

A rare case of triple infection with dengue, malaria and typhoid- A case report

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ABSTRACT

Malaria, Dengue and Enteric fever are important causes of fevers in Andhra Pradesh especially during rainy season. Each of these diseases can substantially contribute to mortality if not diagnosed and treated early. Co infection of Dengue with Malaria, Other viral infections, Typhoid, Leptospira etc has been described in many parts of the world but triple infection with Dengue, Malaria and Typhoid in the same patient is not reported anywhere in literature, to our knowledge. We report a rare case of 24 year male with diagnosed Dengue infection in a private clinic, who was referred to our hospital for continuing fever for more than a week, thrombocytopenia and pain abdomen.

He was febrile, conscious and coherent and his other vitals were stable. His blood picture showed leukocytosis and thrombocytopenia, while other biochemical tests were normal. Dengue NS1 antigen was negative but IgM ELISA was positive. Malarial antigen was positive for *P. falciparum* and Widal showed a titre of O-1:320 and H-1:160. His blood cultures showed growth of *Salmonella typhi*, confirming Typhoid co infection. He was treated with platelet transfusions and one week course of Intravenous Artesunate, Ceftriaxone, and oral Doxycycline along with symptomatic treatment. He responded well to treatment and was discharged after near normalization of general condition.

Key words: *Dengue, Malaria, NS1 Antigen, Triple infection, Typhoid*

Introduction

Malaria and Enteric fever (Typhoid) are common causes of fevers in many parts of Andhra Pradesh. North Coastal Andhra Pradesh districts reported maximum deaths due to Malaria in the past decade, and the figure is unlikely to change in future. Recently, the incidence of Dengue fevers is on the rise in these regions. Co infection with Malaria and Dengue is reported in literature from many parts of the world but triple infection along with Dengue in the same patient has not been described anywhere in the literature [1]. We report a rare case

of Triple infection with Malaria, Dengue and Enteric fever in the same patient.

Case report

A 24 year old male patient hailing from a tribal village was referred from a private clinic for the management of thrombocytopenia, unrelenting fever for eight days, epistaxis, malena and pain abdomen. He held the tests done outside showing Dengue NS1 positivity, platelet count 44000/mm³ and widal titre O-1:160 and H-1:80. We admitted the case as

Dengue fever with thrombocytopenia. During our hospital stay, he continued to have high grade fever with chills, rigors and severe prostration. Fever was intermittent, associated with head ache and joint pains, nausea and diffuse pain abdomen. He was a non smoker and non alcoholic, there was no significant past and family history and he did not have fever in the past two years.

On examination his vitals were stable. He was conscious and coherent. There was no cardiac murmur and lungs were clear. There was a palpable spleen four cm below the left costal margin and abdomen was diffusely tender. Investigations showed Hb - 13.7gm%, Total count is 4,800 cells / mm³, Neutrophils- 70%, Lymphocytes-27%, Eosinophils-03%, ESR-35mm/hr, Platelet count 26000/ mm³, and urine microscopy was normal. Blood for culture and sensitivity was sent. A diffuse erythematous, blanchable rash developed on the second day of admission which quickly disappeared. A repeat Dengue NS1 antigen was negative. However, ELISA IgM was positive and IgG was negative for Dengue. Malarial antigen (HRP-2 based Antigen detection ELISA) was positive for P.falciparum and thick and thin smears showed gametocytes of P.falciparum (Figure-1) Widal has shown a titre of O-1:320, H-1:160 and stool for occult blood was positive. Ultrasonography of abdomen showed mild hepatomegaly and moderate splenomegaly. Under this clinical setting, we considered the diagnosis of mixed infection of P.falciparum Malaria and Dengue and possible enteric fever.

The patient was started on Inj. Artesunate 120 mg at 0, 12 and 24 hrs and there onwards 120 mg/day, Inj. Ceftriaxone 4 gm/day, Inj. Pantoprazole 40 mg/d, I.V fluids 2 lit/day, Tab. Doxycycline 200 mg/day and Tab Paracetamol as required along with four packs of Random Donor Platelet transfusions. On day three, blood culture showed the growth of salmonella typhi (Figure-2). He started showing gradual response from day four after admission and by day six, he was afebrile and his platelets normalized. He complained continuing fatigue and asthenia but other symptoms improved. Treatment was continued for seven days and he was given Tab. Primaquin 45 mg stat for gametocyte

eradication of P.falciparum and was discharged on day eight. At follow up after one week he had no complaints.

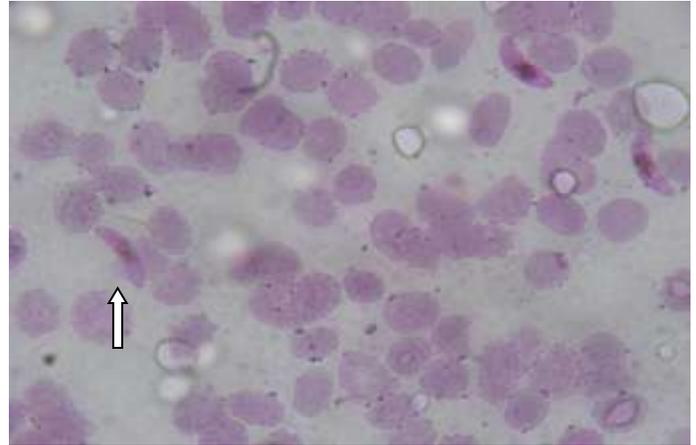


Figure 1 showing banana shaped gametocytes of P.falciparum in the peripheral smear.



Figure 2 showing jet black colonies of S.typhi on Wilson Blair medium.

Discussion

Malaria and Dengue share common geographical areas especially in endemic regions for Malaria and acquisition of both infections is not uncommon among inhabitants in those regions. Dengue fever occurs predominantly in rainy seasons because of

mosquito burden, and corresponds with the peak incidence period for Malaria and Typhoid. Dengue virus, like many other viruses can reduce the total lymphocyte count and transient bone marrow suppression can result in marked neutropenia. It can induce IL-10 production which down regulates monocytes and promotes alloantigen specific unresponsiveness of human CD8+ T cells, the effect lasting upto two weeks [2]. This can result in increased susceptibility to secondary infections, especially during the convalescence period.

Duration of fever in Dengue is generally 5-7 days and most of the infections spontaneously subside. Dengue can be diagnosed by NS1 antigen kits which are commercially available, are highly specific but sensitivity drops after first week of fever and may become negative subsequently. IgM antibody test may become positive after day five and these rapid ELISA tests are reasonably reliable in India where cross reactivity with other Flavi virus infections are less likely. Supportive treatment for Dengue fever is sufficient while monitoring for complications is a must. Thrombocytopenia in this case might be caused by both Dengue and Malaria. Thrombocytopenia requires correction preferably with single donor platelets if there is systemic bleeding or if platelets are below 20000-30000/mm³, depending on clinical judgement. Epistaxis in this patient might be due to thrombocytopenia, however the critical platelet count below which bleeding starts is variable from patient to patient and there are many cascades of hemostatic perturbations possible which may vary [3]. On the other hand, severe *P. falciparum* Malaria should be aggressively treated with Artemesin based combination therapy as delayed treatment can substantially increase the mortality [4]. Enteric fever in this patient was diagnosed initially based on rising titres of Widal and subsequently confirmed by blood cultures. Dengue related immunosuppression might have predisposed to typhoid after exposure to contaminated food or water. Typhoid infection shows variable patterns of fever in the first week and if untreated, can result in serious complications like encephalopathy and bowel perforation later on [5]. Pain abdomen and positive stool occult

blood in this patient could represent bleeding ulcers in colon, however we did not subject him to colonoscopy due to denial of consent. Shrewd clinical suspicion has lead to successful diagnosis and treatment with good outcome in this patient.

Conclusion

Patients with Dengue fever can have poor immunity during convalescent period which makes them susceptible to other infections. Beyond one week of fever, if patient with Dengue infection shows no signs of response to conservative treatment, it is strongly suggested to consider other possibilities of co infections most importantly Bacterial infections and Malaria.

References

1. Mohsin Bin Mushtaq, Mehmood I. Qadri, and Aaliya Rashid, "Concurrent Infection with Dengue and Malaria: An Unusual Presentation," Case Reports in Medicine, vol. 2013, Article ID 520181, 2 pages, 2013. doi:10.1155/2013/520181
2. Anuja mathew, Ichiro kurane, sharone Green, david W. Vaughn, siripen Kalayanarooj, Saroj Suntayakorn et.al. Impaired T cell proliferation in Acute Dengue Infection. The journal of immunology; May 1, 1999vol. 162 no. 95609-5615.
3. Chuansumrit A, Chaiyaratana W. Hemostatic derangement in Dengue hemorrhagic fever. Thromb Res. 2013 Sep 26. pii: S0049-3848(13)00442-8.
4. McGraw-Hill; 2008. Chapter 210; Malaria. In: Dan L. Longo, Dennis L. Kasper, J. Larry Jameson, Anthony S. Fauci, Stephen L. Hauser, Joseph Loscalzo. Editors. Harrison's Principles of Internal Medicine. 18 th Ed. New York.
5. Edino ST, Mohammed AZ, Uba AF, Sheshe AA, Anumah M, Ochicha O et.al. Typhoid enteric perforation in north western Nigeria. Niger J Med. 2004 Oct-Dec;13 (4):345-9.

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