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The outcome of black water fever treated with quinine therapy

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Abstract

Background: *According to the WHO black water fever is defined as severe, acute intravascular hemolysis with hemoglobinuria and dramatic fall in hemoglobin value with scant or absent parasitaemia(1). Black water fever (BWF) is a severe clinical syndrome, characterized by intravascular hemolysis, hemoglobinuria, and acute renal failure that is classically seen in European expatriates chronically exposed to Plasmodium falciparum and irregularly taking quinine.*

Methods*: This study was carried out in Sinnar Teaching Hospital, in the period from the first of October 2005 up to the end of October 2011. The data was collected from 19 patients all of them fulfill the W.H.O criteria for the diagnosis of black water fever , they received the standard dose of quinine infusion according to their weights and creatinine clearance , with daily basis follow up of the parasite count, hemoglobin and kidney functions.*

Result*: After 4 weeks recovery of kidneys functions occurred in 94 % of patients, 31.6 % required hemodialysis, and death is recorded in 5.3%.*

Conclusion: *Quinine as antimalarial drug in standard dose is a suitable therapy for patients with black water fever with good outcome.*

Keywords: black water fever, quinine therapy

INTRODUCTION

Acute hemoglobinuria with passage of black urine associated with recent or concurrent Plasmodium falciparum infection is a well-known clinical syndrome, first described a century ago. There has been at least one case, however, attributed to Plasmodium vivax (1). Acute hemoglobinuria indicates massive intravascular hemolysis and can be caused by a variety of factors in patients with P. falciparum infestation, including classic black water fever (BWF) as defined by the World Health Organization (WHO) on the basis of classic descriptions [2], overwhelming malaria with a high level of parasitemia [2, 3], glucose-6-phosphate dehydrogenase (G6PD) deficiency-induced hemolysis [4, 5], and other causes of hemolysis [4]. Unfortunately, the term "BWF" is commonly used to designate all of these conditions, a practice that leads to confusion and complicates analysis of the relevant literature. Black water fever is a complication of malaria infection in which red blood cells burst in the blood stream (hemolysis), releasing hemoglobin directly in the blood vessels and in the urine, frequently leading to kidneys failure. The disease was first linked to the malaria by the Sierra Leonean physician Dr. John Farrell Easmon in his 1884 Pamphlet entitled the nature and treatment of black water fever. He coined the name (black water fever) and he was the first one who successfully treats such cases. Symptoms and signs within a few days of onset there are chills, with rigor, high fever, jaundice, vomiting, rapidly progressive anemia, and dark red or black urine. The cause of hemolytic crises in this disease is unknown (mainly due to the intravascular hemolysis). There is rapid and massive destruction of red blood cells results in hemoglobinuria, intense jaundice, anuria (passing less than 50 ml of urine in a day), and finally death in the majority of cases. The most probable explanation for black water fever is an autoimmune reaction apparently caused by the interaction of malaria parasite and

the use quinine.). Blackwater fever is a serious complication of malaria [1]. It is much less common today than it was before 1950 [2]. It may be that quinine plays a role in triggering the condition, and this drug is no longer commonly used for malaria prophylaxis. Quinine remains important for treatment of malaria. All patients treated by quinine infusion and then shifted to oral route after disappearance of vomiting to complete the treatment. Symptomatic treatments were administered such as intravenous fluid, blood transfusion and sometimes supportive care as intensive care and dialysis.

Problem

Malaria is a major medical and economical problem in Sudan that affects all society and governmental sectors. It is one of the major causes of death. This study tries to touch black water fever, as one of the serious malarial complications (6).

PATIENTS AND METHODS

This study was carried out in Sinnar Teaching Hospital, in the period from the first of October 2005 up to the end of October 2011. The data was collected from 19 patients, all of them fulfill the W.H.O criteria for the diagnosis of black water fever, they received the standard dose of quinine infusion according to their weights and Creatinine clearance, with daily basis follow up of the parasite count, hemoglobin and kidney functions.

Objective

Study the outcome of black water fever treated with quinine therapy.

RESULTS

Figure (1): Explain the frequency of gender.

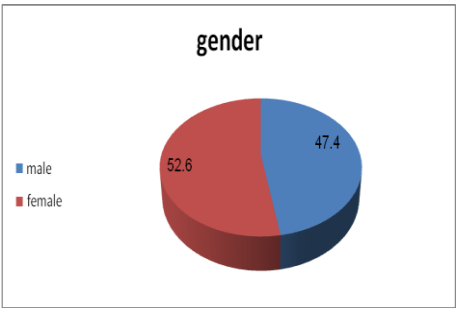

Figure (2): Explain the frequency of Age.

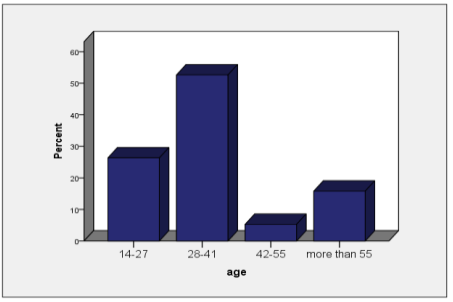

Table (1): Frequency and percentage of anemia among patients.

Anemia		
	Frequency	Percent
normal	0	0.0
mild	0	0.0
moderate	2	10.5
severe	17	89.5
Total	19	100.0

Table (2): Frequency and percentage of patients with raised serum Creatinine.

	Frequency	Percent
High	19	100.0
Normal	0	0.0

Table (3): Frequency and percentage of patients with high serum Bilirubin.

	Frequency	Percent
High	19	100.0
Normal	0	0.0

Table (4): Frequency and percentage of patients required renal dialysis.

Renal dialysis		
	Frequency	Percent
yes	6	31.6
no	13	68.4
Total	19	100.0

Table (5): The **treatment outcome after 4weeks.**

outcome after 4weeks		
	Frequency	Percent
Normal serum Creatinine	16	84.2
High serum Creatinine	2	10.5
Pass	1	5.3
Total	19	100.0

DISCUSSION

This study has been conducted in Sinnar Teaching Hospital in a period of the first of October 2005 up to the end of October 2011. In 19 patients presented by feature of black water fever 47.4% of them are male (9 from 19) and 52.6% are female (10 from 19) (Figure1).These patients categorize age wise into 4 group. Most frequent group is 28 to 41 years old composed of 52.6% and the next group is 14 to 27 years old composed 26.3%, the third group more than 55years old composed of 15.8% and the last group is 42 to 55years old composed 5.3% (Figure2).This study showed that 89.5% of data stand on moderate anemia followed by 10.5% on severe anemia (table1). All patients suffered from high serum Bilirubin (table3) and raised renal profile (table 2). Regarding treatment all patients

received the standard dose of quinine therapy according to their weight and creatinine clearance. In spite of different grades of renal impairment only 31.6% of patients required Dialysis (Table 4), 84.2% of them normalized their renal profile with in 4weeks, 10.5% remain with residual high renal profile. Death is recorded in 5.3% (table 5).

RECOMMENDATIONS

After the enumeration the study results, there are some ideas which could help further in the field of research and are better to be recommended as follow:

- Malaria can present with serious complications that need vigorous treatment.
- Quinine therapy remains the corner store in treating black water fever patients with a favorable outcome.

CONCLUSIONS

This study was done in Sinnar Teaching Hospital in 19 patients with feature of black water fever. The goal of the research is to study the outcome of black water fever treated with quinine therapy. The patients fulfill the W.H.O criteria for the diagnosis of black water fever. All of them received the standard dose of quinine infusion according to their weights and creatinine level, with daily basis follow up of their parasite count, hemoglobin and kidney functions. Symptomatic treatments were administered, like intravenous fluid, blood transfusion and sometimes supportive care such as intensive care and dialysis. (31.6%) required hemodialysis. After 4 weeks regarding renal functions recovery occurred in 94 % of patients. Death is recorded in 5.3%. Quinine as antimalarial drug in standard dose is a suitable therapy for patients with black water fever with good outcome.

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