Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/8d7sc326

DENGUE FEVER WITH ACUTE LIVER DYSFUNCTION: A CASE SERIES STUDY IN A TERTIARY HEALTH CARE CENTRE IN ARUNACHAL PRADESH

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ABSTRACT
Dengue is the most common cause of viral hemorrhagic fever, globally. It is endemic in many tropical countries. Dengue fever is one of the most recent emerging diseases in north eastern states of India with a fast-growing burden over the years. Classically, dengue patients present with fever and rash and in severe cases with bleeding and shock. Liver injury is commonly reported in patients with dengue, and various phases of liver dysfunction have been described as secondary to dengue infection. This case series brie□y describes the clinical pro□le of dengue fever with acute liver dysfunction from a tertiary care hospital in Arunachal Pradesh (north-eastern state of India)

KEYWORDS: Dengue Fever, Acute Liver Dysfunction, Acute Hepatitis, Dengue Induced Hepatitis, Severe Dengue

1. INTRODUCTION

Dengue is the most common cause of viral hemorrhagic fever, globally. It is endemic in many tropical countries, but in the last few years, cases have also been frequently reported from non-endemic regions. More than 5 billion people are at risk of getting affected with dengue, and more than 400 million cases are being reported annually. In 2024, 14.1 million dengue cases were reported globally, surpassing the historic milestone of 7 million observed in 2023[18]. Dengue fever is one of the most recent emerging diseases in north eastern states of India with a fast-growing burden over the years [16,17].Dengue was classified as non-classical dengue fever (DF), classical DF, dengue hemorrhagic fever (DHF), and dengue shock syndrome (DSS). Patients with severe capillary leak, hypotension, severe bleeding or severe organ involvement are all classified as severe dengue. Classically, dengue patients present with fever and rash and in severe cases with bleeding and shock. Liver injury is commonly reported in patients with dengue, and various phases of liver dysfunction have been described as secondary to dengue infection. Patients with liver involvement generally present with gastrointestinal symptoms like nausea, vomiting, abdominal pain and anorexia, along with yellowish discoloration of the eyes and skin.

2. METHODS:

Cases were collected between years 2022-2023 among confirmed dengue NS1 positive patient who came at Medicine OPD or Emergency and Trauma centre TRIHMS Naharlagun (a tertiary care hospital in Arunachal Pradesh – North East India) with various symptoms persistent with dengue fever. Their symptomatology was noted and laboratory and radiological studies done according to the cases.

Inclusion Criteria:

1) Acute febrile illness with dengue NS1/IGM positive cases

Exclusion criteria:

1) Chronic alcoholic
2) Acute or chronic viral hepatitis
3) Patient on herbal medication
4) Patients on hepatotoxic drugs
5) Co-infection with tropical fevers (Eg. Scrub typhus fever)

CASE PRESENTATION:

A) GENERAL CHARACTERISTICS OF THE PATIENTS:

Total 23 cases were collected out of which 11 cases were excluded (5 chronic alcoholics, 4 chronic hepatitis B and 3 with concomitant scrub typhus infection), 11 cases who met the inclusion criteria out of which 9 were male (81.8%) and 2 were female (18.2%). The median age was 35 years. All the 11 patients were admitted at General Medicine Ward And Department of Emergency And Trauma Centre of Tomo Riba Institute of Health And Medical Science Hospital Naharlagun Arunachal Pradesh and manage conservatively during their acute illness. Constitutional symptoms, respiratory symptoms, musculoskeletal symptoms and gastrointestinal symptoms were the most common presenting complaints.

Table 1: General characteristics of the patients

Variables	Dengue fever cases
Male	9 (81.8%)
Female	2 (18.2%)
Age (median)	35 years (24-60 years)

B) DENGUE FEVER SYMPTOMS:

Most of the patients had overlapping of various symptoms and it was observed that almost 2/3 of them had overlapping of 2 or more symptoms. The most common were of constitutional and respiratory symptoms with fever and generalized fatigue in all 11 patients (100 %) followed by musculoskeletal and other symptoms. Fatigue was experienced even with mild exertion and was present even before their acute illness in most of the patients. All the patients who required admission during their acute illness presented mainly with fever with chills and petechial rashes. Musculoskeletal symptoms were also common with arthralgia in 9 patients (81.8%) and Back ache in 8 patients (72.7%). Multiple petechial rashes over general skin and limbs were seen in 6 patients (54%) and multiple episodes of loose stool and right upper abdomen pain present in 5 patients (45.4%). There was no tenderness of muscles and joints and but right hypo-chondrium tenderness was present in 5 patient on abdominal examination.

Table 2: Dengue fever cases symptoms

Symptoms	Dengue fever cases
Constitutional symptoms 1. Fever with chills	 11 (100%)
Respiratory symptoms 1.fatigue	11 (100%)
Musculoskeletal symptoms 1..Arthralgia 2. Back pain	 9 (81.8%) 8 (72.7%)
Dermatological symptoms 1.Pethechial rashes	 6 (54%)
Gastrointestinal symptoms 1.Loose stool 2.Right upper abdomen pain	 5 (45.4%) 5 (45.4%)
Neurocognitive symptoms 1.Dizziness	 1 (0.9%)

C) INVESTIGATION PROFILE:

All 11 patients (100%) had moderate to severe thrombocytopenia and mild to moderate raised in liver enzymes. 9 patients (81.8%) had mild fatty infiltrations to heterogeneous liver paryncymal echotexture with normal shape and size in ultrasonography whole abdomen and 3 patients (27.2%) had normal study.

Table 3: Laboratory and Radiological Investigation Profile

Cases	Hemoglobin (gm/dl)	Platetets (1.5-4.5 Lakhs)	Aspartate Aminotransferase (SGOT)	Alanine Aminotransferase (SGPT)	Dengue NS1/IGM	Ultra Sonography (Whole abdomen)
1. 29 years/male	14.9	0.26	111	110	**Positive**	Liver normal shape and size with heterogeneous echogenicity
2. 24 years/male	14.3	0.59	78.2	59.4	**Positive**	Normal study
3.29 years/male	14.3	0.55	85.3	64	**Positive**	Normal study
4. 35 years/male	13.5	0.58	197.3	187.4	**Positive**	Liver normal shape and size with heterogeneous echogenicity
5.30 years/ female	10.2	0.59	155	106.7	**Positive**	Liver normal shape and size wilt mild fatty infiltrations
6. 29 years/ male	13.6	0.24	155	163	**Positive**	Liver normal shape and size with heterogeneous echogenicity
7. 35 years/ female	10.2	0.7	112	102	**Positive**	Liver normal shape and size with heterogeneous echogenicity
8.35 years/ male	16.4	32	88	66	**Positive**	Liver normal shape and size wilt mild fatty infiltrations
9. 55 years/male	11.5	12	81.2	60.6	**Positive**	Normal study
10. 60 years/ male	11.5	30	344	116	**Positive**	Liver normal shape and size with heterogeneous echotexture
11. 40 years/male	17.2	15	135	101	**Positive**	Liver normal shape and size with heterogeneous echotexture

D) TREATMENT:
All of them were treated symptomatically; five patients were transfused random donor platelet for correction of thrombocytopenia. At the time of hospital stay platelets and serum transaminase level where monitored daily. All patients discharged after 6-7 days of hospital stay with follow up advised.

3. DISCUSSION
Dengue infection may rarely lead to acute liver dysfunction. In the present case series study, all the patients had dengue fever with moderate to severe thrombocytopenia. The rise in AST was more than ALT was seen in all 11 cases. Liver injury in patients with dengue may be multi-factorial. The direct cytotoxic effect of dengue virus may lead to liver injury. Further, the cytokine storm associated with severe dengue fever may cause immune-mediated hepatic injury and may progress to acute liver injury. Severe hypotension associated with DSS, may also lead to hepatic hypoperfusion and contributes to liver injury. Additionally, frequent use of hepatotoxic drugs (paracetamol, nonsteroidal anti-inflammatory drugs, and antibiotics) may contribute to liver injury.

4. CONCLUSSION
Dengue infection may rarely lead to acute liver injury especially in severe dengue with thrombocytopenia and shock. These patients may frequently require intensive care and close monitoring of vital systems. The most of these patients may improve with supportive care with close monitoring of liver functions. This case series brie□y describes the clinical pro□le of dengue fever with acute liver dysfunction in this region (Arunachal Pradesh- North-Eastern state of India) and emphasizes the physicians to consider acute liver dysfunction while dealing with a dengue fever patient with shock and thrombocytopenia. There is need of more study in region with ample of case for more conclusive outcome.

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