

## **Pediatric psychosis in the emergency room: Could it be *Plasmodium vivax* malaria?**

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### **Abstract**

**Malaria is associated with severe neurological complication especially by *Plasmodium falciparum*. We report a case of acute malaria in a seven year old boy presenting with features of psychosis as the primary presenting complaint, with absence of fever or concomitant drug intake before arrival. Peripheral blood smear of patient subsequently revealed *Plasmodium vivax* [ring and trophozoite stage] as he was investigated further when febrile spikes appeared. Malaria is associated with severe neurological complications especially by *P. falciparum*. We report a case of acute malaria in a seven year old boy presenting with features of psychosis as the initial presenting complaint, without history of fever or concomitant drug intake before arrival. Peripheral blood smear revealed *P. vivax* [ring and trophozoite stage].**

**Keywords:** Psychosis, *Plasmodium vivax*, Malaria.

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### **Pediatric Psychosis in Emergency Room: Could It Be *Vivax*?**

In 2015, there were 214 million cases of malaria globally and 438,000 malaria deaths [1]. Of these, *P. vivax* malaria caused an estimated 13.8 million cases globally, and accounted for about half of all malaria cases outside Africa.

Malaria is a great masquerader of symptoms. Neurological manifestations are not uncommon in complicated malaria, with deficits reported to occur in upto 17% of children with cerebral malaria [2,3]. Psychosis may be associated in a minority of patients [4,5]. Malaria in children is associated with varied psychiatric symptoms which may include aggressive behaviour, decreased somnolesence, visual and auditory hallucinations among other psychiatric symptoms [6]. However, in most cases since fever or other symptoms accompany the psychiatric manifestations at presentation diagnosis may not be difficult.

Malaria presenting primarily as psychosis is rare. We report a case of malaria in a child with psychosis as the primary presenting manifestation at admission, with febrile episodes developing only later.

#### **Case Report**

A 7 year old male child presented with a brief [2-3 h] history of abnormal behavior, auditory and visual hallucinations, and altered sensorium. He had no family history of any

psychiatric illness and the child was neurologically and mentally normal before illness. There was no history of fever, pallor, jaundice, and drug or toxin ingestion. On examination the child was stuporous but had no neurological deficits or signs of meningeal irritation. There was no splenomegaly and other systemic examination was normal. Blood examination showed hemoglobin 12.7 g/dl, total leukocyte count of 9600/ $\mu$ L, with differential counts of polymorphonuclear leukocytes 77% and lymphocytes 23%. Cerebrospinal fluid examination and cranial CT scan were normal. Renal function and liver function tests were normal. Since the patient was seen during the rainy season, when the number of cases of malaria increases substantially in this malaria endemic region, he was investigated for malaria despite the atypical presentation. A psychiatric consultation was also requested. Peripheral smear for malaria parasite showed asexual ring stages and trophozoites of *P. vivax*. After about 24 h of admission child also developed fever. He was started on intravenous artesunate and showed complete recovery in two days. He was discharged after four days of hospital stay and was neurologically normal at discharge and when observed during follow up visit after one month.

#### **Discussion**

In children, proper diagnosis of psychotic behavior can be difficult due to varied developmental age and lack of

diagnostic clarity [7]. Diagnosis of psychosis in malaria may be complicated due to the presence of confounding variables. These include among others, febrile delirium and concomitant drugs which are known to produce neuropsychiatric manifestations which include: corticosteroids, mefloquine or chloroquine [8-13].

Psychosis due to malaria as a presenting symptom has been described in literature, predominantly among adults [14,15]. Malarial psychosis in adults has been described to be associated with paranoid and manic syndromes [14]. Agitation and confusion have also been described upon recovery from coma. Psychiatric manifestations in children with malaria have also been attributed to hyperpyrexia, anti-malarial drugs or as part of the Post Malaria Neurological Syndrome [PMNS] [6,12,14-20]. The mechanism of the induction of psychosis and the pathogenesis of neurological manifestations in malaria remain unclear and precise documentation is scanty in these respects [6].

In the present case, the child had not received any anti-malarial like chloroquine or mefloquine and had no fever prior to admission. Additionally, there was no clinical and/or laboratory evidence of other infectious conditions like meningitis, encephalitis or typhoid fever which may be associated with confusional states and can mimic malaria induced psychosis [21]. The psychosis in our patient was thus in all likelihood induced by *Plasmodium vivax* malaria.

Neurological involvement has been reported to be more frequent with falciparum malaria. But *P. vivax* has a wider geographical distribution than *P. falciparum* because it can develop in the Anopheles mosquito vector at lower temperatures, and can survive at higher altitudes and in cooler climates [1]. Malaria induced psychosis is a rare entity [17]. To our knowledge there are only few such case reports to date in literature. We have not come across any case reports, in our search, describing psychosis as the primary and only presenting manifestation at admission of *P. vivax* malaria in pediatric age group.

The present case therefore, highlights the need for considering malaria as a possible etiology for unexplained psychiatric manifestations, in children particularly of endemic region, even in the absence of other symptoms.

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