# *Dengue and Typhoid Fever Coinfection in A Child*

## *Bir Çocukta Görülen Dang Ateşi ve Tifo Ateşi Koenfeksiyonu*

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**Abstract**

The clinical features of commonly seen illnesses, such as malaria, enteric fever, dengue, chikungunya, scrub typhus, and leptospirosis mimic each other. Sometimes, concurrent infections within a patient make both diagnosis and subsequent management challenging. Concurrent infections can result in the overlapping of clinical features, posing a diagnostic dilemma for the treating clinician. Given that both typhoid fever and dengue fever are endemic in India, it is possible to be simultaneously infected by both the diseases. Herein we report the case of a 3-year-old child who presented with dengue and typhoid fever coinfection and subsequently recovered. *(J Pediatr Inf 2016; 10: 36-8)*

**Keywords:** Dengue, typhoid, coinfection

**Öz**

Yaygın olarak görülen sıtma, tifo, dang, chikungunya, çalılık ateşi ve leptospiroz gibi hastalıkların klinik özellikleri birbirini taklit ederler. Bazen, bir hastada görülen eşzamanlı enfeksiyonlar tanıyı daha da zorlaştırır ve hastalık yönetimi zor bir iş haline gelir. Eş zamanlı enfeksiyonlar geliştiğinde, klinik özelliklerin örtüşmesi sonucunda, tedaviyi yöneten klinisyen açısından tanısal bir ikilem ortaya çıkar. Hem tifo hem de dang ateşi Hindistan'da endemik hastalıklar oldukları için, aynı anda her iki enfeksiyonun da görülmesi olasıdır. Bu nedenle, bu çalışmada dang ve tifo ateşi koenfeksiyonu ile başvuran ve iyileşen üç yaşındaki bir çocuk sunulmaktadır.
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## Introduction

Infectious diseases are the most important causes of morbidity and mortality in developing countries, such as India (1). Clinical features of commonly observed diseases such as malaria, enteric fever, dengue, chikungunya, scrub typhus, and leptospirosis mimic each other. Therefore, accurately diagnosing these diseases is challenging for clinicians. In tropical countries, many coinfections, including staphylococcal infection and malaria with dengue, have been reported (2-4). we need this sentence features, creating a diagnostic dilemma for the clinician (5). If not timely treated, coinfections may lead to life-threatening consequences. Given that both typhoid and dengue are endemic in India, it is possible to be simultaneously infected by both the diseases (6). Herein we report the case of a 3-year-old child who presented with dengue and typhoid fever coinfection.

## Case Report

A 3-year-old male child presented with a high fever for 5 days and vomiting for 1 day. There was no history of cough, bladder disturbances, bleeding tendencies, or rash. On examination, the child was found to have a capillary filling time of <3 s, pulse rate of 76/min, respiratory rate of 26/min, and blood pressure of 92/50 mmHg. Abdomen examination revealed a palpable 2-cm liver. Other system examinations were unremarkable. Laboratory findings were as follows: Hb 10.7 gm/dL, hematocrit 32, total leucocyte count 6500/mm$^3$ (neutrophils 65% and lymphocytes 27%), erythrocyte sedimentation rate 70 mm, platelets 73000/mm$^3$, SGOT 78 U/L, and SGPT 71 U/L. His urine microscopy was

normal, and the culture was sterile. His blood culture was sterile after 48 h. His peripheral smear for the malarial parasite and Weil–Felix test results were negative. His chest X-ray and kidney function test results were normal. His dengue serology was positive for IgM antibodies and negative for IgG antibodies. He was diagnosed with dengue fever and accordingly treated with paracetamol syrup and intravenous Ringer's lactate. He became afebrile on the day after admission. On the second day, his vital signs were stable and his platelet count decreased to 86,000/mm$^3$. He was afebrile without paracetamol for 2 days. On the third day, he developed high fever spikes along with a cough. His ear, nose, and throat and respiratory system examinations were unremarkable. In view of cough and fever we made a diagnosis of acute respiratory infection/second phase of biphasic dengue fever. His vital signs were stable, and his platelet count had increased to 129000/mm$^3$. His repeat total leucocyte count, urine microscopy and culture, and chest X-ray were normal. He continued to have high fever spikes. In view of the associated cough, a provisional diagnosis of acute respiratory infection was made and azithromycin was started. His blood pressure was maintained within normal limits, and his platelet count was between 1.09 and 1.27 lakhs/mm$^3$ consistently for 5 days. The blood culture taken at admission, which was sterile after 48 h, grew *Salmonella typhi,* which was sensitive to ceftriaxone on subsequent subcultures. Widal test results were positive to both TO and TH antigen titers of 1:160. He was treated with an intravenous injection of 100 mg/kg/day of ceftriaxone. He became afebrile on the fifth day of ceftriaxone injections, and his platelet count increased to 247,000/mm$^3$. He was discharged after a 14-day course of ceftriaxone. Informed consent was obtained from his parents.

## Discussion

Worldwide, 2.5 billion people live in countries where dengue is endemic and are at a risk of contracting dengue fever or dengue hemorrhagic fever. Of them, 1.3 billion live in 10 countries in the WHO South-East Asia region (7). Dengue is an important emerging infectious disease in India. In the acute phase of the illness, the clinical features of dengue infection are difficult to distinguish from other illnesses found in tropical areas (7, 8). Typhoid fever is also common in the 5- to 15-year-old age group, and the reported overall incidence rate of typhoid fever is 214.2 per 100,000 individuals/year (1). Typhoid fever usually presents with prolonged fever with spikes in temperature without returning to normal. The fever rises in increments and usually reaches 40–40.5°C by the end of the first week of illness (8). Particularly in dengue, there is a sudden sharp rise in temperature between 39°C and 40°C, and this is frequently accompanied by a flushed face and headache. The fever may be biphasic, lasting 5–7 days in the majority of cases. It is generally an acute febrile illness associated with a severe headache, myalgia, arthralgia, and rashes (7). In typhoid fever, a dull, continuous frontal headache beginning during the first 2 days of fever may occur along with gastrointestinal symptoms, such as diarrhea and constipation (5, 8). In dengue, the critical phase of dengue hemorrhagic fever begins around the time of transition from the febrile to afebrile phase (7). The initial presentation of fever, vomiting, and thrombocytopenia in the month of November in our patient was compatible with the diagnosis of dengue. He tested positive for IgM antibodies to dengue, suggesting an acute infection with dengue. His presentation was consistent with WHO's diagnostic criteria for dengue hemorrhagic fever (7). He became afebrile for 2 days along with a drop in his platelet count. In dengue patients, there is a sudden drop in platelet count below 100000/mm$^3$ by the end of the febrile phase before the onset of shock or resolution of fever (7). He was probably in the critical phase of dengue. However, fever spikes reappeared with cough after an afebrile period of 2 days, along with an increase in platelet count. We attributed the fever to either viral acute respiratory infection or the second phase of saddleback dengue fever. Children with dengue frequently have upper respiratory symptoms due to concurrent infection with other viruses and bacteria (8). However, fever persisted in our patient despite signs of recovery from dengue, such as the maintainance of normal blood pressure and improvement in platelet count. According to the WHO, a fever usually lasts for 2–7 days in patients with dengue (6, 7). However, our patient continued to have fever for >10 days, prompting us to reevaluate him. His blood culture grew *S. typhi* on subcultures, and the Widal test results were positive. The first case of coinfection with dengue and typhoid was reported by Sudjana and Jusuf (6). In a study by Kasper et al. (9) from Cambodia, of the 883 cases of dengue infection, 3 (0.30%) had coinfection with typhoid fever. A study by Baba et al. (10) from Nigeria reported dengue coinfection with typhoid fever in 13 (4.1%) of 310 febrile patients. A study conducted in Delhi reported dengue–typhoid coinfection in 7.8% of their dengue cases (5). Although the causal mechanisms remain to be elucidated, dengue virus can cause a diminished T-cell proliferation in response to mitogens *in vitro* (1). The breakdown of the intestinal mucosal barrier in dengue may be another reason for increased gram-negative sepsis (1). Given that both diseases are endemic in tropical countries, they remain public health problems, and it is possible to have both infections at the same time. Both dengue and typhoid may lead to many complications if not diagnosed and treated promptly.

## Conclusion

As clinicians, we should be aware of the natural course of the illness of commonly occurring diseases. Whenever there is a breach in the natural course or overlapping of clinical features creating a diagnostic dilemma, concurrent infection should be strongly suspected. Therefore, in dengue infection, blood culture sampling would be desirable for the detection of any concurrent septicemia.

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