

## Original Research Article

# Clinical profile of Dengue fever in children of Nellore city, Andhra Pradesh, India

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**Received:** 07 June 2019

**Accepted:** 11 September 2019

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## ABSTRACT

**Background:** India especially Andhra Pradesh is endemic for dengue, in dengue fever mortality and morbidity is more in children when compare to adults. Authors objective was to assess the clinical profile of the Dengue fever in children.

**Methods:** Children below 14 years with serologically positive for dengue included in this study from June 2017 to June 2018, data was collected and analyzed with MS office 2016.

**Results:** In 100 children 84 were suffering with Non Sever dengue, 16 were suffering with severe dengue. In the study population 68 were male children and 32 were female children, more children 68 were in the above 11 age group, 52 children stay in hospital for 3-6 days.

**Conclusions:** Health education and anti-larval measures and anti-adult measures for mosquito control is effective measures.

**Keywords:** Children, Clinical profile, Leukocytosis, Non sever dengue fever, Sever dengue fever, Thrombocytopenia

## INTRODUCTION

Dengue fever is a mosquito-borne tropical disease caused by the dengue virus.<sup>1</sup> Symptoms typically begin three to fourteen days after infection.<sup>2</sup>

This may include a high fever, headache, vomiting, muscle and joint pains, and a characteristic skin rash. In a small proportion of cases, the disease develops into severe dengue, also known as dengue hemorrhagic fever, resulting in bleeding, low levels of blood platelets and blood plasma leakage, or into dengue shock syndrome, where pressure occurs.<sup>1,2</sup>

As of 2010 dengue fever is believed to infect 50 to 100 million people worldwide a year with 1/2 million life-threatening infections.<sup>3</sup> It dramatically increased in frequency between 1960 and 2010, by 30 fold. This increase is believed to be due to a combination of

urbanization, population growth, increased international travel, and global warming.<sup>3</sup>

The geographical distribution is around the equator with 70% of the total 2.5 billion people living in endemic areas from Asia and the Pacific. Many people in outbreaks are not virally tested, therefore their infections may also be due to chikungunya, a coinfection of both, or even other similar viruses. Dengue reinfection is observed to be more severe in children due to immunological phenomenon.<sup>4</sup> In 2010, 25 cases and five deaths were reported from Odisha.<sup>5</sup>

Rapid increase in the dengue cases in 2012 became a public health concern in Eastern India as the majority of cases were affecting the young adolescents. Andhra Pradesh is endemic for dengue fever, Dengue fever mortality and morbidity is more in children when compare to adults that why the main motive of this study was to

assess the clinical profile of the dengue infection in the children.<sup>6</sup>

## METHODS

This was prospective observational study.

### Study setting

Children under 14 years who are admitted with provisional diagnosis of dengue fever in pediatric ward, Narayana Medical college, Nellore, Study Population: Children under 14 years who are admitted with provisional diagnosis of dengue. Sample Size: 100 Children less than 14 years of age Study Period: June 2017 to June 2018 (1 year). Data Collection: By using pre-designed, pretested questionnaire. Data analysis was done by using MS Office 2016.

### Statistical test

Rates, Ratios, Proportions and Chi-square tests.

### Inclusion criteria

Children under 14 years who are admitted with provisional diagnosis of dengue fever.

### Exclusion criteria

Children who were positive for malaria, meningitis, and enteric fever and children parents who are not willing to give consent were excluded from the study. All children aged up to 14 years with positive dengue tests, either NS1 antigen, IgM, IgG antibody rapid serological test kit, or ELISA, were included into this study. Routine blood examinations like hemogram, TLC, TPC, Hb, Hematocrit were done daily and vitals were monitored with tourniquet test. Chest X-ray, ultrasonography of abdomen and liver function tests were done on the third day of admission to all the participants. The patients were treated with oral paracetamol, intravenous fluids, blood products, and platelets as per the recent WHO dengue guidelines.<sup>7</sup>

**Table 1: Demography and distribution of study subjects.**

| Parameter                   | Variable                           | Total | Non sever dengue | Sever dengue |
|-----------------------------|------------------------------------|-------|------------------|--------------|
| Age                         | < 3 Years                          | 8     | 8                | 0            |
|                             | 4-7 Years                          | 22    | 20               | 2            |
|                             | 8-11 Years                         | 31    | 26               | 5            |
|                             | >11 Years                          | 39    | 30               | 9            |
| Sex                         | Male                               | 68    | 58               | 10           |
|                             | Female                             | 32    | 26               | 6            |
| Duration of hospitalization | 0-3 Days                           | 42    | 40               | 2            |
|                             | 3-6 Days                           | 52    | 42               | 10           |
|                             | >6 Days                            | 6     | 2                | 4            |
| Classification              | Un classified fever                | 28    |                  |              |
|                             | DF(with and without warning signs) | 56    |                  |              |
|                             | Severe Dengue Fever (DHF)          | 16    |                  |              |

## RESULTS

As shown in the Table 1, In 100 children 84 were suffering with Non Sever dengue, 16 were suffering with severe dengue. In the study 68 were male children and 32 were female, more children 68 were in the above 11 age group, 52 children stay in hospital for 3-6 days. In the present study as shown in Table 2, Leucopenia was seen 26 children, in 58 children leukocyte count was within normal range. As shown in the Table 3, out of 100 children thrombocytopenia was seen in 29%, hepatomegaly was in 33%, rise of SGOT was seen in 47% of children. As shown in the Table 4, all children were suffering with fever (100%), 34% of children was on Intravenous fluids transfusion, 5% on platelets transfusion and 4% on whole fresh blood transfusion.

**Table 2: Lab investigations.**

| Investigations              | Variable                                    | Non sever dengue | Sever dengue | Total |
|-----------------------------|---|------------------|--------------|-------|
| TLC (Total leukocyte count) | Leucopenia <4000 cells/mm <sup>3</sup>      | 23               | 3            | 26    |
|                             | Leucocytosis >11000 cells/mm <sup>3</sup>   | 11               | 5            | 16    |
|                             | Normal TLC 4000-11000 cells/mm <sup>3</sup> | 50               | 8            | 58    |

**Table 3: Hepatic manifestations of study population.**

| Hepatic manifestations  | Bleeding present | Bleeding absent | Total |
|-------------------------|------------------|-----------------|-------|
| <b>Thrombocytopenia</b> |                  |                 |       |
| Present                 | 12               | 17              | 29    |
| Absent                  | 22               | 49              | 71    |
| Total                   | 34               | 66              | 100   |
| <b>Hepatomegaly</b>     |                  |                 |       |
| Present                 | 12               | 21              | 33    |
| Absent                  | 23               | 44              | 67    |
| Total                   | 35               | 65              | 100   |
| <b>Rise of SGOT</b>     |                  |                 |       |
| Present                 | 19               | 28              | 47    |
| Absent                  | 16               | 37              | 53    |
| Total                   | 35               | 65              | 100   |

**Table 4: Treatment given in the hospital.**

| Management                    | Non sever dengue | Sever dengue | Total |
|-------------------------------|------------------|--------------|-------|
| Antipyretics                  | 84               | 16           | 100   |
| Intravenous fluids            | 22               | 12           | 34    |
| Platelets transfusion         | 0                | 5            | 5     |
| Whole fresh blood transfusion | 0                | 4            | 4     |
| Dopamine                      | 0                | 1            | 1     |
| Adrenaline                    | 0                | 1            | 1     |

## DISCUSSION

Dengue fever one of the leading public health problem in India, especially in Andhra Pradesh and Telangana. dengue manifestations are very severe in children. In this study the maximum numbers of cases were seen in the group >11 years of age group as shown in Table 1, and the least affected age group was infants. More incidence was in adolescent children, this can be explained by children play at open field. This makes them prone to repeated attacks by Aedes mosquitoes. There was male children predominance, male children more affected than female children. In the study conducted by Basuki P. S, Budiyanto, Puspitasari D, et al. there was no such male predomence.<sup>8</sup> This was probably due to more importance being given to the male children in the Indian society. Covered dress used by females may be another cause for fewer incidences. In our study fever was present in all cases. This findings similar with Ahmed S, Arif F, Yahya Y, Rehman A, Abbas K, Ashraf S, Akram DS.<sup>9</sup> As shown in Table 2, leucopenia was more in non-severe dengue. As shown in Table 3, thrombocytopenia present only in 12 children, Bleeding in dengue is multifactorial. The most common bleeding manifestations in both severe and nonsevere dengue were petechiae, purpura, and ecchymosis. According to Mittal H, Faridi M. M. A, Arora S. K, Patil R. Various factors apart from thrombocytopenia lead to bleeding in dengue. They are decreased platelet function, fibrinogen consumption, prolongation of

PT/PTT, and vasculopathy.<sup>10</sup> In the study Krishnamurti CH, Kalayanarooj SI, Cutting MA, Peat RA, Rothwell SW, Reid TJ, Green SH, Nisalak AN, Endy TP, Vaughn DW, Nimmannitya SU tourniquet test was positive for many children, in this study, in the majority of the patient's tourniquet test was found to be negative.<sup>11</sup> This may be due to low proportion of positive tourniquet test in Indian studies may be due to the darker skin colour in Indian children.<sup>12</sup> As shown in Table 2, leucopenia was more in non-sever dengue, According to Ratageri VH, Shepur TA, Wari PK, Chavan SC, Mujahid IB, Yergolkar PN. Leukopenia was significantly related with severe dengue cases which were against our results.<sup>13</sup> In our study thrombocytopenia was seen to be more in those with severe dengue (Table 3). There was less mortality in the present study group, whereas mortality rate was high in the study Seneviratne SL, Malavige GN, De Silva HJ.<sup>14</sup>

## CONCLUSION

In children, symptoms like fever, pain, rashes, and vomiting are associated with hepatomegaly and elevated SGOT, a strong possibility of dengue fever is present, especially in an epidemic setting. Health education and anti-larval measures and anti-adult measures for mosquito control is effective measures.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Kishore E, Junapudi SS. Clinical profile of Dengue fever in children of Nellore city, Andhra Pradesh, India. *Int J Contemp Pediatr* 2019;6:2390-3.