

## Severe falciparum malaria: A case report

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**Abstract.** Plasmodium parasites caused Malaria. Indonesia is one of the countries in Southeast Asia that endemic to malaria. The burden of malaria is more in the eastern part of Indonesia than the Western part as well as the endemicity. Some cases of malaria will develop to severe form. Usually, the manifestation of children and adult are different. We reported a severe case of malaria in a 14-year-old boy who develops several manifestations such as anemia, hypoglycemia, sepsis and black water fever. We successfully treated the patient with Artesunate intravenous and continued with Dihydroartemisinin-piperaquine.

### 1. Introduction

Malaria is one of the most burden diseases among all infectious diseases. It transmitted by the bites of infected female *Anopheles* mosquitoes.<sup>1</sup>In the year 2015, about 212 million cases of malaria occurred worldwide. Most of the cases in 2015 were in the WHO African Region (90%), followed by the WHO South-East Asia Region (7%) and the WHO Eastern Mediterranean Region (2%). Progression to severe and fatal disease is significant but not entirely confined to *Plasmodium falciparum* infections. High mortality always associated with Severe malaria. From a clinical perspective, there is a continuum from asymptomatic malaria to uncomplicated illness through to severe and lethal malaria.<sup>4</sup>

In severe malaria, the prompt administration of an effective antimalarial drug, preferably by a parenteral route, is essential. Artesunate (i.v. or i.m.) is the treatment of choice, followed by Artemether (i.m.) and Quinine (i.v. or i.m.).<sup>4</sup>

### 2. Case Report

A boy, 14 years old was in Adam Malik hospital with abdominal pain fever and pale on 20<sup>th</sup> August 2016 with 48 kg body weight and 170 cm height within normal range. This patient was from another hospital with a diagnosis of suspected peritonitis. He has been hospitalized for five days before. Abdominal CT-scan showed hepatomegaly with moderate ascites, bilateral pleural effusion, and small multiple peri-aortic nodules. Diagnosis of lymphoma was evocated by a radiologist. History of travel in malaria-endemic areas was one month ago (Kutacane, Aceh). There are no details about previous medication (drugs/herbs).

At admission to Adam Malik hospital, the patient presented with Glasgow Coma Scale 13, fever, pallor, icteric, abdominal pain, hepatomegaly (+ 5cm) and splenomegaly (Schuffner VI).





**Figure 1.** Patient condition when arrived (picture was with the permission of patient).

When we were consulted the patient had already presented with decreased consciousness for half a day, fever, shivering and yellowish of the eye since one week before admission. The first day after admission, blood test results showed anemia (6.2g/dL), leukocytosis (43,380/mm<sup>3</sup>), thrombocytopenia (40,000/mm<sup>3</sup>), hypoglycemia (26mg/dL), hyperuricemia (124mg/dL), hypoalbuminemia and prolonged hemostasis. Urinalysis showed hemoglobinuria, and urine culture result came out with *E.coli*.

A blood smear revealed *Plasmodium falciparum* in ring stage, schizonts, and gametocytes, while the urinalysis result was dark with positive urobilinogen and blood.

The patient transferred to Pediatric Intensive Care Unit (PICU) with NGT alimentation, albumin correction and Artesunate therapy with 2.4mg/kg on H 0, 12, 24 then daily. Followed by parenteral antimalaria treatment for 3 days, we continue with Dihydroartemisinin-piperaquine 2-6mg/kg/day for three days. Single dose Primaquine of 0.25mg/kg was administered. The patient also treated with Ceftriaxone 1gr 2 times/day, Paracetamol 500 mg 3 times/day, and Vit. K 3mg/day IM.

After five days treated in PICU, the patient showed several improvements. The patient was discharged after eight days.



**Figure 2.** Patient's urine color.

### 3. Discussion

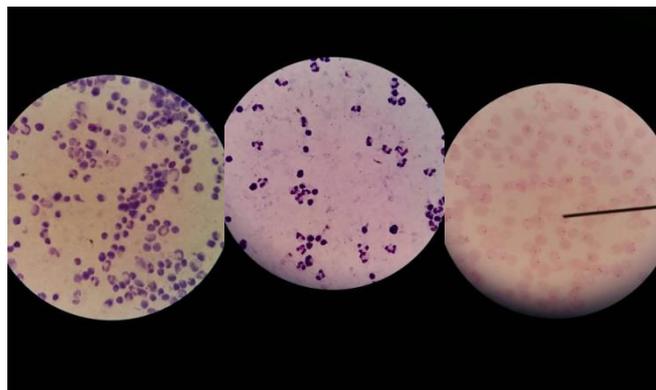
Severe malaria is several manifestations such as impaired consciousness, acidosis, hypoglycemia, severe malarial anemia, renal impairment, jaundice, pulmonary edema, significant bleeding, shock, and hyperparasitemia. According to the WHO criteria from 2000, there are different severe manifestations of *Plasmodium falciparum* malaria in adults and children.

In this patient, we found almost all the severe malaria presentation, such as impaired consciousness, respiratory distress, prostration, jaundice, severe anemia, hypoglycemia,

hyperparasitemia, and acidosis. Severe malaria must be followed up due to risks of progression to a complicated case.

The Artemisinin derivate Artesunate is established as the treatment of choice for severe malaria. Therapy begins with Artesunate i.v 2.4 mg/kg immediately then at 12, 24 hourly and daily until oral medication can be taken reliably.<sup>2</sup> Artesunate i.v showed a 35% reduction in death rates in adults in Asia and a 22.5% reduction in children in Africa when compared with Quinine. In contrast to Quinine, Artesunate action on early circulating ring-stages reduces the risk of sequestration of red blood cell infected with mature forms of *Plasmodium falciparum* and related clinical manifestations of severe malaria.<sup>3</sup>

In this case, this patient was given Artesunate therapy for four days and continued with DHA-piperaquine for three days while blood smear test was confirmed *Plasmodium falciparum* in ring stage, schizonts, and gametocytes. Parasite clearance is the criteria for determining resistance to antimalarial drugs and determined through parasite counts in blood smears.<sup>5</sup> Due to parasitological follow up at D 0, 3 and 7, the result shows the significant result in decreasing amount of parasite. In more than 50% of severe malaria cases, co-infection with bacteremia is common, therefore administering antibiotic is needed and as the third generation, cephalosporin can be the option for getting the result from the culture.<sup>4</sup>



**Figure 3.** Blood smear results at D0.

#### 4. Conclusion

Severe falciparum malaria can be life-threatening unless it is early diagnosed. The Artesunate regimen treatment given will give the best result due to its great efficacy.

#### References

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