

Case Report

Unusual presentations of vivax malaria: A report of two cases

K.V. Vinod, Keerthi Talari, Maya Gopalakrishnan, K.K. Nisar & T.K. Dutta

¹Department of General Medicine, JIPMER, Puducherry, India

Key words Acute gastroenteritis; atypical manifestations; sixth nerve palsy; status epilepticus; vivax malaria

Malaria contributes to significant morbidity and mortality in the developing countries of the tropics. World Health Organization (WHO) has estimated [WHO malaria news release, year 2010] that about 250 million cases of malaria occur every year worldwide, causing 8,60,000 deaths. Malaria caused by *Plasmodium falciparum* accounts for majority of complications and deaths due to malaria. The symptoms of malaria are non-specific. A significant minority of patients of malaria in endemic areas may present with atypical clinical manifestations, thereby mimicking other illnesses and leading to diagnostic confusion as well as delay in treatment¹. This may lead to complications or even death. Complicated malaria may closely mimic other commonly prevalent infections like enteric fever, leptospirosis, dengue haemorrhagic fever, acute viral hepatitis, viral meningoencephalitis, scrub typhus and severe sepsis of obscure origin. Here, we report two cases of vivax malaria with unusual presentations—one with acute gastroenteritis without fever at presentation and the other with fever, generalized convulsive status epilepticus and isolated bilateral sixth cranial nerve palsy, as cerebral malaria.

Case Reports

Patient 1: A 21 yr old migrant labourer from West Bengal presented to the emergency department of our hospital with complaints of vomiting (4–6 episodes/day), loose watery stools (about 8–10 episodes/day, 150–200 ml each, without foul smell, blood or mucus) and abdominal pain for 2 days. There was no history of recent travel. The patient was afebrile, dehydrated but haemodynamically stable. He had diffuse abdominal tenderness without guarding and rigidity. There was no palpable liver or spleen and bowel sounds were preserved. Patient developed high grade fever (103°F) with chills on the day after admission (Day 4 of illness) but the vomiting and stool frequency reduced. Laboratory evaluation revealed Hb: 13.5 g/dl, leucocytes: 7700/μl with normal differential, thrombocytopenia (platelet count: 38,000/μl). Peripheral blood film incidentally

showed trophozoites and schizonts of *P. vivax*. Patient had hypokalemia (ser. K⁺: 3.4 mEq/l) but renal and liver function tests were normal. Stool microscopy and hanging drop preparation examination were unremarkable. Stool culture did not yield pathogenic bacteria of significance and blood culture was sterile. *Plasmodium* LDH (lactate dehydrogenase) immunochromatographic test was positive for *P. vivax*. PfHRP2 (*P. falciparum* histidine rich protein 2 antigen) test was negative. Ultrasonography of the abdomen was normal. Patient initially received intravenous hydration, potassium supplementation and later started on oral chloroquine (base 25 mg/kg, over 3 days). Patient's gastrointestinal complaints subsided completely by Day 5 and fever by Day 6. He was advised to take primaquine (15 mg/day for 2 wk), after confirming normal blood level of glucose-6 phosphate dehydrogenase and discharged on Day 6.

Patient 2: A 13 yr old girl was admitted with complaints of intermittent fever for 20 days, repeated generalized tonic clonic convulsions (5–6 episodes) and unconsciousness for 1 day. Patient was found to be in generalized convulsive status with fever (102°F) on admission. Fundus examination was normal. She was immediately intubated and mechanically ventilated. Status was controlled with intravenous lorazepam and phenytoin. Contrast enhanced CT of brain showed diffuse cerebral oedema (Fig. 1). Laboratory evaluation revealed normal serum Na⁺ (136 mEq/l), K⁺ (3.8 mEq/l), calcium (8.8 mg/dl), magnesium (1.9 mg/dl), plasma glucose (106 mg/dl). Renal and liver function tests were also normal. Blood counts revealed Hb: 8.8 g/dl, leucocytes: 11,700/μl (with differential N78, L20 and E2%) and platelets: 62,000/μl. Peripheral blood film did not show parasites but quantitative buffy coat (QBC) technique revealed *P. vivax*. *Plasmodium* LDH immunochromatographic test was positive for *P. vivax* but PfHRP2 test was negative. Cerebrospinal fluid (CSF) was acellular with elevated proteins (62 mg%) and normal glucose (72 mg/dl). CSF and blood cultures were sterile. CSF



Fig. 1: Contrast enhanced CT brain of patient 2 showing diffuse cerebral oedema.

PCR was negative for *M. tuberculosis* and herpes simplex virus. Japanese B encephalitis virus serology was negative. Patient received initially artesunate intravenously and then combination oral therapy with artesunate and doxycycline. Patient regained consciousness on third day after admission but exhibited isolated sixth cranial nerve palsy of both sides. Meningeal signs were absent. The sixth nerve palsy recovered completely over next three days. She was extubated on Day 4. Fever subsided by Day 5 and she was discharged without sequelae on Day 6 with primaquine 7.5 mg/day for 2 wk.

DISCUSSION

Malaria presents classically with febrile paroxysms with associated sweating and rigors. Development of immunity, increasing resistance to antimalarial drugs and indiscriminate use of antimalarial drugs have been proposed as the causes for malaria presenting with unusual features in endemic areas¹. Atypical manifestations are less commonly described with vivax malaria compared to falciparum malaria¹. Complications of falciparum malaria like severe anaemia, thrombocytopenia, acute kidney injury, acute respiratory distress syndrome, cerebral involvement and hepatic dysfunction have been reported in vivax malaria as well^{1,2}, although to a much lesser extent. So the term benign tertian malaria for vivax malaria appears inappropriate.

The presentation of our first patient simulated acute

gastroenteritis. He did not have fever initially. Fever developed later during hospital stay. This led to diagnostic confusion. In a study of 101 vivax malaria patients³, two were initially misdiagnosed as acute gastroenteritis, 17 (16.8%) had vomiting and 24 (23.8%) had diarrhea along with fever. Vivax malaria has been reported to masquerade as acute surgical abdomen⁴. Falciparum malaria also can mimic acute gastroenteritis and acute abdomen⁵. Non-typhoidal salmonellae have been reported to cause acute gastroenteritis and sepsis in African children with severe falciparum malaria⁶ but in our patient stool and blood cultures were not suggestive.

Cerebral malaria and generalized convulsive status (as seen in our second patient) are uncommonly reported in vivax malaria^{2,7}. Cerebral malaria manifesting with isolated bilateral sixth cranial nerve palsy is rare in adults⁸ but more commonly described in children^{1,9}. Only one out of 441 adult patients (0.33%) of cerebral malaria had isolated sixth nerve palsy as a sequela in a study⁸ which recovered completely later. Sixth nerve palsy in our second patient was probably related to raised intracranial tension as CT showed diffuse cerebral edema. Both of our patients had thrombocytopenia. Mixed infection was excluded in both cases by negative antigen detection test (PfHRP2 test) for *P. falciparum*. Polymerised chain reaction (PCR) could not be performed to confirm the species of *Plasmodium* as the facility is not available in our hospital.

How *P. vivax* causes cerebral malaria despite low levels of parasitemia and absence of cytoadherence and sequestration of the parasitized erythrocytes is not clear. Proposed mechanisms include the presence of concurrent infections, mixed *Plasmodium* infections, reversible local changes in the microvasculature, endothelial activation and injury and microvascular thromboinflammatory responses¹⁰.

To conclude, vivax malaria can rarely present with atypical gastrointestinal and central nervous system manifestations, which the treating physician needs to be aware of.

REFERENCES

1. Zaki SA, Shanbag P. Atypical manifestations of malaria. *Res Rep Trop Med* 2011; 2: 9–22.
2. Kochar DK, Saxena V, Singh N, Kochar SK, Kumar SV, Das A. *Plasmodium vivax* malaria. *Emerg Infect Dis* 2005; 11(1): 132–4.
3. Oh MD, Shin H, Shin D, Kim U, Lee S, Kim N, et al. Clinical features of vivax malaria. *Am J Trop Med Hyg* 2001; 65(2): 143–6.
4. Gopisetty S, Sarveswaran J, Achutan R, Davies J, Ausobsky JR. Acute surgical abdomen—an atypical presentation of *Plasmodium vivax* malaria. *Gut* 2007; 56(3): 447–8.

5. Mahmood K, Jairamani KL, Abbasi B, Mahar S, Samo AH, Talib A, *et al*. Falciparum malaria: various presentations. *Pak J Med Sci* 2006; 22(3): 234–7.
6. Oundo JO, Muli F, Kariuki S, Waiyaki PG, Iijima Y, Berkley J, *et al*. Non-typhi salmonella in children with severe malaria. *East Afr Med J* 2002; 79(12): 633–9.
7. Sarkar S, Bhattacharya P. Cerebral malaria caused by *Plasmodium vivax* in adult subjects. *Indian J Crit Care Med* 2008; 12(4): 204–5.
8. Kochar DK, Shubhakaran, Kumawat BL, Kochar SK, Halwai M, Makkar RK, *et al*. Cerebral malaria in Indian adults: a prospective study of 441 patients from Bikaner, north-west India. *J Assoc Physicians India* 2002; 50: 234–41.
9. Idro R, Jenkins NE, Newton CR. Pathogenesis, clinical features, and neurological outcome of cerebral malaria. *Lancet Neurol* 2005; 4(12): 827–40.
10. Anstey NM, Russell B, Yeo TW, Price RN. The pathophysiology of vivax malaria. *Trends Parasitol* 2009; 25(5): 220–7.

Correspondence to: Dr K.V. Vinod, Assistant Professor, Department of General Medicine, JIPMER, Dhanvantarinagar, Puducherry–605 006, India.

E-mail: drkvv@rediffmail.com

Received: 3 October 2011

Accepted in revised form: 4 February 2012