



# Clinical Profile and Outcome of Dengue Fever in Pediatrics

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**ABSTRACT**

**Background of Study:** Dengue viral infection is the most common mosquito – borne disease in the world with multiple presentations, high morbidity and mortality pattern. In our part of Tamilnadu epidemics of dengue are increasing in frequency, the demographic pattern and the trend of illness are vastly changing. The clinical presentation, morbidity and outcome of illness are also changing year by year in our region. Hence we have made an attempt to start this study.

**Aim:** To study the clinical profile and outcome of dengue fever in Pediatrics

**Methods:** Cross Sectional Observational study in dengue patients less than 12 years were included. All patients undergone Rapid IgM Elisa test. Patients with positive for IgM were followed up.

**Results:** 53 sero-positive dengue cases were reported and analyzed. Among the dengue fever comprises 21% DHF comprises 55%, and DSS comprises 25% Regarding age group 62.3% were between 6 and 12 years, 29% comprises children between 1 and 5 years. Infants comprise 17%. The common symptoms are fever 100%, vomiting 67% and abdominal pain was present in 42%. Seizure was found in 38.5% of DSS. Diarrhoea was present in 53.8% of DSS. Gastro – intestinal bleeding present in 34% of patient.

**Conclusion:** Dengue fever is becoming more prevalent in south India. Most affected age group is between 6 and 12 years. Abdominal pain is the significant symptom in children with DHF. Significant cases with DSS had seizures. Cases initially diagnosed as diarrhea later turned out to be dengue fever. Early recognition, precise assessment and appropriate treatment as per WHO guidelines reduce high morbidity and mortality rate.

**KEYWORDS** Dengue, Dengue Hemorrhagic Fever (DHF), Dengue Shock Syndrome (DSS)

**INTRODUCTION**

Dengue viral infection is the most common mosquito borne disease in the world with varied presentations, high morbidity and high mortality patterns. 2.5 billion People — two fifths of the world's populations in tropical and subtropical countries are at risk. An estimated 50 million dengue infections occur worldwide annually. A very large proportion (approximately 90%) of them are children aged less than five years, and about 2.5% of those affected die. Epidemics of dengue are increasing in frequency. During epidemics, infection rates among those who have not been previously exposed to the virus are often 40% to 50% but can also reach 80% to 90%. Aedes (Stegomyia) aegypti is the primary epidemic vector. No vaccine is available for preventing this disease at present. The demographic pattern and the trend of illness are vastly changing every year through the past decade. South India and especially South Tamilnadu has witnessed several dengue epidemic outbreaks during the past few years. Early recognition and prompt initiation of appropriate management is vital.

**METHODOLOGY**

Cross Sectional Observational Study was conducted in department of Pediatrics, Tirunelveli Medical College Hospital. Children less than 12 years of age with clinical features of Dengue (any acute febrile illness with two of the following: myalgia, head ache, retro-orbital pain, bleeding, altered sensorium, shock or low platelet count) were included in the study. Informed consent was obtained and detailed history was taken. For all cases, the rapid IgM ELISA test was done at our hospital. Children positive for IgM were followed up for clinical profile. Clinical Features suggestive of Dengue with other se-

rology positive cases were excluded from the study. Laboratory investigations carried out in these patients include Hemoglobin, Complete blood count, Dengue IgM serology, Liver function test, serum amylase. Chest X ray was taken to demonstrate pleural effusion. Ultrasound abdomen was done to identify ascites, polyserositis and gall bladder wall thickening. CSF analysis was done in patients with convulsions, meningeal signs and altered sensorium.

**RESULTS**

53 sero positive dengue cases were reported in our hospital during studyperiod. Dengue fever: 11 (20.8%), Dengue hemorrhagic fever: 29 (54.7%), Dengue shock syndrome: 13 (24.5%). Males (49.1%) and females (50.9%) were comparatively equally affected.

**Table – 1 Age distribution and Mean duration of fever**

S.No.	Features	DF (n=11)	DHF (n=29)	DSS (n=13)
1.	Mean Age (years) (±SD)	6.05 (±4.2)	7.0 (±3.4)	6.4 (±4.5)
2.	< 1 year	2 (18.2%)	3 (10.3%)	4 (30.8%)
3.	1-5 years	4 (36.4%)	6 (20.7%)	1 (7.7%)
4.	6-12 years	5 (45.4%)	20 (69%)	8 (61.5%)
5.	Mean duration of fever (±SD)	6 (54.5%)	15 (51.7%)	6 (46.2%)

**Table – 2 Clinical Features**

S.No.	Features	Total (n=53)	DF (n=11)	DHF (n=29)	DSS (n=13)	P Value
1.	ABDOMINAL PAIN	22(41.5%)	2(18.2%)	18(62.1%)	2(15.4%)	0.004
2.	VOMITING	36(67.9%)	8(72.7%)	20(69%)	8(61.5%)	0.82
3.	DIARRHOEA	10(18.9%)	2(18.2%)	1(3.4%)	7(53.8%)	0.001
4.	SEIZURE	6(11.3%)	1(9.1%)	0	5(38.5%)	0.001
5.	COUGH	14(26.4%)	1(9.1%)	9(31%)	4(30.8%)	0.342
6.	Rash	20(37.7%)	4(36.4%)	11(37.9%)	5(38.5%)	0.9
7.	GI BLEED	18(34%)	0	11(37.9%)	7(53.8%)	0.0017
8.	POSITIVE HESSTEST	10(18.9%)	0	6(20.7%)	4(30.8%)	0.148

Most common symptoms were fever 100%, vomiting 67.9% and Abdominal pain 41.5%. Fever was present in all children. Diarrhoea was more common in DSS (53.8%) compared to DF and DHF. SEIZURE was common in DSS (38.5%) while none of the DHF cases had seizure. GI bleed was present in 34% of the patients. GI bleed was significantly higher in DSS. HESS test was positive in DSS cases (6) and DHF cases (4). SGOT and SGPT values were increased in all the groups. Hepatomegaly is a significant finding in all groups. 69% DHF cases had polyserositis.

**Table – 3 Laboratory Features**

S. No.		Total (n=53)	DF (n=11)	DHF (n=29)	DSS (n=13)	
1.	Platelet count	< 20000	2(3.8%)	0	1(3.4%)	1(7.7%)
		20000 -50000	21(39.6%)	3(27.3%)	13(44.8%)	5(38.5%)
		50001 – 100000	20(37.7%)	6(54.5%)	7(24.1%)	7(53.8%)
		> 100000	10(18.9%)	2(18.2%)	8(27.6%)	0
2.	PCV Mean (SD)	36.16 (±4.95)	39.84 (±6.54)	36.69 (±5.35)	0.12	
3.	SGOT (%)	48(90.6%)	10(90.9%)	26(89.7%)	12(92.3%)	
4.	SGPT (%)	46(86.8%)	9(81.8%)	26(89.7%)	11(84.6%)	
5.	Hepatomegaly	20(37.7%)	8 (72.7%)	8(27.6%)	4(30.8%)	
6.	Right Pleural Effusion and Ascites	25(47.2%)	0	20(69%)	5(38.5%)	

**Table – 4 Outcomes**

No.	Features	Total (n=53)	DF (n=11)	DHF (n=29)	DSS (n=13)
1.	RECOVERY	51 (96.2%)	11 (100%)	29 (100%)	11 (84.6%)
2.	DEATH	2 (3.8%)	0	0	2 (15.4%)

2 cases of DSS (CFR-3.5%) from the entire study group died. DF & DHF had a complete recovery. GI bleed was present in 34% of the patients. GI bleed was significantly higher in DSS. HESS test was positive in more DSS cases than DHF. But this is not statistically significant.

**DISCUSSION**

As discussed in the literature, South East Asian region has a varied clinical profile and outcome compared to the rest of the world. The demographic pattern and the trend of illness are vastly changing every year through the past decade. South India and especially South Tamilnadu has witnessed several dengue epidemic outbreaks during the past few years. Here I compare the clinical profile and outcome of Dengue in our hospital with other Indian and study done other countries.

Totally 53 Sero-positive cases dengue children who presented at Tirunelveli Medical College hospital during the study period were analyzed. As per the WHO classification, the frequency of Dengue fever was 20.8%, Dengue hemorrhagic fever 54.7% and Dengue shock syndrome 24.5%, while no cases presented Dengue fever having unusual bleed. (i.e. bleeding without plasma leakage) Narayanan et al (Chennai2001)reported DF (72.78%), DHF (18.6%), DSS (8.4%). Kalyanarooj et al (Indonesia) reported DF (including DFB) (53%), DHF (including DSS)(47%). Ratageri et al reported DF (18%),DHF (including DSS) is 82%. In present study, DHF (including DSS) is 79.2%. Present study is comparable with other studies. This shows that severe forms of dengue-DHF and DSS have increased over the decade. It may be due to increasing endemicity, environmental factors and changing virulence of the viruses. Baseline microvascular permeability in children is greater than that of adults and this could partly explain why DHF and DSS are more frequently seen in children<sup>38</sup>. In the present study Dengue infection was noted in 17% of infants, MJ. Kulkarni et al study shows Children in 6-12 yrs age group constituted 45.8% of cases forming the most commonly affected group. In the present study, there is no sex predilection for the disease (male 49.1% compared to female 50.1%), while both sexes had equal distribution of disease severity (Garcia-Rivera et al) studies reporting no significant difference in frequency between male and female. In the present study all children had fever. Mean duration fever was 6.02 days. In DSS mean duration of fever was 5.14 days. Chandrakanta et al study shows mean duration of fever 10.7%. In the present study 67.9% children had vomiting. MJ. Kulkarni et al reported vomiting in 35.2% children. Chandrakanta,et al (Changing clinical manifestations of dengue infection in north India dengue bulletin 2008)shows vomiting was 41.2%. Ratagiri et al study shows 82%.The percentage is variable in different studies. In the present study 41.5% children had abdominal pain. Chandrakanta, et 111 al study shows 25%. Shigeki Hanafusa et al study shows 68%.In the present study abdominal pain was significantly more common in DHF (62.1%). The present study shows 34% incidence of GI bleeding. Chandrakanta,et al shows 38.8%. Narayanan et al shows high percentage 61% of hematemesis. In the present study GI bleeding was significantly more common in DSS. DSS was low in Narayanan et al. Due to increasing endemicity and changing epidemiology, DSS is in increasing trend. Chandrakanta, et al study shows 37.5% cases had skin rash. Shigeki Hanafusa 1,2 et al study shows 55.1%. In the present study shows 37.7% of skin rash. It is comparable with other studies. In the Present study shows 18.9% positively. Chandrakanta, et al study shows 6.2% of children had loose stools. In the present study 18.9% children had diarrhea and is statistically significantly reported in DSS cases .This may be due to the poor socio economic status and nutritional status in our children, predisposing to early shock in dengue. Chandrakanta et al study shows 45% cases had seizure. In present study 11.3% cases had seizure. Most of the seizure occurred in DSS 38.5% . COUGH: Shigeki Hanafusa et al study shows 35.4% children had cough. MJ. Kulkarni study shows 9.07% . In the present study 26.4% of children had cough. Cough is a Unique feature of pediatric dengue compared to adult dengue. Chandrakanta, et al study shows mean hematocrit value 26.8 % . The present study shows 3.8% of mortality which is consistent with the WHO observed case fatality rates in India (3-5%).The higher rates could be due to the higher rural population that reports to our institution.

**CONCLUSION**

Dengue fever is becoming more prevalent in India, especially south India. Incidence of Dengue shock syndrome is increasing. Abdominal pain is a significant symptom in children with bleed (DHF). It is not a symptom to be ignored. Abdominal Pain in a child with suspected dengue should alert us to the possibility of GI bleed. Cases initially diagnosed as acute watery diarrhea, eventually turned out to be dengue. And diarrhea children with suspected dengue were significantly prone for DSS. Hence, high index of suspicion and aggressive management are the need in such cases. Seizure was significant

in DSS cases. Any dengue child throwing convulsions should hence be promptly evaluated for unrecognized shock. The bleeding in dengue is not purely due to thrombocytopenia. It is due to multiple etiologies including vascular changes. Re-gaining from treating the platelet numbers rather than the patient and strict adherence to protocols would go a long way in preventing iatrogenic complications like fluid overload. There is no role for prophylactic platelet transfusion. Children who presented to our setup with bleed significantly progressed to DSS. It is thus an alarming sign. Early recognition, precise assessment and appropriate treatment as per established WHO protocols should reduce the high mortality rates. There is a probable need for region specific guidelines for better outcomes.

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