High Incidence of Severe Parasitemia in Falciparum Malaria

Dear Editor,

In response to the communication by Lt Col D Rosha et al [1], I would like to put on record our experiences with falciparum malaria in an Air Force station situated in a semi-hilly, densely forested, tribal, highly malarious belt in Central India. Meteorological and topographical features in this belt ensure heavy transmission of malaria almost perennially among the locals. The vectors identified by us include *A culicifacies* and *A fluviatilis*, the latter being a highly efficient vector with outdoor resting habits.

The Air Force station is intimately surrounded by tribal villages with a heavy reservoir of falciparum malaria. As the same was spilling over and giving our station the dubious distinction of having the highest rate of malaria among all service stations, we projected the problem to Air HQ, which in turn approached Director, National Malaria Action Programme (NMAP), and through him State and District health authorities to extend necessary support including Modified Radical Treatment to the local population around the Air Force station. As a consequence, a joint team with the civilian field workers and the SHO staff has been established to carry out active and passive surveillance among the tribal villages and extend radical treatment to the positives. Besides, reducing the reservoir of infection and in turn checking the incidence among service personnel, the data gathered has built up a sound surveillance and early warning system. It also reveals that tribals tolerate falciparum malaria better than nomadic service personnel.

Recently we detected *P falciparum* parasitemia of more than 50% of the RBCs in a 3 year old tribal girl who had no signs other than low grade fever detected during active surveillance - and responded

favourably to a dose of chloroquine and primaquine administered by the civil multipurpose worker. The following host factors may be considered before suspecting a new strain of falciparum.

Populations long exposed to *P falciparum* show some resistance to it possibly as a result of natural selection [2]. Natives acquire a relative tolerance to the infection and suffer only a mild illness. Many children in such areas have large liver and spleen and malaria parasites in the blood, but no other signs of the disease. In untreated or inadequately treated malaria the parasites persist in the body for months or years and in malarious regions reinfection is the rule. After the early period of recurring fever (overt malaria), the parasites live in more or less stable equilibrium with the forces of immunity (?symbiosis) [2]. It is quite likely that the threshold of parasitemia which gives rise to symptoms may be higher in natives (because of host factors) as compared to non-immune nomadic populations, which may explain the findings by Lt Col Rosha et al (perhaps having a pathologist as their co-author has given an agent new falciparum strain bias in their views!).

References

1. Rosha D, Kataria VK, Maudar KK. High incidence of severe parasitemia in falciparum malaria (letter). MJAFT 2000;56:179.
2. Manson-bahr PEC, Apted FIC. Malaria and Babesiosis. In : Manson's Tropical Diseases. 18thed. ELBS, 1982;38-71.

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REPLY

Dear Editor,

I thank Lt Col A Banerjee for his thoughtful response to our letter.

Prolonged exposure over generations should select out a relatively immune population in endemic areas of falciparum malaria. The emergence of such immunity would restrict parasitemia, the patient becoming symptomatic once the degree of parasitemia increases. If hepatomegaly or splenomegaly occurs with low grade parasitemia, the patient should be considered immunologically unstable. The concept of immune tolerance for falciparum malaria is interesting but in that case the patient should be minimally sympto-

matic with increasing parasitemia. All our patients were severely symptomatic with a high degree of parasitemia which leads us to believe that either the strain is new or mutated, this of course can only be proved by studying the antigenic characteristics of the parasite.

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FLUID AND ELECTROLYTE CONCEPTS IN NEW BORN

Dear Editor,

Effective fluid and electrolyte management involves (1) calculating the fluid and electrolyte requirement for maintaining metabolic functions; (2) replacing losses (evaporative, third space, external); and (3) considering pre-existing fluid deficit or excess. The daily fluid requirements can be approximated to 120-150ml/kg/24 hours in prematures, 100ml/kg/24 hours in neonates (term) and 1000ml+50ml/kg/24 hours in infants >10 kg of body weight. Detail of fluid requirement in normal neonates based on birth weight is as follows :

Day of Life	<1000g	1001-1500g	1501-2000g	>2500g
Day 1	100-120ml	80-100ml	60-80ml	50-70ml
Day 2	120-150ml	110-130ml	90-110ml	80-100ml
Day 3	150-170ml	140-160ml	120-140ml	100-120ml
Day 4	180-200ml	160-180ml	140-160ml	130-150ml
Day 5 onwards	180-200ml	170-200ml	150-180ml	140-160ml

The estimations of daily fluid requirements should also take into