

Case Report

Falciparum malaria complicated by black water fever

M. S. Madhuri¹, K. Elavarasan¹, V. P. Benjamin¹, M. S. Sridhar¹, S. Natarajan¹, V. Chiranjeevi²

Departments of ¹Medicine and ²Nephrology, Meenakshi Medical College Hospital and Research Institute, Kanchipuram, Tamil Nadu, India

Abstract We describe the course of falciparum malaria in a 28-year-old male patient who developed haemoglobinuria, black water fever following parenteral administration with artesunate. In the treatment of falciparum malaria, apart from quinine, use of other antimalarials, either singly or in combination are associated with the syndrome of blackwater fever.

Keywords: Blackwater fever, falciparum malaria, haemoglobinuria

Address for correspondence: Dr M. S. Sridhar, Professor, Department of Medicine, Meenakshi Medical College Hospital and Research Institute, Enathur, Kanchipuram, Tamil Nadu, India.
E-mail: sridhar.ms16@gmail.com

INTRODUCTION

Black water fever (BWF) is a severe clinical syndrome, characterised by intravascular haemolysis, haemoglobinuria and acute renal failure. Hippocrates is said to have given first description of BWF. A severe febrile illness accompanied by the passage of dark urine was documented by an English surgeon, Tidlie, in West Africa in 1819. J. Farrell Easmon gave the condition the name BWF in 1884. It was a complication of falciparum malaria in which haemoglobinuria caused acute renal failure from massive quinine-induced lysis of red blood cells (RBC).^[1] After the introduction of chloroquine, it was thought to have disappeared.^[2]

CASE REPORT

A 28-year-old male presented to the medicine to outpatient department with the complaints of fever of 6-day duration. Fever was 'high grade', intermittent in nature and was associated with chills and sweating for the preceding 6 days. He developed fever in Hyderabad of Telangana state where he has been working as daily wage labourer (stone cutting) for the previous 15 days. The fever was preceded by body

pains. He complained of 3–5 episodes of vomiting also; vomitus contained previously eaten food particles. He did not have a headache, body pains, cough, breathlessness or abdominal pain. His body temperature was 103° Fahrenheit, pulse rate 120 beats/min; he was hypotensive; successive blood pressure recordings were 70/50 mm of Hg and 90/60 mm of Hg and SpO₂ 96% was without any supplementation. Earlier, he was treated for fever in the private sector with intravenous (IV) ceftriaxone 1 g twice-a-day and IV fluids. Four years earlier, he had 'jaundice' which subsided on treatment, the nature of which is not clear. He consumes mixed diet, including non-vegetarian food. The patient gave a history of abusing ethanol and had been smoker for 5 years.

Physical examination revealed mild pallor of palpebral conjunctivae and tongue and jaundice. There was no nail abnormalities, cyanosis, oedema feet or lymphadenopathy. Systemic examination did not reveal anything significant except that spleen was palpable in the left hypochondrium up to 3 cm from the left costal margin.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Madhuri MS, Elavarasan K, Benjamin VP, Sridhar MS, Natarajan S, Chiranjeevi V. Falciparum malaria complicated by black water fever. *J Clin Sci Res* 2018;7:187-8.

Access this article online	
Quick Response Code:	Website: www.jcsr.co.in
	DOI: 10.4103/JCSR.JCSR_14_19

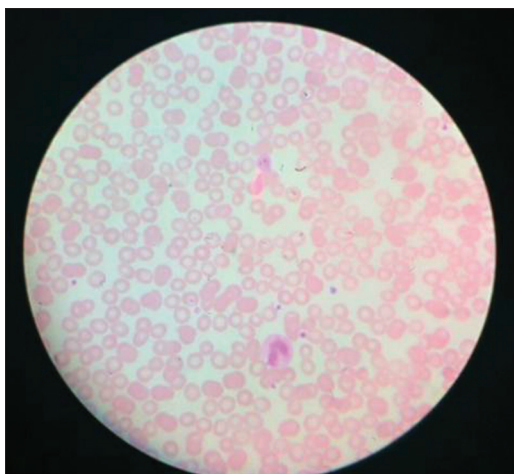


Figure 1: Peripheral smear showing malarial parasite (Leishman, ×100)

Investigation

Urinalysis reports albumin and urine sugar were negative, pus cells 1–2/HPF, epithelial cells 1–2/HPF and RBC plenty (25 cells). Random blood glucose 6.0 mmol/L (105 mg/dL), urea 12.28 mmol/L 74 mg/dL, creatinine 150.31 mmol/L 1.7 mg/dL, serum electrolytes sodium 142 mmol/L, chloride 105 mmol/L, potassium 3.4 mmol/L, bicarbonate 21 mmol/L, RBC 4.25 million/ μ L, haemoglobin 129 g/L, platelet 57,000/ μ L, packed cell volume 39%, mean corpuscular volume 94 fL/cell, mean corpuscular haemoglobin (MCH) 30 pg/cell, MCH concentration 34 g/dL, erythrocyte sedimentation rate 48 mm after first hour, total white blood cell count was 3500/ μ L, liver function tests-total serum bilirubin 78.66 mmol 4.6 mg/dL, direct bilirubin 46.7 2.7 mg/dL, aspartate aminotransferase 47 IU/L, alkaline phosphatase 120 IU/L, albumin 2.9 g/dL. Peripheral smear showed *Plasmodium falciparum* [Figure 1].

IV fluids and IV artesunate were administered for 3 days. For pyrexia, acetaminophen was administered parenterally. On day two of treatment, the patient specifically complained of passing dark and reddish urine which he likened to 'cola colour' [Figure 2]. A diagnosis of BWF was made. The patient recovered with anti-malarial and supportive treatment and was discharged on the sixth day after admission.

DISCUSSION

While oral artesunate and artemether are considered safe and well-tolerated antimalarial drugs,^[3] the patient described here developed syndrome of BWF after parental administration of artesunate.



Figure 2: Blackwater (cola coloured urine)

Of late, cases have been reported due to treatment with mefloquine, halofantrine, mefloquine-artesunate combination and artemether-lumefantrine combination.^[4,5] BWF is said to be more common among persons with Glucose-6-phosphate dehydrogenase (G6PD) deficiency. Thus, this condition is considered exotic with several enigmatic issues.^[1] The syndrome of BWF should receive due attention while treating a patient with falciparum malaria.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. George CR. Blackwater fever: The rise and fall of an exotic disease. *J Nephrol* 2009;22 Suppl 14:120-8.
2. Bruneel F, Gachot B, Wolff M, Régnier B, Danis M, Vachon F, et al. Resurgence of blackwater fever in long-term European expatriates in Africa: Report of 21 cases and review. *Clin Infect Dis* 2001;32:1133-40.
3. Price R, van Vugt M, Phaipun L, Luxemburger C, Simpson J, McGready R, et al. Adverse effects in patients with acute falciparum malaria treated with artemisinin derivatives. *Am J Trop Med Hyg* 1999;60:547-55.
4. Aloni NM, Nsangu M, Kunuanunua T, Kadima TB, Muanda TF. Haemolytic crisis of blackwater fever following artemether-lumefantrine intake. *Bull Soc Pathol Exot* 2010;103:296-8.
5. Price R, van Vugt M, Phaipun L, Luxemburger C, Simpson J, McGready R, et al. Adverse effects in patients with acute falciparum malaria treated with artemisinin derivatives. *Am J Trop Med Hyg* 1999;60:547-55.