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CASE REPORT: PANCYTOPENIA IN SEVERE MALARIA WITH SUSPECTED HEMOPHAGOCYTTIC SYNDROME AT ATAMBUA HOSPITAL

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ABSTRACT

Background: Malaria is a parasitic infectious disease caused by *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium ovale*, and *Plasmodium malariae*. The signs of a malaria infection include fever, chills, anemia, and splenomegaly. In the Belu district, the incidence of malaria is still high. It's about 10,6 per 1000 population. **Objective:** To describe a case of Malaria in one of patient in Indonesia. **Methods:** Case report. **Results:** A 61-year-old woman with Malaria with clinical manifestations as follow, fever, body aches, and chills felt since 3 days before hospital admissions. On the 4th day of treatment, *Plasmodium falciparum* was found. **Conclusion:** A combination of anti-malarial medications (OAM) is used in the treatment of malaria with the goal of reducing *Plasmodium* resistance to anti-malarial medications.

Keywords : *Malaria, Plasmodium falciparum, Pancytopenia, Hemophagocytic Syndrome.*

INTRODUCTION

Malaria is a parasitic infectious and life threatening disease that caused by *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium ovale*, and *Plasmodium malariae*.^{1,2} Because *Plasmodium vivax* is more difficult to control and eradicate than *Plasmodium falciparum*, many co-endemic settings have seen an increase in the proportion of malaria cases attributable to *Plasmodium vivax*.¹⁴ Malaria attacks erythrocytes and is distinguished by the finding of asexual forms in blood.^{1,2} This disease is naturally transmitted through the bite of female anopheles.^{2,3}

Moreover, this disease has a singular geographic distribution, particularly in areas close to the equator. Despite its potential for death, it can actually be avoided and treated.¹³ Indonesia was listed as one of the nations with an epidemic of malaria.¹⁰ Eastern Indonesia, including Papua, West Papua, East Nusa Tenggara, North Maluku, and Maluku, had remarkable number of malaria cases. According to the Indonesian report on basic health research, the prevalence of malaria in Papua, West Papua, East Nusa Tenggara, North Maluku, and Maluku was 12.07 percent, 8.64 percent, 1.99 percent, 1.36 percent, and 1.21 percent, respectively.¹² In the Belu district itself, the incidence of malaria is still high. It's about 10,6 per 1000 population.

The signs of a malaria infection include fever, chills, anemia, and splenomegaly.² Furthermore, vulnerable people, such as children and elderly infected *Plasmodium falciparum* or

Plasmodium vivax malaria run the risk of dying from severe anemia and Malaria recurrence in vulnerable group is poorly characterized in terms of its long-term effects. Effective treatment and early diagnosis can avoid undesirable outcome.¹¹ Also, to reduce the risk of recurrence, disability, and death in severe malaria patients, clinical management and treatment must be improved.¹³ On the other hand, the information about malaria treatment effectiveness in endemic region is insufficient. This study aimed to describe a case of Malaria in one of patient in Atambua Hospital.

CASE REPORT

A 61-year-old woman went to the emergency hospital with a fever, body aches, and chills felt since 3 days ago. There was an absence of cough and cold, the fever fluctuated within the three days. The patient reports having headaches and nausea. Malaria and other disease history were denied.

Physical examination results : BP: 90/60mmHg, P: 88x/minute, RR: 20x/minute, T: 38°C. Other physical checks revealed it to be normal and the absence of the liver and spleen.

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Table 1. Progress of Laboratory Result

Laboratory results	Day 1	Day 3	Day 4	Day 7	Day 9
Hemoglobin	11.8 g/ul	9.6 g/ul	9.3 g/ul	6.9 g/ul	7.9 g/ul
WBC	5.500	4.300	2.900	4.300	5.300
RBC	4.02x10 ⁶	3,8 x10 ⁶	3,3x10 ⁶	2,17x10 ⁶	2.64x10 ⁶
Thrombocyte	85.000	54.000	32.000	163.000	384.000
Blood smear	Negative	Negative	+4 trophozoit plasmodium falcifarum	Trophozoit positive	Trophozoit negative

On the 4th day of treatment, plasmodium falciparum was found. Primaquine 1x3 single dose tablets were given and Dihydroartemisinin – piperazine (DHP) 1x3 tablets were also given for 3 days. The patient complained of having blood in their urine. The patient received 3x500mg infusions of paracetamol and 2x40mg doses of omeprazole by IV. On the 7th day, there were still trophozoites in the blood smear. So the doctor gives an infusion of quinine and 2x100 mg of doxycycline. The result was that no trophozoites were found on the 9th day of treatment. The patient refused blood transfusions. When discharged, the patient received quinine and doxycycline for 7 days, as well as vitamins.

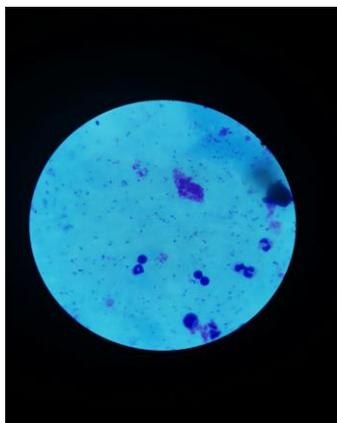


Figure 1. A microscope image at 40X magnification of Blood smear of trophozoite falciparum +4 (before antimalaria drug therapy)

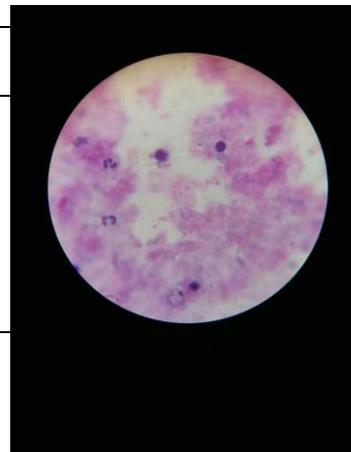


Figure 2. A microscope image at 40X magnification of Blood smear, after antimalaria drug therapy

DISCUSSION

In the case report above, pancytopenia was found in severe malaria because most of the life cycle of malaria parasites occurs in the blood and then induces changes in it.⁴ Hemophagocytic syndrome is a rare cause of pancytopenia that occurs due to an exaggerated immune response to T cells induced by inflammatory cytokines such as necrosis α (TNF α), interferon γ (IFN γ), and Macrophage Colony Stimulating Factor (M-CSF).^{5,6,7} Diagnostic criteria of Hemophagocytic syndrome: Hereditary factors, clinical criteria like fever and splenomegaly, the criteria for laboratory examination results include Hb <9 g/dl for adult, Hb <10 g/dl for children, Platelets <100,000, neutrophil <1x10⁹/l, hypertriglyceridemia and/or hypofibrinogenemia (fasting triglycerides: ≥ 3 mmol/l, fibrinogen <1.5 g /l), ferritin >500 μ g/l, sCD25(sIL-2) $\geq 2400\mu$ /ml, decreased or absent NK cell activity and hemophagocytosis in bone marrow, cerebrospinal fluid or lymph nodes.^{7,8,9} Hemophagocytic syndrome was suspected in this case based on the aforementioned characteristics. However, such follow-up exams cannot be performed due to limited facilities. In this situation, the 1st and 2nd of anti-malarial medications are used to treat malaria until no more Plasmodium falciparum is detected in the blood.^{2,3}



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CONCLUSION

Malaria is an infectious disease diagnosed based on clinical pictures and examination of blood smears with the finding of trophozoites plasmodium falciparum.^{2,3} A combination of anti-malarial medications (OAM) is used in the treatment of malaria with the goal of reducing plasmodium resistance to anti-malarial medications.

CONFLICTS OF INTEREST

The author declares no conflict of interest.

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AUTHOR CONTRIBUTIONS

The authors conduct research based on a case report in Atambua Hospital.

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