

# A Retrospective Study on Malaria Cases Admitted to the University Hospital, Kuala Lumpur, 1984 – 1988

Sidhu P.S. BSc, MB BS, MRCP, DTM & H\*.

Ng S.C. MBBS, MRCP, MPath, FRCPA.

*Department of Medicine\* and Pathology, University of Malaya, Faculty of Medicine, Kuala Lumpur, Malaysia*

## Summary

A review of malaria cases over a five year period from 1984-1988 at the University Hospital, Kuala Lumpur, Malaysia is presented. A total of 64 cases were recorded; 50% of which were due to *Plasmodium falciparum*, 40.6% were due to *Plasmodium vivax*, 6.2% due to *Plasmodium malariae* and 3.1% due to a mixed infection of *Plasmodium falciparum* and *Plasmodium vivax*. The breakdown of species type compared similarly with other studies conducted in the region. Of this total, sixteen cases were imported from Pakistan, India, Thailand, Indonesia, Sri Lanka, Vietnam, Madagascar and Mali. The presenting symptoms and the clinical findings were typical of a malaria infection. The main problem in the future will be the increase in imported cases of malaria.

*Key words:* Malaria, Malaysia, University Hospital, Diagnosis, Imported Cases, Clinical features.

## Introduction

Malaria remains an important cause of morbidity and mortality worldwide with 50% of the world's population at risk.<sup>1</sup> In Peninsular Malaysia as a result of eradication programmes embarked upon in 1967, the number of cases of malaria has dropped from a range of 300,000 to 400,000 per year to 12,432 cases in 1988. The majority of cases were from the population living mainly in hilly and inland areas of Peninsular Malaysia which are considered to be the problem areas for malaria.<sup>2</sup>

A retrospective study was conducted using the case records of all patients admitted to the University Hospital, Kuala Lumpur with a blood film diagnosis of malaria during the period 1984 to 1988. This paper attempts to deal with the aspects of malaria as seen in a University teaching hospital set in an urban area of a country endemic for malaria. Particular attention was paid to the area of acquisition of infection, race, age and sex of the patients, clinical presentation and admitting diagnosis.

## Patients and Methods

Patients who were diagnosed to have malaria, confirmed by Giemsa stained thick and thin peripheral blood films prior to treatment, were considered. The case records of the patients which met the criteria stated above over the period of 1984 to 1988 attending the University Hospital were reviewed. Information regarding species identification, symptoms, clinical findings, biochemical and haematological parameters were noted. In addition information regarding source of infection was determined from the travel history for fourteen days prior to hospitalization and/or onset of symptoms. Other information such as race, age and sex of each patient were also noted. A breakdown of the cases seen according to nationals and non-nationals of Malaysia was tabulated.

## Results

There were 64 cases of malaria recorded over the five year period (1984 to 1988) at the University Hospital, Kuala Lumpur. *Plasmodium falciparum* was diagnosed in 32 cases (50%), *P. vivax* in 26 cases (40.6%), mixed infection (*P. vivax* and *P. falciparum*) in two cases (3.1%) and *P. malariae* in four cases (6.2%). The majority of cases (48 cases, 75%) were infected within Malaysia, while the 16 remaining cases (25%) were acquired abroad. Of the total of 16 cases acquired from abroad, eight were due to *P. vivax*, six cases were *P. falciparum* and two were *P. malariae*. One non-national acquired the infection while visiting the country, and a total of six nationals acquired malaria whilst abroad. No deaths were recorded.

Ten non-nationals entered the country after contracting the infection while travelling through a malarious country or had come from an area endemic for malaria. These non-nationals originated from Pakistan, India, Thailand, Indonesia, Mali, Afghanistan and Vietnam. The nationals acquired the malaria infection from India, Sri Lanka and Madagascar.

Of the 48 cases of malaria acquired in Malaysia, eight cases were acquired within the Kuala Lumpur area, eight cases were from Pahang, seven cases from Selangor, six cases from Sabah, five cases from Perak, four cases from Johore, three each from Kelantan and Negri Sembilan and one each from Kedah, Pahang and Melaka. No cases were referred to the University Hospital, Kuala Lumpur from Sarawak, Perlis and Trengganu.

Table I shows the distribution of the cases according to age groups and sex. As seen from this table, 59.5% of the cases recorded were in the 20–39 year old group. The youngest patient was a three month old baby girl with a presumed transfusion acquired *P. malariae* infection, and the oldest was a 73 year old Indian female with a *P. vivax* infection acquired in India. A total of 51 patients were male (79.9%). Breakdown by race showed twenty-three Chinese, eighteen Malay and nine Indian patients. The rest were eleven non-nationals, two Orang Asli and one Eurasian patient (Table II).

Table 1  
Distribution of cases of malaria according to age and sex seen at University Hospital,  
Kuala Lumpur, Malaysia 1984 – 1988

Age groups (yrs)	Sex		Total	% of Total cases
	M	F		
0 – 9	1	6	7	10.9
10 – 19	5	0	5	7.8
20 – 29	24	1	25	39.1
30 – 39	11	2	13	20.4
40 – 49	6	1	7	10.9
50 – 59	3	2	5	7.8
60+	1	1	1	3.1
Total	51	13	64	

M = Male; F = Female

**Table II**  
**Distribution of malaria cases according to Race and Nationality seen at**  
**University Hospital, Kuala Lumpur, 1984 - 1988**

Race	Malay	Chinese	Indian	Others*	Non-nationa
Male	16	17	6	2	11
Female	2	6	3	1	0
Total	18	23	9	3	11
% of total	28.2	35.9	14.1	4.7	17.1

\* One male Eurasian; two Orang Asli

**Table III**  
**Clinical signs on admission in malaria cases seen at University Hospital,**  
**Kuala Lumpur, 1984 - 1988**

Findings	No. of Cases (Total 64)	% of cases
Fever	64	100
Chills / Sweats	58	90.6
Gastrointestinal symptoms	24	37.5
Delirium	6	9.4
Coma	3	4.7
Jaundice	15	23.4
Pallor	22	34.4
Right hypochondrial pain	7	10.9
Hepatomegaly	35	54.7
Splenomegaly	35	54.7

Prior to admission, all the patients reported having a fever, 90.6% had a history of chills and sweats, 37.5% had gastrointestinal symptoms and 10.9% had right hypochondrial pain. Hepatomegaly was seen in 54.7% of cases and splenomegaly in 54.7% of cases as well pallor in 34.4% of cases and jaundice in 23.4%. Three patients were admitted in a state of coma (Table III).

Table IV tabulates the admitting diagnosis in which malaria was the primary consideration in 62.5% of patients (40 cases) followed by a wide range of other possible diagnoses as listed.

**Table IV**  
**Diagnoses made during admission for malaria cases, University Hospital,**  
**Kuala Lumpur, 1984 – 1988\***

Diagnosis	No. of Cases	Percentage
Malaria	40	62.5
Viral fever	6	9.4
Typhoid	5	7.8
Hepatitis	2	3.1
Liver abscess	2	3.1
Pneumonia	2	3.1
Anaemia	1	3.1
Leptospirosis	1	1.6
Bacterial endocarditis	1	1.6
Pyelonephritis	1	1.6
Typhus	1	1.6
Organic brain syndrome	1	1.6

*\*In only four patients was malaria not considered in the differential diagnosis.*

## Discussion

The small number (64 cases) over a five year period of all types of malaria at the University Hospital, Kuala Lumpur is due to the presence of the larger General Hospital which is generally considered to be the referral centre for Kuala Lumpur and indeed the whole country. However the University Hospital would still be expected to receive patients from the local urban areas and thus the low number of cases may also reflect the low incidence of malaria in urban areas of Malaysia. Only five out of 64 cases acquired malaria in the Kuala Lumpur-Selangor area.

The high number of cases in the 20-39 year old group, which is also almost exclusively male may reflect the high mobility of this age group employed or travelling in malarious areas. In terms of occupation, working as a timber logger in the Pahang jungle carries obvious risks of contraction of malaria. The weekend hunter who treks through jungle is a potential victim of malaria too. Both groups are unlikely to take chemoprophylaxis against malaria. A study of Malaysian soldiers showed that the increased incidence of malaria coincided with periods of jungle based military exercise.<sup>4</sup>

A significant proportion of cases (25%) contracted their malaria outside the country, complicating the national picture of malaria. Most cases of imported malaria were *P. vivax* with five out of the eight cases imported from India where the predominant species of malaria is *P. vivax*.<sup>3</sup> None of the patients from India took chemoprophylaxis against malaria. The medical profession may be at fault in not

advising travellers to take antimalarials while visiting areas known to be endemic for malaria.<sup>5</sup> Normally such advice is not given to a patient travelling from one endemic country to another. However this advice may be particularly important when dealing with the individual from an urban area who is unlikely to have been exposed to repeated attacks of malaria and so would be unlikely to have any partial immunity to infection.<sup>6</sup>

The occurrence of 50% of the malaria seen at the University Hospital being caused by *P. falciparum* compares with an incidence of 63.59% in the study of malaria in Malaysian soldiers,<sup>4</sup> 62.8% of cases from Sandakan, Sabah,<sup>7</sup> an incidence of 55.1% in a large study conducted in a urban referral hospital in the Philippines<sup>8</sup> and 55.1% in a study on Indian army personnel<sup>9</sup>. In this respect the profile of the species type seen at the University Hospital, Kuala Lumpur, varies to a small extent by having a larger proportion of *P. vivax* infections. 26 cases (40.6%) were of *P. vivax* which compares with 35.5% in the series from Sabah, 38% in the urban setting in the Philippines, 35.48% in the Malaysian army soldiers, and 31.8% in the study on Indian soldiers. However the actual number of reported cases for Peninsular Malaysia for 1987 as issued by the Vector Borne Diseases Division of the Ministry of Health, Malaysia<sup>2</sup> are 5,227 cases (52.2%) for *P. falciparum* and for *P. vivax* 4,590 cases (45.9%). These figures correspond more closely to the breakdown of species type in the present study.

Mixed infections (*P. vivax* and *P. falciparum*) accounted for 3.1% in the present series, 13.1% in the Indian series, 6% in the Filipino series, 0.73% in the Malaysian Army series and 2.1% in the series from Sabah. The actual number of reported cases of mixed infections in Peninsular Malaysia in 1987 was 180 (1.8%). The small number in this study precludes a meaningful comparison to be made. No cases of *P. malariae* were seen in the Indian series, 0.1% in the Filipino series, 0.1% in the series on Malaysian soldiers and 6.2% in the present series. Two of the cases of *P. malariae* in this were imported from Madagascar and Afghanistan. Both the domestically acquired *P. malariae* infections, one of which was acquired through contaminated transfused blood, were in children transferred to the University Hospital from other hospitals in the country. In 1987, thirteen cases of *P. malariae* were recorded nationally.<sup>2</sup>

The fact that only three patients were seriously ill with malaria may be due to the ready access to medical care in the urban situation. All the patients had a fever and a very high proportion experienced chills and sweats. These classical symptoms of malaria, when present, are a good pointer to the presence of malarial infection but an afebrile patient may still have malaria if antipyretics had been used previously.

Approximately half the number of patients presented with hepatomegaly and splenomegaly and a fifth had clinically apparent jaundice. Pallor was reported in a third of patients. This reflects the importance of taking a blood film in the presence of jaundice with an enlarged liver and a fever. The same holds true for the pale febrile patient.<sup>10</sup>

The high index of suspicion of a malarial infection was later confirmed by the high percentage (62.5%) of correct primary diagnosis made by the admitting medical officer. However the number of other diagnoses made in the study (37.5%) reflects the close manner in which malarial infections can resemble other diseases, especially when due to *P. falciparum*.<sup>11</sup>

The pattern of occurrence of the different species of malaria seen at the University Hospital, Kuala Lumpur did not differ markedly from the pattern seen in the country and elsewhere in Southeast Asia. Due to the occurrence of considerable numbers of imported cases in Malaysia, and the widespread resistance to drugs all over the world, doctors should be informed of the worldwide distribution of malaria.

## References

1. Gilles H.M. Malaria an overview. *J. Infect.* 1989; 18 : 11-23.
2. Epidemiology Service, Vector Borne Diseases Division, Ministry of Health, Malaysia, 1987.
3. Harinasuta T, Dixon K.E., Warrell D.A., Doberstyn E.B. Recent advances in malaria with special reference to Southeast Asia. *Southeast Asian J. Trop. Med. Public Health.* 1982; 13 : 1-33.
4. Supramaniam V. Malaria in Malaysian soldiers *Med. J. Malaysia* 1981; 36 : 136-141.
5. Philips-Howard P.A. Efficacy of drug prophylaxis *J.R. Soc. Med.* 1989; 82 Suppl. 17 : 23-29.
6. McGregor I.A. The development and maintenance of immunity to malaria in highly endemic areas. *Clinics in Tropical Medicine and Communicable Diseases* 1989; i : 29-53.
7. Lyn P.C.W. Cerebral malaria and mixed *Falciparum-Vivax* infections. *Ann. Acad. Med. Singapore.* 1987; 16 : 310-312.
8. Buck R.L., Alcantara A.K., Uylangco C.V., Cross J.H. Malaria at San Lazaro Hospital, Manila Philippines. 1979-19081. *Am. J. Trop. Med. Hyg.* 1983; 32 : 212-216.
9. Gopinathan V.P. and Subramaniam A.R. Pernicious syndromes in *Plasmodium* infections. *Med. J. Aust.* 1982; 2 : 568-572.
10. Warrell D.A. and White N.J. Complications of malaria *Trop. Doct.* 1984; 14 : 191.
11. Warrell D.A., Molyneux M.E., Beales P.F. Severe and complicated malaria *Trans. R. Soc. Trop. Med. Hyg.* 1990; 84 (Supplement 2) : 1-65.