

## Unusual and Simultaneous Presentation of Three Infectious Diseases in A Single Patient

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### Abstract

This case report describes the presence of two viral infections along with vector born parasitic infection in a single patient with overlapping clinical symptoms. This 11-year-old Hindu male child presented with continuous fever with rash along with loss of consciousness. On examination patient was unconscious with severe pallor and splenomegaly. Lab. reports showed the presence of ring form of trophozoites of plasmodium falciparum.

Further Serological examination revealed presence of NS-1 antigen along with IgM antibody. On further examination IgM antibody for chikungunya virus was also present. The patient improved gradually on ACT and supportive management without any sequelae.

This case report emphasizes that if any suspicion of any diverse clinical symptom or sign, it is always pertinent to look for other infection in endemic areas immediately after presentation of the patient. The presence of 3 simultaneous infections (1 viral & 2 vector born parasitic disease) further signifies that early recognition of these infections may help in saving the patient's life as well as for planning of further therapeutic measures.

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### I. Introduction

Arboviral infections, such as dengue and chikungunya are endemic to South Asia. Concurrent viral infection with another vector-born parasitic infection, such as malaria, is not uncommon in India and would pose a challenge for medical diagnosis because of overlapping clinical symptoms.<sup>1</sup> Dengue along with chikungunya had been reported from central and south India for quite some time but only few cases were reported from east India. Combination of these infections concurrently in one patient has not been reported from eastern part of India till date. Only one case report has been published in 2015 but that patient visited Nigeria few days back & then returned to India.<sup>1</sup>

Malaria is a major parasitic infection in India, accounting for a sizable morbidity & mortality. An early diagnosis and complete treatment are the key for containing the disease. Around 1.5 million confirmed cases are reported annually by national vector born disease control program of the Government of India.<sup>2</sup>

Both dengue and chikungunya fever are arboviral infections of global importance.<sup>3</sup> The global prevalence of dengue has increased recently. The disease is now endemic in more than 100 countries in Africa, the Americas, the Eastern Mediterranean, South-East Asia and the Western pacific.<sup>4</sup> out of more than 390 million dengue infection occurring annually, approximately 96 million develop clinical disease.<sup>5</sup>

Chikungunya is an acute disease, which results in fever, arthritis and skin rash, caused by virus belonging to the Togaviridae family of the genus Alphavirus. Re-emergence of chikungunya disease occurred in India during 2005-06, causing 1.3 million cases in 13 states, chiefly Andhra Pradesh and Karnataka.<sup>4</sup> The two disease share a common mode of transmission i.e. through different species of mosquitoes. Therefore these infections are normally present in the same geographical location.<sup>3</sup> Laboratory diagnosis of the two viral infections is done by virus isolation, genome detection (RT-PCR) and antibody detection (IgM or IgG ELISA). In addition, the antigen detection (NS-1 ELISA) is also being used for diagnosis of dengue infection.<sup>3</sup>

Due to many common clinical presenting symptoms, dengue fever may be misdiagnosed as chikungunya infection. This finding indicate that patient suspected with dengue and /or chikungunya virus infection should be tested for both the virus, especially in the endemic areas.<sup>3</sup>

Malaria is also vector borne & usually found in same region as of dengue and chikungunya, due to prevailing population of different varieties of mosquitos roaming in the region. Addition of malaria in same patient suffering from dengue and chikungunya cannot be ruled out theoretically. The present case is one such example.

## **II. Case Report**

A 11 year old tribal male child from remote forestregion of Jharkhand was admitted in the department of Pediatrics & Neonatology, RIMS, Ranchi with the chief complains of fever with rigor & rash for 8 days. He had 2 episodes of vomiting 2 days back & was unable to stand or walk. Later patient became unconscious.

Fever was associated with pain in the large joints, without associated swelling or erythema of the joint. Fever was also associated with severe headache. His Perinatal period was uneventful. Child was immunized as per National immunization schedule with BCG marks present on the upper part of left arm.

On examination- patient was febrile & unconscious, had a pulse=86/m, RR=22/m, BP=104/66 mm of hg and was maintaining a saturation of 96% without supplementary oxygen. The patient was dyspneic, had a maculopapular rash, Pallor (++), spleen was just palpable with soft consistency. However, no other abnormality was detected in the examination of chest, cardiovascular & central nervous system examination.

Various tests to assess his medical condition were conducted. A complete blood count with peripheral smear, ELISA (IgM & IgG) for dengue and serology for chikungunya were sent along with routine blood examination. The OPTIMAL test was positive for both PV&PF at the time of admission. The patient was managed with inj. Artesunate and other supportive treatment.

A complete blood count showed a reduced Haemoglobin=8.2gm/dl, reduced platelet counts of 60,000/mm<sup>3</sup>, Rbc count=3.85million/mm<sup>3</sup>, TLC=12900 cells/mm<sup>3</sup>, DLC=N(64.1%) L(31%) E(1.3%) M(2%) B(1.6%). Comprehensive kidney function tests showed elevated blood urea=112mg/dl, Sr. creatinine=1.2mg/dl. Comprehensive liver function tests showed serum total bilirubin=1.5mg/dl with a direct bilirubin=0.7mg/dl & indirect bilirubin=0.8mg/dl, Aspartate Amino transferase (AST) = 156 U/L, Alanine Amino transferase (ALT) =62 U/L, Serum Alkaline phosphatase=161 U/L. serum electrolytes results were Sr.Na=134meq/l, Sr.K=5.4meq/l, S.Ca=7.2mg/dl. Total serum protein=3.9gm/dl, Sr.albumin=2.2gm/dl, random blood sugar=131mg/dl. Cerebro spinal fluid examination was clear in colour with protein 81= mg%, glucose=90 mg%, Rbc=02/mm<sup>3</sup>, Wbc=06/mm<sup>3</sup>, ADA=14 IU/L, Grams & Z-N staining was negative. Diagnostic tests for malaria, dengue and chikungunya infections were conducted. Accordingly, microscopic examination of thick and thin blood smear showed presence of ring form of malarial parasite Plasmodium falciparum. Dengue IgM(NIV Pune kit)=positive, chikungunya IgM(NIV Pune kit)= positive. A general blood picture was that of markedly reduced platelets, Hb, red cells were markedly microcytic hypochromic.

## **III. Discussion**

Though various cases of coinfection of dengue and malaria had been reported earlier but concurrent infection of malaria, dengue and chikungunya has not been reported as yet from eastern part of India.

On reviewing literature, there are only few reports available on concurrent of malaria, dengue and chikungunya infection in recent years and few reports from South east Asia and India.<sup>6</sup> Multiple infections in a single patient would drastically change the spectrum of clinical manifestations and thus complicate the diagnostic process.<sup>1</sup>This type of concurrent infection may change the presentation, progression and outcome. This may further pose challenge to clinician. This case report emphasizes the need for awareness about existence of such combination in Jharkhand/ or other parts of India. Considerable thought may be put for multidimensional diagnostic approach in such clinical situation.

## **IV. Conclusion**

This case report emphasizes possibilities of concurrent infection in endemic region. Due to some similarities in clinical and biological characteristics of all the three diseases mentioned, it is recommended that doctors should investigate for all the three diseases in patients presenting in similar situation. Awareness and education of doctors working in these region may help in early diagnosis and proper with timely treatment of patients.



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