

Case Report

A thirty one year old man with co-infection of malaria and dengue

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Abstract

Malaria and dengue are two important mosquito borne diseases. Only imported malaria cases are currently seen in Sri Lanka, mostly from India and Africa. Co-infections with malaria and dengue have not been reported previously in Sri Lanka. A 31-year-old male who had returned from Mozambique 4 weeks before was admitted with a low grade fever for 4 days and diagnosed as dengue fever. After 5 days the fever became high grade and intermittent with chills and rigors. His blood film and antigen test were positive for *P. falciparum*. Antimalarial treatment was started with intravenous artesunate, followed by artemisinin based combination therapy. The patient's fever improved with 24 hours of treatment and thereafter he recovered completely. Although co-infections are uncommon, malaria should be considered in any febrile patient with a travel history up to 1 year to a malaria endemic country, even if chemoprophylaxis is taken. Diagnosis of one infection should not exclude the possibility of a coexisting malarial infection in patients with an appropriate travel history, since missing the diagnosis can lead to severe consequences.

Keywords: malaria, dengue, co-infection.

Case report

Introduction

Dengue is a flaviviral infection transmitted by the bite of an infected *Aedes* mosquito. Symptoms appear after an average incubation period of 3-14 days. Epidemics usually occur following the monsoon season. The symptoms vary in severity in individuals and sequential infections increase the risk of dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS).

Malaria is caused by one of five protozoan species of the genus Plasmodium. *P. falciparum*, *P. vivax*, *P. ovale* and *P. malariae* have been identified in Sri Lanka over the past 3 years. The average incubation period is 9-14 days, but can last up to a maximum of 3 months.¹ Since October 2012, no cases of indigenous malaria have been reported in Sri Lanka and on 5th of

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September, 2016 Sri Lanka was certified by the World Health Organization (WHO) as having eliminated malaria.² Yet, over the past 3 years, 180 malaria cases have been reported, all in individuals who had contracted the disease overseas.³

Co-infection with malaria and dengue is uncommon.⁴ It is more severe than individual infections, with greater risk of complications such as anaemia and thrombocytopenia.⁵ To our knowledge this is the first reported case of co-infection of dengue and malaria in Sri Lanka.

Case presentation

A 31-year-old male who had returned from Mozambique 4 weeks previously, was admitted with a low grade fever of 5 days, arthralgia and myalgia. On examination he was not pale or icteric and had no hepatosplenomegaly. His blood counts showed as WBC 6500/mm³ with 51% neutrophils and 46% lymphocytes, and a platelet count of 170,000/mm³. Dengue NS1 antigen test was negative. After admission his fever increased to 40 °C and the platelet counts decreased to 94,100/mm³. Patient was managed as for dengue fever. On Day 6 of fever, the platelet count dropped to 78,000/mm³ and dengue antibodies tested positive for IgM and IgG antibodies.

On the following day (day 7 of fever), the platelet count increased to 88,000. The low grade fever changed to an intermittent high grade type associated with chills occurring every 48 hours (Figure 1). Blood for thick and thin films and malaria antigens pLDH and HRP2 were positive for *Plasmodium falciparum* with a high parasite density of 134,600/μl. Haemoglobin levels reduced from 15.2 to 10.3 g/dL over 8 days during his hospital stay. Liver enzymes were mildly elevated with ALT 91.9 U/L and AST 43.6 U/L. Serum bilirubin and urine analysis were normal.

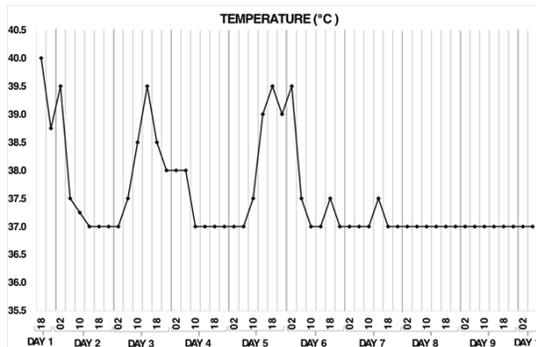


Figure 1: Patient's temperature chart, from the day of admission (day 5 of fever).

The patient was treated according to the national guidelines for malaria recommended by the Anti-Malaria Campaign (AMC) with intravenous artesunate, a total of 3 doses at 0, 12 and 24 hours, followed by artemisinin based combination therapy (Coartem) for 3 days and a stat dose of primaquine, 0.75mg/kg bodyweight at its completion. The fever subsided with the 3rd dose of artesunate and he made a complete uneventful recovery.

Discussion

This patient had dengue fever which was confirmed by positive dengue IgM antibodies, tested with a rapid combo test (SD BIOLINE Dengue Duo), which has a specificity of 95.5%. Malaria was not considered initially in this patient for the following 4 reasons. Firstly, no indigenous malaria cases have been reported from Sri Lanka since November 2012. Secondly, on admission, the patient's clinical features and results of investigations confirmed dengue infection. Thirdly,

the patient had arrived from Mozambique 28 days previously which is beyond the average incubation period for malaria which is 9-14 days. Fourthly, the patient had taken chemoprophylaxis given by the AMC for malaria, starting 1 week before travel, during his overseas stay of 6 weeks and for 5 days after returning.

The change in fever pattern to a high and intermittent tertian type on day 5 suggests that the malarial fever may have become evident with the resolution of dengue fever. It has been reported that the malarial periodic fever could be masked by the daily intermittent fever of dengue.⁶ When the fever continued beyond 7 days with the classic intermittent (every 48 hours) high grade pattern, the diagnosis of malaria was strongly suspected and subsequently confirmed.

In this patient, early diagnosis and prompt treatment of malaria may have avoided the complications such as thrombocytopenia and anaemia which are known to occur in co-infections.⁴ Although a reduction in haemoglobin from 15.2 to 10.3 g/dL was noted, there was no other evidence of haemolysis or bleeding.

This case illustrates the importance of excluding malaria in a febrile patient with an appropriate travel history lasting up to 1 year, irrespective of whether chemoprophylaxis was taken or not. Further it must be emphasized that in such patients, even if a confirmed cause is found, it should not exclude the possibility of a coexisting malarial infection, as it could be easily missed because it is no longer endemic in Sri Lanka and this can lead to serious life threatening consequences.

Conflicts of interest

The authors do not have any conflicts of interest regarding this case report.

Patient consent

Informed consent was obtained from the patient for publication of this case report.

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