

PARASITOLOGICAL EXAMINATION OF IMPORTED AND INDIGENOUS MALARIA IN TEGALOMBO COMMUNITY HEALTH CENTER, PACITAN DISCTRICT, EAST JAWA PROVINCE

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ABSTRACT

The district of Pacitan is one of malaria hypoendemic areas in East Jawa Province. The people of Pacitan District are accustomed to work in outer Jawa islands temporary for three months period. They go in a good health to Papua, Sulawesi, Kalimantan, and Maluku islands, but often come back to Pacitan District are infected with malaria parasites (imported malaria). On the other hand, the people who do not go to outside Pacitan District have also been infected with malaria parasites (indigenous malaria). During the period of August 2009, the microscopy examination has been done on the thick blood films of the malaria infected travelers hospitalized at the Community Health Center (Puskesmas) of Tegalombo Subdistrict, in Pacitan District. The parasite species of the total number of 26 patients hospitalized in Tegalombo Community Health Center, 22 patients (84.6%) were imported malaria and 4 patients (15.4%) were indigenous malaria. Almost all imported malaria cases were male (95.45%) aged 18-40 years old, there was only one female worker (4.54%) aged 30 years old. Indigenous malaria were found in 2 males (50%) including one kid aged 6 years old and a man aged 17 years old, and 2 females (50%) aged 30 and 35 years old.

Keywords: imported malaria, indigenous malaria

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INTRODUCTION

Malaria remains one of major health problem in Indonesia. The district of Pacitan is one of malaria hypoendemic areas in East Jawa Province. The people of Pacitan District are accustomed to work outside Jawa islands temporary for three months periode. They go in a good health to Papua, Sulawesi, Kalimantan, and Maluku islands, but often come back to Pacitan District are infected with malaria parasites (imported malaria). On the other hand, the people who do not go to outside Pacitan District have also been infected with malaria parasites (indigenous malaria). During the period of August 2009, the microscopy examination has been done on the thick blood films of the malaria infected patients hospitalized at the Community Health Center (Puskesmas) of Tegalombo Subdistrict, in Pacitan District, East Jawa Province, Indonesia. The examination is aimed to find out the parasite species which infect the imported and indigenous malaria in the center mentioned above.

MATERIALS AND METHODS

The patients examined were malaria infected patients who hospitalized in the Community Health Center of

Tegalombo Subdistrict, in Pacitan District, East Jawa Province, Indonesia during August 2009. Malaria cases were divided into imported and indigenous. Imported malaria is the patients that have been infected by malaria parasites in out side Jawa Island, while indigenous malaria is the patients who infected by malaria parasites in Pacitan District.

Microscopy examination is performed on the Giemsa stained- thick blood films based on the characteristic of malaria parasite shown on the DPDx Laboratory Identification of Parasites of Public Health Concern, and Manual of malaria microscopy (WHO 2008). The parasite counts were also performed to obtain the number of parasites per 200 leukocytes on Giemsa stained-thick films or per μ l infected blood.

RESULTS

The parasite species of the total number of 26 patients hospitalized in Tegalombo Community Health Center, 22 patients (84.6%) were imported malaria and 4 patients (15.4%) were indigenous malaria. Almost all imported malaria cases were male (95.45%) aged 18-40 years old, there was only one female worker (4.54%) aged 30 years old. Indigenous malaria were found in 2

males (50%) including one kid aged 6 years old and a man aged 17 years old, and 2 females (50%) aged 30 and 35 years old.

Parasite Species and Parasite Count

Identification of parasite species of imported malaria resulting in *P. falciparum* was found in 12 cases (54.5%), *P. vivax* in 4 cases (18.2%) and mix of both species in 6 cases (27.3%), and 31.8% with detectable gametocytes. The parasite counts were ranged from 480-1480 parasites per 200 leukocytes. While indigenous malaria was composed by *P. falciparum* found in 2 cases (50%), *P. vivax* in one case (25%) as well as mix of both *P. falciparum* and *P. vivax* (25%). The results are shown in Table 1.

Table 1. Results of parasitological examination of imported and indigenous malaria in community health center of Tegalombo sub district of Pacitan District, East Jawa Province.

	Malaria Cases	
	Imported	Indigenous
Number of cases	22 (84.6%)	4 (15.4%)
Male patients	21 (95.45%)	2(50%)
Female patients	1 (4.54%)	2 (50%)
Ages	18-40 years old	6, 17, 30, 35 years old
<i>P. falciparum</i>	12 cases (54.5%),	2 cases (50%)
<i>P. vivax</i>	4 cases (18.2%)	1 case (25%)
Mix <i>Pf+ Pv</i>	6 cases (27.3%)	1 case (25%)

DISCUSSION

The data shows that the number of imported malaria in Tegalombo Community Health Center is higher than that of indigenous malaria. The increase of malaria cases in Tegalombo Community Health Center of Pacitan District of East Jawa Province in August 2009 that is due to imported malaria from outer Jawa Island. Trends in imported malaria in Tegalombo Community Health Center are the result of increases in travel activity of the residence to those malaria endemic areas in Indonesia, such as Indonesian Papua (Lederman 2006), Maluku, Kalimantan, Jambi and Riau (Priyana 2008), while malaria infection is threatening them as they were nonimmune travelers. The aim of travel is to work as temporary worker for 3 months and come back to Pacitan District often with malaria infection. While they went back to Pacitan District, malaria is possibly transmitted to other residences that are not traveling to any malaria endemic areas. Based on the gender of workers in outer islands, almost all workers are male (95.45%) and only one female (4.54%). The ages of the workers are the productive ages to work (18-40 years old), while the choices of travel destinations are mostly the fields of work that do not need specific skill, such as

building construction or plantation (Priyana 2008) that can be done by any body with low or middle education.

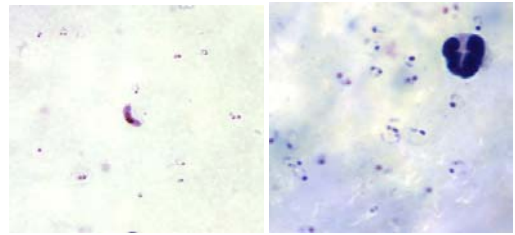


Figure 1. *P. falciparum* on thick blood film of travelers of Pacitan District hospitalized at Tegalombo Community Health Center, Pacitan District, East Jawa Province, Indonesia

Microscopy examination of blood films on imported malaria showed that infection with *P. falciparum* is higher (54.5%), followed by *P. vivax* (18.2%) and mix of both species (27.3%), and 31.8% with detectable gametocytes. The presence of gametocytes suggested, that the patients have been infected at least for 10 days as the life cycles are presented about 10 times before forming gametocytes. They also potentially transmit the parasites to others. The indigenous malaria showed the *P. falciparum* infection in 2 cases, while *P. vivax* and mix *P. falciparum* and *P. vivax* were found in only one case. Parasite counts in both cases were ranged from 480-1480 parasites per μ l infected blood and categorized as ++, +++ and +++++. Parasite count is important to establish how severe malaria in a patient. The data is necessary to find out whether the malaria parasites are responding to the antimalaria treatment being given. This can be monitored over time by plotting the parasite count on the day of treatment and comparing it with the count in a blood film made at some specified later time (WHO 2008). As the increased of imported malaria were noted in Pacitan (hypoendemic area of malaria) it is important to reach the travelers for pretravel advice because they do not take effective precautions as they believe that their risk is minimal. The effective precautions are also important for the children born in the endemic areas as they have no immunity at all (Baas et al. 2006). The geographic origin of the immigrants plays a major role in the prevalence of the predominant species. Immigrants rarely use chemoprophylaxis or seek medical advice prior to travel as they mistakenly believe that they retain lifelong immunity (Bacanner et al. 2004). The migrants of Pacitan District who come back from working in outer Jawa Island, account for an increasing proportion of malaria infection cases in Tegalombo Community Health Center. Reduced efficacy of chemoprophylaxis may also factor in the increased importation of malaria.

They do not seek medical advice prior to working in outer Jawa Island, or they do but do not use chemoprophylaxis properly.

The reason of the increase in imported malaria in Pacitan District and in Jakarta is different. Jakarta is the capital and the most populous city in Indonesia, autochthonous malaria does not currently occur. Military, forestry, mining, and tourist activities draw Jakarta residents to distant parts of the archipelago with high rates of malaria. The study on imported malaria in Jakarta during January 2004 to February 2005, showed that imported malaria mostly came from Aceh Province, Papua and Bangka Islands. While malaria parasite, *P. falciparum* infection was accounted for 53% of cases, of which 15% had detectable gametocytemia. The highest number of cases occurred in May, July, and December with the nadir in October.

CONCLUSION

The parasitological examination in import and indigenous malaria cases in Tegalombo Community Health Center, Pacitan Regency, showed that *P. falciparum*, *P. vivax* and mix of both species were found in both cases, however, *P. falciparum* were found

more frequently rather than *P. vivax* and mix infection. Parasitemia in both cases were categorized middle to high parasitemia.

REFERENCES

- Bacaner N , Stauffer B , Boulware DR , et al . 2004. Travel medicine considerations for North American immigrants visiting friends and relatives . JAMA 291 : 2856 – 2864 .
- Baas, MC; Wetsteyn, J; van Gool, T. 2006. Patterns of Imported Malaria at the Academic Medical Center, Amsterdam, The Netherlands. Journal of Travel Medicine, Volume 13, Issue 1, 2006, 2–7
- Lederman, ER., Sutanto, I., Wibudi, A., Ratulanie, L., Krisin, Rudiansyah, I., Fatmi, A., Kurniawan, L., Nelwan, RHH., and Maguire, JO. 2006. Imported Malaria in Jakarta, Indonesia: Passive Surveillance of Returned Travelers and Military Members Postdeployment. <http://www3.interscience.wiley.com/journal/118566205/abstract>
- Priyana. AH. 2008. Nyamuk Malaria Ancam Pacitan. <http://www.kabarindonesia.com/berita.php?pil=3&jd=Nyamuk+Malaria+Ancam+Pacitan&dn=20081029100726>
- WHO. 2008. Manual of malaria microscopy.