



# CLINICAL PROFILE OF DENGUE FEVER

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## Abstract

**Introduction:** Dengue Fever is one of most common Vector born disease in the world. It is caused by Arbovirus and spread by Aedes Aegypti Mosquitoes. **Aim:** To Study Clinical and Biochemical Parameters as well as Outcome of Dengue Fever Patients. **Method:** 100 Patients Above age of 12 years were Analysed with confirmed NS1 And IgM +ve Dengue Fever. **Conclusion:** Fever associated with headache, retroorbital pain, erythematous morbilliform rash, conjunctival suffusion and itching in palms and soles along with thrombocytopenia, leucopenia, elevated liver transaminases should prompt a clinician on the possibility of dengue infection. Platelet transfusions have little role in management of dengue patients.

**Keywords:** Dengue Fever, Dengue Hemorrhagic Fever(DHF), Dengue Shock Syndrome(DSS)

## INTRODUCTION

Dengue is the most common arthropod-borne viral (arboviral) illness in humans. Globally, 2.5-3 billion individuals live in approximately 112 countries that experience dengue transmission. Annually, approximately 50-100 million individuals are infected.<sup>1</sup> The incidence has increased manifold in India due to unplanned urbanization and migration of population to urban areas. Although initially reported from urban locales, dengue is now being reported from urban and rural backgrounds alike. Dengue is caused by infection with one of the four serotypes of dengue virus, which is a Flavivirus. Infection with one dengue serotype confers lifelong homotypic immunity to that serotype and a very brief period of partial heterotypic immunity to other serotypes, but a person can eventually be infected by all 4 serotypes.<sup>2</sup> Several serotypes can be in circulation during an epidemic.

Dengue is transmitted by mosquitoes of the genus Aedes, principally Aedes aegypti.<sup>3</sup> Initial dengue infection may be asymptomatic (50-90%),<sup>4</sup> may result in a nonspecific febrile illness, or may produce the symptom complex of classic dengue fever (DF). Classic dengue fever is marked by rapid onset of high fever, headache, retro-orbital pain, diffuse body pain (both muscle and bone), weakness, vomiting, sore throat, altered taste sensation, and a centrifugal maculopapular rash, among other manifestations. A small percentage of persons who have previously been infected by one dengue serotype develop bleeding and endothelial leak upon infection with another dengue serotype. This syndrome is termed dengue hemorrhagic fever (DHF).

The exact clinical and laboratory profile is crucial for diagnosis as well as successful management of the patients. This study is an attempt to elucidate the clinical and laboratory profile of serologically confirmed cases of dengue fever in our hospital.

## MATERIAL AND METHODS

This prospective observational study was carried out in VSGH Hospital in Ahmedabad from May 2018 to May 2019. All patients above 12 years with confirmed dengue, who were hospitalized with NS1 (nonstructural protein) antigen and/ or IgM dengue antibody positivity were included in the study. The patients with concomitant malaria, typhoid, leptospirosis etc were excluded from the study. Detailed history and careful clinical examination was performed on each patient. Laboratory investigations done were hemoglobin, total and differential leucocyte counts, platelet count, hematocrit, liver function tests, blood urea and serum creatinine, chest radiograph and ultrasound scan of abdomen. Blood counts were monitored periodically as and when required till resolution. Other differential diagnosis were excluded by appropriate tests.

## RESULTS

A total of 100 patients who reported between May 2018 and May 2019 were studied and analysed. Majority of these cases reported to our hospital coinciding with rainy season, showing the breeding of mosquitoes during the said period. Majority of the patients were males (66 %). Females formed 34% of the cohort.



Table 1: Age and Sex Characteristics

Age Group (Years)	No. of Cases		Total	Mortality (%)
	Male	Female		
13-20	31	13	44	6.8
21-30	27	12	39	5.1
31-40	3	1	4	0
41-50	3	6	9	0
>50	2	2	4	25

Fever, Headache, Myalgia, Arthralgia, Skin Rashes, Minor to Major Bleeding Manifestation, Abdominal Pain with or without Diarrhea were the Common Presentation of our Patients. Plasma Leakage Manifestation in form of Pleural Effusion And Free Fluid in Abdomen were found in 21% of Patients. A Few Patients (4) had CNS Manifestations, in form of altered sensorium (3) & generalised seizures (1). All 4 patients with CNS manifestation had fatal outcome.

Table 2: Clinical Features:

CLINICAL FEATURES	NO OF CASES
Fever	97
Headache	81
Myalgia & Arthralgia	52
Rashes	6
Bleeding Manifestations	10
Abdominal Pain	33
Diarrhea	23
Altered Sensorium	3
Seizures	1
Pleural Effusion	12
Free Fluid in Abdomen	9

Major Hematological abnormality in all patients with dengue fever was Thrombocytopenia. The range of platelet count observed in majority of our patients was 20000-50000/mm<sup>3</sup>(40%) and high mortality (18.7%) was seen in patients (18.7%) was seen in patients having platelet count <10000. However not all patients with low platelet count had Bleeding Manifestations and majority of them recovered without any specific treatment. Specific treatment in form of platelet concentrate was given to 10 patient only, who presented with platelet count <10000 &/or Bleeding. 7 of them did not survive even with aggressive therapy.

Table 3- Thrombocytopenia in Dengue Fever

No. of Platelets(/mm <sup>3</sup> )	No. of Cases	Mortality(%)
<10000	16	18.7
10000-20000	20	10
20000-50000	40	2.5
50000-100000	23	4.3
100000	11	0

Table 4- Hematological & Biochemical Alteration in Dengue Fever

PARAMETER	NO OF CASES
Anemia(Hb<10.0)	10
Leucopenia(TC<4000)	26
Thrombocytopenia(APC<100000)	89
Hematocrit>45%	11



Serum Bilirubin>3.0	5
Serum Creatinine>2.0	7
SGPT>45	70

Tourniquet test was done in 55 patients in our study, out of which only 14 patients showed positive test. As per WHO criteria all 100 patients were classified into DF, DHF & DSS and the findings are as follows:

Table -5 Various Types of Dengue Fever

Type	No of Cases	Mortality (%)
DF	89	0
DHF	8	50
DSS	3	100

Table -6 Complications of Dengue Fever

Complications	No. of Cases	Outcome		Mortality (%)
		Cured	Expired	
Hepatitis	7	5	2	28.5
ARF	7	4	3	42.8
DIC	3	0	3	100
Encephalitis	1	0	1	100
Hepatitis +ARF	1	0	1	100

## DISCUSSION

Increase in the number of dengue cases over the past few years has been attributed to rapid unplanned urbanization with unchecked construction activities and poor sanitation facilities contributing fertile breeding areas for mosquitoes, it is also seen that increase in alertness among medical personnel following the epidemics and availability of diagnostic tools in the hospitals have contributed to the increased detection of cases. <sup>5</sup> Male to female ratio in our study was 1.94: 1.

Age group analysis of primary and secondary cases revealed that although secondary cases occurred in all ages, more of primary cases belonged to younger age (13-20 years) <sup>7</sup> and more of secondary cases in middle to older age. At the same time we observed higher mortality rate in older patients of dengue fever as compared to younger age group.

As seen in observation table we found dengue fever more prevalent in young adult males which has also been reported by other researches as shown in table below:

Study	Commnest Age Group	No. of patients
Atiya et al <sup>6</sup>	11-20 years	25%
West Bengal study <sup>7</sup>	11-20 years	31%
I jamaiah et al <sup>8</sup>	20-29 years	38%
Present Study	13-20 years	44%

As expected, Fever was the commonest presentation of this febrile viral infection (97%) in present study and also reported by other studies (I jamaiah et al & Atiya et al in which fever was reported as commonest presentation in 100% & 96.8% respectively)

This is an important finding giving clue to all doctors that in any febrile illness with most nonspecific symptoms, DF should be suspected particularly when epidemic is going on & one should try to avoid NSAIDs to treat any undiagnosed fever which may turn out to be DF where NSAIDs are contraindicated.

Hemorrhagic Diathesis may vary from minor petechial rashes to frank bleeding from all sites due to DIC in cases of DHF and this is the most dreaded presentation of DF. 15-18.7% incidence of Bleeding Manifestations have also been reported in other studies also, as shown in table below:

Study	% of patients with bleeding manifestations
Shah K R	15 %
Rachel Daniel et al	15.2%
Atiya et al	18.7%



Present Study	10%
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Commonest Laboratory finding in DF is Thrombocytopenia (platelet < 1,00,000/mm<sup>3</sup>) which was seen in 89% in present study. Another laboratory finding observed with more frequency was raised SGPT, which was > 35 IU/L in 70% of dengue patients in our study.

As per WHO definition, DHF is defined as a probable or confirmed case of dengue fever plus hemorrhagic manifestation with thrombocytopenia plus evidence of plasma leakage manifestation with thrombocytopenia<sup>9</sup>. DSS is defined by all the criteria of DHF plus evidence of circulatory failure. On application of this definition we found DHF in 8% of our dengue patients with 50% mortality amongst them. In our study prevalence of DSS was 3% with mortality 100%.

As reported by Rachel et al, clinical outcome of dengue infections depend on many factors important being virulence of circulatory DENV serotype/genotype, primary /secondary infection and a combination of sequential infections<sup>10</sup>. Since in the present study these aspects have not been investigated, the comparison of clinical outcome with other studies in the region or elsewhere require further studies.

## CONCLUSION

Dengue infection is increasing proportional to increased urbanization and compromised sanitation measures. Fever associated with headache, retroorbital pain, erythematous morbilliform rash, conjunctival suffusion and itching in palms and soles along with thrombocytopenia, leucopenia, elevated liver transaminases should prompt a clinician on the possibility of dengue infection. Platelet transfusions have little role in management of dengue patients. Early diagnosis, careful monitoring and proper fluid management goes a long way in reducing the mortality due to dengue hemorrhagic fever and shock syndrome.

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