

# Imported Malaria : A Retrospective Study in University Hospital, Kuala Lumpur, A Ten-Year Experience

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## Summary

Over a period of ten years (1983-1992), 134 malaria cases admitted to University Hospital, Kuala Lumpur (UHKL) were analysed. Malays constituted 27.6%, Chinese 29.8%, Indians 9.7%, Indonesians 16.4% and other foreigners 16.4%. Therefore, of the total number of cases, foreigners constituted 32.8% (44) of all the malaria cases admitted to UHKL. Fifteen of these foreigners had chloroquine - resistant strains of malarial parasites. Three species of malaria were reported of which *Plasmodium falciparum* constituted the most (46.3%) (80% of these developed resistance to chloroquine). *Plasmodium vivax* was confirmed in 44.8% (10% of these developed resistance to chloroquine) and there was only one case of *Plasmodium malarie* infection.

**Key Words:** Malaria, Imported infection, Plasmodium, Chloroquin-resistant malaria

## Introduction

Malaria is still a major public health problem in Malaysia<sup>1,2,3,4,5</sup>. Despite the extensive vector control programme since 1967<sup>6</sup>, the total number of malaria cases in Malaysia remain high there being 50,500 and 59,208 in 1990 and 1995 respectively.<sup>4</sup> The majority of these cases were from the state of Sabah (84%).<sup>4</sup> Most malarial cases were reported in rural areas (87%)<sup>4</sup>, among the Orang Asli (10%)<sup>4,7</sup>, those working in Land Development Schemes and those recently returning from the jungles.<sup>3,4,8</sup>

Malaria cases were rarely reported in the urban areas. Wilayah Persekutuan, being a city centre had 55 cases in 1990 and 32 cases in 1995<sup>4</sup>. Recently, a new source of malaria has been introduced into the country. These were from the immigrant workers (legal or illegal) and the large number of tourists coming into the country<sup>2</sup>. These has resulted in the detection of malaria in urban areas such as Kuala Lumpur and Petaling Jaya. The

total number of malaria cases among immigrants was 910 in 1990, and this increased to 8658 in 1995, with 5439 (63%) in Indonesians and 3040 (35%) in Filipinos<sup>4</sup>.

Cases were also reported among immigrants from Thailand, Myanmar, India, Bangladesh and Papua New Guinea<sup>4</sup>.

The aim of this retrospective study was to investigate the total number of malaria cases admitted to the University Hospital for the past ten years and to determine the number of immigrants and foreigners with malaria being admitted to the University Hospital.

## Materials and methods

The case notes of all malaria cases admitted to University Hospital, Kuala Lumpur between the years 1983 - 1992 were carefully analysed. A total of 134 cases notes of malaria patients were traced .

## Results

Table I shows that Chinese formed 29.8% of the malaria cases followed by the Malays (27.6%) and the Indians (9.7%). Indonesian illegal immigrants constitute 16.4% and others which included tourists, foreign students studying in the International Islamic University and University Malaya, Vietnamese refugees, Bangladeshi, Indian and Thailand illegal immigrants and expatriates working in Malaysia, formed another 16.4%. Nine of the Indonesian illegal immigrants and six of the other foreigners had the chloroquine-resistant strain of malaria. Table I also shows that majority of the cases were within the 20-29 years age group (45%) and those between 20-39 years age group, 69%. This is also true in the whole country.<sup>2,4</sup> In all the races, males were more commonly affected with malaria, this is because males were engaged in the various high risk activities such as clearing forests and going into the jungles (for e.g. armies, police personnel and lumber jacking)<sup>1,2,4</sup>. *Plasmodium falciparum* constitute the most cases (46.3%)<sup>1,3,4,7</sup>, followed by *Plasmodium vivax* 44.8%, then mixed infection of *Plasmodium falciparum* and *Plasmodium vivax* 7.5% and *Plasmodium malariae*

and mixed infection of *Plasmodium falciparum* and *Plasmodium malariae* one case each.

Resistance to chloroquine was seen in 80.35% and 10.7 % of *Plasmodium falciparum* and *Plasmodium vivax* respectively, mixed infection of *Plasmodium falciparum* and *Plasmodium vivax* 7.1% and mixed infection of *Plasmodium falciparum* and *Plasmodium malariae*, only one case and this was reported as resistant to chloroquine. These patients were initially treated with the chloroquine regime, when this failed they were subsequently treated with fansidar.

Table II shows that most complications (88%) were due to *Plasmodium falciparum*<sup>1</sup>. 40% of the complications were due to cerebral malaria with one death. 36% had jaundice and anaemia and 24% had blackwater fever.

## Discussion

In Malaysia, malaria is not a major problem of the city centre, but cases were common among specific communities such as Orang Asli, Police Field Force

Table I  
Malaria distribution by age, sex, and race (1983-1992) UHKL

Age (year)	Race										Total	
	Malay		Chinese		Indian		Indonesian		Others			
	M	F	M	F	M	F	M	F	M	F		
0 - 9	2	2		6								10
10 - 19	2		3		4		1		1			11
20 - 29	18	1	14		3		8	2	12	3		61
30 - 39	6	2	9	1	3		7		3	1		32
40 - 49	2			2	1		3		1			9
50 - 59		2	4				1		1			8
60 - 69					1							1
70++			1			1						2
Total	30	7	31	9	12	1	20	2	18	4		134
%	27.6		29.8		9.7		16.4		16.4			

Table II  
Species of malaria vs complications

Malaria species	Complication (%)			
	Cerebral malaria	Jaundice + anemia	Blackwater fever	Total
<i>Plasmodium falciparum</i>	(9) 36%	(7) 28%	(6) 24%	(22) 88%
<i>Plasmodium vivax</i>		(1) 4%		(1) 4%
<i>Plasmodium malariae</i>		(1) 4%		(1) 4%
Mixed <i>P. vivax</i> + <i>P. falciparum</i>	(1) 4%			(1) 4%
Total	(10) 40%	(9) 36%	(6) 24%	(25) 100%

personnel, workers recently returned from jungle, participants in land development schemes and those living in rural endemic areas<sup>1,2,3,4,7,8</sup>.

University Hospital Kuala Lumpur caters for the urban population, so it was not surprising that the majority of the patients studied were Chinese as this ethnic group is mainly concentrated around the big cities of Kuala Lumpur and Petaling Jaya.

Now, a new source of malaria infection has been introduced into the city and also into the country by the immigrant workers (mostly illegal) and the large number of tourists (especially from the endemic areas). Many of these were also resistant to the normal chloroquine regime of treatment. These immigrant workers were mainly from the 'Kongsis' or squatter areas from the vicinity of University Hospital, Kuala Lumpur such as Kampung Sg. Kayu Ara, Bandar Sunway, Kampung Lindungan, Sungai Way, Damansara, Petaling Jaya and Subang Jaya.

Moore and Cheong<sup>2</sup>, carried out a survey of 81 malaria cases from General Hospital, Kuala Lumpur, and he found that 49% of the cases were imported malaria and 3 of these imported cases had chloroquine-

resistant malaria. In this survey of University Hospital Kuala Lumpur, we found that 15 of these imported cases (13 due to *Plasmodium falciparum*, 1 due to *Plasmodium vivax* and another one case due to mixed infection of *Plasmodium falciparum* and *Plasmodium vivax*) had chloroquine-resistant malaria. Most of these illegal immigrants only sought hospital treatment when they were severely ill and desperate. This is only the tip of the iceberg, the actual number must be more than this as in less severe cases (for eg. mild fever), they will seek alternative treatment in view of their illegal entry into this country. Willocks *et al*<sup>9</sup>, reported increased incidence of imported malaria, over ten years by 51% brought in by immigrants to United Kingdom. This survey also confirms previous studies which show that the most common species is *Plasmodium falciparum* followed closely by *Plasmodium vivax*<sup>3,4,7,10</sup>.

Moore and Cheong<sup>2</sup>, reported that malaria continues to be a common infection admitted to General Hospital Kuala Lumpur, in contrast to the past, many new cases are now diagnosed in foreigners who have entered the country either legally or illegally.

In conclusion, this new source of malaria among the

foreigners must be given very serious consideration. They have the potential of increasing the malaria cases in urban centres, where most of them are living at the many construction sites around Petaling Jaya and Kuala Lumpur. They are also the potential source of the spread of chloroquine-resistant malaria.

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