

# Clinical profile, predictors of DHF and outcome of dengue fever in children at government tertiary care centre

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## Abstract

**Background:** Dengue fever (DF) has been identified as an emerging infectious disease in India. Dengue is the most important mosquito borne disease which is found to be endemic in more than 100 countries.<sup>1,2</sup>In the last few years, its incidence has increased upto 30-fold along with increasing geographic expansion to new countries and, also from urban to rural setting. **Aims and Objectives:** To study the clinical profile and outcome of dengue fever in children and to Assess the Predictors of DHF. **Material and Methods:** It is observational study of 80 children diagnosed with dengue admitted at the pediatric intensive care unit (PICU) of a tertiary care hospital RIMS Raichur, over a period of one year from May 2018 to May 2019. **Results:** As per WHO classification 59 cases belongs to dengue with warning sign, 11 cases were dengue without warning sign and 10 cases had severe dengue. Out of 80 study subjects 54 were boys and 26 were girls. Levels of SGOT (raised in 71 study subjects), SGPT (raised in 68 study subjects) and platelet count (60 study subjects below 39999/mcL). On ultrasonography we found that 48 children had hepatomegaly, 11 children had polyserositis, 31 children had thickened gall bladder wall and 42 children showed presence of ascites. **Conclusion:** Children of age group of 5-10 years were commonly affected by dengue. Nausea, vomiting, myalgia and headache was most common symptom and hepatomegaly and splenomegaly was most common finding in cases. Vomiting, hematemesis, skin bleeds, altered sensorium, hepatomegaly, elevated SGOT, SGPT, gall bladder wall thickening, ascites, pleural effusion following the period of fever defervescence strongly indicate Dengue hemorrhagic fever and dengue shock syndrome.

**Key Word:** Dengue fever, children, warning signs.

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Received Date: 04/04/2019 Revised Date: 21/05/2019 Accepted Date: 07/07/2019

DOI: <https://doi.org/10.26611/10141115>

## Access this article online

Quick Response Code:	Website: <a href="http://www.medpulse.in">www.medpulse.in</a>
	Accessed Date: 10 July 2019

## INTRODUCTION

Dengue, a Spanish alteration of the Swahili word Kindinga, is the most common mosquito born viral illness in humans. The earliest known documentation of dengue like symptoms was recorded in the Chinese

Encyclopaedia of Symptoms during the Chin Dynasty (AD 265-420). Dengue fever (DF) has been identified as an emerging infectious disease in India. Dengue is the most important mosquito borne disease which is found to be endemic in more than 100 countries.<sup>1,2</sup> In the last few years, its incidence has increased upto 30-fold along with increasing geographic expansion to new countries and, also from urban to rural setting. An estimated 50 million dengue infections occur annually and approximately 2.5 billion people live in dengue endemic countries.<sup>3</sup> During epidemics of dengue attack rates among susceptible are often 40%-50%, 90% of hospitalised DHF were children less than 15 years, mortality in dengue is 5%.<sup>4</sup> In India infections are becoming more frequent involvement of younger age group and increased the frequency of epidemics are indicator of higher incidence of infection. The earliest case dengue fever in India was reported in

1956 from Vellore and also the first dengue haemorrhagic fever case reported in Calcutta in 1963.<sup>5</sup> In India the annual incidence is estimated to be 7.5 to 32.5 million.<sup>6,7</sup> There are very few studies on dengue fever in Karnataka region so in this study we are trying to highlight the clinical aspects of dengue fever in pediatric population.

### AIMS and OBJECTIVES

1. To study the clinical profile and outcome of dengue fever in children
2. To assess the Predictors of DHF.

**Study Setting And Design:** This is cross sectional observational study. It is conducted at Pediatric intensive care unit (PICU) of a tertiary care hospital RIMS Raichur, over a period of one year from May 2018 to May 2019. The inclusion criteria was all children below 14 years of age that had clinical features suggestive of dengue illness and confirmed by rapid dengue test (IgM, IgG and

NS1Ag). While children with other significant disease were excluded from study. Informed consent was taken from parents and the study is approved by Institutional Ethical Committee. A detailed history was taken to determine symptomatology. Detail clinical examination which include vitals, general, and systemic examination findings were recorded in a predesigned proforma at the time of admission. Haematological parameters like CBC, packed cell volume, platelet count were done in all patients. Liver function test, coagulation profile, blood sugar with electrolytes, ultrasound abdomen, and chest radiography were performed if clinically indicated. The patients were classified according to revised WHO guideline and managed appropriately.

**Statistics:** The data were tabulated and analyzed using SPSS 10.1 software. The Symptomatology, clinical features, laboratory parameters and outcome of these children were taken for analysis.

### RESULTS

**Table 1:** Distribution of dengue cases as per revised WHO classification

Classification	No. of cases	Percentage
Dengue without warning signs	11	13%
Dengue with warning signs	59	74%
Severe dengue	10	13%
<b>Total</b>	<b>80</b>	<b>100%</b>

**Table 2:** Age wise distribution of dengue cases as per revised WHO classification

Age Groups	Dengue with warning signs	Dengue without warning signs	Severe dengue	Total
< 1 Year	8	1	0	9
1-5 Years	15	4	2	21
5-10 Years	28	4	5	37
10-14 Years	8	2	3	13
<b>Total</b>	<b>59</b>	<b>11</b>	<b>10</b>	<b>80</b>

**Table 3:** Frequency of clinical features seen in the dengue cases.

	Number	Percentage (%)
Raised SGOT level	71	89%
Raised SGPT level	68	85%
Platelet Count		
>1 lakh	4	5%
40000-100000	16	20%
20000-39999	54	68%
<20000	6	8%

**Table 5:** Sowing signs by ultrasonography in study subjects.

Signs	Number	Percentage (%)
Hepatomegaly	48	60%
Polyserositis	11	14%
Thickening of Gall bladder wall	31	39%
Ascitis	42	53%

## DISCUSSION

In the present study we observed a total of 80 children. As per WHO classification 11 cases belongs to dengue without warning sign, 59 cases were dengue with warning signs and 10 cases have severe dengue. (Table 1). 54 were boys and 26 were girls. In the Table no.02 we explained age wise distribution of study subjects according to various age groups. We found that maximum 28 children within 5 to 10 years of age group were with dengue with warning signs. While 8 children from 1 to 10 years of age group with dengue without warning signs. 5 study subjects belong to 5 to 10 years of age group with severe dengue. In the Table no 03 we explained various clinical features according to WHO revised classification of dengue. Table no 04 shows levels of SGOT (raised in 71 study subjects), SGPT (raised in 68 study subjects) and platelet count (60 study subjects below 39999/ mL). The degree of rise in liver enzymes might be used as a tool to predict the severity of the disease. Higher is the level of liver enzymes, poorer is the prognosis. Study by Brij Mohan *et al* (10) reported that levels of SGOT raised during first week and SGPT raised during second week. The levels of both began to decline by third week. SGPT is primarily associated with hepatocytes and is raised due to liver damage. SGPT is found in cardiac and skeletal muscle, hepatocytes, renal and brain tissue and is raised due to damage to these structures. Liver enzymes can be a potential marker for dengue during early febrile phase. On ultrasonography we found that 48 children had hepatomegaly, 11 children had polyserositis, 31 children had thickened gall bladder wall and 42 children showed presence of ascites (Table no.05) Srinivasa. K *et al*<sup>8</sup> in their study found that a total of 185 children diagnosed to have dengue fever were admitted in the hospital during the study period. The cases were classified according to WHO protocol as Dengue without warning sign (48.1%), Dengue with warning signs (27%) and severe dengue (24.8%). All the children had fever as the presenting complaint. The other predominant symptoms observed were vomiting (61.6%), abdominal pain (50.2%), rashes (30.2%), myalgia (24.3%), and bleeding manifestation (16.2%). The other significant findings noted were Hepatomegaly (52.4%), Ascites (47.01%). Hemant Jain *et al* in their study observed that a total of 65 children were included in this study. As per WHO classification 42(64%) cases belongs to dengue with warning sign. 8 cases have severe dengue and 15 cases had dengue without warning sign 35(53%) were boys and 30(47%) were girls. The most common age group was between 5 to 10 years (46%). Fever was observed in all dengue patients with mean duration of 5.6 days. The common presentation by these children include headache(64%), myalgia(63%), bleeding(58%) and decrease urine

output(53%) each hepatomegaly and splenomegaly were noted in 90% and 26% of the cases, respectively. Clinical fluid accumulation in form of ascites and pleural effusion with reduced diuresis were observed in 40% and 43% of cases. N S Shewale<sup>9</sup> in their research got outcome that Total 95 children were enrolled, 67 with dengue warning signs and 28 with severe dengue. Common warning signs were abdominal pain/tenderness, liver enlargement, lethargy and restlessness. Those with severe dengue had respiratory insufficiency due to acute lung injury (ALI) or acute respiratory distress syndrome (ARDS), refractory shock and severe bleeding. Two presented with dengue encephalitis. According to Halstead *et al*<sup>11</sup>, mortality due to dengue in Asian countries is 0.5%-3.5% (if early recognition and appropriate treatment was instituted), in our study all the patients were recovered from the illness no death has been reported. The findings in the present study were similar to previous studies. Small difference in results are might be due to small sample size or geographical variation.

## CONCLUSION

Proper history taking, good clinical examination and periodic monitoring the patients would help us to identify patients at risk for bleeding and there by institute prompt treatment and reduce the mortality associated with DHF/DSS. Vomiting, hematemesis, skin bleeds, altered sensorium, hepatomegaly, elevated SGOT, SGPT, gall bladder wall thickening, ascites, pleural effusion following the period of fever defervescence strongly indicate Dengue hemorrhagic fever and dengue shock syndrome.

### Limitations of The Study

- Confirmation of dengue viral infection was not done. So, all the cases in the study are PROBABLE DENGUE according to WHO case definition.
- Viral antibody titers were not done to diagnose primary and secondary dengue precisely.
- Serotypes were not done. So the predominant serotype was not identified.
- Treatment modalities like type of fluid used, need for inotrope support, ventilator support, need for blood products were not studied.

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

