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Case Report

Dengue and typhoid co-infection: a case report from a tertiary care hospital in Puducherry

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ABSTRACT

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. We report the case of a 3-year-old child who presented with dengue and typhoid fever coinfection and subsequently recovered. In every febrile patients' common infections should be evaluated with through history, clinical examinations and logical investigations. If not treated early, dengue and typhoid together, may lead to multi-organ involvement with significant morbidity and mortality.

Keywords: Dengue and typhoid, Coinfection of dengue and enteric, Dengue with enteric

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.[1] Coinfection can lead to superimposed signs and symptoms, creating a difficulty in diagnosis for the physician.[2] Given that both typhoid fever and dengue fever are endemic in India, it is possible to be simultaneously infected by both the diseases.

CASE REPROT

A 7-year-old male presented with high grade fever for 5 days associated with vomiting and loose stools for 3 days. On examination child is irritable and dull looking with Heart rate of 130 bpm, rhythm-regular, normal volume, all peripheral pulses felt equally, respiratory rate of 30 cycles/mins, saturation 96% under room air, Blood pressure 110/80 mmhg, capillary filling time <3 secs with sunken eyes, excessive thrust and dry oral mucosa.

Abdomen: soft, diffuse tenderness present over the abdomen

More elicited in right iliac region, mild hepatosplenomegaly.

On day 1 of admission child was found to have neutrophilic leucopenia. ESR was elevated. CRP was positive (24 mcg/ml). USG abdomen was taken and appendicitis was ruled out. Child was started on IV fluids and IV antibiotics with initial suspicion of enteric fever /appendicitis.

On day 2 of admission there was thrombocytopenia with suspicion of dengue, dengue IgM serology was sent which was turned out to be positive. The child was started on IV fluids RL 5 ml/kg/hr. Continuous

monitoring of urine output was done. Since there was a persistent fever other etiologies were considered, such as typhoid, rickettsia disease. Widal test showed titres suggestive of enteric fever (TO: 1:640, TH 1:1280) due to *Salmonella Typhi*. A blood culture and Widal test was performed in view of persistent fever, blood culture showed *salmonella enteric serovar typhi* growth.

ELISA for IgM for Leptospira were negative. Ultra sonogram of abdomen was performed in view of abdomen pain which showed evidence mild hepatosplenomegaly. Electrolyte imbalance (potassium - 2.7 mg/dl) was present without any ECG changes, which was corrected with oral potassium supplements 2 meq/kg/day. There was a gradual increase in platelets. The patient received intravenous ceftriaxone for five days, but still fever persists hence patient was started on azithromycin (20 mg/kg/day). There is gradual decrease in fever (Figure 1), hence the child was shifted to ward and discharged after an afebrile period of 48 hrs.

Table 1: Investigations during the course of the treatment.

Total count (10^3/mcl)	12.9	5.32	3.6	5.15	7.2
Haemoglobin (g/dl)	12.3	11.5	11.5	12.0	12.4
Platelet (10^3/mcl)	257	140	85	54	70
PCV	33.5	31.1	32.3	32.7	33.1
Neutrophils (%)	87.5	89.4	84.9	75.8	72.1
Lymphocytes (%)	11.2	7.6	13	21.2	21.8
Eosinophils (%)	0.0	0.0	0.0	0.1	0.3
Monocytes (%)	1.1	2.7	1.3	2.5	2.0
Basophils (%)	0.2	0.2	0.6	0.4	0.2

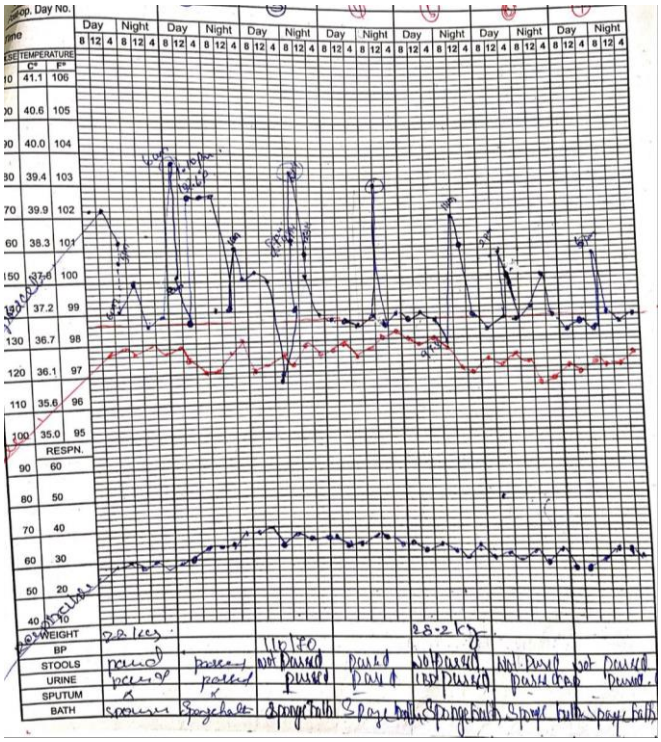

Figure 1: Temperature graph of the child.

DISCUSSION

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.[3,4] 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.[2] 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.[5] In our case the patient presented with fever, vomiting and diarrhoea. However, vomiting subsided, he was tested positive for IgM antibodies to dengue, suggesting an acute infection with dengue. He was probably in the critical phase of dengue on day 3 admission with fluid loss in third space leading

to pedal oedema and ascites (shifting dullness +), platelets count of 54,000/cu.mm, the child was catheterized and urine output was monitored. A possible interaction between dengue and typhoid may arise through intestinal endothelial damage or intestinal haemorrhage, or through immunosuppression superimposed by initial virus illness.[6] However, our patient continued to have fever for >10 days, his blood culture grew *S. typhi* on subcultures, and the Widal test results were positive.

S. typhi showed resistance to cephalosporins but was susceptible to carbapenems, piperacillin-tazobactam and tigecycline, and he recovered completely with injection meropenem and oral azithromycin.[5] In our case, the fever persisted even after receiving 5 days of receiving ceftriaxone (100 mg/kg/day) even after showing sensitivity to 3rd generation cephalosporins. Hence we started on oral azithromycin (20 mg/kd/day), and fever subsided subsequently. A study conducted in Delhi reported dengue-typhoid coinfection in 7.8% of their dengue cases.[1-8] 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 prompt.

CONCLUSION

Dual infections are difficult to diagnose due to overlapping of symptoms especially in endemic areas were occurrence is more. Co-infection should always be considered in while dealing with patients with prolonged acute nonresponsive febrile illness. In every febrile patients' common infections should be evaluated with through history, clinical examinations and logical investigations. If not treated early, dengue and typhoid together, may lead to multi-organ involvement with significant morbidity and mortality.

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