CASE REPORT

Complicated vivax malaria in pregnancy: A case report in rural area of Indonesia

Raymond Surya1, Edward Sugito Manurung1, Yudianto Budi Saroyo2*
1Obstetrics and Gynecology Specialist, RSUD SoE, Timor Tengah Selatan District, East Nusa Tenggara, Indonesia
2Department of Obstetrics and Gynecology, Dr. Cipto Mangunkusumo Hospital, Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia

Objective: This study aims to report a preterm delivery and anemia as part of P. vivax malaria infection complications in a pregnant woman in Timor Tengah Selatan regent, East Nusa Tenggara, Indonesia.

Case report: A 42-year-old, gravida 6 para 5, 36-week of gestational age pregnant woman came with complaints of water broke since one day before admission. She had fever with chills for three days, especially at night along with muscle, headache, joint soreness, dizziness, and palpitations. Rapid diagnostic test for malaria showed positive result. Peripheral blood smear examination revealed microcytic hypochromic due to iron deficiency or chronic infection and presence of trophozoites-ring form of P. vivax with 4,235 parasitemia. There was born baby boy 2,470 grams (percentile 28%), fetal head 31 cm (percentile 13%), birth length 43 cm (percentile 4%), and Apgar Score (AS) 8 and 9 at 1 and 5 minutes, respectively. The treatment was according to antimalarial guideline in Indonesia using dihydroartemisin 120 mg and piperaquine phosphate 960 mg fixed dose as DHP for 3 days and primaquine 15 mg for 14 days.

Conclusion: Anemia as part of vivax malaria complication in pregnancy contribute to preterm delivery.


Highlights:
1. Vivax malaria in pregnancy can contribute to anemia and preterm delivery.
infection in pregnancy is associated with maternal anemia and hepatic dysfunction, miscarriage, congenital malaria, preterm delivery, and developing to severe disease.\textsuperscript{6,9,10} A significant burden and impact of \textit{P. vivax} infection in pregnancy needs a strategy to prevent and control this spread. Unfortunately, \textit{P. vivax} and \textit{P. ovale} are the only malaria species which have ability to relapse because of the dormant liver stages known as hypnozoites. In acute stage of vivax malaria, schizontocidal agent chloroquine (CHQ) is the key of treatment and it is also safe for pregnancy.\textsuperscript{11} To prevent the occurrence of relapse, 8-aminoquinolines primaquine (PMQ) or tafenoquine (TQ) both actives to against hypnozoites stage of \textit{P. vivax}. Meanwhile, it is contraindicated in pregnancy because the glucose-6-phosphate dehydrogenase (G6PD) status of fetus cannot be determined antenatally in most malaria endemic settings.\textsuperscript{11,12}

Therefore, this study aims to report a preterm delivery and anemia as part of \textit{P. vivax} malaria infection complications in a pregnant woman in endemic areas of malaria in Indonesia, namely Timor Tengah Selatan regent, East Nusa Tenggara.

**CASE REPORT**

A 42-year-old, gravida 6 para 5,36-week of gestational age pregnant woman was admitted to a rural hospital in SoE, East Nusa Tenggara, Indonesia with complaints of water broke since one day before admission. She had fever with chills for three days, especially at night along with muscle, headache, joint soreness, dizziness, and palpitations. No history of malaria infection before. The patient had a BP of 110/70 mmHg, pulse 105 bpm, RR 20 bpm, temperature 1020F, saturation of 98% without oxygen support. Physical examination revealed in normal range. On obstetrical status, there was head presentation at station -1 and 2 cm dilatation without intact membrane. Ultrasound examination showed oligohydramnios with estimated fetal weight (EFW) of 2,500 grams.

The patient had Hb 8.3 g/dL, leucocyte 12,400/uL, platelet 229,000/uL, mean corpuscular volume (MCV) 76/um, mean corpuscular hemoglobin (MCH) 25 pg, granulocyte 69%, lymphocyte 23%, monocyte 8%, random blood glucose (RBG) 112 mg/dL, aspartate aminotransferase (AST) 28 U/L, alanine aminotransferase (ALT) 24 U/L, urea 13 mg/dL, creatinine 0.4 mg/dL. Rapid diagnostic test for malaria showed positive result. Peripheral blood smear examination revealed microcytic hypochromic due to iron deficiency or chronic infection and presence of trophozoites-ring form of \textit{P. vivax}. Malaria smear showed 4,235 \textit{P. vivax} parasitemia with trophozoite-ring form stage of the parasite present (Figure 1).

Figure 1. Trophozoite-ring form stage of \textit{P. vivax} parasitemia.

After observation 12 hours, there was born baby boy 2,470 grams (percentile 28%), fetal head 31 cm (percentile 13%), birth length 43 cm (percentile 4%), and Apgar Score (AS) 8 and 9 at 1 and 5 minutes, respectively. On examination to the Fenton growth curve, it is still appropriate for gestational age (AGA). Neonatal and cord blood smears were negative for malaria parasites.

The treatment was according to anti-malarial guideline in Indonesia using dihydroartemisin 120 mg and piperaquine phosphate 960 mg fixed dose as DHP for 3 days and PMQ 15 mg for 14 days. Paracetamol in divided doses was given to control the fever. The fever clearance time was 12 hours, and the clinical symptoms was resolved after day 1. The patient was hospitalized for three days to get DHP administration. The patient was well and she was to be discharged. Evaluation after 7, 14, and 21 days of treatment, there was no \textit{P. vivax} found on peripheral blood smear (Figure 2).
DISCUSSION

The classic P. vivax malaria symptoms are consisted of fever, headache, and chills which is usually after 10-15 days getting bitten by an infected mosquito. The high frequency of headache combined with fever in P. vivax infection makes the practice to perform malarial rapid diagnostic test at antenatal check-up especially in endemic area. In our case, the woman came with fever and headache so that the midwives performed malarial rapid diagnostic test. Meanwhile, P. vivax microscopic monoinfection is defined as the presence of asexual P. vivax parasites of any densities and no other of Plasmodium species found on the blood smear. Congenital malaria defines as the presence of asexual Plasmodium parasites in the peripheral of neonates or cord blood at delivery without regarding the clinical symptoms and signs.

In Asia, infection both P. falciparum and P. vivax in pregnancy are prevalent whereas P. vivax infection is considered to be benign and less morbidity than P. falciparum. Study in Papua showed that high drug-resistant malaria and ability to relapse of P. vivax infection caused the 34% of infections in pregnancy. It was higher than study from Thailand which showed lower average of P. vivax parasitemia (632 parasites/µL); thus, our patient revealed classic symptoms of malaria corresponding to higher parasitemia level.

In our case, the woman came to health facility due to obstetrical reason with suspicious symptoms of malaria. She undergone rapid positive malarial test and was continued with P. vivax infection on peripheral blood smear. There was 4,235 P. vivax parasitemia higher than study in Papua which showed lower average of P. vivax parasitemia (632 parasites/µL); thus, our patient revealed classic symptoms of malaria corresponding to higher parasitemia level.

The risk of anemia, small for gestational age (SGA), and preterm delivery is increased with P. vivax infection. Study by Azucena B, et al. revealed that clinical P. vivax infection increased the risk of maternal anemia (OR 5.48; 95% CI 1.83-16.41; p=0.009). Meanwhile, another study in Venezuela stated that 84.6% of women with malaria came with mild to severe anemia which severe anemia as the most frequent complication around 23% corresponding to study in Brazil. Vivax malaria infection was associated with the increased of SGA (OR 1.27; 95% CI 1.21-1.33). Meanwhile, vivax malaria infection at each gestational age was related with preterm birth (OR 1.23-1.79). In our case, the woman suffered from vivax malaria at 36 weeks of gestational age with microcytic hypochromic anemia, AGA, and preterm delivery due to obstetrical indication of water broke. On peripheral blood smear, it found microcytic hypochromic smear due to iron deficiency or chronic infection or malaria infection. Whether P. vivax infection causes preterm birth or SGA is still debatable. There are some evidences that P. vivax is able to sequester in placenta regardless placental inflammation as one of factors contributing to preterm birth. In P. vivax infection, systemic inflammation is more common than local placental inflammation which is proved by modest placental pathology and absent of sequestration. In our case, the history of malaria infection was unknown. The possibility of preterm birth in our case might be caused by maternal anemia impacting to vivax-associated SGA. Besides, anemia in malaria is often normocytic and normochromic without spherо-
cytic hypo-
ave tested
r prevention of relapses in vivax malaria;
lti-
les reservoirs so that it limits for
opathies and iron
20
i
h through preterm premature
-
-
tudy is conducted in endemic area of malaria in
fting,
data gathering and
on with malaria, and pregnancy status.
Brief
d like
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-


