

A NOTE ON THE USE OF DARAPRIM AS A MALARIA PROPHYLACTIC IN NIGERIAN TROOPS AND THEIR FAMILIES

BY

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IN the late summer of 1957 the medical officer of a Nigerian infantry battalion stationed in Eastern Nigeria reported that both he and the commanding officer were concerned about the anticipated epidemic of malaria which experience in previous years indicated was likely to occur in the autumn both during and after the annual rains. A disquieting feature about previous epidemics was the frequency of cerebral malaria in infants associated with a high mortality.

Investigation of the unit showed that with the exception of wearing long trousers and sleeves rolled down when on guard duty or exercises Nigerian soldiers took no personal anti-malaria precautions. Anti-mosquito measures undertaken were residual spraying of quarters and oiling of static water in the barracks area. The barracks occupied by the battalion were ideally sited for the maintenance of a high incidence of malaria. Within half a mile of the low hill on which the barracks lie is a small river with swamp on either edge. On the other side of the river is a large village which provides a large reservoir of infection in addition to the soldiers themselves.

A mosquito control scheme was planned but was not practicable. Most of the work would have had to be done on private property the owners of which refused to co-operate. The only measure which seemed to promise any hope of success was individual chemoprophylaxis on the lines of the paludrine used universally in the British Army and by British personnel seconded to the Nigerian military forces. This prompted enquiries as to why chemoprophylaxis had not been used before in Nigeria. Mepacrine had been used by the West African Expeditionary Force in S.E.A.C. in the Second World War but was discontinued on return to West Africa. Enquiry showed that chemoprophylactics were not given for two main reasons. First it was stated that prophylactics, by preventing recurring attacks of malaria, would destroy the Nigerian's partial immunity to the disease, so that, when a prophylactic was discontinued (e.g. when the soldier was discharged from the army) the individual would suffer severely from malaria and might well succumb from complications such as cerebral malaria or blackwater fever. In addition to this, an attack of malaria in the partially immune Nigerian adult is a relatively mild disease lasting up to two days once or twice in the year. The other major reason for not using chemoprophylactics was that of expense, though with the increasing tempo of Nigerianisation of the army, the loss of key manpower and cost of malaria treatment was becoming a major consideration.

The malariologist to the Nigerian government was asked to advise on the problem. He described two trials which he had carried out in village communities in different parts of Nigeria which showed the value of Daraprim as a chemoprophylactic. His experience did not bear out the hypothesis that cessation of the drug was associated with severe attacks of malaria. He advised Daraprim in a dosage of 25 mg. once per week with half dosage for children under seven years of age. He further advised that this was the minimum safe dosage in his experience if Daraprim resistance was to be prevented. Funds available would only permit of a dosage of 25 mg. per adult every 14 days with the appropriate half dosage for children under 7 years: it was therefore decided to commence chemoprophylaxis at this dosage and to increase the dosage later if more funds became available and the scheme appeared successful. This was done in July, 1958.

The results are tabulated below with comparable figures from two other infantry battalions in other Nigerian stations (with comparable climate) which

Table 1. Incidence of malaria in Nigerian soldiers on Daraprim (Battalion A) compared with two similar groups (Battalions B and C) not given Anti-Malarial Prophylactics.

MONTH	BATTALION A		BATTALION B		BATTALION C	
	Number of cases	Attack rate /1000/month	Number of cases	Attack rate /1000/month	Number of cases	Attack rate /1000/month
1957						
No Daraprim						
JULY	31	42	No report	—	No report	—
AUGUST	36	46	19	30	No report	—
SEPTEMBER	13	18	28	42	No report	—
OCTOBER	15	21	36	55	20	29
Daraprim commenced in Battalion A— 25 mg. every 14 days.						
NOVEMBER	1	1.3	16	23	34	49
DECEMBER	7	9	25	36	32	46
1958						
JANUARY	2	2.7	28	40	43	59
FEBRUARY	1	1.3	50	71	82	115
MARCH	0	0	9	14	33	46
APRIL	2	2.6	14	22	31	43
MAY	2	2.7	50	74	42	52
JUNE	2	2.7	35	52	41	57
Daraprim dosage increased to 25 mg. every 7 days.						
JULY	8	11	44	62	40	53
AUGUST	0	0	38	54	29	40
SEPTEMBER	1	1.8	16	29	32	44
OCTOBER	1	1.3	10	16	37	52
NOVEMBER	1	1.4	16	29	65	89
DECEMBER	5	7	8	14	61	84
1959						
JANUARY	1	1.3	7	13	63	89
FEBRUARY	1	1.5	11	18	22	30
MARCH	1	1.2	7	13	28	39

Average monthly attack rate/1000 (since Daraprim commenced): Battalion A 3.4; Battalion B 35; Battalion C 58.

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were not on Daraprim. As will be seen the results are most encouraging. Malaria has virtually disappeared amongst the soldiers and has been very much reduced in their families. The difficulties of ensuring that the family actually consume their Daraprim accounts for the disparity in results between soldiers and their families. The soldier consumes his "tablet" on parade and at the same time is given tablets for his family—it is not practicable to parade the family. Cerebral malaria in infants has disappeared which, however, shows that a large proportion at least of the families are getting their tablets. Much of the success of the scheme has been due to the energy and enthusiasm with which the scheme has been put over to the soldier by his officers both regimental and medical.

Since this trial the scheme has been extended to cover the remainder of the Nigerian military forces.

Comment

The striking reduction in malaria incidence in Battalion A is noteworthy. That the incidence of malaria has not been reduced to nil every month is mainly due to the arrival of new intakes of recruits (not on Daraprim previously) and individuals missing their Daraprim, though the possibility of Daraprim resistance

Table 2. *Number of cases in Nigerian Soldiers' Families. (Approximately 500 adults and 800 children in each station.)*

Month	Battalion A	Battalion B	Battalion C
1957			
	No Daraprim		
JULY	101	No report	No report
AUGUST	110	70	No report
SEPTEMBER	74	37	No report
OCTOBER	105	53	60
Daraprim commenced in Battalion A. Adults—25 mg. every 14 days : half dose for children under 7 years			
NOVEMBER	50	45	75
DECEMBER	14	42	80
1958			
JANUARY	12	50	120
FEBRUARY	8	85	80
MARCH	1	30	64
APRIL	10	46	69
MAY	17	56	95
JUNE	10	64	96
Daraprim dosage increased to 25 mg. every 7 days : half dose for children under 7 years			
JULY	20	66	71
AUGUST	13	68	68
SEPTEMBER	17	62	68
OCTOBER	27	45	85
NOVEMBER	14	42	125
DECEMBER	22	35	107
1959			
JANUARY	5	53	76
FEBRUARY	1	No report	56
MARCH	0	21	98

building up will have to be closely watched. From March, 1958 to March, 1959 practically every soldier of Battalion A took his annual leave of one month during which time he was not given Daraprim. This does not seem to have given rise to cases of malaria, a point carefully enquired into by the unit medical officer (Table 1.).

The precise numbers of wives and children cannot be determined. No record is kept by the Army of a soldier's family. It is assumed that he has only one wife for allowance and quartering purposes but this number is frequently exceeded. Also the number of children born is relatively large with a very high infant mortality. For these reasons no attack rates have been worked out. The figures obtained do, however, show the marked improvement obtained where Daraprim is offered to the Nigerian soldier for the protection of his family against malaria (Table 2.).

In spite of the improvement the periodicity of malaria is still present : March, 1958 and March, 1959 both having the lowest incidence. March is usually the last dry month before the rains which commence in April and continue on into September, with occasional rains up to December, after which practically no rain falls till the succeeding April.

A CASE OF PSEUDOMYXOMA PERITONEI

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THE term pseudomyxoma peritonei was first used by Werth (1884) to describe massive accumulations of gelatin in the peritoneal cavity resulting from rupture of a pseudomucinous cystadenoma of the ovary. Fraenkel (1901) used the same expression to describe the clinical picture resulting from rupture of a cyst of the appendix. The case described here is a patient who presented with a mass of myxomatous tissue in a hernial sac and died of the condition without other disease eight years later.

CASE REPORT

Major J. A. was a retired Indian Army officer who first reported sick in 1949 aged 59. He complained of a lump in the right groin of two years' duration, progressively enlarging. It was painless, disappeared on lying down, and was controlled by a truss. Examination showed a thin, healthy-looking man with a large reducible right indirect inguinal hernia. He was admitted to hospital and herniorrhaphy was performed. At the operation a large sac was found behind the cord, the sac contained excess peritoneal fluid and attached to the wall was a tumour, one inch in diameter, with a hyaline granular appearance. Nothing abnormal was palpated through the neck of the sac.

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