and day 8.

c. In 2 (4%) patients there was no absolute clearance although there was a significant reduction of the parasitaemia (resistance of RII type).

The mean clearance time for the 48 patienats was 3.72 + 1.52 days.

KEYWORDS.

Malaria, chloroquine, patient,

INTRODUCTION

Malaria is still prevalent in Africa. In East, South and Central Africa, the diseases is deeply entrenched due to the added problem of Plasmodium falciparum strains being resistant to chloroquine. [1,2] There are recent reports of chloroquine resistance in West Africa, in countries such as Cameroon[3] and Benin.[4] In Nigeria, there has been a reported decreased sensitivity of P. falciparum to chloroquine[5]. Clinical resistance of P. falciparum to chloroquine was reported in Accra, Ghana in 1986.[6] In vivo P. falciparum resistance at the RI and RII levels to chloroquine in Accra/Ghana has been confirmed.[7]

In Ghana malaria is generally endemic in all areas, however there is so much interregional as well as interdistrict variations in prevalence due to the influence of rainfall, vegetation and human behaviour,8 that it is very important for each region and district to have adequate information on the in vivo sensitivity of the parasite P. falciparum to chloroquine. No reports are available yet on the in vivo susceptibility of P. falciparum to chloroquine from Kumasi, hence the importance of this work in an urban area.

Materials and Methods:

Between June 1988, and December, 1988 study was conducted in Komfo Anokye Teaching Hospital, Kumasi in the Ashanti Region of Ghana. 50 patients presenting with malaria and the presence of P. falciparum confirmed microscopically were selected. Patients of both sexes aged between 1 1/2 years and 50 years. Patients with mixed malarial infection, were excluded. Patients who were seriously ill were also excluded. All patients were resident in Kumasi. All patients were given a total of 25mg/kg chloroquine base orally in 3 divided doses on an out-patient basis (10mg/kg on day O and 1; 5mg/kg on day 2). Chloroquine was given by one of us and the patients observed for 60 minutes after intake; to ensure that drug was not vomited.

The patients were seen daily until the asexual P. falciparum parasites had disappeared in the blood films. Asexual parasites were counted in 100 fields of the thick film using a X 100 oil immersion objective and a X 6 eye

Daily parasitic counts (per 100 fields in 50 patients with P. falciparum malaria after treatment with chloroquine (25 mg/kg body weight)

			DAY										
No	Age	Sex	0	1	2	3	4	5	6	7	14	21	28
1	3½	M	541	501	300	107	35	12	0	0	-	-	-
2	19	M	276	140	35	0	0	0	0	0	-	-	-
3	56	F	150	84	22	0	0	0	0	0	-	-	-
4	3	F	231	101	47	0	0	0	0	0	-	-	-
5	31	M	631	530	500	520	486	301	197	200	chloroquine discontinued		
6	50	M	247	138	97	0	0	0	0	0	-	-	-
7	7	M	498	301	79	0	0	0	0	0	-	-	-
8	14	M	601	581	500	439	402	401	276	262	chloroquine discontinued		
9	15	F	170	56	10	0	0	0	0	0	-	-	-
10	21	M	542	401	323	147	98	54	13	0	-	-	-
11	7	F	582	479	197	89	0	0	0	0	-	-	-
12	7	M	176	48	0	0	0	0	0	0	-	-	-
13	16	M	78	16	0	0	0	0	0	0	-	-	-
14	36	M	240	200	103	0	0	0	0	0	-	-	-
15	34	F	120	89	46	0	0	0	0	0	-	-	-
16	9	M	382	383	279	86	42	0	0	0	-	-	-
17	22	F	176	43	0	0	0	0	0	0	-	-	-
18	32	M	107	34	12	0	0	0	0	0	-	-	-
19	13	M	423	137	82	41	0	0	0	0	-	-	-
20	11	F	283	107	31	0	0	0	0	0	-	-	-
21	11	M	302	273	200	109	0	0	0	0	-	-	-
22	6	M	571	321	208	184	149	101	0	0	-	-	-
23	19	F	437	201	95	0	0	0	0	0	-	-	-
24	25	F	498	301	289	174	63	0	0	0	-	-	-
25	37	F	582	376	289	250	98	0	0	0	-	-	-

26	11	F	132	97	0	0	0	0	0	0	-	-	-
27	5	M	370	182	46	0	0	0	0	0	-	-	-
28	15	F	406	383	19	0	0	0	0	0	-	-	-
29	27	M	197	63	0	0	0	0	0	0	-	-	-
30	48	M	346	281	39	0	0	0	0	0	-	-	-
31	13	F	384	273	140	0	0	0	0	0	-	-	-
32	29	F	256	136	100	54	12	0	0	0	-	-	-
33	17	M	201	131	89	0	0	0	0	0	-	-	-
34	9	M	348	146	90	49	0	0	0	0	-	-	-
35	5	F	309	141	87	37	0	0	0	0	-	-	-
36	4	M	279	100	0	0	0	0	0	0	-	-	-
37	13	F	355	176	48	0	0	0	0	0	-	-	-
38	1½	M	507	473	296	143	89	16	0	0	-	-	-
39	15	M	421	179	93	0	0	0	0	0	-	-	-
40	4	M	98	13	0	0	0	0	0	0	-	-	-
41	24	F	513	436	241	109	87	9	0	0	-	-	-
42	4	F	691	342	132	69	0	0	0	0	-	-	-
43	8	M	436	218	107	0	0	0	0	0	-	-	-
44	17	M	546	401	383	273	185	67	0	0	-	-	-
45	14	F	396	301	273	189	102	93	88	36	-	-	-
46	13	M	191	167	95	0	0	0	0	0	-	-	-
47	17	F	403	246	98	0	0	0	0	0	-	-	-
48	16	M	521	306	106	0	0	0	0	0	-	-	-
49	18	M	143	75	39	0	0	0	0	0	-	-	-
50	30	F	527	349	239	106	95	43	13	0	-	-	-

piece. The mean parasite clearance time was calculated according to the method used by Midala et al. 1988.[5]

RESULTS

As seen in Table 1, the pretreatment parasitaemia varied between 78 (case No. 13) and 691 (case No. 42) counted in 100 fields of the thick film. 30 (60%) patients became parasite negative during the first 3 days. None of the patients achieved a total clearance of parasitaemia on day 1. 18 (36%) patients (case No. 5 and case No. 8) demonstrated a decreased parasitaemia but did not achieve a total clearance of parasitaemia by day 8. They later received amodiaquine (camoquin) which successfully cleared the parasitaemia.

DISCUSSION

In 48 (96%) patients, it was found that asexual parasitaemia had disappeared within 8 days. In 2 (4%) patients there was a decrease in parasitaemia but not a total clearance (Resistance type RII). These findings indicate that P. falciparum is sensitive to chloroquine in this part of Ghana. However, in 1988 Ofori Adjei et al., found chloroquine resistance in Accra, and we have now demonstrated the emergence of resistance of P. falciparum to chloroquine in Central Ghana.

Reports up to 1984 from Ibadan in Southern Nigeria show a complete clearance of parasitaemia within 3 days (Aderounmu et al., 1980; Walker et al., 1984). Midala also reported in Zaria in 1988 that in his study, 82% of the patients were parasite negative within the first 3 days, the remaining 19% needed 4 or 5 days for the parasitaemia to disappear. In our study, 60% of the patients became parasite negative within 3 days, while a large number 36% of the patients became negative within 8 days with a mean clearance of 3.72 + 1.52 days. Reports received from Accra/Ghana showed a mean clearance of 74.25 + 25.5 hours (3.09 + 1.06 days) (Ofori Adjei et al., 1988) and from Zaria/Nigeria, 3.45 + 1.25 days (Midala et al., 1988).

The mean parasite clearance time is unusually long, our results also suggest the decreased parasite susceptibility of chloroquine in Ghana. The presence of the resistant strain of P. falciparum at the RII level also confirms similar observation by Ofori Adjei et al., in Accra, in 1988. Chloroquine, however, is still effective in the treatment of malaria in Kumasi.

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