

Dengue and typhoid co-infection: A case report from a tertiary care hospital in South India

Vigna Seshan R.V., Gopalsamy S., Padma Srikanth

ABSTRACT

Introduction: Acute undifferentiated febrile illness is the most common presenting symptom in both adults and children during the monsoon. Incidence of both vector- and water-borne diseases are highest during these seasons, co-infections of dengue with typhoid, malaria, leptospirosis, scrub typhus and other arboviruses can occur in endemic areas. Co-infections of dengue with typhoid have been reported sparsely and are known to present with overlapping symptoms making the clinical diagnosis difficult.

Case Series: We report two confirmed cases of dengue and typhoid co-infection during the monsoon of 2013 from a tertiary care centre in Chennai. Both the patients presented with high grade fever with headache, myalgia and gastrointestinal symptoms. They were admitted to inpatient units with provisional diagnosis of dengue disease, both the patients were confirmed with the diagnosis of dengue, one patient was positive for dengue virus by Real time PCR and other was positive for dengue specific IgM. In view of the persistent fever and associated gastrointestinal symptoms various diagnostic test were performed, which showed that there was a co-infection with typhoid fever. Both the patients were treated with appropriate antibacterial agents and discharged after complete recovery.

Conclusion: Dual infections are difficult to diagnose especially in endemic areas during the rainy season as patients present with undifferentiated fever. Co-infections have to be suspected in cases with atypical disease presentations or prolonged fever.



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Keywords: Acute febrile illness, Co-infection, Dengue virus, Typhoid

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Vigna Seshan R.V.¹, Gopalsamy S.², Padma Srikanth³

Affiliations: ¹PhD scholar, Department of Microbiology, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra University, Porur, Chennai-600116; ²Tutor, Department of Microbiology, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra University, Porur, Chennai-600116; ³Professor, Department of Microbiology, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra University, Porur, Chennai-600116.

Corresponding Author: Dr. Padma Srikanth M.D., Professor, Department of Microbiology, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra University, Porur, Chennai- 600116, Tamil Nadu, India; Email: srikanth_padma@rediffmail.com

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INTRODUCTION

Acute febrile illness is the most common clinical syndrome among patients attending to hospital in developing countries [1]. Acute febrile illness are caused by a variety of bacterial, viral and parasitic agents

[2]. Patients with co-infection present with atypical manifestations resulting in a delay in diagnosis [3]. Co-infections of dengue with Chikungunya, malaria and other arboviruses have been frequently reported from endemic areas [4, 5]. Co-infections of typhoid fever have been documented with various enteric viruses [6]. Dual infections tend to have prolonged fever and increased risk of complications [7]. It is necessary that clinicians be aware of the prevalence of dual infections to make a prompt diagnosis in order to initiate appropriate treatment. Here, we report two cases of dengue-typhoid co-infection both the patients were hospitalized and recovered completely.

CASE SERIES

Case 1

A 40-year-old male presented with high grade fever of five days duration, associated with headache, myalgia, nausea and two episodes of vomiting. There was a significant decrease in platelet count ($90 \times 10^9/\mu\text{L}$). A presumptive diagnosis of dengue fever was made and the patient was started on intravenous fluids along with antipyretics. The patient had persistent fever, vomiting and developed abdominal pain. ELISA (panbio, Australia) for dengue NS1 antigen was negative, however he was positive for dengue specific antibodies IgM and IgG indicating a secondary dengue infection. Since there was a persistent fever other etiologies were considered, such as malaria, typhoid, leptospirosis, rickettsia diseases, influenza and influenza-like illnesses. A blood culture and widal test was performed in view of persistent fever, blood culture showed no growth. However, widal test showed titres suggestive of enteric fever (TO: 1:160, TH 1:320) due to *Salmonella Typhi*. Rapid test for malarial antigen (targeting HRP II protein and pLDH - Alere SD BIOLINE, Australia), ELISA for IgM for *Leptospira* were negative. Ultra sonogram of abdomen was performed in view of abdomen pain which showed evidence mild hepatosplenomegaly. Liver function test showed mild derangement in liver enzyme and bilirubin levels. The patient recovered with intravenous ceftriazone 2 g a day for five days, there was a gradual increase in platelet level and patient was discharged after the fever subsided.

Case 2

A 24-year-old male presented with high grade fever of three days duration, associated with headache, myalgia, nausea. He had a relatively low platelet count ($120 \times 10^9/\mu\text{L}$) and total count ($3800/\text{mm}^3$). The patient was positive for dengue virus by Real time PCR, Dengue NS1 antigen was positive, test for malarial antigen (targeting HRP II protein and pLDH - Alere SD BIOLINE, Australia) were negative. He was admitted and treated conservatively with antipyretics. Fever persisted even after day-6, the patient developed abdomen pain and few episodes of loose stools.

Blood culture was positive for *Salmonella Typhi*. Widal test titres (TO 1:80, TH 1:160) were suggestive of enteric fever. A dengue IgM test done on day-8 was positive. The patient was treated for enteric fever and discharged after complete recovery.

DISCUSSION

Dengue and typhoid fever are notifiable diseases in India. Both diseases contribute majorly to the public health problems especially during the monsoons [1]. Due to the varied clinical presentations, these diseases are often under reported or misdiagnosed [8–10]. The exact incidence of dengue and typhoid co-infection is not known [6, 7]. It is a known fact that bacterial infections follow viral diseases especially in upper respiratory diseases, the effect one disease over the other is not exactly known in dengue-typhoid co-infections [1, 5]. However, the hemodynamic, inflammatory changes occurring in dengue fever can predispose to invasive *Salmonella* infections as both the disease agents are common during the rainy seasons. Both patients in our study presented with high grade fever, myalgia and gastrointestinal symptoms like nausea, vomiting and abdominal pain which can be seen in both enteric fever and in “dengue with warning signs” group of patients. If not diagnosed and treated promptly both dengue and typhoid can progress into similar life-threatening complications such as septic shock and multi organ failure.

Often when there is a laboratory evidence for a febrile undifferentiated fever, clinicians may not pursue other investigations especially in resource limited settings. Usually, acute febrile illness is caused by a single etiologic agent. However, recently it has become evident that dual infections or co-infections can occur either due to host related factors or vector adaptability as in the case of CHIKV and dengue or other environmental factors or agent related factors as in the association of typhoid bacteremia with polio virus [11–15]. We believe that increasingly infectious diseases are presenting with atypical manifestations or as dual infections. There is a need to document such cases and heighten awareness among clinicians to the changing dynamics of disease manifestations.

CONCLUSION

We have presented two proven cases of dengue-typhoid co-infection. Co-infection should always be considered in endemic areas while dealing with patients with acute febrile illness especially when there is a prolonged fever.

Author Contributions

Vigna Seshan R.V. – Substantial contributions to conception and design, Acquisition of data, Analysis

and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Gopalsamy S. – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Padma Srikanth – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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