

CASE REPORT

DENGUE AND MALARIA CO-INFECTION IN A YOUNG ADULT WITH ATYPICAL FEATURE

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Abstract:

As an endemic zone, malaria and dengue coinfection can be expected in Bangladesh, although there have not been enough case reports of such coinfection. We describe a previously healthy 22-year-old male from Dhaka, with a history of travelling to Coxs-Bazar 3 weeks ago, presented with fever with chills and rigors, generalized weakness and cough for 2 weeks. Clinical examination showed tachycardia, hypotension, subconjunctival haemorrhage and positive tourniquet test. Lab reports showed NS1-Ag positive, thrombocytopenia, progressive anaemia, mild hyperbilirubinemia. He was treated initially for dengue haemorrhagic fever. His laboratory parameters started improving; however, he had persistent fever with chills and rigors daily and persistent coughing. Peripheral smear for Malaria showed schizonts and trophozoites of *Plasmodium falciparum* and ICT for malaria was positive. He recovered following treatment with IV fluids and oral artesunate. The presence of fever even in a critical phase of dengue, the typical rise of temperature daily, progressive anaemia, mild jaundice and specific travelling history gave a clue of coinfection with Malaria. On follow-up, after 2 weeks, he had no symptoms, and all the laboratory parameters were normal. challenge was the atypical features like dry cough and exertional dyspnoea. The timely diagnosis and appropriate treatment were crucial for prognosis of this patient.

Keywords: *Plasmodium falciparum*, Dengue, Coinfection, Prognosis

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Introduction

Mosquito borne infections like dengue and malaria are common in Southeast Asia, especially in Bangladesh. However, coinfections with these two diseases are rarely found because differences in the vector. Immunity also play a role in such endemic area¹. Less diagnostic facilities in this part of the world lead to non-reporting of such cases. Delay in diagnosis and appropriate treatment in Dengue and malaria coinfection may increase morbidity and mortality [2]. Earlier there have been reports of concurrent infection of dengue virus

with a flavivirus, Chikungunya² and with different bacteria including *Salmonella Typhi*³ *Shingella Sonnei*⁴ and *Leptospira* spp⁵. The first case report of dengue malaria coinfection was from France in July 2005. However, the cases about coinfection of those two pathogens were reported rarely since 2005^{3,4}. Despite being the endemic zone, unfortunately, there have been very few case reports on dengue and malaria coinfection from the Southeast Asian countries³. *Falciparum* malaria has the highest incidence and

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mortality rate in malaria infection⁷. So, these confectons especially with *Falciparum* malaria need early diagnosis and prompt management.

Case report:

We report a case of a 22-year-old male, student from Bangladesh, a resident of Dhaka, with a history of travelling to Coxs-Bazar, Bangladesh, 3 weeks ago. He did not receive any malaria prophylaxis before travelling to Coxs-Bazar. On admission, he presented with fever with chills and rigors for 5 days, with highest-recorded temperature was 105°F. He also complained of cough which was dry and was associated with exertional dyspnoea. He also mentioned of occasional gum bleeding within this period. On examination, He had tachycardia of 104 bpm and BP = 100/60 mm Hg. The tourniquet test was positive and subconjunctival haemorrhage was seen. His laboratory reports are shown in Table 1. Positive NS1-Ag, progressive thrombocytopenia, progressive anemia, reticulocytosis, mild hyperbilirubinemia, increased creatinine was noticeable. Ultrasonography abdomen showed spleen of size 12 cm and mild ascites. He was admitted with the diagnosis of dengue haemorrhagic

fever and was being treated accordingly. The patient became hemodynamically stable with 1 L of bolus normal saline. We continued adequate hydration, and repeated this daily. He was hemodynamically stable from 2nd day of admission; however, his Hemoglobin was gradually decreasing from 13.2 to 9.5 g/dl. Though other laboratory parameters were improving gradually, he was complaining dry cough which was associated with exertional dyspnoea and a fever of 102–103°F with chills and rigors daily at around noon. His urine culture and blood culture reports were normal. Chest X-ray was normal.

We could not detect any other focus of infection. As we noticed the progressive reduction of Hb, then we did his peripheral smear for Malarial parasite during the peak of fever and sent immunochromatography test (ICT) for malaria. The peripheral smear for the malarial parasite report showed schizonts and trophozoites of *P. falciparum* as shown in Fig. 1. We started oral artemether-lumefantrine combination (Coartem) according to guideline. Fever started to subside on the 2nd day and fever did not rise after completion of 3 days course. On follow-up after 2 weeks of discharge, he had no symptoms and all the laboratory parameters were within normal range.

Table I
Laboratory parameters

Lab parameters	Day 1	Day 2	Day 3	Day 4
Hb(g/dl)	13.2	11.2	10.0	9.5
Hct(%)	45	39	35.2	36.1
Total leukocyte counts(/il)	5500	5700	6800	7400
Differential leukocyte count	N45L46M08E01	N44L47M08E01	N74L21M04E01	
	N76L17M04E03			
Platelets(/il)	90	000	29000	33
	000	000		
Urea/creatinine(mg/dl)	1.2	1.6		
Bilirubin:	2.1		2.4	
ALT/AST/ALP(U/L)	42/47/160		53/123/28	
NS1 Ag/IgG, IgM for dengue	Positive /negative			
Blood C/S	Negative			
Urine C/S	Negative			
Chest X-ray P/A view	Normal			
ICT for malaria	Positive			
ICT for Kala-azar	Negative			
USG of whole abdomen	Mild Ascites, Splenomegaly (12 cm)			

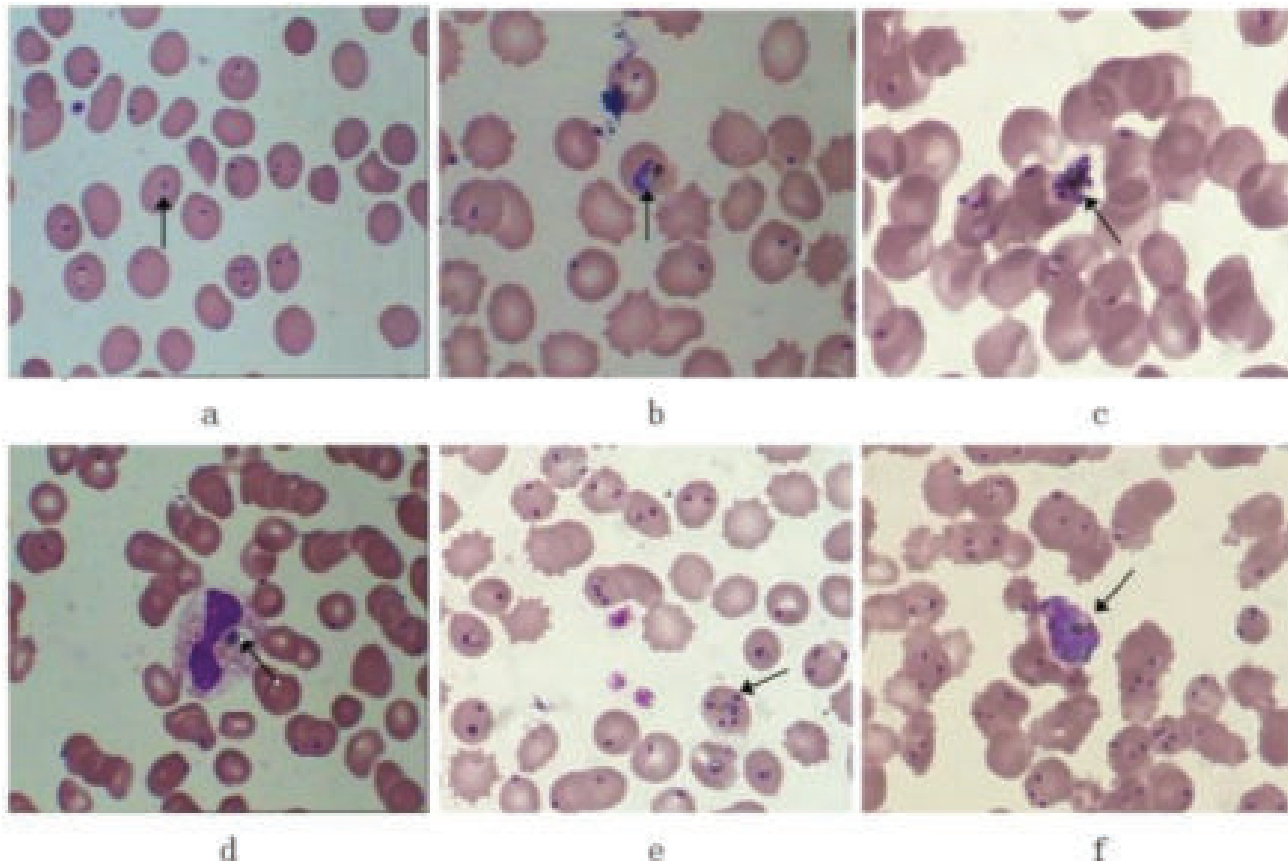


Figure 1: The microscopic examinations of peripheral blood smear of *Plasmodium falciparum* infection (Wright’s staining, ×1000)

Notes: a. Early trophozoites; b. Big trophozoite; c. Schizonts; d. Malaria pigment; e. Early trophozoites ; f. Mixed metabolites

Discussion:

Overlapping of clinical features in concurrent infection with two different infective agents leads to a diagnostic challenge to the physician. In addition, a coinfection may be more severe⁸. Usually in critical phase, dengue patients remain afebrile⁹. Persistence of fever in this period, guided us to consider associated other infection. The pattern of rise of temperature, specially peaking at night daily at a similar time along with progressive reduction of Hb and mild jaundice, all these features were suggestive of coinfection with malaria. Sometimes, these infections mimic features which often lead to missing of the coinfections⁶. Along with the fever, he was complaining of pulmonary symptoms like dry cough and exertional dyspnoea which led us to consider RTI or pneumonia initially. But chest examination and chest X-ray was insignificant¹¹. Cough is associated with malaria sometimes but not common. Usually, the cough is dry and irritating. Most

of the times, in acute febrile illness, we often draw conclusion to a single diagnosis even if we find atypical features and forget to look after the coinfections¹⁰.

The study of cases with coinfection may help us to avoid the diagnostic dilemmas. In patients residing or travelling in the endemic area of dengue and malaria, we should think of dengue malaria coinfection. If the clinical picture is not fitting well to the single diagnosis, early diagnostic and therapeutic intervention may reduce the morbidity and mortality¹².

Conclusion:

Malaria and dengue are difficult to differentiate clinically as is emphasized by this case, yet the treatment of the illnesses is different and delay in appropriate therapy can be devastating, especially in malaria. It would be expected therefore that since both infections are endemic in our area, coexisting malaria and dengue infection could be common. We suggest that such concurrent infections should always be kept in mind by the physician while encountering such clinical situations as such mixed infections are likely to occur more frequently than reported in the available literature.

Conflict of Interest:

The authors stated that there is no conflict of interest in this study

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Consent:

For the purpose of publishing this case report and any related photos, the parents are written informed consent was acquired.

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