Original Article

Clinical and Laboratory Profile of Dengue Fever in Children Admitted to a Tertiary Care Centre

Dharavath Devendar[1], Muthyapu Shravan[1], P Ravi Kumar[2]

[1]Assistant Professor, Department of Paediatrics, Government Medical College, Kamareddy, Telangana, India. [2]Assistant Professor, Department of Pathology, Government Medical College, Kamareddy, Telangana, India.

Abstract

Background: Dengue fever is one of the most important public health problems for children in tropical areas, with a wide spectrum of clinical manifestations from a simple fever to a severe disease such as dengue with shock, bleeding or involvement of the organs. The objective is to analyse clinical features, laboratory profile, serological profile, classification, requirements of treatment and short-term outcome of children admitted with dengue fever. **Material and Methods:** This was an observational study in the Department of Pediatrics at Government Medical College, Kamareddy, Telangana, India from March 2025 to February 2026. 100 children were included of whom 100 had been admitted with serologically confirmed dengue fever. Descriptive statistical methods were used to record and analyze demographic data, clinical features, signs of warning, laboratory findings, serological status, supportive treatment and outcome. **Results:** The mean age was 8.4 ± 3.6 years and 6–10 years was the most common age group. Male was 58.0% of the cases. Children had fever as the initial symptom and asthenia, abdominal pain, headache, myalgia, retro-orbital pain, rash, hepatomegaly, bleeding manifestations, and shock, followed. There were 48.0%, 40.0%, and 12.0% of children with dengue without warning signs, dengue with warning signs and severe dengue, respectively. Commonest laboratory abnormalities were thrombocytopenia. A total of 64% had platelet count < 100,000/mm3, 28% had severe thrombocytopenia, 38% had leukopenia, 24% had raised hematocrit and 48% had raised SGOT. The 56.0% that were NS1 antigen positive. All children made it through and were discharged. **Conclusion:** Fever, gastrointestinal symptoms, thrombocytopenia, leukopenia, an elevated hematocrit and elevated hepatic enzymes were the most important findings. Optimal recognition and monitoring, fluid therapy, and supportive care led to good outcomes.

Keywords: Dengue fever; Children; Thrombocytopenia; Leukopenia; NS1 antigen; Severe dengue; Pediatric infectious disease.

Received: 19 May 2026 **Revised: 08 June 2026** **Accepted: 21 June 2026** **Published: 17 August 2026**

Introduction

Dengue fever is an arbovirus disease and is transmitted primarily by Aedes mosquito species, and one of the fastest growing transmitted arboviral fever disease in the world. Dengue virus is a flavivirus that has four serotyped strains of antigenically varying forms of the virus that causes infection. The clinical picture ranges from mild febrile diarrhea to complicated Dengue characterized by plasma leakage, bleeding, shock and organ dysfunction. Dengue has been found to be a significant disease burden, particularly in tropical and subtropical countries, where Asia has a large proportion of disease transmission, according to global estimates.[1] Urbanisation, population mobility, vector adaptation, climate suitability and absence of mosquito control have been associated with the changing distribution of dengue.[2,3]

Dengue outbreaks with fluctuation in seasonality, serotype distribution, clinical presentation, and hospitalization rates have occurred periodically in India and have been observed to vary from region to region. Pediatric cases are clinically significant not only because they can deteriorate quickly during the critical period, but also because either warning signs might be overlooked or fluids may be delayed. Dengue fever is a public health problem in India and is under diagnosed, under reported and has overlapping clinical features with other acute febrile illnesses.[4] In hospital environment, the prompt identification of clinical and laboratory indices becomes critical in the triage, monitoring and rapid referral to intensive care unit (ICU) if needed.

In the early phase of fever, clinical features of dengue in children are often non-specific. Commonly reported findings are fever, headache, vomiting, abdominal pain, myalgia, retro-orbital pain, rash, hepatomegaly, and bleeding manifestations. Persistent vomiting, abdominal tenderness, lethargy, hepatomegaly, fluid accumulation, mucosal bleeding and rising hematocrit level, falling platelet count are warning signs that signify an increased risk of progression.[5-7] Furthermore, atypical presentations and organ involvement is becoming commonplace, especially in

Address for correspondence: Dr. Dharavath Devendar, Assistant Professor, Department of Paediatrics, Government Medical College, Kamareddy, Telangana, India.
E-mail: jdev85154@gmail.com

DOI:
10.21276/amit.2026.v13.i2.952

How to cite this article: Devendar D, Shravan M, Kumar PR. Clinical and Laboratory Profile of Dengue Fever in Children Admitted to a Tertiary Care Centre. Acta Med Int. 2026;13(2):1757-1761.

children admitted with dengue fever.[7] Multiple tropical infections occurring in resource limited settings and these features contribute to diagnostic challenge.

Laboratory assessment is the key to dengue assessment. Thrombocytopenia, leukopenia, hemoconcentration, elevated aminotransferases, and electrolyte disturbances help with clinical suspicion and aid in the monitoring of the disease. Several pediatric studies have noted that serial platelet counts, total leukocyte count, hematocrit level, and increase in liver enzymes can be used to predict the severity of the disease.[8-12] NS1 antigen testing is useful in the early phase, whereas IgM antibody positivity is more common later in the illness. Since the clinical and laboratory profile differs by region, local data are useful for strengthening pediatric dengue protocols.

The present study was undertaken to evaluate the clinical and laboratory profile of dengue fever among children admitted to a tertiary care centre. The objectives were to describe the demographic pattern, presenting symptoms, clinical classification, hematological and biochemical abnormalities, serological profile, treatment requirements, and short-term hospital outcome among pediatric dengue cases admitted at Government Medical College, Kamareddy, Telangana, India.

Materials and Methods

Study design and setting: This hospital-based observational study was conducted in the Department of Pediatrics, Government Medical College, Kamareddy, Telangana, India. The study included children admitted with dengue fever during the period from March 2025 to February 2026. The institution functions as a tertiary care referral centre for pediatric infectious diseases and receives patients from urban and rural areas of the surrounding region.

Study population: 100 dengue fever admitted children were analyzed. Eligibility included children under the age of 15 years who had clinically suspected dengue and confirmed by laboratory testing of NS1 antigen and/or dengue IgM antibody. Children with incomplete records were excluded; children with alternative diagnosis to explain the febrile illness and children with underlying coexisting chronic haematological disorders which influenced platelet counts were excluded from the final analysis. This sample was all consecutive allowable admissions within the study period.

Data collection: The questionnaires gathered data about the demographic factors like age, sex and place of living. Clinical parameters which were reported were: fever, vomiting, abdominal pain, headache, myalgia, retro-orbital pain, rash, bleeding manifestations, hepatomegaly, splenomegaly, hypotension, shock, and other warning signs. Clinical classification was made based on standard clinical criteria used in the management of dengue in children – without warning signs, with warning signs and severe dengue [13,14]. The details of treatment were intravenous fluid, platelet transfusion and intensive care monitoring.

Laboratory investigations: Laboratory parameters were obtained from both complete blood count, hematocrit, platelet count, liver function tests, serum electrolytes and dengue serology. Leukopenia was taken to be defined as an absolutely low T-LC (< 4,000 cells/mm³). Three thresholds for thrombocytopenia were analyzed: platelet counts < 150,000/mm³, < 100,000/mm³ and < 50,000/mm³. According to the reference values in the institutions' laboratories, the following signs were recorded: increased Hct, increased SGOT, increased SGPT and hyponatremia. Serological categories were NS1 antigen positivity, IgM antibody positivity and NS1 antigen with IgM antibody positivity.

Statistical analysis: Descriptive statistics were used for analysing data which were entered in a spreadsheet. Means with standard deviations were used for continuous variables. Categorical variables were reported as frequencies and percentages. Since the study was primarily descriptive, no inferential comparison was performed. Results were presented in tables with explanatory text to describe the clinical classification, laboratory profile, serological pattern, and outcomes.

Ethical considerations: The study was conducted using hospital-based clinical data with maintenance of patient confidentiality. Personal identifiers were not included during analysis.

Results

A total of 100 children admitted with dengue fever were included in the study. The mean age of the study population was 8.4 ± 3.6 years. Most children belonged to the 6–10 years age group. Males were more commonly affected than females, with a male-to-female ratio of 1.4:1. The majority of children were from rural areas [Table 1].

Table 1: Baseline demographic profile of the study population

Variable	Number of children	Percentage
Total cases	100	100.0
Mean age	8.4 years	±3.6
Age group		
≤5 years	18	18.0
6–10 years	46	46.0
11–15 years	36	36.0
Sex		
Male	58	58.0
Female	42	42.0
Residence		
Rural	62	62.0
Urban	38	38.0

Fever was the most common presenting symptom and was observed in all children. Vomiting, abdominal pain, headache, myalgia, and retro-orbital pain were the other frequent clinical manifestations. Bleeding manifestations were seen in 18.0% of children, while hepatomegaly and rash were observed in 26.0% and 22.0% of cases, respectively [Table 2].

Table 2: Clinical manifestations among children with dengue fever

Clinical feature	Number of children	Percentage
Fever	100	100.0
Vomiting	54	54.0
Abdominal pain	46	46.0
Headache	42	42.0
Myalgia/body pains	39	39.0
Retro-orbital pain	28	28.0
Rash	22	22.0
Bleeding manifestations	18	18.0
Hepatomegaly	26	26.0
Splenomegaly	8	8.0
Hypotension/shock	12	12.0

According to clinical classification, dengue fever without warning signs was observed in 48 children. Dengue with warning signs was present in 40 children, while severe dengue was diagnosed in 12 children. Among the warning signs, persistent vomiting and abdominal pain were the most frequent findings [Table 3].

Table 3: Clinical classification of dengue cases

Clinical category	Number of children	Percentage
Dengue without warning signs	48	48.0
Dengue with warning signs	40	40.0
Severe dengue	12	12.0

Thrombocytopenia was the most common laboratory abnormality. Platelet count below 100,000/mm³ was observed in 64 children, while severe thrombocytopenia below 50,000/mm³ was noted in 28 children. Leukopenia was seen in 38.0% of children. Raised hematocrit was observed in 24.0% of cases, suggesting plasma leakage. Elevated liver enzymes were also common, with raised SGOT and SGPT observed in 48.0% and 36.0% of children, respectively [Table 4].

Table 4: Laboratory profile of children with dengue fever

Laboratory parameter	Number of children	Percentage
Hemoglobin <10 g/dL	16	16.0
Leukopenia <4,000 cells/mm³	38	38.0
Platelet count <150,000/mm³	78	78.0
Platelet count <100,000/mm³	64	64.0
Platelet count <50,000/mm³	28	28.0
Raised hematocrit	24	24.0
Raised SGOT	48	48.0
Raised SGPT	36	36.0
Hyponatremia	22	22.0

NS1 antigen positivity was the most common serological finding and was observed in 56 children. IgM antibody positivity was seen in 30 children, while both NS1 and IgM positivity were noted in 14 children. Most children recovered with supportive management. Platelet transfusion was required in 10 children, and 12 children required intensive care monitoring. No mortality was observed in the present study [Table 5].

Table 5: Serological profile and outcome of children with dengue fever

Parameter	Number of children	Percentage
NS1 antigen positive	56	56.0
IgM antibody positive	30	30.0
Both NS1 and IgM positive	14	14.0
IV fluid therapy required	72	72.0
Platelet transfusion required	10	10.0
ICU admission	12	12.0
Recovered and discharged	100	100.0
Mortality	0	0.0

Overall, fever, vomiting, abdominal pain, thrombocytopenia, leukopenia, and elevated liver enzymes were the predominant

clinical and laboratory findings. Most children had uncomplicated dengue or dengue with warning signs, while severe dengue was observed in a smaller proportion. Early clinical recognition, serial platelet monitoring, hydration, and supportive care contributed to favorable outcomes in all children.

Discussion

The present study described the clinical and laboratory profile of 100 children admitted with dengue fever at a tertiary care centre in Telangana. The mean age of the study population was 8.4 ± 3.6 years, and the 6–10 years age group formed the largest proportion. This finding is consistent with several pediatric dengue studies reporting higher admission among school-aged children, probably reflecting greater outdoor exposure and vector contact during daytime activity.[5,6] Male predominance was observed, with males forming 58.0% of cases. The distribution of sex has been reported to be similar in hospital-based pediatric dengue series, and also in this case it is related to the characteristics of the referral and care-seeking behaviours.[5-7]

There was no question of a fever-free dengue infection in the present cohort as the check of the fever had been universal. Vomiting, abdominal pain, headache, myalgia, retro-orbital pain, rash, hepatomegaly, bleeding manifestations, and shock were the important clinical findings. Other common symptoms reported by Pothapregada et al. in pediatrics were fever, myalgia, headache, retro-orbital pain, vomiting, abdominal pain, and warning signs.[6,7] The very common vomiting and abdominal pain were significant to the current finding as a warning sign associated with worsening disease and progression to severe dengue.[13]. Close monitoring was necessary after admission: bleeding manifestations were seen in 18.0% and shock in 12.0% of the children.

Children with features that were considered to represent severe dengue accounted for 12.0% of clinical classification, while 48.0% of cases were classified as dengue without warning signs, signifying that a significant number of children had warning signs which needed careful monitoring. In previous literatures, the importance of pediatric dengue's ability to develop from febrile to critical phase has been highlighted, while warning signs help clinicians to stratify the patients early.[13,14] Children in this study did not die, suggesting good supportive care and appropriate escalation of children with shock and severe thrombocytopenia.

The most frequent laboratory abnormality was thrombocytopenia (78.0% children had < 150,000 thrombocytes/mm³, 64.0% had < 100,000 and 28.0% had < 50,000/mm³). Thirty-eight (38.0%) had leukopenia and 24 (24.0%) had elevated hematocrit. These results agree with some previous research that has shown leukopenia, thrombocytopenia, hemoconcentration and dynamic hematological changes as useful indicators to diagnose and monitor dengue in children.[10-12] Forty-eight per cent of the children had elevated SGOT levels and 36 per cent had elevated SGPT levels. Dengue involvement of liver has been reported in children and elevation of aminotransferases have been correlated with the severity and systemic involvement.[8,9]

Early presentation to hospital led to the most common serological pattern of NS1 antigen positivity. IgM antibody positivity and co-occurrence of NS1 (and IgM) were later (or overlapping) stages of infection. The treatment profile revealed that the rate of intravenous fluid therapy, platelet transfusion, and ICU admission were 72.0%, 10.0%, and 12.0%, respectively. Today's therapeutic strategies focus on appropriate fluid management, no prophylactic platelet transfusion unindicated and close surveillance for the presence of organ dysfunction.[14] The present findings would be applicable to similar tertiary care paediatric units in dengue endemic areas where children are admitted with fever, gastrointestinal symptoms, thrombocytopenia and biochemical evidence of hepatic involvement.

Limitations: This study was done at only one tertiary care centre and the sample size was ten-hundred children who were admitted, and so did not represent community and outpatient dengue burden. Detailed day-wise biochemical follow-up was not included, nor were viral serotyping, or serumetic changes. No separate analysis of the seasonal clustering was done. The size of warning sign and severe dengue were affected by referral bias associated to hospital admission.

Conclusion

Common symptoms of Dengue fever in admitted children in this tertiary level care centre were fever, vomiting, abdominal pain, headache, myalgia, rash, hepatomegaly, bleeding manifestations and shock. Laboratory abnormalities were of interest: thrombocytopenia, leukopenia, elevated hematocrit, elevated SGOT and SGPT, and hyponatremia. Commonest serological finding was NS1 antigen positivity which is seen in many children due to early diagnosis. Dengue without warning sign and dengue with warning sign accounted for the majority of cases, and a minority of severe dengue cases. The results were favourable without mortality, due to careful clinical evaluation, serial laboratory monitoring, early intravenous fluid replacement and selective transfusion of support. The results of this study further corroborate the need for regular monitoring of warning signs and repeated hematological monitoring in hospitalized children with dengue.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Bhatt S, Gething PW, Brady OJ, Messina JP, Farlow AW, Moyes CL, et al. The global distribution and burden of dengue. Nature. 2013;496(7446):504-507. doi:10.1038/nature12060. PMID:23563266.
2. Simmons CP, Farrar JJ, Nguyen VV, Wills B. Dengue. N Engl J Med. 2012;366(15):1423-1432. doi:10.1056/NEJMra1110265. PMID:22494122
3. Guzman MG, Harris E. Dengue. Lancet. 2015;385(9966):453-465. doi:10.1016/S0140-6736(14)60572-9. PMID:25230594.
4. Gupta N, Srivastava S, Jain A, Chaturvedi UC. Dengue in India.

Indian J Med Res. 2012;136(3):373-390. PMID:23041731.
5. Mishra S, Ramanathan R, Agarwalla SK. Clinical profile of dengue fever in children: a study from Southern Odisha, India. Scientifica (Cairo). 2016;2016:6391594. doi:10.1155/2016/6391594. PMID:27213083.
6. Pothapregada S, Kamalakannan B, Thulasingham M, Sampath S. Clinically profiling pediatric patients with dengue. J Glob Infect Dis. 2016;8(3):115-120. doi:10.4103/0974-777X.188596. PMID:27621562.
7. Pothapregada S, Kamalakannan B, Thulasingam M. Clinical profile of atypical manifestations of dengue fever. Indian J Pediatr. 2016;83(6):493-499. doi:10.1007/s12098-015-1942-9. PMID:26725457.
8. Roy A, Sarkar D, Chakraborty S, Chaudhuri J, Ghosh P, Chakraborty S. Profile of hepatic involvement by dengue virus in dengue infected children. N Am J Med Sci. 2013;5(8):480-485. doi:10.4103/1947-2714.117313. PMID:24083224.
9. Jagadishkumar K, Jain P, Manjunath VG, Umesh L. Hepatic involvement in dengue fever in children. Iran J Pediatr. 2012;22(2):231-236. PMID:23056891.
10. Ho TS, Wang SM, Lin YS, Liu CC. Clinical and laboratory predictive markers for acute dengue infection. J Biomed Sci. 2013;20:75. doi:10.1186/1423-0127-20-75. PMID:24138072.
11. Chen CH, Huang YC, Kuo KC, Li CC. Clinical features and dynamic ordinary laboratory tests differentiating dengue fever from other febrile illnesses in children. J Microbiol Immunol Infect. 2018;51(5):614-620. doi:10.1016/j.jmii.2016.08.018. PMID:28712817.
12. Kalayanarooj S, Vaughn DW, Nimmannitya S, Green S, Suntayakorn S, Kunentrasai N, et al. Early clinical and laboratory indicators of acute dengue illness. J Infect Dis. 1997;176(2):313-321. doi:10.1086/514047. PMID:9237695.
13. Htun TP, Xiong Z, Pang J. Clinical signs and symptoms associated with WHO severe dengue classification: a systematic review and meta-analysis. Emerg Microbes Infect. 2021;10(1):1116-1128. doi:10.1080/22221751.2021.1935327. PMID:34036893.
14. Tayal A, Kabra SK, Lodha R. Management of dengue: an updated review. Indian J Pediatr. 2023;90(2):168-177. doi:10.1007/s12098-022-04394-8. PMID:36574088.