

Original Research Article

Clinical profile of Dengue infection in infants a tertiary teaching hospital experience

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ABSTRACT

Background: Dengue viral infection caused by arthropod borne flavivirus has become endemic worldwide. India contributes to a tune of 20% of global burden. The clinical manifestation ranging from benign dengue fever (DF) to life threatening dengue hemorrhagic fever (DHF)/ dengue shock syndrome (DSS), has varied nonspecific features in infants. study was undertaken during our peak dengue season to know the clinical profile and outcome of dengue viral infection in infants.

Methods: This is a prospective observational study. All infants with features suggestive/ clinical suspicion of dengue were enrolled with parental consent. Their demographic detail, history, clinical features were collected, categorised and treated according to WHO 2012 dengue guidelines.

Results: A total of 86 infants were enrolled. Male female ratio was 2.44:1. Majority of infants were in Category B (63.9%) Fever being the most common presentation, Gastrointestinal and Respiratory symptoms, CNS manifestation like convulsion/ altered sensorium was noticed in 3.4% cases. Majority of cases were in critical phase (80%), recovery phase with fluid overloaded (edema) features were present in 7% cases. Thrombocytopenia was seen in all infants. Infants in Category C needed ionotropes, ventilator support and blood products, whereas those in other two categories did not. Recovery was seen in 94.25% and mortality was 4.6%.

Conclusions: This study highlights the varied presentation of dengue in infants and to have a high index of clinical suspicion for dengue in infants presenting with nonspecific symptoms, for effective care of this dynamic disease.

Keywords: Dengue infection, Infants, Non-specific manifestation

INTRODUCTION

One of the re-emerging diseases that now has become endemic in most parts of the world is Dengue viral infection. Dengue virus belongs to genus flavivirus, with four serotypes (DENV 1, DENV 2, DENV 3, DENV 4) and transmitted by the bite of female aedes aegypti mosquito.¹ As more than 70% of population at risk for dengue live in WHO South - East Asia Region (SEAR), the estimated burden is approximately 0.29 million cases

of which India contributes 20%.¹ India reported a total of 75,808 cases in the year 2013, with a case fatality of 0.3.¹

The clinical manifestations range from benign dengue fever (DF) to life threatening dengue hemorrhagic fever (DHF)/dengue shock syndrome (DSS).¹ The manifestations in infants is with nonspecific symptoms like cough, cold, gastroenteritis like illness, convulsion and hepatic dysfunction.^{2,3} This prospective observational study was undertaken during our peak dengue season to

know the clinical profile and outcome of dengue viral infection in infants.

METHODS

This study was carried out at Pediatric intensive care unit and Dengue ward of Indira Gandhi Institute of Child Health, Bangalore. Study period was from 1st June 2015 to 31 July 2015. Infants presenting with clinical features suggestive of dengue viral infection were enrolled after obtaining parental consent.

A detail review of history and physical examination was done and data recorded. Relevant investigations like complete blood count, liver function tests, PT and ApTT, Dengue NS1Ag, Dengue IgM and IgG were done. All the infants were categorised in to A, B and C as per WHO 2012 guidelines and treated accordingly. Infants in Cat C were managed in PICU while rest were managed in a separate 'Dengue ward' having a resident round the clock to monitor both clinical and laboratory parameters.

RESULTS

A total of 86 patients who met the above criteria were enrolled, there were 61 (70.9%) male and 25 (29.1%) females, with male to female ratio- 2.44:1 (Table 1). At admission, the Infants in Cat B was 55 (63.9%), Cat C - 18 (21%) [Compensated shock in 8 (44%), hypovolemic shock in 10 (55%)] followed by Cat A 13 (15.1%) (Table 2).

Fever was the most common presentation in all infants, persistent vomiting in 38 (44%) refusal of feeds 19 (22%), flushing 17 (19.7%), excessive cry 14 (16.3%), malena 6 (7%), Petichae 4 (4.7%), decreased urine output 16 (18.6%), Cough/URI symptoms seen in 12 (14%), loose stools seen in 38 (44%), convulsion and altered sensorium in 3 (3.4%) (Table 3).

Table 1: Demographic variables n=86.

Variables	No. (%)
Age	No (%)
1 month to 6 months	28 (32.5)
6 months to 1 year	58 (67.4)
Sex	No (%)
Male	61 (70.9)
Female	25 (20.9)

Table 2: WHO category n=86.

Category	Percentage
Category A	13 (15.1%)
Category B	55 (63.9%)
Category C	18 (21%)
Compensated shock	8
Hypovolemic shock	10

Table 3: Clinical features n=86.

Clinical features	No. (%)
Fever	86 (100%)
Malena	6 (7%)
edema	6 (7%)
Petechiae	4 (4.7%)
Loose stools	38 (44%)
Vomiting	38 (44.1%)
Convulsion	2 (2.3%)
Refusal of feed	19 (22%)
Flushing	17 (19.7%)
Decreased urine output	16 (18.6%)
Abdomen pain	14 (16.3%)
Excessive crying	14 (16.3%)
Abdomen distension	14 (16.3%)
Cough /URI	12 (14%)
Altered sensorium	1 (1.2%)
Hepatomegaly	59 (68.6%)
Splenomegaly	7 (8.1%)
No organomegaly	20 (23.3%)

All the infants had thrombocytopenia 86 (100%), Hemo concentration was seen in 32 cases on admission (37%), PT/PTT was prolonged in 23 (26.7%), out of which both PT and PTT were prolonged in 6 cases (26%), only PTT was prolonged in 17 (74%), Liver enzymes were derranged in 40 (46.5%).

Hypoglycemia was documented in 4 (4.6%) infants. Among dengue serological markers 47 (54.6%) infants were NS1Ag positive, IgM Dengue positivity seen in 51 (59.3%), both NS1Ag and IgM positivity seen in 25 (29%).

Table 4: Laboratory parameters n=86.

Parameters	No (%)
Thrombocytopenia	86 (100%)
Hemoconcentration	32 (37%)
Altered LFT	40 (46.5%)
Prolonged PT and aPTT	23 (27%)
Hypoglycemia	9 (10%)
NS1Ag positive	47 (54.6%)
Dengue IgM positive	51 (59.3%)
Both NS1Ag and IgM positive	25 (29%)

Table 5: Outcome and duration of stay in PICU.

Duration of PICU stay	No.(%)
Less than 3 days	47 (54.7%)
3-7 days	34 (63.9%)
More than 7 days	15 (17.4%)
Outcome	No (%)
Recovery	81 (94.2%)
Death	4 (4.6%)
Discharge against medical advice	1 (1.2%)

All the infants were managed as per WHO 2012 guidelines. Among the 18 Cat C infants, 12 (66%) required FFP transfusion, 9 (50%) required packed red blood cells 16 (18.6%) required ionotropes and 5 (27%) needed ventilator support.

Complete recovery was seen in 82 (94%) and mortality was 4 (4.6%) with all infants being in category-C at presentation (Table 5).

DISCUSSION

This study was undertaken at a tertiary teaching hospital of Bangalore, Karnataka during the months of June and July 2015 which is the peak season for dengue infections in Karnataka. Of the total 86 infants enrolled there was a male preponderance seen with male female ratio of 2.44:1, this was similar to a study done by Ahmed et al.³ Our study shows a slight increase in infants greater than 6 months. This is consistent with many studies which show a preponderance in manifestation of dengue viral infection in later half of infancy. Studies done by Hammond et al and Hung et al, showed a similar increase in greater than 6 months infants.^{4,5} Those belonging to Category-C at admission were 21% and of these 11% infants were in hypovolemic shock and 9% were in compensated shock. Infants in Category B constituted the majority of admission (63.9%) followed by Category A (15.1).

In the present study fever was seen in all infants (100%) at presentation, in a study done by Capeding et al found that majority of dengue infections ranged from asymptomatic to mild symptomatic infections in which fever constituted only in 10-25% of symptomatic infants.⁶ Gastrointestinal symptoms like vomiting and loose stools seen in 38% of infants. Infants non-specific symptoms like refusal of feed (22%), excessive crying and pain abdomen/distension (16.3%) was noticed. Those with flushing was (19.7%), bleeding manifestation like malena (7%), Petechiae (4.7%) were also seen more in Category C infants. Respiratory symptoms like cough and upper respiratory infection was seen to a tune of 14% which was seen in many reports. Thus, stressing the importance of maintaining high index of suspicion for dengue even though initial presentation may point towards respiratory system involvement. Hung et al in their study saw respiratory symptoms in 42% of infants, 7.4% had malena and Git symptoms and 99% of their 107 infants had petechiae.⁵ Altered sensorium and convulsion was seen in 1.2% and 2.3% respectively whereas Hung et al⁵ noticed in 9.3% of infants. Alteration in haematological parameters like thrombocytopenia seen in 100% infants, hemoconcentration 37% was seen. Hepatomegaly and splenomegaly were noticed in 68.6% and 8.1% respectively which was similar to Hung et al and Abm Shahidul Alam et al.^{4,7,8} Deranged liver function tests 46.5% with prolonged PT and a PTT 27% was seen in all Cat C infants. The presence of such significant hepatomegaly and deranged liver enzymes is an indicator

of disease severity which was similarly seen in many studies.^{9,10}

Dengue serology showed NS1Ag positive in 54.6% of infants and IgM positive in 59.3%. IgG antigen testing was not done due to technical problem at that period.

All infants in were managed as per WHO 2012 dengue guidelines, infants in Category C required in addition ionotropes in 18.5% and ventilator support in 5.8%. Blood products like fresh frozen plasma and packed red blood cells was required in 66% of Category C infants. Recovery was seen in 94.25 and mortality in this study was 4.6%.

CONCLUSION

This is a prospective observational study of a short duration yet it shows a picture of varied clinical features in infants affected with dengue illness. Features ranged from nonspecific symptoms like fever, irritability, refusal to feed, convulsion, cough and cold, vomiting and loose stools. Hematological system and gastrointestinal system predominated in these children. Aggressive ICU management was required in significant number of infants in Category C. This study stresses the importance of through clinical and laboratory correlation in all infants suspected of dengue fever or coming from dengue endemic areas more so during the peak season of dengue fever, for effective care of this dynamic disease, the nonspecific presenting features and symptoms involving various systems like respiratory and gastrointestinal stresses the importance of maintaining a high index of suspicion for dengue viral infection in infants.

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