A case of concurrent dengue and Plasmodium vivax malaria in a returned traveler to India

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Day 69:Final follow up

clinically well

CBC normal range

repeat parasitemia level was 0%.

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Rx: primaquine phosphate 30-mg PO

INTRODUCTION

CASE TIMELINE

Day 20:

PHOL

TDU clinic-P. vivax

strain confirmed by

Dengue and malaria are common vector-borne tropical diseases

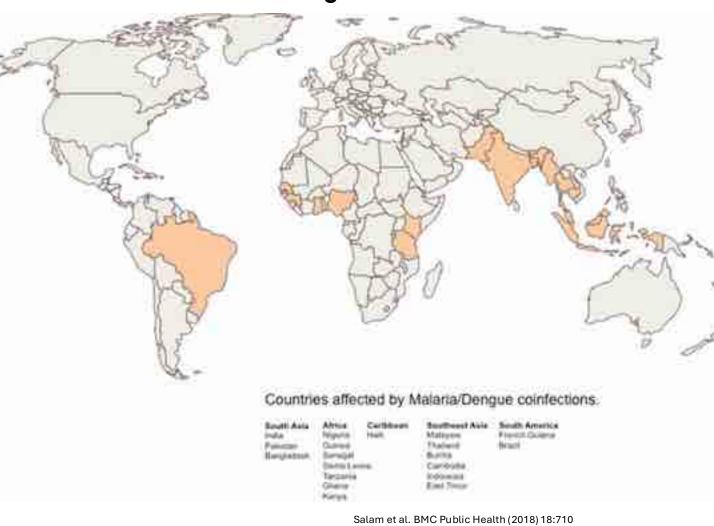
They are associated with high morbidity and mortality



Co-infection of malaria and dengue is underestimated due to parsimonious approach once the diagnosis of either is made

Herein, we describe a case of a 27-year-old man of Indian origin residing in Canada who took a 15-day trip to India to visit friends and relatives (VFR), and thereafter presented to hospital for evaluation of high fever, fatigue, myalgia, headache and generalized weakness.

Global distribution of Dengue and Malaria co-infection



Day 10:
fatigue, myalgia,
headache

Day 13:
Travelled to
Cancun, Mexico

Day 1:
Return to Canada
following 15 days trip

Symptoms
worsened with fever

with chills

Presented to ED for high fever of 40.5 C

Workup: CBC

Mild anemia with hemoglobin of 127g/L

WBC 4.9 x 109/L with moderate lymphopenia of 0.3 x 109/L

Profound thrombocytopenia of 66 x 109/L

Infectious workup:

Initial malaria RDT: positive pan-Plasmodium aldolase, negative P. falciparum-specific HRP-2 antigen

Thin blood smear demonstrated intraerythrocytic stages of P. vivax at a parasitemia level of 0.7%.

Blood cultures and serologic testing for hepatitis A,

hepatitis B, and dengue virus

Day 27: Follow up

Dengue serology: reactive IgM and IgG by EIA confirming the diagnosis of malaria and dengue co-infection

Repeat parasitemia 0%

Repeat CBC demonstrated resolution of lymphopenia (2.1 x 109/L) and thrombocytopenia (platelets 232 x 109/L).

Remaining infectious work up negative

CLINICAL OUTCOME

Investigations

to New Delhi, India

Initial work up for malaria while present in the ED by rapid diagnostic test (RDT) demonstrated positive pan-*Plasmodium* aldolase and negative *P. falciparum*-specific histidine rich protein-2 (HRP-2) antigen, most suggestive of a non-falciparum malaria. However, the few cases of HRP-2 mutant strains of *P. falciparum* reported from the Indian sub-continent necessitate interpreting a negative HRP-2 band cautiously. Thin blood smear demonstrated intraerythrocytic stages of *P. vivax* at a parasitemia level of 0.7%.

Dengue serologic testing performed during his first visit to the ED (drawn on day 8 of fever) was reported as **reactive** IgM and IgG by enzyme immunoassay (EIA), confirming the diagnosis of malaria and dengue co-infection.

Management

The patient was started on atovaquone-proguanil 1000/400 mg daily for 3 days with fatty meals

Once the reference laboratory confirmed that his malaria was caused by *P. vivax* strain, he was additionally started on primaquine phosphate 30-mg PO daily for 14 days for radical cure, after confirming a normal G6PD level of 8.3 U/g Hb.

Symptomatic management for dengue ensued

The severity of the intercurrent infection can be mitigated by early diagnosis and treatment of the malaria component while supportive measures are instituted for dengue.^{2,3}

LEARNING POINTS

Outcome

The patient improved clinically rapidly and during the follow up at our clinic 6 weeks from symptom onset he continued to remain clinically well.

His CBC at the time of 6-week follow-up was within normal range Routine repeat day 28 parasitemia level was 0%.

This case underscores the importance of patients presenting with either infection acquired from areas endemic for both coupled with the trifecta of low parasitemia level, moderate to severe thrombocytopenia and leukopenia, support the diagnosis of intercurrent infection. ⁴

This case highlights that dengue and malaria

permissive to mosquito generation.¹

intercurrent infection might be more common than

previously estimated, particularly as vector ranges

expand with global warming and climatologic events



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