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To the Editors

# Abdominal pain as a presenting feature in malaria

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Abdominal pain is a frequent presenting complaint in children. Frequently the symptom tends to be vague with investigations seldom showing organic disease. Malaria is a major problem in the developing world today with an estimated 300-500 million cases and more than 1 million deaths each year[1]. Abdominal pain is frequently described with malaria and can result from various causes.

A retrospective study was done on confirmed cases of malaria [either by positive blood smears and/or positive rapid antigen test (OptiMAL test)] admitted from 1st January to 31st December 2009 in the paediatric general wards and intensive care unit of a tertiary care hospital. Data of all children from one month to twelve years of age with malaria were reviewed and those presenting with abdominal pain were selected for further study. Children with associated infections like dengue fever, leptospirosis, enteric fever, urinary tract infection and viral hepatitis were excluded. The mode of presentation, clinical course, investigation, treatment, response to therapy, and complications were noted.

Of 227 cases of confirmed malaria admitted to hospital, 133 were *P. vivax (Pv)*, 67 *P. falciparum (Pf)* and 27 were mixed infections (i.e. both vivax and falciparum). Seventy-six (33.5%) patients presented with abdominal pain and of them 38 had *Pf*, 36 had *Pv* and 2 had mixed infection. Fifty two patients were more than 5 years of age and none were less than 2 years of age. The abdominal pain was mild, continous and dull in fifty-two patients, of whom forty-six had pain in the periumbilical region whereas in the remaining it was poorly localised. On examination, the abdomen was non-tender without guarding or rigidity. Bowel sounds were normal. All investigations in these fifty-two patients were normal and the pain disappeared within 48 hours of starting antimalarial treatment. In the remaining 24 patients, four had acalculous cholecystitis, eleven had hepatitis and nine had gastrointestinal bleed. In these 24 patients abdominal pain lasted from four to twelve days with a mean of 5.6 days. In these patients associated symptoms of the above diseases were present along with abdominal pain on presentation.

Abdominal pain is reported to be more often associated with falciparum infections than with vivax[2]. In our study abdominal pain was seen in 56.7% and 27.1% cases of *Pf* and *Pv* respectively. The prevalence of abdominal pain noted in various studies on malaria ranges from 21.4% to 29.5%[3,4]. In our study 33.5% of patients with malaria presented with abdominal pain with 68.4% cases having no identifiable cause. Abdominal pain in these patients could be due to ischaemic changes in the intestine secondary to microvascular changes due to sequestered red blood cells[5].

Abdominal pain in malaria is usually mild and transient; however it can mislead the paediatrician resulting in unnecessary investigations and delayed diagnosis. However, in some cases the pain can be severe and persistent. The causes of severe and persistent abdominal pain in malaria include acalculous cholecystitis, gastrointestinal bleed, acute surgical abdomen, splenic rupture, splenic infarction, splenic torsion and hepatitis/ hepatomegaly[2]. In our study four patients had acalculous cholecystitis, eleven had hepatitis and nine had gastrointestinal bleed. The abdominal pain in these patients lasted from four to twelve days with a mean of 5.6 days. None of our patients with malarial hepatitis had features of encephalopathy. There was no evidence of exposure to hepatotoxic drugs. Furthermore, clinical or serological evidence of viral hepatitis was absent in these patients. The hyperbilirubinaemia in eight patients was of the conjugated variety and in the remaining three of the unconjugated type. Out of the nine patients with GI bleed, six had melaena and three had haematemesis. All 9 patients had thrombocytopenia ($<1.5x10^9$/l) and four had deranged coagulation profile. Acalculous cholecystitis (ACC) was seen in three cases of falciparum malaria and one case of vivax malaria. The diagnosis of ACC was made according to clinical features and sonographic findings. The exact pathogenesis of ACC is not clearly known, but cholestasis and increased bile viscosity from prolonged fasting, spasm of the ampulla of Vater, endotoxaemia, microangiopathy and ischaemic reperfusion injury, are some of the suggested hypotheses[6].

In conclusion, in tropical areas, malaria could be considered in the differential diagnosis of any child presenting with fever and abdominal pain. In the majority the pain is mild, transient, usually subsides with antimalarial treatment and does not require any investigation. However, the presence of persistent and severe abdominal pain warrants further work up.

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