VOLUME - 13, ISSUE - 01, JANUARY - 2024 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Pathology

RARE CONCURRENT INFECTION WITH DENGUE AND MALARIA (PLASMODIUM. FALCIPARUM & PLASMODIUM. VIVAX) IN A ADULT MALE

Dr Madhukar M Gavit MD Pathology, Senior Resident, Department of Pathology, HBT Trauma care hospital Jogeshwari 400060, Mumbai, Maharashtra.

Dr Roshan Shaikh* MD Pathology, Senior Resident, Department of Pathology, HBT Trauma care hospital Jogeshwari 400060, Mumbai, Maharashtra. *Corresponding Author

ABSTRACT These concurrent infections have overlapping clinical manifestations and season of presentation. Dengue and malaria are both endemic in Mumbai and represent a major public health burden in this region & dengue is prevalent throughout India. These infections being vector borne diseases, the reason for simultaneous infection can be the same breeding period of the vectors in post-monsoon season. In this article we have reported a 37 year-old male, resident of Mumbai, hotel waiter by occupation returned to Mumbai after a weeklong trip to Rajasthan in December 2023. The patient started developing fever, chills, myalgias, and headache two days following his return and was admitted to our hospital. On investigation rapid antigen test for dengue & malaria shows positive results, so for malaria both thick & thin peripheral blood smear made on which classic headphone forms & gametocytes of Plasmodium Falciprum seen, also ring form of plasmodium vivax seen. Diagnosis of concurrent infections becomes difficult for a physician leading to delay in institution of appropriate treatment.

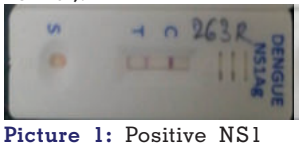
KEYWORDS : Concurrent-infection; malaria; dengue; peripheral smear.

INTRODUCTION:

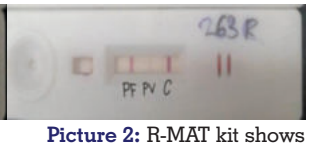
Tropical infections due to dengue, malaria, leptospira, scrub typhus and many other vector borne diseases are generally seen in South Asia including Indian subcontinent. These infections have overlapping clinical manifestations and season of presentation. Malaria is highly endemic in India (1). Dengue and malaria are both endemic in Mumbai and represent a major public health burden in this region. Dengue is prevalent throughout India and outbreaks of dengue have been seen from months of October to December (2). Although concurrent infections are reported, they are not very common (3–4). These infections being vector borne diseases, the reason for simultaneous infection can be the same breeding period of the vectors in post-monsoon season. Diagnosis of concurrent infections becomes difficult for a physician leading to delay in institution of appropriate treatment. In view of the severity of co infection (Epelboin et al., 2012)(4), overlapping symptoms, and a challenging obscurity of diagnosis, a multidimensional diagnostic approach is suggested. We hereby report a rare case of a patient having concurrent infection with dengue, malaria (Plasmodium. Falciparum & Plasmodium. Vivax).

Case History:

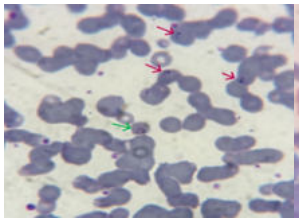
A 37 year-old male, resident of Mumbai, hotel waiter by occupation returned to Mumbai after a one week long trip to Rajasthan in December 2023. The patient started developing fever, chills, myalgias, and headache two days following his return journey for that he took Paracetamol. The patient subsequently developed severe headache and high grade fever of 102□ F and was admitted to our hospital. Physical examination was unremarkable and haemogram revealed a HB- 10.2gm/dl, WBCs- 7510/uL & normal platelet count of 1, 82,000/mm3. A viral serology test using NS1 Antigen for dengue virus turned out to be positive as shown in Picture 1. Patient continued to have fever spikes and chills despite the therapy, so for malaria (R-MAT) rapid malaria antigen test was carried out that turned out to be positive. R-MAT shows strong positive band for P. Falciprum & weak positive band for P. Vivax as shown in picture 2, along with thick and thin blood smears for malarial parasite was also carried out. Blood smears showed ring forms & gametocyte of Plasmodium falciparum as shown in picture 3A& 3B & ring form of plasmodium vivax as shown in picture 4, along with reactive lymphocytes also seen as shown in picture 5 . His renal and liver function tests, spot urine examination, chest X-ray, and USG abdomen were ordered and all parameters were within normal limits. This suggested that the patient had concurrent dengue fever and malaria (P. Falciprum & P. Vivax) infection. The tests for Malaria were repeated to ensure conformity and the tests were again positive for both Plasmodium vivax and Plasmodium falciparum. The patient was put on Injection Falcigo-120 (Artesunate) five days. Patient responded well to the treatment. Fever subsided and his general condition improved. He was given radical cure for malaria with 30 mg of Primaquine daily for 14 days (after his G6PD levels returned to normal).



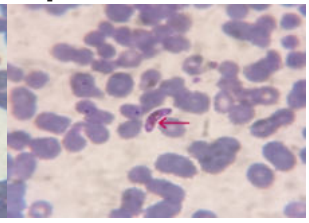
Picture 1: Positive NS1 Antigen for dengue virus.



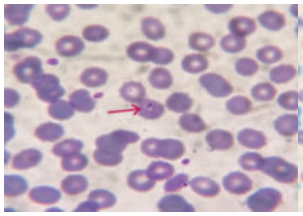
Picture 2: R-MAT kit shows strong positive band for P. Falciparum & weak positive band for P.Vivax



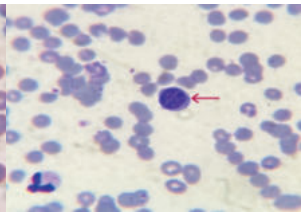
Picture 3A: P.Falciparum ring forms showing classic headphone appearance (Green arrow) & appliqué forms (Red arrow)



Picture 3B: P.Falciparum gametocytes (Red arrow)



Picture 4: P.Vivax ring form.



Picture 5: Reactive lymphocyte large in size with open chromatin.

DISCUSSION:

Fever is a non-specific manifestation of numerous infections. In a tropical country like India, the most common tropical infections causing acute febrile illness are malaria, leptospira, scrub typhus, dengue, typhoid and many others. Malaria and dengue are two arthropod borne tropical infections, which are prevalent throughout India (1–2). Most of outbreaks of dengue are also seen in post-monsoon season and early winters (1). These infections present with non-specific manifestations like acute onset of fever with leucopenia, thrombocytopenia and hepatic involvement. Some cases have also shown to have neurological involvement and acute respiratory distress syndrome (5). Although co infections with scrub typhus, dengue and malaria have been reported, these are still not very common (3–4). Mixed infections are of concern for a clinician including unexpected clinical findings and apparent poor response to treatment. Role of co infections in the severity of the disease is not clearly identified. It has also been seen that co infections of dengue and malaria seems to be more severe with greater risk of thrombocytopenia (5). Response to treatment is of diagnostic significance. Hence, a patient with acute febrile illness not responding to appropriate therapy within 48 h must be investigated for concurrent infection with other tropical infective diseases. Laboratory tests with varied sensitivity and specificity are available for investigating these infections. Dengue NS1Ag has a sensitivity of 45–94.3% and specificity of 93–100%. IgM for dengue by ELISA has a sensitivity of 85–90% and specificity of 88–100 %(6–7). Rapid malaria antigen QDx for malarial parasite has a sensitivity of 96.6% and specificity of 100 %(8). These tests are highly sensitive but specificity is an issue especially with antibody-based serological tests. Hence, the role of cross-reactivity between anti bodies and influence of antibodies borne out of earlier infections on the antibody-based serological assays should always be considered. In index case, confirmation of concurrent infections was made with the help of antigen-based serological tests and PCR. To conclude, patients in tropical countries presenting in post-monsoon season with acute febrile illness with multiple organ involvement not responding to appropriate and adequate therapy aimed for a suspected tropical infection should be evaluated for concurrent infections with other microorganisms. This possibility of co-infection should be thought early enough to decrease morbidity and possibly mortality as well.

Conflict Of Interests: Nil

REFERENCES:

1. Chakravarti A, Arora R, Luxemburger C. Fifty years of dengue in India. Trans R Soc Trop Med Hyg 2012; 106: 273–82.
2. Dash AP, Valecha N, Anvikar AR, Kumar A. Malaria in India: Challenges and opportunities. J Biosci 2008; 33 (4): 583–92.
3. Singhsilarak T, Phongtananant S, Jenjittikul M, Watt G, Tangpakdee N, Popak N, et al. Possible acute coinfections in Thai malaria patients. Southeast Asian J Trop Med Public Health 2006; 37: 1–4.
4. Epelboin L, Hanf M, Dussart P, Ouar-Epelboin S, Djossou F, Nacher M, et al. Is dengue and malaria coinfection more severe than single infection? A retrospective matched study in French Guiana. Malar J 2012; 11: 142.
5. Jindal SK, Aggarwal AN, Gupta D. Adult respiratory distress syndrome in the tropics. Clin Chest Med 2002; 23: 445–55.
6. Dussart P, Petit L, Labeau B, Bremand L, Leduc A, Moua D, et al. Evaluation of two new commercial tests for the diagnosis of acute dengue virus infection using NS1 antigen detection in human serum. PLoS Negl Trop Dis 2008; 2 (8): e280.
7. Blacksell SD, Jarman RG, Gibbons RV, Tanganuchitcharnchai A, Mammen MP Jr, Nisalak A, et al. Comparison of seven com mercial antigen and antibody enzyme-linked immunosorbent assays for detection of acute dengue infection. Clin Vaccine Immunol 2012; 19: 804–10.
8. Anchinmane VT, Shedge RT. A review of malaria diagnostic tools: Microscopy and rapid diagnostic test (RDT). Asian J Med Sci 2010; 1: 75–9.