

# Study of clinical profile of dengue fever at tertiary care hospital in rural Maharashtra

Gajanan Gondhali<sup>1</sup>, Shivani Rath<sup>2</sup>\*

<sup>1</sup>Associate Professor, Department of Medicine, MIMSR Medical College and YCR Hospital, Latur, Maharashtra, INDIA.

<sup>2</sup>Junior Resident 3, Department of Dermatology, NKP Salve Institute of Medical Sciences, Nagpur, Maharashtra, INDIA.

Email: [shivani08@gmail.com](mailto:shivani08@gmail.com)

## Abstract

**Background:** Dengue infections can result in a wide spectrum of disease severity ranging from an influenza-like illness (dengue fever; DF) to the life-threatening dengue hemorrhagic fever (DHF)/dengue shock syndrome (DSS). **Aim:** To analyze the variations in clinical features of dengue fever patients presented at tertiary care teaching hospital. **Material and Methods:** This cross sectional study was conducted on 110 patients admitted in hospital suffering with dengue. Patient demographic details were noted. All Patients were subjected to detailed history taking interview and underwent general physical and systemic examination. **Results:** Most number of patients were from younger ages like 30 patients (27.3%) and 29(26.4%) patients in the 25-34 years age group. Fever was the commonest clinical presentation noted in 94.54% of the patients followed by bone and muscle pain in 82.73% patients. Active bleeding manifestations was noted in 7.25% patients. Systemic examination findings revealed CVS findings in 42.73%, respiratory system findings in 7.27% and per-abdominal findings in 12.73% of the patients. **Conclusion:** Our study shows wide array of clinical findings in dengue fever and their varied presentation. It seems that many factors may be attributed to the differences seen, such as infection with different serotypes or infection with more than one serotype.

**Keywords:** Dengue fever, fever, myalgia, active bleeding

## \*Address for Correspondence:

Dr. Shivani Rath, Junior Resident-3, Department of Dermatology, NKP Salve Institute of Medical Sciences, Nagpur, Maharashtra, INDIA.

Email: [shivani08@gmail.com](mailto:shivani08@gmail.com)

Received Date: 21/08/2019 Revised Date: 11/09/2019 Accepted Date: 04/10/2019

DOI: <https://doi.org/10.26611/10211213>

## Access this article online

Quick Response Code:



Website:

[www.medpulse.in](http://www.medpulse.in)

Accessed Date:  
09 October 2019

## INTRODUCTION

Dengue is a mosquito-borne acute febrile illness caused by dengue virus (DENV) belonging to the family Flaviviridae. It has four serotypes, DENV-1 to DENV-4, which are closely related but antigenically distinct. It is transmitted by mosquitoes of the genus *Aedes*, which are widely distributed in subtropical and tropical areas of the world.<sup>1</sup> Several outbreaks of dengue have occurred over past decades in many countries, causing significant morbidity and mortality. Dengue virus infection is

currently an area of great concern due to its wide geographic spread and also due to the vast majority of world population under its potential influence. The disease is now endemic in more than 100 tropical and sub-tropical countries.<sup>2</sup> Dengue infections can result in a wide spectrum of disease severity ranging from an influenza-like illness (dengue fever; DF) to the life-threatening dengue hemorrhagic fever (DHF)/dengue shock syndrome (DSS).<sup>3</sup> According to the US Centers for Disease Control and Prevention (CDC) and the WHO dengue guidelines, the clinical features of DF and DHF are sudden onset of fever, severe headache, myalgias and arthralgias, leucopenia, thrombocytopenia, and hemorrhagic manifestations.<sup>3</sup> It occasionally produces shock and haemorrhage, leading to death. Classic DF symptoms include fever, headache, retro-orbital pain, myalgias and arthralgias, nausea, vomiting, and often a rash. Some DF patients develop the more serious form of the disease DHF with symptoms that include a decline in fever and presentation of hemorrhagic manifestations, such as microscopic hematuria, bleeding gums, epistaxis, hematemesis, malena, and ecchymosis. DHF patients

develop thrombocytopenia and hemoconcentration; the latter is due to an increase in the concentration of blood cells resulting from the leakage of plasma from the bloodstream.<sup>2</sup> This study was conducted to analyze the variations in clinical features of dengue fever patients presented at tertiary care teaching hospital.

## MATERIAL AND METHODS

This cross sectional study was conducted in the Department of Medicine, in tertiary care hospital on 110 patients admitted in hospital suffering with dengue over a period of two years. Prior to initiating the study, ethical clearance for same was obtained from the Ethics Committee.

### Inclusion criteria

Patients admitted in Ward/ICU hospital having

- Age group of  $\geq 13$  years.
- Fulfilling the WHO criteria for dengue.
- Confirmed dengue serology (Dengue IgG/IgM/NS1 positive)

### Exclusion criteria

- Patients on medications affecting the heart rate / rhythm.
- Patients with history of preexisting heart disease.
- Patients with electrolyte abnormalities affecting the heart rate/rhythm.
- Patients not willing to give consent for the study.
- Patients suffering from mixed infections (Malaria, leptospira).

### Method of collection of data

Patient demographic details were noted. All Patients were subjected to detailed history taking interview so as to ascertain the details of the current illness, any past illnesses similar or otherwise, ongoing medications and to rule out any cardiac disease. All patients underwent general physical and systemic examination. Daily monitoring of vital signs was done and lowest recorded pulse rates, blood pressures were noted. Pulse rates of patients having disproportionate tachycardia were also noted. Laboratory investigations such as Complete blood count, Cardiac enzymes- CKMB, Troponin I, SGOT, Serum LDH were done. Electrocardiography and 2D Echocardiography was also done to study cardiac involvement in these patients.

## RESULTS

Most number of patients were from younger ages like 30 patients (27.3%) and 29(26.4%) patients in the 25-34 years age group and 14-24 years age group respectively. There were 23 patients (20.9%) in the 35-44 years age group, 17 (15.4%) patients in the 45-54 years age group, 10 patients (9.1%) in the 55-64 years age group and 1 patient (0.9%) in 65-74 years age group showing least dengue patients in older age group. Out of the 110 patients, 62% of the patients were males and 38% were females. The male to female ratio was 1.62:1. The mean age of the study population was  $35.15 \pm 13.2$ . with range of 16 to 68 years. The mean and median age among males was  $33.9 \pm 13.5$  years and 30 (Range 16 to 63) years. In females the same was  $37.05 \pm 12.5$  years and 34 (range 16 to 68 years) years respectively.

**Table 1:** Demographic characteristics of the study population

Demographic characteristics	Number (n=110)	Percentage %
Age Groups		
14-24 years	29	26.4%
25-34 years	30	27.3%
35-44 years	23	20.9%
45-54 years	17	15.4%
55-64 years	10	9.1%
64-74 years	01	0.9%
Sex		
Male	68	61.8%
Female	42	38.2%

Fever was the commonest clinical presentation noted in 94.54% of the patients followed by bone and muscle pain in 82.73% patients. The other presentations observed were headache (73.64%), rash (43.64%), vomiting (16.36%), abdominal pain (25.45%) and breathlessness (1.82%). No cardiac symptoms like chest pain, palpitation or swelling of feet were noted in the dengue patients in this study. The mean duration of hospital stay of the dengue was  $5.22 \pm 1.75$ .

**Table 2:** Distribution of patients according to symptoms

Symptoms	Total number of subjects (n=110)	
	Number	Percentage
Fever	104	94.54%
Rash	48	43.64%
Headache	81	73.64%
Vomiting	18	16.36%
Abdominal Pain	28	25.45%
Breathlessness	02	1.82%
Bone and muscle pain	91	82.73%

On clinical examination, 16% of the dengue patients were found to be afebrile and 84% were febrile on admission. Active bleeding manifestations was noted in patients with 5.45% having malaena, 0.9% of the patients had haemetemesis and 0.9% of the patients had epistaxis at presentation.

**Table 3:** Distribution of patients according to clinical examination findings

Clinical Examination Findings	Total number of subjects (n=110)	
	Number	Percentage
Hypotension	08	7.27%
Petechiae	19	17.27%
Tourniquet Test	26	23.64%
Bradycardia	40	36.36%
Tachycardia	05	4.55%
Tachypnoea	02	1.82%

Systemic examination findings revealed CVS findings in 42.73%, respiratory system findings in 7.27% and per-abdominal findings in 12.73% of the patients. CVS findings included those of bradycardia and signs of vascular involvement like cold peripheries; no CVS finding was noted apart from these. Respiratory system findings included those of crepitations and decreased air entry. Per abdomen examination findings included those of hepatomegaly and splenomegaly. No central nervous system findings were noted. Out of 110 dengue patients; 69.1% had dengue fever, 7.3% had dengue shock syndrome and 23.6% had dengue hemorrhagic fever. Lowest mean platelet count recorded during entire duration of hospital stay was found to be  $78.54 \pm 55.28 \times 1000/\text{cumm}$  while the median was 74. IgM and IgG were positive in 34.55% and 19.09% of the patients respectively; while NS1 was positive in 75.45% patients. CK-MB at admission was raised ( $>25$ ) in 43.64% of the patients. Out of the 48 patients with abnormal CK-MB levels at admission, 41 (85.42%) patients were found to have normal CK-MB levels at the time of discharge. Troponin I at admission was positive in 11.8% of the patients. SGOT was  $> 46$  U/L in 64.55% and Serum LDH was  $>400$  U/L in 41.82% of the patients at admission. In the present study, ECG at admission revealed normal ECG in 56.36% of the patients while ECG changes were noted among 43.64%. The second ECG done on day three showed normal ECG in 87.27% and ECG changes were noted in 12.73% patients. At the time of discharge normal ECG was seen in all the patients

(100%) indicating transient ECG changes in patients with dengue. Echocardiography showed pericardial effusion in 0.91% patients, systolic dysfunction in 1.82% patients; while 2.73% patients had diastolic dysfunction.

## DISCUSSION

Dengue affects people of all ages. In Southeast Asia, where dengue is hyperendemic, dengue hemorrhagic fever usually affects children younger than 15 years.<sup>3</sup> All four dengue virus serotypes can cause the disease which can present as a mild self-limiting illness, dengue fever (DF), or as the more severe forms of the disease, dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS).<sup>3</sup> In our study the mean age of the study population is  $35.15 \pm 13.2$ . The mean and median age among males was  $33.9 \pm 13.5$  years and 30. In females the same was  $37.05 \pm 12.5$  years and 34 years respectively. The youngest patient was 16 years old and the oldest patient was aged 68 years. The male to female ratio (M:F) was 1.62:1 suggesting male preponderance. These findings were comparable to a study by Miranda *et al*,<sup>4</sup> in which the mean age was 32 and M: F was 0.92:1. In another study by Malavige *et al*,<sup>5</sup> the mean age was 26.6 years and M:F was 1.4:1. Another study by Guilarde *et al*,<sup>6</sup> had mean age of  $32 \pm 12$  years and M:F of 1.7:1. After classifying age groups most number of patients were from younger ages like 30 patients (27.3%) and 29(26.4%) patients in the 25-34 years age group and 14-24 years age group respectively. There were 23 patients (20.9%) in the 35-44 years age group, 17 (15.4%) patients in the 45- 54 years

age group, 10 patients (9.1%) in the 55-64 years age group and 1 patient (0.9%) in 65-74 years age group showing least patients in older age group. In the present study, fever was the commonest clinical presentation noted in 94.54% of patients followed by bone and muscle pain in 82.73% patients. The other presentations observed were headache (73.64%), rash (43.64%), vomiting (16.36%), abdominal pain (25.45%) and breathlessness (1.82%). No cardiac symptoms like chest pain, palpitation or swelling of feet were noted in the dengue patients in this study. In another study by Arora *et al.*,<sup>7</sup> majority of the patients presented with myalgia (97.5%) followed by fever (92.5%). Other presentations like headache, rash, vomiting, abdominal pain and breathlessness were noted among 79.17%, 33.33%, 30.83%, 12.5% and 0.83%. Daniel *et al.*,<sup>8</sup> had patients with presenting symptoms were: fever (96.8%), headache (77.2%), abdominal pain (62.4%), diarrhoea (15.2%), bleeding (15.2%), skin rash (13.2%), pruritus (10.4%), sore throat (5.2%), and seizures (0.8%). Recently, Kumar *et al.*,<sup>9</sup> in his record-based study conducted in a coastal district of Karnataka to assess the clinical manifestations, trend and outcome of all confirmed dengue cases admitted in a tertiary care hospital assessed the laboratory confirmed cases from 2002 to 2008 from Medical Records Department (MRD). Of the 466 patients, the most common presentation was fever 462 (99.1%), followed by myalgia 301 (64.6%), vomiting 222 (47.6%), headache 222 (47.6%) and abdominal pain 175 (37.6%). Malavige *et al.*,<sup>5</sup> in their study had fever (100%) as the most common presenting symptom followed by myalgia (76%), headache (66%), vomiting (63%) and abdominal pain (16%). In this study active bleeding manifestations was noted in patients with 5.45% having malena, 0.9% of the patients had haemetemesis and 0.9% of the patients had epistaxis at presentation and during course of hospital stay (Table 6). Another study by NP Singh *et al.*,<sup>10</sup> had most common Hematemesis (22%) followed by malena (16) and epistaxis (14). Malavige *et al.*,<sup>5</sup> had Hematemesis (40%) followed by malena (34%) and epistaxis (24%) which was much higher as compared to our study. In a study conducted by Sharma *et al.*,<sup>11</sup> outlining the clinical manifestations of Dengue Haemorrhagic fever outbreak in 1996 Delhi epidemic Hematemesis occurred in 22.4% patients and malena and epistaxis noted in 26.5% and 32.6% respectively. The higher incidence could probably be attributed in part to the case selection in this study which took only DHF cases into consideration. Overall active bleeding manifestations were much lower compared to other studies. Upon general examination 92 out of 110 patients were febrile (84%), bradycardia was the observed in 36.36% of the patients followed by positive tourniquet test, petechiae, hypotension,

tachypnea and tachycardia seen in 23.64%, 17.27%, 7.27%, 4.55% and 1.82% patients respectively. None of the patients had pedal oedema or raised jugular venous pressure. In the present study systemic examination findings revealed CVS findings in 42.73%, respiratory system findings in 7.27% and per-abdominal findings in 12.73% of the patients. CVS findings included those of bradycardia and signs of vascular involvement like cold peripheries; no CVS finding was noted apart from these. Respiratory system findings included those of crepitations and decreased air entry. Per abdomen examination findings included those of hepatomegaly and splenomegaly (Table 9 and 10). In another study by Arora *et al.*,<sup>7</sup> the clinical examination revealed, fever in 47.5%, petechiae in 33.3%, hepatomegaly and shock signs in 21.67% of the patients each. On systemic examination, hepatomegaly was present in 21.67%, crepts in 13.33%, cold peripheries in 11.67% and splenomegaly in 10.83% of the patients. In another study done by Daniel *et al.*,<sup>8</sup> the major physical findings noted included positive tourniquet test (33.67%), hepatomegaly (17.6%), bradycardia (16.8%), pleural effusion (13.2%) and ascites (12%). This highlights wide variation in the clinical profile of dengue fever. In another study done by Sheetal *et al.*,<sup>12</sup> major clinical findings 3% patients had hypotension, hepatomegaly was seen in 8% patients, 32% patients had bradycardia, 4% patients had ARDS and 3% had unexplained tachycardia. This shows wide array of clinical findings in dengue fever and their varied presentation in multiple studies. Respiratory system involvement was observed to a lesser extent in our study and there were no CNS findings in our study. A possible reason for the significant differences seen in the clinical expression of the disease may be due to infection with different DENV serotypes and the possibility of concurrent infections with more than one serotype.

## CONCLUSION

Our study shows wide array of clinical findings in dengue fever and their varied presentation. It seems that many factors may be attributed to the differences seen, such as infection with different serotypes or infection with more than one serotype.

## REFERENCES

1. Malavige GN, Fernando S, Fernando DJ, Seneviratne SL. Dengue viral infections. *Postgrad Med J.* 2004; 80:588-601.
2. WHO Fact sheet No 117: Dengue and dengue haemorrhagic fever. (2008). Available: <http://www.who.int/mediacentre/factsheets/fs117/e/>.
3. WHO (1997) Dengue haemorrhagic fever: diagnosis, treatment, prevention and control, 2nd edition. Geneva: World Health Organization.

4. Miranda CH, Borges Mde C, Matsuno AK, Vilar FC, Gali LG, Volpe GJ, Schmidt A, Pazin-Filho A, Silva FM, Castro-Jorge LA, Oliveira MF, Saggiaro F, Martines RB, Fonseca BA. Evaluation of cardiac involvement during dengue viral infection. *Clin Infect Dis*. 2013 Sep;57(6):812-9.
5. Malavige GN, Velathanthiri VGNS, *et al*. Patterns of disease among adults hospitalized with dengue infections; Srilanka; *Q J Med* 2006;99:299–305.
6. Guilarde AO, Turchi MD, *et al*. Dengue and Dengue Hemorrhagic Fever among Adults: Clinical Outcomes Related to Viremia, Serotypes, and Antibody Response; *JID* 2008;197:817-823.
7. Arora M, Patil RS. Cardiac Manifestation in Dengue Fever. *J Assoc Physicians India*. 2016 Jul;64(7):40-44.
8. Daniel R, Rajamohanam, *et al*. A Study of Clinical Profile of Dengue Fever in Kollam, Kerala, India. *Dengue Bull* 2005; 29.
9. Kumar A, Rao CR, Pandit V, Shetty S, Bammigatti C, Samarasinghe CM. Clinical manifestations and trend of dengue cases admitted in a tertiary care hospital, Udupi district, Karnataka. *Ind J Commun Med* 2010; 35:386-90.
10. NP Singh, Rajat J, *et al*. The 2003 outbreak of Dengue Fever in Delhi, India; *Southeast Asian J Trop Med Public Health* 2005;36(5):1174-8.
11. Sharma S, Sharma SK, Mohan A, Wadhwa J, Dar L, Thulkar S, *et al*. Clinical profile of dengue haemorrhagic fever in adults during 1996-outbreak in Delhi, India. *Dengue Bull* 1998;22:20-7.
12. Sheetal S, Jacob E. A Study on the Cardiac Manifestations of Dengue. *J Assoc Physicians Ind* 2016 May;64(5):30-34.

Source of Support: None Declared  
Conflict of Interest: None Declared

