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DENGUE'S YOUNGEST VITCTIMS: CLINICAL PROFILE OF INFANTILE DENGUE PATIENTS IN A TERTIARY HOSPITAL

Paediatrics

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ABSTRACT

Dengue Fever is caused an arthropod borne flavivirus carried by the Aedes aegypti mosquito. India is endemic for dengue, contributing to nearly 20% of the global burden. The clinical manifestations range from a self-limiting febrile illness to life-threatening Dengue Shock Syndrome and Dengue Hemorrhagic Fever. A unique group of individuals in whom a higher degree of morbidity and mortality is seen is infants. Our study was carried out in the peak monsoon when the incidence of Dengue is highest. This is a prospective observational study. All children less than one year of age with positive serology for dengue or clinical features highly suggestive of Dengue were enrolled with parental consent and their demographic, clinical, and laboratory parameters were mapped out. They were categorized based on the National Guidelines for Management of Dengue Fever by NVBDCP (2023). Results- A total of 20 infants were enrolled. Male female ratio was 1.2:1. Majority of infants were in Category C (40%) Fever being the most common presentation, Gastrointestinal and Respiratory symptoms, CNS manifestation like convulsion/ altered sensorium was noticed in 10%. Thrombocytopenia was seen in 60% of infants. Infants in Category C needed inotropes, ventilator support and blood products, whereas those in other two categories did not. Recovery was seen in 80% and mortality was 20%. This study highlighted the importance of a high index of clinical suspicion with timely diagnosis and treatment with stringent monitoring in the management of infants with Dengue fever.

KEYWORDS

infants, dengue fever, dengue shock

INTRODUCTION

Dengue Fever is caused by a flavivirus and transmitted by the bite of the Aedes aegypti mosquito. India contributes to nearly 20% of the world's case load owing to the rampant breeding of mosquitoes especially in the monsoon months. The typical clinical features of Dengue Fever include fever, retroorbital pain, headache, joint pain, and rash. The dreaded complications are Dengue Hemorrhagic fever and Dengue Shock Syndrome.

The category of patients in whom this disease has not been studied extensively is infants. The diagnosis is complicated by non-specific clinical features like respiratory and gastrointestinal complaints and higher incidence of complications like shock, bleeding, cardiac dysfunction, and hepatic impairment. In addition to this, many of the classical signs of dengue are absent in infants.

Our study is a prospective observational study carried out in the peak monsoon when the incidence of Dengue is highest due to rampant breeding of mosquitoes. We have taken efforts to map out the demographics, clinical profile, and outcome in infants having Dengue Fever.

Infantile Dengue is rarely studied in detail due to practical limitations and age-related confounding factors. This is an effort to understand this illness and its management better, thereby improving patient outcomes and reducing the mortality associated with this dreaded disease.

METHODOLOGY:

This study was conducted at the Pediatric Ward and Pediatric Intensive Care Unit of Bharatratna Dr. Babasaheb Ambedkar Municipal General Hospital, Mumbai in the peak monsoon season from 1st June 2025 to 30th September 2025. All children under the age of 1 year with clinical features and serology suggesting dengue infection were enrolled in the study with parental consent.

Baseline investigations like Complete Blood Count, Renal and Liver Function Tests, PT-INR were sent along with Dengue serology. Based on the clinical features the children were categorized into Uncomplicated Dengue, Dengue with Warning Signs, and Severe Dengue (based on the 2023 National guidelines for Dengue Management by NVBDCP)[1]. Patients with Severe Dengue were managed in the PICU (Pediatric Intensive Care Unit) and the other two were managed in the pediatric ward. Stringent monitoring of vital parameters and input output was ensured for all patients. Blood products were transfused when required and inotropic and ventilatory support was required by a small portion of patients.

RESULTS:

Among the 20 infants included in the study, equal distribution was observed across both age groups. Ten infants (50%) were between the age group of 0–6 months and the remaining ten (50%) were aged 7–12 months. Among the study population it was observed that 11 infants (55%) were males and 9 infants (45%) were females, showing a slight male predominance with Male to Female ratio of 1.2:1. (Table 1A, 1B)

Table 1A. Age Distribution

Age Group	Number (n)	Percentage (%)
0–6 months	10	50
7–12 months	10	50
Total	20	100

Table 1B. Sex Distribution

Sex	Number (n)	Percentage (%)
Male	11	55
Female	9	45
Total	20	100

Patients were classified at admission as per National Vector Borne Disease Control Programme (NVBDCP 2023)[1], 5 infants (25%) had dengue without warning signs, 7 infants (35%) had dengue with warning signs, and 8 infants (40%) were classified as severe dengue. Severe dengue accounted for the largest proportion of cases. As some warning signs are difficult to assess in infants due to age-related limitations, a proportion of cases may have been misclassified as dengue without warning signs. (Table 2)

Table 2. Classification Of Dengue

Classification	Number (n)	Percentage (%)
Without warning signs	5	25
With warning signs	7	35

Severe dengue	8	40
Total	20	100

A total of 20 infants with dengue were included in the study. Fever was the most common presenting symptom and was observed in all cases (100%), many non-specific symptoms were also found to be significantly associated, such as Poor feeding and vomiting was noted in 6 infants (30%), while lethargy was present in 4 (20%). Hepatomegaly was documented in 3 infants (14%), and hepatosplenomegaly in 2 (10%). Bleeding manifestations were seen in 6 infants (30%), Features of shock were observed in 4 infants (20%), 10% patients presented with Seizures which is an uncommon but recognized complication in severe dengue.

Few other non-specific findings were also noted, including upper respiratory tract infection (URTI) symptoms in 3 infants (15%) and tachypnea in 2 infants (10%), which may mimic common pediatric infections and potentially delay clinical suspicion of dengue. Empyema was observed in one infant (5%). (Table 3)

Table 3. Clinical Features

Parameter	Number(n)	Percentage(%)
Fever	20	100
Poor feeding	6	30
Lethargy	4	20
Hepatomegaly	3	14
Hepatosplenomegay	2	10
Bleeding	6	30
Shock	4	20
Seizures	2	10
URTI	3	15%
Tachypnea	2	10%
Empyema	1	5%

Laboratory evaluation of the 20 infants revealed hemoconcentration as the most frequent abnormality, observed in 15 infants (75%). Thrombocytopenia was noted in 12 infants (60%). Leukopenia was observed in 7 infants (35%), leukocytosis in 3 infants (15%), and a normal total leukocyte count in 10 infants (50%). While leukopenia is the common hematological pattern in dengue, a relatively higher proportion of infants in the present study had normal WBC counts, with leukocytosis observed in a smaller subset. This may either be due to age-related variability in immune response or the presence of concurrent infections in infants.

Deranged liver function tests were seen in 8 infants (40%). Hypoglycaemia and deranged international normalized ratio (INR) were each documented in 5 infants (25%).

Serological testing showed NS1 antigen positivity in 13 infants (65%). Dengue IgM positivity was detected in 5 infants (25%), while both NS1 antigen and IgM antibodies were positive in 2 infants (10%). (Table 4)

Table 4. Laboratory Parameters

Parameter	Number (n)	Percentage (%)
Hemoconcentration	15	75
Thrombocytopenia	12	60
leukopenia	7	35
Leucocytosis	3	15
normal WBC	10	50
Deranged LFT	8	40
Hypoglycaemia	5	25
Deranged INR	5	25
NS1 positive	13	65
IGM	5	25
Both IgM & NS1	2	10

50% of the infants required admission to the Pediatric Intensive Care Unit during the course of illness. Intravenous fluids were administered to 95% of infants. Inotropic support was required in 50%. PRBC, FFP, and platelet transfusions were required in 35%, 40%, and 40% of cases respectively. Supportive therapy formed the mainstay of treatment while 50% of patients required additional interventions. (Table 5)

Table 5. Treatment Modalities

Treatment	Number (n)	Percentage (%)
IV fluids	19	95
Inotropes	10	50
PRBC transfusion	8	35
FFP transfusion	9	40
Platelet transfusion	9	40

Overall survival rate was found to be 80%, sixteen infants recovered and were discharged, while four infants (20%) succumbed to the illness. All infants with severe dengue required PICU admission. Mortality was observed exclusively among infants with severe dengue.

DISCUSSION:

This study was carried out in the peak monsoon months of Mumbai (June-September) which is the peak season for dengue in Mumbai. Our study shows a slight male preponderance with male to female ratio of 1.2:1. This is similar to the findings of Lakshmikantha KM et al[2] who described demographics of infantile dengue in Karnataka. Differing slightly from most studies, our study showed an equal distribution of children in the first and second half of infancy as compared to an inclination towards the second half found by most. The higher morbidity of dengue in infants is well-established, and our findings are similarly consistent, with 40% presenting with severe dengue requiring PICU admission.

The symptomatology of infantile dengue is more varied than that of older children, but fever was a uniform finding in all our patients. This is dissimilar to findings by Capeding et al[3] with only 10-25% of their patients presenting with fever. Gastrointestinal symptoms seemed prominent in our patients with 30% having poor feeding and vomiting. Bleeding manifestations were present in 30% with all of them falling in the Severe Dengue category. Respiratory involvement was also seen in 30% with one infant ending up with empyema. This highlights the importance of keeping dengue fever in mind even when localizing features suggesting otherwise may be present. Hung et al[4] described all the above-mentioned clinical features and in addition also described altered sensorium in 9.3% of their cases. In contrast, 20% of our children were lethargic at presentation with 2 landing up with seizures.

ABM Shahidul et al[5] described hematological abnormalities in almost all patients with infantile dengue (100% having thrombocytopenia, 38% having hemoconcentration) with a small portion having splenomegaly (8.1%). This was well in-line with our findings with 60% having thrombocytopenia, and 75% having hemoconcentration.

Deranged coagulation profile was seen in 25% of our patients, all of whom belonged to the Severe Dengue category. 14% of patients also showed hepatomegaly and 25% showed hypoglycemia indicating that hepatic involvement is an important cause of morbidity in infantile dengue. These findings are in concordance with those of Lakshmikantha KM et al[1] who found that 45% of their patients had a deranged coagulation profile.

Dengue serology showed NS1Ag positive in 65% of infants and IgM positive in 25% with 10% surprisingly showing positivity for both.

All children in the Severe Dengue criteria required PICU stay with 50% requiring inotropes, significantly higher than those in Lakshmikanta KM et al's study wherein inotropes were needed only by 18.5%. Blood products were transfused to 40% of our patients as compared to 66% by Lakshmikanta KM et al[1]. In spite of timely efforts, 20% of our patients tragically succumbed to the illness, part of the blame to be placed on the resource limited setting that the patients were treated in and the delay in presentation of the child to the hospital.

The significantly higher morbidity and mortality of infantile Dengue may be attributed to vertically transmitted IgG which paradoxically worsens their clinical picture and prognosis due to antibody dependent enhancement. In addition, there are age related confounding factors which make the diagnosis very difficult as most of the classical signs and symptoms of dengue are absent in infants. Moreover, the presentation may be masqueraded by an entirely different clinical picture like acute gastroenteritis or a lower respiratory tract infection. Most infants present directly with complications which means that crucial time has been lost. The higher incidence of cytokine storm[8] with marginal tolerance to fluids makes the management nothing short of a tightrope that a clinician must traverse to achieve a successful outcome.

CONCLUSIONS:

Our study reveals the importance of keeping the highest index of suspicion when it comes to infantile dengue owing to the vastly varied clinical presentations. Our sample size, in spite of being a small cohort, illustrates this point very well with symptoms ranging from non-specific ones like fever, irritability, refusal to feed, gastrointestinal problems, respiratory distress, to directly presenting with complications like shock and bleeding. The infants in the latter category required aggressive ICU care with many of them requiring inotropic and ventilatory support.

It emphasizes the role of maintaining a low threshold for thorough investigations and monitoring of infants who are suspected of having dengue fever, especially in the peak monsoon season. The non-specific clinical presentation, low tolerance to extra fluids, and high incidence of severe dengue mandates the heightened vigilance that an infant with dengue must receive.

This study also highlights the crucial role of time in ensuring a successful recovery of infants with dengue, in the form of early diagnosis, prompt initiation of treatment, timely monitoring for complications, addressing them without delay. The infants who presented directly with complications were the ones who succumbed to the disease.

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