

# Complex Febrile Convulsion And Malaria Induced Psychosis In An African Child

O Oyedeji, A Aremu, O Adebami, M Oningbide, G Oyedeji

## Citation

O Oyedeji, A Aremu, O Adebami, M Oningbide, G Oyedeji. *Complex Febrile Convulsion And Malaria Induced Psychosis In An African Child*. The Internet Journal of Neurology. 2005 Volume 5 Number 2.

## Abstract

We report the case of a 3-year-old male Nigerian, with acute malaria, presenting with complex febrile convulsion and features of psychosis. The case is discussed.

## INTRODUCTION

Malaria is the most common infectious childhood illness affecting the under five-year age group in the tropics. There are 300-500 million reported cases globally every year of which 3-3.5 million result in death. <sup>1</sup>Of the 4 species of the protozoan causing malaria, plasmodium falciparum is the most dangerous. It has the ability of giving rise to systemic complications such as acute renal failure, pulmonary edema, anemia and bleeding disturbances. Common central nervous complications of acute malaria include febrile convulsions and cerebral malaria. <sup>1,2</sup> Psychosis arising from acute malaria is unusual; however it may complicate cerebral malaria. Anti-malarial drugs and fever have been associated with psychosis in individuals with acute malaria disease.

## CASE REPORT

A 3-year-old boy presented at the emergency unit of the State hospital, Osogbo, Western Nigeria, with one-day history of fever, vomiting and sleeplessness. The parents gave Artemisin, Chloroquine and Paracetamol tablets at home on the evening the fever was noticed. At 12 midnight the patient developed bizarre reactions. He was sleepless, shouting and beating his father. The patient also had three episodes of brief intermittent generalized convulsions, each episode occurring every hour and lasting for less than one minute without post-ictal sleep. The patient has had a previous episode of febrile convulsion secondary to malaria one year before the present illness. No other family member has had a history suggestive of febrile convulsions, epilepsy or psychosis. The patient has taken Chloroquine and Artemisin for malaria disease several times in the past without developing adverse reactions. No other drugs had

been given.

Examination revealed a conscious and agitated child with a temperature of 38.9°C. He had cold extremities but was not pale, cyanosed, icteric or dehydrated. The essential findings on examination of the central nervous system were those of a conscious and restless child with irrational speech. There were no signs of meningeal irritation and the cranial nerves were normal. Cardiorespiratory findings included a pulse rate of 160 beats per minute, blood pressure of 90/50 in the supine position and a respiratory rate of 44 cycles per minute. The liver was not tender but it was enlarged to 3cm below the costal margin, with a firm consistency and a smooth surface. The spleen was enlarged to 2cm below the costal margin. No other abnormalities were detected on systemic examination.

An assessment of complex febrile convulsion and malaria-induced psychosis was made. The blood film showed trophozoites of Plasmodium falciparum one plus. The packed cell volume was 36% and the total white blood cell count and differentials were reported normal. Microbiological and chemical analyses of the cerebrospinal fluid were also reported normal. Computerized tomography scanning of the brain was normal. The random blood sugar was 7.3 mmol/L.

The patient was subsequently placed on intravenous fluids (4.3% dextrose saline), at maintenance rate. Five milligrams of Diazepam was added to this fluid. The patient slept 30 minutes after the commencement of the intravenous fluids. On waking up five hours later all the abnormalities on presentation had resolved except for pyrexia, which was still present. This was managed by tepid sponging. Oral doses of Artemisin and Chloroquine were recommenced and

completed. The fever subsided on the second day of admission and improvement was sustained. There after, the patient was discharged and was seen at the paediatric out patient clinic, fully recovered.

### DISCUSSION

Febrile convulsions are the most common seizures in childhood and they affect 2-4% of the total childhood population.<sup>3</sup> The chances of developing a recurrent febrile convulsion are 30-40%.<sup>4</sup> Malaria is a common cause of febrile convulsions in the tropics and also contributes to the development of epilepsy in later life.<sup>5</sup>

Psychosis associated with malaria is an uncommon finding in paediatric practice.<sup>6</sup> Previous studies have demonstrated that the psychosis observed in patients with malaria could be due to the fever, the anti-malaria drug administered, or cerebral malaria.<sup>6,7,8,9,10</sup> As previously noted by some researchers,<sup>7</sup> the psychosis in our patient was probably malaria induced although, the mechanism of induction of psychosis by malaria remains unclear. Thus Senanayake et al have noted that the pathogenesis of neurological manifestations in malaria was under explored.<sup>5</sup> Damages in the sub-cortical white matter and fronto-temporal areas of the neurocortex have been reported in patients with neuropsychiatric manifestations, following cerebral malaria.<sup>8</sup>

The fact that the child has not developed psychotic reactions to Artemisin and Chloroquine during any of the previous intakes makes these anti-malarial drugs the unlikely causes of the reactions. Also, the role of fever as the etiological agent for psychosis in the present study is unclear. It is noteworthy that the psychosis did not relapse despite the persistence of the pyrexia during the post Diazepam administration period. In our environment of practice, meningitis, encephalitis and typhoid fever are notable infectious diseases associated with confusional states mimicking malaria-induced psychosis.<sup>1,11</sup> These differentials were all excluded on the basis of clinical presentation and the results of the investigations.

Awareness of the fact that malaria infection may induce psychosis is essential in the comprehensive management of malaria. It should influence the choice of anti-malarial drugs administered and the need to change the anti-malarial drugs used. Chloroquine and Mefloquine for example, have been found to induce psychosis in patients with malaria fever.<sup>9,10</sup>

Anti-malaria drug induced psychosis should be watched out for and the implicated drugs discontinued, once the adverse reaction is noticed. However, a good analysis of the situation is required before discontinuing therapy. In this case, Chloroquine and Artemisin were not discontinued on the grounds that these drugs had been ingested several times in the past without adverse reactions. Unnecessary changes in the administration of antimalarial drugs can encourage parasite resistance.

Since malaria induced psychosis is an uncommon disease, a good knowledge of malaria and high index of suspicion are important assets in making a diagnosis and instituting prompt treatment.

### CORRESPONDENCE TO

Dr. O.A Oyedepi.

Department of Paediatrics,  
Ladoke Akintola University Teaching Hospital,  
Osogbo, Nigeria.

E-mail: soltomoyedepi@yahoo.com

Telephone: +234 (0) 8056715508

### References

1. Fernandez MC, Bobb BS. Malaria. emedicine. <http://www.emedicine.com/med/topic.htm>. Date last updated May 2, 2006, Date assessed June 30, 2006.
2. Olumese PE, Gbadegesin RA, Adeyemo AA, Brown B, Walker A. Neurological manifestations of cerebral malaria in an Nigeria child Ann Trop Paediatr 1999; 19:321-5
3. Pust B Febrile seizures - An update Kinderkrankenschwester 2004;23: 328-31
4. Knudsen FU. Febrile convulsions, treatment and prognosis Ugeskr Laeger 2001; 163: 1098-102
5. Senanayake N, Roman GC. Neurological complications of malaria. South east Asian J Trop Med Public Health 1992; 23: 672-80
6. Kochar DK, Shubhakaran, Kumawat BL, Kochar SK, Halwai M, Makkar RK, Joshi A, Thanvi I. Cerebral malaria in Indian adults: A prospective study of 441 patients from Bikaner, North-West India. J Assoc Physicians India 2002; 50:234-41
7. Sowunmi A, Ohaeri JU, Falade CO. Falciparum malaria presenting as psychosis. Trop Goegr Med 1995; 47: 218-9
8. Varney NR, Roberts RJ, Springer JA Connell SK, Wood PS. Neuropsychiatric sequelae of cerebral malaria in Vietnam veterans. J Nerv Ment Dis. 1997; 185: 695-703.
9. Gupte S. Occurrence of Chloroquine induced psychotic manifestations in children with malaria. Ann Trop Paediatr 1992; 12:229
10. Minei-Rachmilewitz T. Neuropsychiatric side effects of malarial prophylaxis with Mefloquine [Lariam]. Harefuah 1999; 137:25-7,87
11. Ali G, Rashid S, Kamli MA, Shah PA, Allaqaband GQ. Spectrum of neuropsychiatric complications in 791 cases of typhoid fever. Trop Med Int Health 1997;2: 314-8

**Author Information**

**O. A. Oyedeji, MBChB FWACP**

Lecturer/ consultant paediatrician, Department of paediatrics, Ladoke Akintola University of Technology Teaching Hospital (LAUTECH)

**A. A. Aremu, MBChB FWACS**

Lecturer/ consultant radiologist, Department of radiology, Ladoke Akintola University of Technology Teaching Hospital (LAUTECH)

**O. J. Adebami, MBChB FWACP**

Lecturer/ consultant paediatrician, Department of paediatrics, Ladoke Akintola University of Technology Teaching Hospital (LAUTECH)

**M.O. Oningbide, MBChB FMCP**

Lecturer/ consultant paediatrician, Department of paediatrics, Ladoke Akintola University of Technology Teaching Hospital (LAUTECH)

**G.A. Oyedeji, MBChB DTCH FWACP FRCP**

Professor/ consultant paediatrician, Department of paediatrics, Ladoke Akintola University of Technology Teaching Hospital (LAUTECH)