# An observational study of Dengue Induced Hepatic Dysfunction in a tertiary care hospital of Ahmedabad

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**Abstract :**

Dengue is a major international health problem that is prevalent in tropical and sub tropical countries. There are certain clinical features that are associated with Dengue in addition to classical features. An analysis of 50 patients suffering from Dengue fever showed liver dysfunction in all patients. Fever, body ache and vomiting were the most common presenting complaints. SGOT (AST) levels were higher than SGPT (ALT) levels. Hepatomegaly, splenomegaly, ascites, gallbladder wall edema and pericholecystic fluid collection were also present in significant number of patients. One should be aware of these presentations when dealing with suspected cases of Dengue.

**Key Words :** Dengue, Hepatic dysfunction, SGOT (AST) , SGPT (ALT).

## Introduction :

Dengue infection is a major health problem worldwide including our country. Globally the incidence of Dengue has grown dramatically in the recent years. Every year during the monsoon months and later, many parts of the country witness outbreaks of dengue infection. 2019 was no exception and we experienced an outbreak of this vector borne disease in Ahmedabad. An analysis of these patients revealed that in addition to the classical features of fever, body ache, rash and thrombocytopenia and bleeding tendency, there were other features such as liver dysfunction including a preferential rise of SGOT, hepatomegaly, splenomegaly, ascites, gallbladder wall edema and pericholecystic fluid collection.

## Aims and Objectives :

To study clinical, biochemical and radiological changes in the liver of patients with Dengue fever.

## Methods:

This observational and cross sectional study was conducted on 50 suspected cases of Dengue fever admitted and diagnosed at GCS hospital, Ahmedabad in October 2019. Detailed history, clinical examination, biochemical parameters, radiological investigations for liver function were done in all patients. All patients were treated as per NVBDCP guidelines for clinical management of Dengue fever.[1]

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## Inclusion criteria:

Suspected cases of Dengue that were admitted and diagnosed with Dengue fever during study period.

## Exclusion criteria:

Viral hepatitis, drug induced hepatitis, alcoholic hepatitis and heart failure, Dengue hemorrhagic fever (DHF), Dengue shock syndrome (DSS).

All necessary investigations to diagnose these conditions were carried out as and when needed.

## Results:

Of the 50 patients studied, 31 were males and 19 females. The age range of patients was 14-50 years and the mean age was 25± 9 years. Presenting complaints in our patients were fever (100%), body ache (90%) and vomiting (82%).

The average serum bilirubin level was 0.55± 0.42 mg/dl. The average SGPT levels were 82.67± 102.13 IU/L while average SGOT levels were 146.93± 197.32 IU/L. The mean Alkaline Phosphatase levels were 75 ± 17.45 U/L. 100 % patients had elevated SGOT levels while 68 % had elevated SGPT levels with preferential rise of SGOT (p-value = 0.00026) more than that of SGPT (p-value = 0.01183). There were 28 % patients

**Table 1: Biochemical and radiological parameters of the study participants #**

| Sr. No. | Parameter | Value |
|---|---|---|
| 1 | Average serum bilirubin (mg/dl) (N = 0.2–1 mg/dl) | 0.55 ± 0.42 |
| 2 | Average SGPT (IU/L) (N = 0-42 IU/L) | 82.67 ± 102.13 |
| 3 | Average SGOT (IU/L) (N = < 37 IU/L) | 146.93 ± 197.32 |
| 4 | Average Alkaline Phosphatase (U/L) (N = 54-369 U/L) | 75 ± 17.45 |
| 5 | SGPT > 2 × ULN (N = 84 IU/L) | 14 (28 %) |
| 6 | SGOT > 2 × ULN (N = 74 IU/L) | 30 (60 %) |
| 7 | Presence of Ascites (USG) | 26 (52 %) |
| 8 | Presence of hepatomegaly (USG) | 5 (10 %) |
| 9 | Presence of splenomegaly (USG) | 11 (22 %) |
| 10 | Gallbladder wall edema & pericholecystic fluid collection (USG) | 46 (92%) |

# Values in mean ± standard deviation or n (%)

who had their SGPT level > 2 × ULN, while 60% patients had SGOT level > 2 × ULN.

None of the patients presented with ascites. However 52 % patients had presence of mild ascites on ultrasonography. Ascites in Dengue has been attributed to plasma leakage. None of the patients had palpable liver and spleen on presentation.However 10 % patients had hepatomegaly and 22 % patients had splenomegaly on ultrasonography. 92 % patients had gallbladder edema with pericholecystic fluid collection on ultrasonography. Such findings are also seen in cases of acute viral hepatitis but such cases were excluded from the study. The underlying mechanism for pericholecystic fluid collection is not known. The line of management and duration of hospital stay in all patients was same as with patients without hepatic dysfunction.

**Discussion:**

The results of the present study show certain unusual manifestations of Dengue.

There was universal involvement of liver in our patients with preferential rise of SGOT rather than SGPT. Involvement of liver in Dengue has been described in textbooks as an elevation of transaminases.[2] Higher SGOT levels in comparison to SGPT are known to occur in alcoholic liver disease but such cases were excluded from our study. In adults there are few studies that report elevated enzyme levels, ascites and hepatomegaly.[3-6]Our findings are different from that of Srivenu Itha et al [7] who found no preferential elevations

of enzymes.

The presence of vomiting in 82 % patients indicates hepatic dysfunction. The mechanism of liver involvement in Dengue infection is not clear and may involve a direct injury to liver cells or an immunologic response. Multiple studies had been carried out which showed preferential elevation of SGOT rather than SGPT in DHF and DSS but patients with DHF and DSS were excluded from our study. It is important to keep these features in mind particularly keeping in mind that diagnosis of Dengue may be difficult in some cases and ELISA for dengue may not be positive in first few days of infection.[8]

## Conclusion:

The present study shows that there are certain features of Dengue that are not known to be usually associated with it and these includes the presence of raised liver enzymes in all patients (SGOT > SGPT), ascites, hepatomegaly, splenomegaly, and gallbladder edema and pericholecystic fluid collection.

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