# **Original Research Article**

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# Clinical profile and changes in laboratory parameters among dengue patients at tertiary care hospital: an observational study

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# **ABSTRACT**

**Background:** Globally the incidence of dengue has increased in the past three decades. It is predominantly found in the urban and semi-urban area however now it is spreading in rural areas also. In India the incidence of dengue has increased due to rapid urbanization, lifestyle changes and improper water storage practices. Hence this study was planned to study the clinical and laboratory profile of dengue patient as the number of dengue patients is on rise every year and there is varied presentation of clinical features in different parts of India.

**Methods:** This observational study was carried out in tertiary care hospital. Confirmed cases of Dengue were included in the study. There cases were observed seven days. During this period their clinical and biochemical profile was recorded in pre structured and pre tested proforma. Data was compiled and analyzed by MS-Office (Excel) and SPSS-21.

**Results:** In this study total 129 patients were enrolled. Out of total 91 were males and 38 were females. Laboratory profile of dengue patients suggested steep decline in total leucocytes count and platelet during first five days but started to increase by seventh day but platelets have not reached to its original normal value while TLC reverted to normal range. Fever and headache were most common symptom in our study.

**Conclusions:** Clinical and laboratory profile of dengue patient changes with every new epidemic and different region in India. Clinical features like organomegaly are more common in paediatrics age group than adults.

Keywords: Dengue fever, Clinical profile, Complications, Retro orbital pain, Platelets

### **INTRODUCTION**

Dengue fever along with its severe forms like dengue hemorrhagic fever and dengue shock syndrome has become one of the major health problem all over the world. The WHO estimates that presently about two fifths of the world population is at risk for this viral infection. It is estimated that worldwide nearly 2.5 billion people continue to live at risk of contracting the infection while 50 million cases and 24,000 deaths tend to occur in 100 endemic countries and reported to be around 1 million annually from tropical and subtropical

countries.<sup>1</sup> Globally the incidence of dengue has increased in the past three decades in tropical and sub tropical regions. It is predominantly found in the urban and semi-urban area however now it is spreading in rural areas also. In India the incidence of dengue has increased due to rapid urbanization, lifestyle changes and improper water storage practices leading to increase in the breeding sites of Aedes mosquito.<sup>2</sup> Dengue is endemic in 35 states/UT in India, however highest numbers of cases are reported from Maharashtra followed by Odhisa, West Bengal, Karnataka, Tamil Nadu, Kerala and Gujarat. All four serotypes of dengue (Dengue 1, 2, 3 and 4) are found in India but Dengue 1 and Dengue 2 are more

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widespread.<sup>1,2</sup> Different type of dengue presents with different clinical and biochemical profile in different parts of India, hence this study was planned to study the clinical and laboratory profile of dengue patient admitted in tertiary care hospital of Maharashtra state where the number of dengue patients is on rise every year. Also an attempt is made in this study to see the progression of laboratory profile in dengue patients over the period of one week.

#### **METHODS**

This observational study was carried out in Government Medical College, Gondia, a tertiary care hospital for the period of one and half year from July 2017 to January 2019. All confirmed cases of dengue (diagnosed by NS1 positive and IgM serology positive by combo kit) during the fix period of one and half year were included in the study after taking their consent. Pregnant women, children below 18 years and seriously ill patients requiring ICU care were excluded from the study. These cases were observed for next seven days. During this period their clinical and biochemical profile was recorded in pre structured and pre tested proforma. Clinical parameters like Blood Pressure, pulse, temperature were recorded daily. Biochemical and haematological parameters like CBC, platelet, PCV were done on first, third, fifth and seventh day. LFT, RFT were done on also done on alternate days. Average of all parameters was done for interpretation of results. Complications like bleeding, hypotension, ascites etc were noted during the course of illness for seven days. Organomegaly diagnosed by ultrasonography (not by palpatory method) was considered as complication in this study. Data was collected during morning and evening hours according to the comfort of patients. Data was compiled and analyzed by MS-Office (Excel) and SPSS-21.

## **RESULTS**

In this study total 129 patients were enrolled. Out of total 91 were males and 38 were females. The age group of study subject ranged from 18 to 49 years.

Table 1: Socio-demographic profile of dengue patients.

Socio-demogr Parameters	raphic	Frequency (N)	Percentage (%)
Age (in years)	18-25	24	18.60
	26-40	67	51.94
	>40	38	29.46
Sex	Male	91	70.54
	Female	38	29.46
	Illiterate	05	3.87
	Primary	16	12.41
Educational	Secondary	81	62.79
status	Higher secondary & above	27	20.93

In the study while following the changes in clinical and laboratory profile it was observed that there was decline in temperature during the course of one week, however blood pressure declined for initial five days but started to increase by weekend. Laboratory profile of dengue patients suggested steep decline in total leucocytes count and platelet during first five days but started to increase by seventh day but platelets have not reached to its original normal value while TLC reverted to normal range. Liver function test showed increase in both SGOT and SGPT value during course of week while kidney function test showed very high serum urea but normal serum creatinine level in initial week of illness (Table 2).

Table 2: Clinical and laboratory profile of dengue patients during period of one week.

Parameters	Day 1	Day 3	Day 5	Day 7
Temperature (Celsius)	100.7	102.2	100.6	98.9
BP (mm Hg)	130/90	118/78	100/68	126/80
HB (gm %)	13.6	12.6	14.8	14.1
TLC (per cu.mm)	4340	2600	1900	4500
Platelet (per µl)	129132	89000	47000	94000
PCV	41.3	48.5	42.8	40.1
SGOT (units/l)	190	268	484	436
SGPT (units/l)	105	79	138	149
Sr. bilirubin (mg/dl)	0.81	0.64	0.77	0.64
Sr. urea (mg/dl)	24.62	34.2	28.9	26.5
Sr. creatinine (mg/dl)	0.92	0.86	0.74	0.93

Table 3: Percentage of complications observed in dengue patients during course of one week (n=129).

Clinical features	No of patients	Percentage
Fever	(N) 129	100.00
Headache	126	97.67
Myalgia	97	75.19
Itching	96	74.41
Sore throat	91	70.54
Retro-orbital pain	67	51.93
Diarrhoea	55	42.63
Abdominal pain	53	41.08
Vomiting	29	22.48
Conjunctival effusion	29	22.48
Skin rashes	28	21.70

As shown in above Table 3, it was observed that fever was present in all patient irrespective of age and gender. The most common complaint was of headache in 97.67% of the dengue patients followed by myalgia (75.19%), itching (74.41%) and sore throat (70.54%). Complication like diarrhoea, abdominal pain, vomiting, conjuntival effusion and skin rashes was seen in less than 50 percent of the patients. Among the least common complication only 2 patients each of bradycardia, bleeding and hypotension were found. Out of total 129 only single patient of pleural effusion, hepatomegaly, splenomegaly and ecogenic kidney was diagnosed. There was no death due to dengue in any of the study subjects.

# **DISCUSSION**

All four dengue viruses (Dev1-4) cause similar clinical picture and the vector (*Aedes aegypti*) is also the same for them. There is increase in the number of the cases in India due to rapid urbanization which provides the breeding sites in the form of discarded water jars, vases, containers, coconut husks old tires and cooler tanks. After the incubation period of around 2-7 days the typical dengue patient experiences the sudden onset of fever, headache, retro orbital pain, back pain along with severe myalgia that give rise to designation "break bone fever".

Present study was done on 129 confirmed dengue patient out of whom 91 were males and 38 were females. Fever (100%) was the most common symptom found in our study which is consistent with most of studies done in all parts of India. 2,4,6,10,11 We found that headache (97%) was the second most common symptom in our study which is similar to the study done by Deshwal et al and Kumar et al, however headache was found in less than fifty percent of study subjects in the study done by Kunal et al.<sup>2,4,6</sup> Myalgia which is commonly associated with dengue fever was found in nearly 75% of our study subjects which is comparable to the results of Kumar et al but numbers were less compared to other studies done by Rajesh et al, Kunal et al and Yasin et al. 2,6,10 Also other important symptom like retro orbital pain was found in higher percentage compared to other studies done previously in nearby areas.<sup>2,6,11</sup> Among the other important symptoms abdominal pain, diarrhoea, sore throat was found in more quantity while skin rashes and conjunctival effusion was found to be on lower side compared to other studies done in different regions of our country.<sup>2,6</sup>

Itching (74%) was a peculiar finding in our study which is less studied symptoms in many other researches on similar topic. This typical fining may be due to very high alteration in the liver function test result causing hepatic dysfunction.

While studying the systemic involvement features like hepatomegaly and spleenomegaly was in very less percentage compared to finding of Faridi et al in which occurrence of hepatomegaly (100%) and splenomegaly

(32.3%) was very high most probably because of the factor that study being done on the paediatrics age group.<sup>5</sup>

The changes in the clinical and biochemical profile are not much researched topic but finding in our study are in consistent with observation by Ahmad et al.<sup>3</sup> The changes over the week were studied with the intention of understanding the progression of the disease and improve the management of complications and morbidity of the disease.

#### **CONCLUSION**

Clinical and laboratory profile of dengue patient changes with every new epidemic and different region in India. Some peculiar finding like itching is more common in our study than in other regions in India. Clinical features like organomegaly are more common in paediatrics age group than adults.

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Institutional Ethics Committee

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