# ORIGINAL ARTICLE

# STUDY OF CLINICAL PROFILE AND COMPLICATIONS OF DENGUE FEVER IN TERTIARY CARE HOSPITAL OF PUNE CITY

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## ABSTRACT

**Background**: Dengue is an important mosquito borne infection in terms of morbidity and mortality. In recent years it has become a major public health concern. The present study was conducted with an objective to study to the clinical profile, laboratory profile and presentations of dengue fever.

**Methodology:** The study was conducted in Padmashree Dr.D.Y.Patil hospital and Research center, Pimpri, Pune from June 2011 to October 2013. A total number of 50 adult patients were included and their clinical and laboratory profile are noted.

**Results**: The various symptoms associated were fever (100%), myalgia (80%), Arthralgia (46%), Retero orbital pain (26%), vomiting (22%), skin rashes (22%), headache (20%), bleeding tendancies (10%), Malena (12%), hematuria (6%), altered senses (2%). In this study, 92% (46 cases) recovered, whereas mortality was noted in remaining 8% (4 cases), the cause of mortality being MODS and ARDS.

**Conclusion:** Fever was the most common symptom followed by myalgia, arthralgia, retero-orbital pain, vomiting, skin rashes, headache, malena, and hematuria. The most common age group affected was 21-30 years with male preponderance.

**Key words:** Dengue fever, clinical profile, laboratory profile

## INTRODUCTION

Dengue is an important mosquito borne infection in terms of morbidity and mortality. In recent years it has become a major public health concern. The dengue virus is a anthropod borne virus arbovirus, belonging to the family Flaviviridae and genus Flavivirus. It is a mosquito borne viral infection and is transmitted, primarily by Aedes aegypti and sometimes by Aedes albopictus.[1] Dengue is caused by four distinct serotypes of viruses; DEN-1, DEN-2, DEN-3 and DEN- 4.[2] Dengue virus causes a spectrum of illness ranging from inapparent, self-limiting classical dengue fever (DF) to life threatening dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS).[2]

From being a sporadic illness, epidemics of dengue have become a common occurrence worldwide. Dengue fever and dengue hemorrhagic fever is endemic in areas of South East Asia i.e. Bangladesh, India, Indonesia, Maldives, Myanmar, Srilanka and Thailand. Dengue is a major cause of hospitalization and death, especially among children in these regions.[3]

India is endemic for DF and DHF. All the four serotypes are found in the country. Case fatality rates in endemic countries are 2.5%.[3] During epidemics of dengue, attack rates among susceptible are 40-90%.The incidence of dengue and global distribution of dengue have greatly increased in recent years.[4] The present study was conducted with an objective to study to the clinical profile, laboratory profile and presentations of dengue fever.

## METHODOLOGY

The study was conducted in Padmashree Dr.D.Y.Patil Hospital and Research Center, Pimpri, Pune from June 2011 to October 2013. A total number of 50 adult patients were included in this study. Adult male and female patients having the clinical manifestations of dengue fever as mentioned in the clinical case definitions of dengue with serological evidence in the form of dengue IgM or both IgM and IgG positive by MAC-ELISA, and/ or dengue Ns1 antigen were included in the study. Dengue positive patients less than 12 years of age were excluded.

Patients who were IgG positive but IgM negative; that is those who did not have recent evidence of dengue infection were excluded from the study. A written informed consent of each patient at the time of admission was obtained.

Patients who were seropositive for dengue were classified on the basis of WHO criteria as follows: Dengue fever (DF), Dengue fever with unusual bleed (DFB)-bleeding tendencies not satisfying WHO criteria for DHF, Dengue Haemorrhagic fever (DHF)-including patients with Fever, Haemorrhagic manifestations including a positive tourniquet test, Thrombocytopenia and Haemoconcentration and Dengue shock syndrome (DSS)-DHF along with evidence of peripheral circulatory failure.

The patients were assessed for their demographic features (age/sex etc.) and clinical profile (various signs and symptoms). Patients of DHF and DSS were closely monitored for the progression of fever, blood pressure, level of consciousness, hydration, and bleeding tendency; and the complications occurring at any stage were studied.

Hess's capillary fragility test was performed in all the patients. The patients were subjected to usual laboratory tests like, Hb, TLC, DLC, Haematocrit, Platelet count, Liver function tests, Renal function tests, PT, Serum Proteins like serum albumin, urine routine and microscopy. Their ECG's and CXR were also studied. Serological confirmation of dengue was done with the help of MAC-ELISA kit (PAN-BIO) which gave titres for dengue IgG and IgM. For the Ns1 antigen detection the commercial platelet Dengue Ns1 Ag EIA assay (Bio rad) kit was used.

## RESULTS

Among the 50 cases, total of 12% cases were noted in the month of July, 36% cases were noted in the month of August and 30% in September respectively. It is clear that majority of the cases have occurred during the months of July, August and September i.e., in the monsoon and post- monsoon season.

There were 37 males (74%) and 13 females (26%) were observed and the male:female ratio was found to be 2.84:1. From table 2 and graph 2, it is clear that majority of the cases having dengue infection belong to the age group of 21-30 years, wherein 38 % belong to 21-30 years age group and 30% belong to 31-40 years age group and 28% belong to the age group of 11-20 years.

It was seen that all the cases had fever (100%), myalgia (80%), arthralgia (46%) and retro-orbital pain (26%) (Table 2). The duration of fever varies from 2-9 days, where maximum cases (34%) presented with 5 days of fever.

**Table 1: Age wise distribution of dengue positive cases (n=50)**

| Age group | Male | Female | Total (%) |
|---|---|---|---|
| 11 – 20 yrs | 11 | 3 | 14 (28) |
| 21 – 30 yrs | 13 | 6 | 19 (38) |
| 31 – 40 yrs | 12 | 3 | 15 (30) |
| 41 – 50 yrs | 1 | 1 | 2 (4) |

**Table 2: Symptom wise presentation of cases**

| Symptoms | Frequency (%) |
|---|---|
| Fever | 50 (100) |
| Myalgia | 40 (80) |
| Arthralgia | 23 (46) |
| Headache | 10 (20) |
| Retro orbital pain | 13 (26) |
| Vomiting | 11 (22) |
| Skin rashes | 11 (22) |
| Bleeding tendencies | 5 (10) |
| Abdominal pain | 5 (10) |
| Malena | 6 (12) |
| Hematuria | 3 (6) |
| Altered senses | 1 (2) |

**Table 3: Platelet level among the dengue suspected cases**

| Platelets range | Frequency (%) |
|---|---|
| Less than 20000 | 2 (4) |
| 20000 -40000 | 5 (10) |
| 40000 – 60000 | 14 (28) |
| 60000 – 80000 | 12 (24) |
| 80000 – 100000 | 6 (12) |
| 1 - 1.2 Lac | 5 (10) |
| 1.2 - 1.4 Lac | 2 (4) |
| Above 1.4 La | 4 (8) |

**Table 4: Clinical Spectrum of Dengue cases**

| Diagnosis | No (%) |
|---|---|
| Dengue Fever | 38 (76) |
| Dengue Shock Syndrome(DSS) | 2 (4) |
| Dengue Haemorrhagic Fever (DHF) | 5 (10) |
| DSS +AKI | 1 (2) |
| DSS+DIC+ARDS | 1 (2) |
| DSS+ARDS | 1 (2) |
| DSS+MODS | 1 (2) |
| P.Vivax + Dengue Fever | 1 (2) |

It was found that 24% of cases had platelets in the range of 40-60 thousand and 4% of cases had severe thrombocytopenia (platelets <20,000) (Table 3).

It is seen that 76% of the cases had Dengue fever, 12% cases had Dengue Dengue Sock Syndrome, 10% had Dengue haemorrhagic fever, 2% had dengue fever associated with plasmodium vivax malaria (table 4). Outcome of Dengue cases shows that improvement was observed in 92% of the cases and death was observed in 8% and the relation between them was not significant (p > 0.05).

Diagnostic evaluation shows that 74% of the cases were positive for Ns1 antigen testing method and 52% cases were positive for Dengue IGG and IGM antibodies and the relation between them was significant ($p < 0.05$). Temperature distribution shows that 36% cases had temperature of $100^0$ f, 28% of cases had temperature of $99^0$f and 24% cases had temperature of $101^0$f.

## DISCUSSION

The South East Asian regions have recorded increasing incidence of dengue and have contributed to the major portion of global disease burden. Dengue hemorrhagic fever and dengue shock syndrome are endemic to these regions and pose a severe threat to global health. The most common age group affected in this study was 21 – 30 years (21- 30 = 38%). This was comparable to the study of Sing NP[5], where the mean age of the patients was 26 +/- 10 years. Similar study done by Joshi PT[6], revealed that all age groups and both the genders were affected equally 33.3%. However other studies of Gore MM[7] and Dash PK et al[2] revealed a high number of cases in the pediatric age group. This indicates that the virus had been introduced to a non-exposed population and disease was not endemic.

In this study the disease was more seen in case of males (74 %) than to the females (26 %). This was corresponding to the other studies by Dash PK et al[2] and Neeraja M et al[1]. The reason for this may be due to more exposure of the males to the bite of vector Aedes aegypti, due to their clothing habits or outdoor activities. In this study, total of 92% (46 cases) recovered whereas mortality was observed in 8% (4 cases), in comparison with Agarwal A[8], where mortality of 6% was observed. In the the study done by Singh N P[5], a mortality of 2.7% was observed.

This was corresponding to the study done by Neerja M et al[1] where the patients with dengue infection manifested with DF (85%), DHF (5%) and DSS (10%). The study done by Pancharoen et al[9] showed more number of DHF and DSS patients and less number of DF patients . The study done by Aggar-

wal et al[8] showed 67% of cases of DHF and 33% of cases of DSS.

## CONCLUSION

Fever was the most commonest symptom followed by myalgia, arthralgia, retero-orbital pain, vomiting, skin rashes, headache, malena, hematuria. The most common age group affected was 21-30 years with male preponderance. Maximum number of patients was observed to have Dengue fever, whereas the incidence of Dengue hemorrhagic fever and Dengue shock syndrome was comparatively less.

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