

Concurrent infection of dengue fever and hepatitis A infection: A case report

Sir,

Both dengue fever and hepatitis A infection are endemic in developing countries and are associated with poor sanitation and low socioeconomic status. Their coexistence can present a diagnostic dilemma to the treating physician.^[1]

A four-year-old girl was admitted with high-grade fever, vomiting, and abdominal pain for 7 days and jaundice for 3 days. On admission she was conscious and hemodynamically stable. Deep icterus was present. The liver was tender with a span of 10 cm and the spleen palpable 2 cm. Other systems were normal. The differential diagnoses considered were malaria, typhoid fever, dengue fever, and leptospirosis. Investigations revealed: hemoglobin 14.8 gm/dL, total leukocyte count 6200/mm³, and platelet count 59,000/mm³. Peripheral blood smear was negative for malarial parasite. Serum electrolytes, blood culture, urine culture, renal function tests, serum calcium were normal. Widal test and leptospirosis serology were negative. Polymerase chain

Table 1: Liver function test during the course of hospital stay

	Day 1	Day 5	Day 8	Discharge
Serum bilirubin (mg/dL)	1.8	6.6	4.7	3.8
Direct bilirubin (mg/dL)	1.2	3.2	2.9	1.7
Aspartate aminotransferase (IU/L) (AST)	4567	7654	2340	450
Alanine aminotransferase (IU/L)	1654	2476	2340	879
Lactate dehydrogenase (IU/L) (LDH)	510	—	—	—
AST/LDH	8.95	—	—	—
Prothrombin time (s)	24	19	19	16

Table 2: Mixed infection reported from different regions in the last 15 years

Mixed infection	Region	Author
Leptospirosis, dengue, and hepatitis E	Delhi (India)	Behera <i>et al.</i> (2009) ^[2]
Dengue fever and malaria	Karachi (Pakistan)	Abbasi <i>et al.</i> (2009) ^[3]
Dengue fever and hepatitis A and hepatitis E	Karachi (Pakistan)	Yakoob <i>et al.</i> (2007) ^[11]
Dengue fever and typhoid fever	Bandung (Indonesia)	Sudjana and Jusuf (1998) ^[4]
Typhoid fever and viral hepatitis	Delhi (India)	Mishra <i>et al.</i> (2008) ^[5]
Malaria and leptospirosis	Bangkok (Thailand)	Singhsilarak <i>et al.</i> (2006) ^[6]
Dengue fever and leptospirosis	Mumbai (India)	Zaki and Shanbag (2010) ^[7]
Hepatitis A and malaria	Mumbai (India)	Zaki (2009) ^[8]

reaction for dengue virus was positive. Ultrasonography revealed pseudothickening of gall bladder, bilateral pleural effusion, ascites, and hepatomegaly with altered echotexture. Liver function tests during the course in hospital are shown in Table 1. Highly elevated liver enzymes and deranged prothrombin time alerted us to the possibility of coexistent viral hepatitis. Serological test for viral hepatitis was positive for HAV-IgM: 1.4 (N # 0.8) and negative for hepatitis B, C, and E viruses. Intravenous fluids and antipyretics were started. As the general condition of the child was improving and all the cultures were negative, supportive treatment was continued. She finally became afebrile on the 11th day and was discharged on the 13th day of admission. She is well on follow-up after 2 months with normal liver enzyme tests.

There are several overlapping clinical features of dengue, leptospirosis, malaria, and viral hepatitis, which can cause substantial misdiagnosis. Existence of simultaneous, multiple infections in an individual has been reported in the literature [Table 2].^[1-8] Both dengue fever and viral hepatitis can present with fever and jaundice. Liver involvement in dengue can occur due to direct effect of the virus or host immune response on liver cells, circulatory compromise caused by hypotension or localized vascular leakage inside the liver capsule and tissue tropism of particular viral serotypes or genotypes.^[9] Although hepatic involvement is commonly seen with dengue fever, severe hepatic derangement is rare. Presentation of hepatitis A infection is similar, but with a few differences: Fever usually subsides with the appearance of jaundice and the period between onset of fever and jaundice is 1–7 days.^[5] Serum aminotransferase levels are markedly elevated in viral hepatitis (8–10 times normal) as compared with those in dengue fever in which they are elevated 2–3 times the normal value and the ratio of AST/LDH (aspartate aminotransferase/lactate dehydrogenase) is more than 4 in viral hepatitis.^[5] In dengue fever, aspartate aminotransferase

has been found to increase more quickly and peaking at a higher level and then reverting to normal sooner than alanine aminotransferase.^[9] This pattern is different from that commonly seen during acute hepatitis caused by hepatitis viruses. Other differentiating features of dengue fever include hemoconcentration, thrombocytopenia, and third space fluid losses.^[7] The coagulation profile is usually normal in patients with dengue fever.^[9] Hence an abnormal coagulation profile should alert one to an underlying infection with a hepatotropic virus or disseminated intravascular coagulation associated with sepsis. Usually in dengue fever without complications the fever spikes comes down by day 4–5 of illness. However, fever may be prolonged in patients having coexisting other infections as seen in our case. Highly elevated liver enzymes, deranged prothrombin time, and prolonged fever in the patient alerted us to the possibility of coexistent viral hepatitis.

This case illustrates the importance of physician awareness of mixed infections in endemic areas that can pose diagnostic dilemmas, complications, and prolonged course.

Syed Ahmed Zaki, Vijay Lad

Department of Pediatrics, Lokmanya Tilak Municipal General Hospital and Medical College Sion, Mumbai- 400 022, Maharashtra, India

Correspondence:

Dr. Syed Ahmed Zaki, Room no.509, new RMO quarters, Sion, Mumbai- 400 022, Maharashtra, India. E-mail: drzakisyed@gmail.com

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Quick Response Code:	Website: www.ijccm.org
	DOI: 10.4103/0972-5229.92073