

A RETROSPECTIVE PREVALENCE STUDY OF MALARIA IN AN ABORIGINE HOSPITAL IN GOMBAK, SELANGOR, MALAYSIA

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Abstract. This was a five-year retrospective study (1999-2004) on the prevalence of malaria at the Aborigine Hospital, Gombak, Malaysia. A total of 94 malaria cases was analysed. The highest case reports were for the year 2000, with 32 cases (34%), and the lowest was in 2004, with only 1 (1%). The majority of cases reported were among the Semai tribe (44%), followed by the Temiar tribe (34%) and the unspecified tribe (s) (20%). Females (53%) were more commonly affected than males (47%). The majority of cases were within the age group 1-5 years (51%). *Plasmodium falciparum* was the most common species reported in this study, at 57%, followed by *Plasmodium vivax* (38%) and 5% mixed infection of *P. falciparum* and *P. vivax*. Most patients (27%) stayed for more than one month in hospital. Most patients came from Kuala Lipis, Pahang, (78%). The most common complication was anemia (38%) followed by splenomegaly (18%); only 2% had cerebral malaria. All patients were treated with the standard anti-malarial drugs. No deaths were reported in this study.

INTRODUCTION

A new study using epidemiological, geographical and demographic data has demonstrated that there are over 500 million cases of malaria each year. This figure is more than double that previously estimated by the World Health Organisation (WHO) of around 210 million. Of these cases, 70% occur in Africa and 25% in Southeast Asia. Around 2 billion people, *ie*, a third of the world's population, are at risk of contracting the disease (Mason, 2005).

In Malaysia, malaria remains an important public health issue in remote areas. In the Peninsula, infection rates are highest among the aboriginal Orang Asli minority group, and soldiers. Illegal land-scheme workers, often foreigners, also exhibit high infection rates. At highest risk are forest workers (loggers, rattan collectors, and forest-product gatherers), followed by plantation workers and other aboriginal communities (Palmer, 2002). Thomas and Disanaike (1977), Oothuman (1988), Mak *et al* (1992), Rahman *et al* (1997), and the Ministry of Health (2000) reported high rates of infection among the indigenous Orang Asli.

The Orang Aslis are the indigenous minority people of Peninsular Malaysia. The name is a Malay term which translates as 'original people' or 'first people'. They numbered 105,000 in 1997, representing a mere 0.5% of the national population. They are not a homogeneous group; the different tribes include the Orang Laut, Orang Seletar, Mah Meri, Temuan,

Jakun, Semai, Temiar, Jah Hut, and Semelai. Each has its own language and culture, and perceives itself as different from the others. The Semai and Temiar live close to or within, forested areas; they engage in hill rice cultivation and do some hunting and gathering. They also trade in petai, durian, rattan and resins to earn cash incomes (Nicholas, 2005).

Now, in urban areas, we have an increasing problem of imported malaria, mainly among Indonesian workers. The majority of cases of malaria admitted to the University Malaya Medical Centre (UMMC) were Indonesians (Moore and Cheong, 1995; Jamaiah *et al*, 1998).

The aim of this retrospective study is to determine the prevalence of malaria among patients admitted to the Orang Asli Hospital, Gombak, from 1999 to 2004. This is a special hospital providing services to the Orang Asli in Malaysia.

MATERIALS AND METHODS

A total of 94 case notes of all malaria cases admitted to the Orang Asli Hospital, Gombak, from the year 1999 to 2004, were reviewed and carefully analyzed.

RESULTS

Fig 1 shows the distribution of malaria cases admitted to the Orang Asli Hospital from 1999 to 2004. In 1999, 25 cases were admitted, which increased in 2000 to 32. The number of cases dropped to 15 in 2001, and declined further to 8 cases in 2002. There was a slight increase to 13 cases in 2003, and declined to 1 case in 2004.

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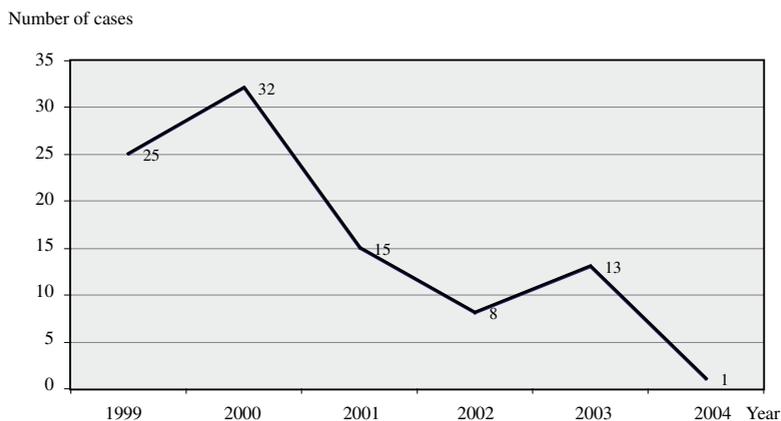


Fig 1- Number of malaria cases, 1999 to 2004.

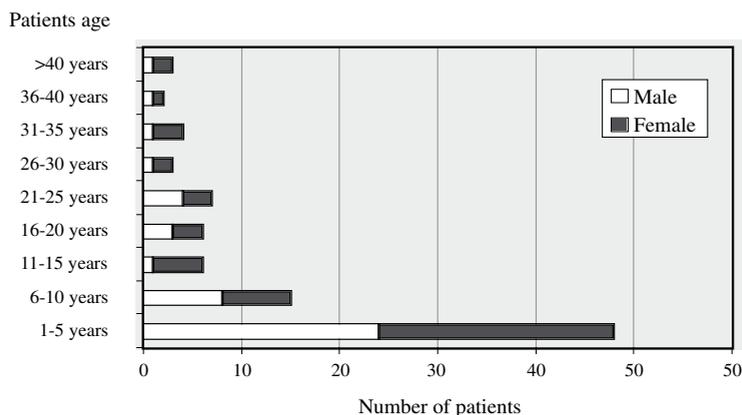


Fig 2- Malaria distribution by age and gender (1999-2004).

The distribution of malaria cases by species reported in Orang Asli Hospital from 1999 to 2004 shows that *Plasmodium falciparum* constituted the highest percentage (57%, 53 cases), followed by *Plasmodium vivax* (38%, 36 cases), with only 5% (5 cases) mixed infections of *P. falciparum* and *P. vivax*.

Fig 2 shows malaria case distribution by age and gender admitted to Orang Asli Hospital (1999-2004). The data shows slightly more female patients (53%, 50 cases) than male patients (47%, 44 cases). The majority of cases fell within 1-5 years of age (51%, 48 cases).

For the distribution of malaria cases by tribe in Orang Asli Hospital (1999-2004), most cases reported were among Semai (44%, 41 cases), followed by Temiar (34%, 32 cases). "Unspecified tribe" constituted 20% (19 cases), and Malays represented only 2% (2 cases).

Fig 3 shows the number of patients according to duration of stay in the hospital; most patients stayed for more than one month (27%) (25 cases), followed by 2 weeks (18%) (17 cases). Patients staying for 3 weeks constituted 16% (15 cases) and 1 week constituted 12% (11 cases). Lastly, patients who stayed for 4 weeks made up 11% (10 cases) and that whose hospital stay was not stated was 16% (16 cases).

Table 1 shows the percentage of cases developing complications from malaria. The majority of patients developed anemia (38%) (36 cases), followed by splenomegaly (18%) (17 cases), hepatomegaly (9%) (8 cases), jaundice (4%) (4 cases), cerebral malaria (2%) (2 cases), and black water fever (1%) (1 case).

DISCUSSION

In this study, it was shown that the number of malaria cases increased from 25 in 1999, to 32 in 2000.

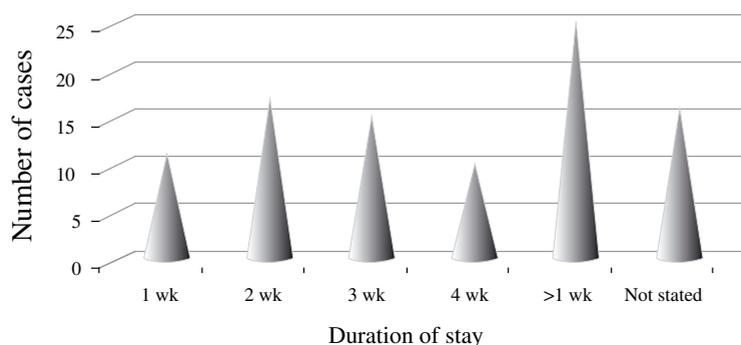


Fig 3- Number of cases according to duration of stay in the hospital.

This was then followed by a steady decline to 15 cases in 2001 and 8 in 2002. There was a slight increase in 2003 to 13 cases, and finally a decrease to only 1 case in 2004. This decrease could be due to the successful Malaria Control Program, which includes using impregnated bed nets, a primary health care approach, periodic chemotherapy given to the Orang Asli, and focal spraying activity in localities with outbreaks in both malaria-prone and non-malarious areas.

The most prevalent malaria parasite in this study was *P. falciparum*, followed by *P. vivax*. This was similar to other previous publications (Thomas *et al*, 1981; Gordon *et al*, 1991; Lim, 1992; Mak *et al*, 1992; Moore and Cheong, 1995; Jamaiah *et al*, 1998; Abdullah *et al*, 2001; Mahdy *et al*, 2004). But a study by Norhayati *et al* (2001) among Orang Asli population in Pos Piah, Perak, reported that the most prevalent species was *P. vivax*, followed by *P. falciparum*.

The most common age group that was susceptible to malaria infection was 1-5 years of age. Gordon *et*

al (1991), Norhayati *et al* (2001), and Mahdy *et al* (2004) also reported similar findings among the Orang Asli population in Pos Legap valley and Pos Piah in Perak, and among the Orang Asli population living in the interior areas of Pahang and Kelantan, Malaysia, respectively. Similar findings were also reported from Indonesia (Syafuruddin *et al*, 1992) and southeastern Lao PDR (Toma *et al*, 2001). This could be attributed to the high susceptibility of the younger age groups to malaria and the high immunity level to malaria in the older age groups. Special attention should be given to children below five years of age, who are susceptible to malaria.

The majority of patients were from the Semai tribe, followed by the Temiar tribe. Most patients came from Pos Lenjang, Kuala Lipis. The majority of patients (27%) stayed in the hospital for more than a month. Duration of stay of admitted patients was used as a measure of severity of infection; the longer the duration, the more severe the infection.

The most common complication seen in this study was anemia. There was no reported case of death. Detection and control of malaria among the Orang Asli is difficult because they live in remote interior areas with an unsatisfactory communication system and their daily activities involve going in and out of the jungle collecting forest products and hunting animals.

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Table 1
Malaria cases with complications.

Types of complication	Number	(%)
Anemia	36	(38)
Splenomegaly	17	(18)
Hepatomegaly	8	(9)
Jaundice	4	(4)
Cerebral malaria	2	(2)
Black water fever	1	(1)
Total	68	(72)

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