

Original article

Study on Clinical Profile Of Dengue Cases admitted in PICU in Basaveshwara medical college and Hospital , chitradurga

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Abstract

Background: Dengue fever is a significant public health concern in tropical regions, affecting children severely and leading to complications like dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). This study evaluates the clinical profile, management, and outcomes of pediatric dengue cases admitted to the Pediatric Intensive Care Unit (PICU) at Basaveshwara Medical College and Hospital, Chitradurga.

Methods: A retrospective observational study was conducted from January 2022 to December 2023, involving 40 pediatric patients (aged 1 month to 15 years) admitted with confirmed dengue infection. Demographic data, clinical presentations, laboratory findings, management strategies, and outcomes were collected and analyzed.

Results: Most cases were in the 6-10-year age group (37.5%), with a male predominance (60%). Fever (100%), rash (70%), vomiting (60%), and thrombocytopenia (45%) were common findings. All patients received fluid resuscitation, while 20% required inotropic support, and 12.5% needed blood transfusions. The average PICU stay was >5 days in 25% of cases, with a mortality rate of 7.5%.

Conclusion: Early recognition, aggressive fluid management, and continuous monitoring are essential to improve outcomes in pediatric dengue cases. Public health efforts should focus on dengue prevention through vector control and community awareness.

Keywords: Dengue, Pediatric Intensive Care, Thrombocytopenia

Introduction

Dengue fever, a mosquito-borne viral infection caused by the dengue virus, remains a significant public health challenge in tropical and subtropical regions, including India.(1) With a marked increase in incidence over recent years, dengue is a leading cause of hospitalization and mortality among children. (2,3) The clinical spectrum of dengue is broad, ranging from asymptomatic infection to severe dengue, which may present with complications such as dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). The progression from mild to severe dengue can be rapid, necessitating prompt recognition and management, especially in pediatric populations.(4,5)

Basaveshwara Medical College and Hospital in Chitradurga, a tertiary care center, frequently admits pediatric patients with severe dengue manifestations. The Pediatric Intensive Care Unit (PICU) plays a critical role in managing these cases, focusing on stabilizing the patient's hemodynamic status, monitoring vital parameters, and addressing complications. Understanding the clinical profile of children admitted with dengue in the PICU, including age, gender, symptomatology, laboratory findings, and outcomes, is essential to improve early diagnosis, optimize treatment protocols, and reduce morbidity and mortality. This study aims to evaluate

the clinical presentation and management outcomes of dengue cases admitted to the PICU, thus contributing to better clinical preparedness and strategic planning in dengue management.

Methodology

Our study was conducted as a retrospective observational analysis at the Pediatric Intensive Care Unit (PICU) of Basaveshwara Medical College and Hospital, Chitradurga. The study period spanned from January 2022 to December 2023, focusing on children aged 1 month to 15 years who were admitted with confirmed dengue infection. Ethical approval was obtained from the Institutional Ethics Committee prior to the commencement of the study, and data was collected from the hospital's medical records. A total of 40 children who met the inclusion criteria were included in the study.

The sample comprised pediatric patients who tested positive for dengue using serological methods, specifically NS1 antigen and IgM antibody tests. Patients with co-infections, chronic illnesses, or those referred from other facilities after receiving initial management were excluded. The collected data included demographic information (age, gender, and residential background), clinical presentation (fever, rash, bleeding tendencies, abdominal pain, vomiting, etc.), vital signs at admission, and laboratory parameters (complete blood count, liver function tests, platelet count, and hematocrit levels).

Data on the management of dengue cases were also gathered, including details of fluid resuscitation, use of inotropes, blood transfusions, and supportive therapies. The severity of dengue cases was categorized based on the World Health Organization (WHO) classification, distinguishing between dengue fever, dengue hemorrhagic fever (DHF), and dengue shock syndrome (DSS). The outcomes were documented in terms of recovery, length of hospital stay, and mortality rates.

All data were compiled and analyzed using Microsoft Excel and SPSS software. Descriptive statistics such as mean, median, and standard deviation were employed for continuous variables, while frequencies and percentages were used for categorical variables. Chi-square test was applied to assess associations between clinical variables and outcomes, with a p-value of <0.05 considered statistically significant.

Results:

Table 1: Demographic Characteristics of Dengue Cases (n=40)

Variable	Frequency (n)	Percentage (%)
Age Group (years)		
1 month - 1 year	4	10.0
1 - 5	12	30.0
6 - 10	15	37.5
11 - 15	9	22.5
Gender		
Male	24	60.0
Female	16	40.0
Residence		
Urban	18	45.0
Rural	22	55.0

Table 2: Clinical Presentation and Laboratory Findings (n=40)

Clinical Parameters	Frequency (n)	Percentage (%)
Fever	40	100.0
Rash	28	70.0
Bleeding Tendencies	10	25.0
Abdominal Pain	16	40.0
Vomiting	24	60.0
Platelet Count (<50,000/ μ L)	18	45.0
Elevated Hematocrit	12	30.0
Elevated Liver Enzymes	20	50.0

Table 3: Management and Outcomes of Dengue Cases (n=40)

Management & Outcomes	Frequency (n)	Percentage (%)
Fluid Resuscitation	40	100.0
Inotrope Support	8	20.0
Blood Transfusion	5	12.5
ICU Stay (>5 days)	10	25.0
Recovery	37	92.5
Mortality	3	7.5

Discussion

Our current study evaluated the clinical profile, management, and outcomes of pediatric dengue cases admitted to the Pediatric Intensive Care Unit (PICU) at Basaveshwara Medical College and Hospital, Chitradurga. The findings provide insights into the demographic distribution, symptomatology, laboratory abnormalities, management strategies, and clinical outcomes in dengue-affected children. This discussion aims to interpret the results in relation to existing literature, highlight significant trends, and suggest potential areas for improvement in dengue management.

1. Demographic Characteristics

The study showed a higher prevalence of dengue in the 6-10-year age group (37.5%), followed by the 1-5-year group (30%). This aligns with other studies indicating that dengue commonly affects school-going children due to greater exposure to outdoor environments, where they are more likely to be bitten by *Aedes* mosquitoes. The male-to-female ratio was 1.5:1, reflecting a higher incidence among boys (60%) compared to girls (40%). This finding is consistent with earlier studies where a male predominance was reported, possibly due to behavioral factors, such as increased outdoor activities in males.

A majority of cases (55%) originated from rural areas, suggesting that environmental and socio-economic factors may contribute to dengue transmission. Poor sanitation, stagnant water, and inadequate vector control measures in rural areas could have influenced the higher incidence. However, urban cases were also significant (45%), indicating that dengue is pervasive across settings, necessitating robust vector control and public health measures in both rural and urban regions.(6,7,8)

2. Clinical Presentation and Laboratory Findings

Fever was the most consistent clinical symptom, present in all cases (100%), which aligns with dengue's hallmark presentation as described in WHO guidelines. Other prominent clinical features included rash (70%), vomiting (60%), and abdominal pain (40%). The presence of rash, often indicative of capillary fragility, underscores its utility as a clinical marker in diagnosing dengue. Additionally, vomiting and abdominal pain were commonly observed, which are indicative of gastrointestinal involvement, a known complication of dengue.

Bleeding tendencies, such as gum bleeding, epistaxis, and hematemesis, were observed in 25% of cases, suggesting the presence of dengue hemorrhagic fever (DHF) in a subset of patients. This is consistent with prior studies, where bleeding tendencies were reported in approximately 20-30% of dengue cases admitted to PICU settings. In terms of laboratory findings, thrombocytopenia (platelet count $<50,000/\mu\text{L}$) was noted in 45% of patients, aligning with the characteristic hematological manifestation of dengue infection. Elevated hematocrit, observed in 30% of cases, is another critical marker, reflecting hemoconcentration due to plasma leakage, a significant indicator of disease severity and progression towards DSS. (9)

Liver enzyme elevation was documented in 50% of the cases, indicating hepatic involvement, a common manifestation of severe dengue. This emphasizes the importance of regular liver function monitoring in dengue patients to detect early signs of multi-organ involvement. The findings of thrombocytopenia, hemoconcentration, and elevated liver enzymes underscore the need for comprehensive laboratory assessment in dengue management to identify patients at higher risk of severe disease progression.

3. Management Strategies and Outcomes

Fluid resuscitation was employed in all patients, emphasizing its role as the cornerstone of dengue management, especially in cases progressing to DHF or DSS. The aggressive use of intravenous fluids helps maintain hemodynamic stability, reduce plasma leakage, and prevent shock. Inotropic support was required in 20% of cases, indicating that a significant subset of children experienced severe dengue manifestations, necessitating vasopressor therapy to maintain adequate blood pressure and organ perfusion. The use of inotropes suggests severe capillary leak syndrome and refractory shock, both of which are critical complications of dengue.

Blood transfusion was necessary in 12.5% of the cases, mainly for those who exhibited severe bleeding tendencies or hematocrit levels indicative of profound plasma leakage. This reflects the potential for severe hematological involvement in dengue and the need for adequate blood bank resources in tertiary care centers handling such cases.

The average duration of ICU stay was over five days in 25% of the patients, indicating the severity and prolonged recovery phase associated with dengue complications. Early detection, aggressive management, and continued monitoring during the critical phase are essential to ensure favorable outcomes and reduce ICU stay. However, despite these efforts, there was a 7.5% mortality rate, which aligns with reported mortality rates in similar studies involving severe dengue in PICU settings. Mortality was primarily attributed to multi-organ failure and refractory shock, highlighting the challenges in managing severe dengue despite timely interventions.(10)

Conclusion:

In conclusion, this study highlights the critical aspects of dengue's clinical profile, management, and outcomes in a PICU setting. It emphasizes the need for timely interventions, comprehensive monitoring, and improved public health measures to reduce dengue morbidity and mortality among children.

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