Section: Paediatrics

Original Research Article

A PROSPECTIVE STUDY ON CLINICAL AND LABORATORY PREDICTIVE MARKERS OF DENGUE FEVER IN CHILDREN IN TERTIARY CARE HOSPITAL

Bramhini Sura[1], Vishnu Anjan Nareddy[2], Naveen SR[3]

[1]Assistant Professor, Department of Paediatrics, Anna Gowri Medical College and Hospital, Parameswaramangalam, Puttur -517584, Tirupati District, Andhra Pradesh, India.
[2]Professor and HOD, Department of General Medicine, Anna Gowri Medical College and Hospital, Parameswaramangalam, Puttur -517584, Tirupati District, Andhra Pradesh, India.
[3]Assistant Professor, Department of Paediatrics, Apollo Institute of Medical Sciences and Research(AIMSR), Chittor, Andhra Pradesh, India.

Received *: 04/09/2025*
Received in revised form *: 20/10/2025*
Accepted *: 08/11/2025*

Corresponding Author:
Dr. Vishnu Anjan Nareddy,
Professor and HOD, Department of General Medicine, Anna Gowri Medical College and Hospital, Parameswaramangalam, Puttur Mandal, Tirupati District, Andhra Pradesh, India.
Email: nvakreddy@yahoo.com

DOI: 10.70034/ijmedph.2025.4.254

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2025; 15 (4); 1425-1431

ABSTRACT

Background: Aim: Early detection of dengue virus infection during the febrile phase is crucial for timely intervention. This study aimed to identify clinical and laboratory predictive markers of dengue infection in children under 13 years at a tertiary care center.

Materials and Methods: A total of 150 children under 13 years presenting with acute high-grade fever and positive NS1 antigen and/or IgM antibodies were enrolled. Dengue severity was classified according to the 2015 National Guidelines for Clinical Management of Dengue Fever (Mild, Moderate, Severe).

Results: Among the cases, 29 (19.3%) were severe, 41 (27.3%) moderate, and 80 mild. Males comprised 70% and females 30% of the cohort, with a mean age of 6.86 ± 3.5 years; 53.3% were aged 2–5 years. Common clinical features included hepatomegaly (77.3%), splenomegaly (42.5%), petechiae (52%), hypotension (51.3%), myalgia (42%), and vomiting (34.6%). Severe dengue was frequently associated with petechiae (79.3%), shock (75.86%), and hypotension (96.6%). Laboratory findings showed leukopenia (5184 ± 3231/cmm), thrombocytopenia (82,571 ± 47,073/cmm), prolonged aPTT (31.7 ± 4.2 s), elevated AST (233 ± 180.7 U/L) and ALT (118 ± 82 U/L), and low CRP levels. Severe dengue cases had significantly higher AST, ALT, PT, aPTT, INR, and CRP values than mild and moderate cases. ROC analysis identified AST >233 U/L and ALT >118 U/L as cutoffs for predicting severe dengue (AUC 0.757 and 0.731, respectively). TLC cutoffs for mild, moderate, and severe dengue were 4965.7, 5854.12, and 7852.2/cmm. Ferritin had an AUC of 0.849 for predicting severe dengue. The combined positive predictive value (PPV) for leukopenia, thrombocytopenia (<150 $\times 10^3$/cmm), elevated AST/ALT, and low CRP was 93.5%, increasing to 93.8% when prolonged aPTT (>38 s) was included.

Conclusion: Liver function abnormalities were observed in all dengue types but were most pronounced in severe cases. Low serum albumin indicates increased vascular permeability and correlates with disease severity. Clinical features such as vomiting, abdominal pain, and hepatomegaly support early diagnosis, while monitoring platelet count, haematocrit, and WBC count is critical for management. Laboratory markers including leukopenia, thrombocytopenia, elevated transaminases, low CRP, and prolonged aPTT are reliable predictors for early diagnosis and severity assessment of dengue in children under 13 years.

Keywords: Dengue fever**,** hepatomegaly, CRP, thrombocytopenia, aminotransferase.

INTRODUCTION

Dengue fever is the fastest-spreading mosquito-borne viral disease worldwide, with a 30-fold increase in incidence over the past five decades. It poses a major public health concern in tropical and subtropical regions. According to WHO 2012 guidelines, dengue is classified as dengue without warning signs, dengue with warning signs, and severe dengue, which includes dengue shock syndrome, respiratory distress syndrome, dengue haemorrhagic fever, and organ failure.

In India, the 2015 National Guidelines classify dengue as:

1. **Mild dengue fever:** High fever and flu-like symptoms without complications, bleeding, hypotension, organ involvement, or capillary leakage.
2. **Moderate dengue fever:** High fever with flu-like symptoms, warning signs, or mild dengue haemorrhagic fever (grades I & II) with minor bleeding.
3. **Severe dengue:** Characterized by severe plasma leakage causing shock or fluid accumulation with respiratory distress, severe bleeding, or organ impairment such as AST/ALT >1,000 IU/L, altered consciousness, or cardiac involvement.

Warning signs indicating the critical phase include: abdominal pain or tenderness, persistent vomiting, clinical fluid accumulation, mucosal bleeding, lethargy or restlessness, hepatomegaly >2 cm, and laboratory evidence of rising haematocrit with rapidly decreasing platelet counts. In endemic regions, dengue is suspected in children presenting with fever, nausea, vomiting, rash, myalgia, and a positive tourniquet test, and confirmed via NS1 antigen or IgM antibody testing.

Laboratory features in acute dengue fever include:

- **Leukopenia** with neutropenia during the febrile phase.
- **Thrombocytopenia:** Mild (100,000–150,000/mm³) in most cases; severe dengue often shows <50,000/mm³.
- **Mild haemoconcentration** (~10%).
- **Liver enzyme elevation:** Slightly raised AST/SGOT, with hepatomegaly seen in 90–98% of children.

Clinical signs of shock include tachycardia, poor perfusion, narrow pulse pressure (<20 mmHg), hypotension, cold clammy skin, and restlessness. The neutrophil-lymphocyte ratio and total WBC count (<5,000/mm³) can predict the critical plasma leakage phase. A sudden drop in platelets (<100,000/mm³) often precedes shock or defervescence.

During recovery, extravascular fluid is gradually reabsorbed over 48–72 hours, haematocrit stabilizes or decreases, WBC counts rise first, and platelets recover later. Routine clinical and laboratory markers such as leukopenia, thrombocytopenia, elevated aminotransferases, low CRP, and prolonged aPTT have been identified as useful predictors of dengue severity.

Aim: This study aims to identify predictive clinical and laboratory markers of dengue infection in children under 13 years at a tertiary care center.

MATERIALS AND METHODS

Study Design: Prospective, hospital-based observational study

Study Period: 18 months

Study Setting: Department of Paediatrics, Anna Gowri Medical College

Ethical Approval: The study was conducted after obtaining clearance from the Institutional Ethical Committee.

Study Population

All children under 13 years of age presenting with acute onset high-grade fever and testing positive for Non-structural Protein 1 (NS1) antigen and/or Immunoglobulin M (IgM) antibody, admitted to the paediatric ward.

Inclusion Criteria

- Children under 13 years of age
- Acute onset of high-grade fever
- Positive NS1 antigen and/or IgM antibody

Exclusion Criteria

- Children with other febrile illnesses such as enteric fever, rickettsial fever, malaria, leptospirosis, septicaemia, and other viral haemorrhagic fevers

Data Collection: 150 samples.

Quantitative Variables:

- Demographic details
- Clinical examination findings
- Routine blood investigations and urine analysis
- White blood cell (WBC) count
- Platelet count
- Haematocrit
- Liver function tests (LFT)
- Prothrombin time (PT)
- Activated partial thromboplastin time (APTT)
- International normalized ratio (INR)
- C-reactive protein (CRP)

Qualitative Variables:

- Fever
- Abdominal pain
- Vomiting
- Rash
- Bleeding
- Hepatomegaly
- Splenomegaly
- Pleural effusion
- Shock
- Jaundice
- Encephalopathy

Data Source:

A structured questionnaire was used to collect demographic, clinical, and laboratory data. All entries were verified by senior consultants.

Methodology:

Children under 13 years presenting to the emergency or outpatient departments were screened. Cases meeting inclusion and exclusion criteria were enrolled after obtaining written informed consent from parents or guardians in their native language. Assent was obtained from the child when appropriate.

Classification of Dengue

Patients were classified according to the National Guidelines for Clinical Management of Dengue Fever (Government of India, 2015):

1. **Mild Dengue Fever:** No warning signs
2. **Moderate Dengue Fever:**
   - Dengue with warning signs
   - Dengue with high-risk comorbid conditions
3. **Severe Dengue Fever:**
   - Severe plasma leakage leading to shock or fluid accumulation with respiratory distress
   - Severe bleeding
   - Severe organ impairment (AST/ALT >1000 IU/L, impaired consciousness, or cardiac involvement)

Laboratory Cut-off Values:

- Leukopenia: WBC <4000/mm³
- Thrombocytopenia: Platelet count <150 ×10³/mm³
- Prolonged APTT: >38 sec
- Elevated AST/ALT: >39 U/L
- Low CRP: <20 mg/L

Clinical and laboratory parameters were compared across mild, moderate, and severe dengue groups.

Statistical Analysis

- Continuous variables are presented as mean ± standard deviation.
- One-way ANOVA was used to compare continuous variables across three groups.
- Categorical variables were compared using Fisher's exact test.
- Independent t-tests were applied for continuous variables.
- A p-value <0.05 was considered statistically significant.
- SPSS version 22 (SPSS Inc., Chicago, IL, USA) was used for data analysis.

Predictive Analysis:

- Sensitivity, specificity, disease prevalence, and diagnostic accuracy were calculated for each parameter.
- ROC curve analysis was performed for laboratory markers such as WBC count, platelet count, and liver enzymes to identify optimal cut-off values.
- Logistic regression was applied to determine the most predictive combination of clinical and laboratory markers for dengue severity.

RESULTS

Dengue Severity and Demographics

Based on the National Guidelines for Clinical Management of Dengue Fever, among the 150 children enrolled:

- **Mild dengue fever:** 80 (53.3%)
- **Moderate dengue fever:** 41 (27.33%)
- **Severe dengue fever:** 29 (19.33%)

The study population had a male predominance: 105 (70%) males and 45 (30%) females.

Ultrasonography Findings

Gall Bladder Wall Thickness (GBWT >3 mm):

- Observed in 75 (50%) of cases.
- Severe dengue: 29/29 (100%)
- Moderate dengue: 28/41 (68.3%)
- Mild dengue: 18/80 (22.5%)
- No statistical difference (P = 0.25); however, association between GBWT and dengue severity was significant (P = 0.001).

Pericholecystic Edema:

- Observed in 70 (46.6%) of cases.
- Severe dengue: 29/29 (100%)
- Moderate dengue: 22/41 (53.6%)
- Mild dengue: 19/80 (23.7%)
- Difference not statistically significant (P = 0.09).

Ascites:

- Observed in 13 (8.66%) cases.
- Severe dengue: 6/29 (20.6%)
- Moderate dengue: 7/41 (17.07%)
- Mild dengue: 0/80 (0%)
- Difference not statistically significant.

Pleural Effusion:

- Observed in 27 (18%) cases.
- Severe dengue: 18/29 (43.9%)
- Moderate dengue: 6/41 (14.6%)
- Mild dengue: 3/80 (3.75%)
- Statistically significant difference (P = 0.0058).

Hepatomegaly:

- Observed in 116 (73.3%) cases.
- Severe dengue: 29/29 (100%)
- Moderate dengue: 40/41 (97.6%)
- Mild dengue: 47/80 (58.75%)
- No statistical difference (P = 1).

Splenomegaly:

- Observed in 79 (52.66%) cases.
- Severe dengue: 21/29 (72.4%)
- Moderate dengue: 24/41 (58.5%)
- Mild dengue: 34/80 (42.5%)
- No statistical difference (P = 0.654).

Perinephric Edema:

- Observed in 9 (6%) cases.
- Severe dengue: 8/29 (27.5%)
- Moderate dengue: 1/41 (2.43%)
- Mild dengue: 0/80 (0%)
- Difference not statistically significant.

Cardiac Manifestations

- 20 children (13.3%) showed cardiac involvement.
- ECG findings: 4 had narrow QRS complexes, 10 had bradycardia.
- Echocardiography (ECHO):

- Moderate dengue: 8/41 had LVEF <50%; rest had LVEF >50%
- Pericardial effusion: 10/29 severe dengue cases and 2/41 moderate dengue cases had minimal effusion; remaining cases had no effusion

Platelet Count

- Severe dengue: All 29 cases had platelet counts <50,000/cumm
- Moderate dengue:
  - 14 cases had platelet counts <50,000/cumm
  - 23 cases had platelet counts between 50,000–100,000/cumm

Table 1: Comparison of clinical features among Mild to Severe Dengue Fever (Symptoms)

	Total	Mild group	Moderate group	severe	P-value
	N (%)	N (%)	N (%)	N (%)	
Fever	150(100%)	80	41	29	-
Vomiting	52(34.66%)	20	19	13	0.7122
Abdominal pain	63(42%)	31	15	17	0.5543
Melena	69(46%)	28	21	20	0.045*
Petechiae	78(52%)	22	33	23(79.3%)	0.025*
Myalgia	63(42%)	20	23	20	0.04
Lymphadenopathy	113(75.33%)	55	31	27	0.02
CNS involvement	28(18.67%)	3	10	15	0.04*
Head ache	35(23.33%)	13	10	12	0.25
Hepatomegaly	116(77.33%)	47(58.75%)	40(97.56%)	29(100%)	0.485*
Splenomegaly	79(52.67%)	34(42.5%)	24(58.5%)	21(72.45%)	0.7919
Convulusions	28(18.67%)	3	10	15	0.125
Hypotension	77(51.33%)	14(17.5%)	35(85.3%)	28(96.6%)	0.05*
Ascitis	13(8.67%)	0	7(17.07%)	6(20.69%)	0.85
Pleural Effusion	27(18%)	10(12.5%)	9(21.96%)	8(27.6%)	0.03
Arthralgia	43(28.67%)	16	15	12	0.452
Bleeding manifestation	16(10.67%)	0	2	14	0.005*
Rash	34(22.67%)	14	8	12	0.0652
Puff	107(71.33%)	43	39	25	0.042*
Shock	22(14.67%)	0	0	22(75.86%)	-
Encephalopathy	8(5.33%)	0	0	8	-

P<0.05 is statistically significant; NA- not applicable

Table 2: Distribution of mean values of laboratory parameters in comparison with National guidelines for Dengue Fever [2015]

Parameters	Mild(N=80)	Moderate(N=41)	Severe(N=29)	Total Mean	Range	P-value
	Mean±SD	Mean±SD	Mean±SD	Mean±SD		
Age(years)	7.2±3.5	5.76±3.3	7.48±3.32	6.86 ± 3.5		0.256
WBC(cells/c.mm)	4965.7 ± 3410.7	5854.12 ± 3520.6	7852.2 ± 5130.9	5184.1667± 3231.11058	1290.00-14620.00	0.016*
Haemoglobin	10.693 ± 1.763	11.254 ± 2.13	13.41 ± 2.82	11.89 ± 2.5	7.5-18.5	<0.05
Platelet COUNT (per c.mm)	129698.4 ± 38414.1	97985.1 ± 55420.1	36568 ± 8759.1	82571.1667± 47073.2747	12590.00 - 174200.00	0.001*
HCT (volume %)	33.759 ± 5.091	37.56 ± 4.55	42.05 ± 2.82	38.8167±6.02658	22.80-51.60	0.0001*
SGOT(AST)(IU/L)	94.1 ± 70.1	116.2 ± 84	380.1 ± 118.3	233.1833±180.67196	58.00-636.00	0.0001*
SGPT(ALT)(IU/L)	59.3 ± 29.2	79.3 ± 37.9	193.8 ± 100.1	118.1500±82.08074	46.00-458.00	0.001*
Total bilirubin (mg/dl)	0.58±0.17	0.68±0.60	1.17±0.85	0.7600±0.64682	0.10-3.4	0.082
Serum proteins (g/dl)	6.3±0.42	6.23±0.48	3.84±1.48	5.6367±1.41037	2.40-7.9	0.0001*
Albumin g/dl	4.42± 1.3	4.15± 1.1	2.75± 1.1	3.95 ±1.6	3.4- 5.3	0.04
PT(seconds)	12.6 ± 1.2	13.8 ± 3.3	16.3 ± 3.1	12.9833±2.58740	10.0-21.0	0.003*
aPTT(seconds)	29.7 ± 4.1	33.5 ± 5.7	33.9 ± 6.2	31.7 ± 4.2	28.0-34.0	0.045*
INR	1.09 ± 0.09	1.1 ± 0.2	1.2 ± 0.13	1.1 ± 0.11	0.90-1.5	0.028*
CRP(mg/dl)	5.5 ± 2.5	4.4 ± 3.1	5.3 ± 3.6	4.9 ± 3.4	4.5-5.6	0.496

P<0.05 is statistically significant; Student's unpaired t test

Table 3: Analysis of Platelet count

Platelet count		Mild(N=80)	Moderate(N=41)	Severe(N=29)	Total (n=150)	p value
<20,000	No. of children	0	6	18	24	
	% of children within clinical diagnosis	0	14.6%	3.5%	16%	
	No. of children	0	8	11	19	

20,000 to 49,999	% of children within clinical diagnosis	0	19.52%	37.94%	12.67%	**0.00**
50,000 to 99999	No. of children	0	23	0	23	
	% of children within clinical diagnosis	0	56.1%	0	15.34%	
1,00,000 to 1,50,000	No. of children	22	4	0	26	
	% of children within clinical diagnosis	27.5%	9.7%	0	17.34%	
>1,50,000	No. of children	58	0	0	58	
	% of children within clinical diagnosis	**72.5%**	**0**	**0**	**38.67%**	

Table 4: Analysis of Total leucocyte count

Total leucocyte count		**Mild(N=80)**	**Moderate(N=41)**	**Severe(N=29)**	**Total (n=150)**	**p value**
4000 to 10,000	No. of children	56	0	-	56	**<0.00***
	% of children within clinical diagnosis	70%	0	-	37.33%	
<4000	No. of children	24	32	6	62	
	% of children within clinical diagnosis	30%	78.04%	20.68%	41.33%	
>10,000	No. of children	0	9	23	32	
	% of children within clinical diagnosis	**0**	**21.9%**	**79.32%**	**21.33%**	

Table 5: Association between laboratory parameters with Outcome

	Recovered [n=145]	**Died [n=5]**	**P value**
WBC(cells/c.mm)	5175.6± 3152.66	7795.2 ± 4560.2	0.000*
Platelet count (per c.mm)	82571.25± 47073.2747	36987 ± 8954.1	0.000*
HCT (volume %)	37.45±5.02	42.32 ± 2.78	0.05*
SGOT(AST)(IU/L)	205.5±180.98	382.5 ± 158.3	0.009*
SGPT(ALT)(IU/L)	117.5±78.2	193.8 ± 100.1	0.007*
Total bilirubin(mg/dl)	0.75±0.54	1.19±0.75	0.002*
PT(seconds)	12.85±2.12	16.85 ± 2.1	0.04*
APTT(seconds)	29.7 ± 4.5	33.9 ± 6.2	0.034*
INR	1.1 ± 0.15	1.3 ± 0.14	0.55,not sig
CRP(mg/dl)	4.8 ± 3.2	5.2 ± 3.5	0.13*
Bradycardia, no(%)	5	5	1#
Hepatomegaly	111	5	<0.05#
Splenomegaly	74	5	<0.05#
Ascites	8	5	0.07,not sig

P<0.05 is statistically significant; Student's unpaired t test
 # P<0.05 is statistically significant; chisquare test.

Table 6: Laboratory parameters in predicting the severity of dengue fever

Laboratory feature	**Mild**	**Moderate**	**Severe**	**Sensitivity (%)**	**Specificity (%)**	**Positive predictive value (%)**	**Negative predictive value (%)**
(1) WBC <4000/cmm	24/80	32/41	6/29	80.5	60.5	80.6	**50.0**
(2) PLT < 150 × 10^3/cmm	22/80	41/41	29/29	98.5	97.5	90.8	**50.0**
(3) AST/ALT > 1.5	16/80	12/41	19/29	82.5	34.3	81.3	**43.8**
(4) CRP < 20 mg/L	48/80	20/41	22/29	93.8	26.5	81.7	**55.1**
(5) aPTT > 38 sec	29/80	21/41	23/29	75.4	53.8	86.0	**36.8**
1+2	23/80	36/41	18/29	91.5	75.5	90.5	**36.5**
1+2+3+4	26/80	38/41	16/29	93.5	75.5	93.5	**45.5**
1+2+3+4	**35/80**	**39/41**	**17/29**	**93.8**	**75.5**	**93.8**	**45.5**

WBC: white blood cell, PLT: platelet, AST: aspartate aminotransferase, ALT: alanine aminotransferase, CRP: C-reactive protein, aPTT: activated partial thrombin time.

DISCUSSION

A total of 150 children under the age of 13 were admitted to the paediatric ward with acute onset high-grade fever and NS1 and/or IgM positivity in our study. The patients were classified into three groups based on clinical and laboratory severity. Clinical parameters were evaluated for predictive value, including sensitivity, specificity, disease prevalence, and diagnostic accuracy. ROC analysis and logistic regression were performed to compare the utility of laboratory markers such as TLC, platelet count, and other parameters, and our findings were compared with previous studies.

The incidence of severe dengue fever in our study was 19.33%, comparable to Bokade CM et al. (22.7%). Among the 150 children, 53.33% had mild dengue fever without warning signs, 27.33% had moderate dengue with warning signs, and 19.33% had severe dengue. Male children were slightly more affected (70%), with a male-to-female ratio of 1.7:1.

Symptomatology

Infants and younger children often presented with febrile illness characterized by maculopapular rash, decreased appetite, vomiting, and abdominal pain. Older children more commonly had classic dengue fever with fever, headache, myalgia, arthralgia, and retro-orbital pain. Abdominal pain incidence was comparable to other studies, except Mai et al., which reported only 14% of cases. Hypotension was rare compared to studies by Chatterjee et al., but more frequent in Setiwan et al., possibly due to larger sample size.

The precise pathogenetic mechanisms underlying dengue's diverse clinical manifestations remain unclear. A prominent hypothesis involves viral strains that boost antibodies and memory T-cells during secondary infection, leading to a "cytokine tsunami."

Hematological Parameters

Decreasing platelet count and increasing haemoglobin and haematocrit correlated significantly with dengue severity ($p < 0.05$). Epistaxis and melena were the most common bleeding manifestations, often related to thrombocytopenia and hepatic dysfunction (raised SGPT, INR >1.5). Mechanisms for bleeding may include abnormal coagulograms, platelet dysfunction, prothrombin complex deficiency secondary to liver involvement, and platelet sequestration.

Ultrasound Findings

- **Pericholecystic edema:** Observed in all severe dengue cases (100%) and 23.75% of mild cases, with no significant difference ($p = 0.09$). This suggests it is not a reliable predictor of severity but may support the diagnosis.
- **Gallbladder wall thickness (>3mm):** Present in all severe dengue cases (100%) and 22.5% of mild cases, with no significant difference ($p = 0.14$), indicating limited predictive value for severity.
- **Pleural effusion:** Observed in 27.6% of severe dengue cases versus 15.5% in mild cases and 21.96% in moderate cases, with a significant difference ($p = 0.03$). Pleural effusion may thus serve as a good sonographic predictor of severity.
- **Hepatomegaly:** Seen in 58.75% of mild, 97.56% of moderate, and 100% of severe cases, with no significant difference ($p = 0.4$).
- **Splenomegaly:** Found in 42.5% of mild, 58.5% of moderate, and 72.45% of severe cases, with no significant difference ($p = 0.79$).

Platelet Count

All severe dengue cases had platelet counts <50,000/cumm. In moderate dengue, 14 cases had counts <50,000/cumm, while 23 had counts between 50,000–100,000/cumm. Low platelet count (<100,000/cumm) may indicate increased risk of cardiac involvement. Platelet count alone does not predict bleeding, as this depends on liver function and coagulation status.

CRP, Hemoglobin, PT, aPTT, and Hematocrit

CRP levels were uniformly low, aiding differentiation from bacterial infections. Haemoglobin >10 g/dl was associated with decreased dengue severity. PT, aPTT, and INR were higher in severe dengue cases. Haematocrit >45% was observed in 33 moderate and 21 severe cases, consistent with plasma leakage.

Cardiac Manifestations

Twenty children had cardiac manifestations, including narrow QRS (4) and bradycardia (10). Echocardiography showed minimal pericardial effusion in 10 severe and 2 moderate dengue cases. Left ventricular ejection fraction (LVEF) <50% was seen in 8 moderate cases. These findings suggest ECHO should be considered in severe and select moderate cases to identify persistent shock despite adequate fluid resuscitation.

Liver Function

Mean serum bilirubin, SGOT, and SGPT levels were 0.76 mg/dl, 233.18 U/L, and 118.15 U/L, respectively. SGOT levels were consistently higher than SGPT, possibly due to myocyte involvement. Severe dengue cases had higher SGPT and lower serum albumin levels, consistent with prior studies.

Predicting Clinical Severity

Rash and myalgia had sensitivities of 58.8% and 47.2% and specificities of 74.8% and 52.8%, respectively. Rash had a high positive predictive value (89.5%) but typically appeared late, limiting early predictive utility. The combination of leukopenia, thrombocytopenia, elevated aminotransferases, low CRP, and prolonged aPTT increased PPV to 93.5% for predicting dengue severity.

Inference

Early symptoms of acute dengue virus infection are variable, making differentiation from other febrile illnesses difficult. A combination of simple laboratory tests (WBC, platelet count, liver function

tests, CRP, coagulation profiles) can aid in early detection and severity assessment. Such an approach may reduce reliance on extensive laboratory diagnostics while supporting clinical decision-making.

CONCLUSION

Elevated liver enzymes, particularly SGOT exceeding SGPT, are predictive of disease severity, prolonged hospital stay, and poor outcomes in children with dengue. Low serum albumin serves as a marker of altered vascular permeability and correlates with disease severity, prognosis, and clinical outcome. Severe dengue is commonly associated with complications such as ascites, pleural effusion, shock, hepatic dysfunction, and hemorrhage. Close monitoring of platelet count, hematocrit, and white blood cell count is essential for effective management, helping to guide treatment decisions and avoid unnecessary platelet transfusions.

REFERENCES

1. World Health Organization. Comprehensive Guidelines for Prevention and Control of Dengue and Dengue Haemorrhagic Fever, WHO, 2011: www.searo.who.int>SEAROTPS60 (accessed on 8th October 2015)].
2. Hand book for Clinical Management of Dengue, WHO July 2012: www.wpro.who.int>mvp>documents.(accessed on 15th January 2017).
3. Kalayanarooj S, Vaughn DW, Nimmannitya S, Green S, Suntayakorn S, Kunentrasai N, Viramitrachai W, Ratanachu-eke S, Kiatpolpoj S, Innis BL, Rothman AL, Nisalak A, Ennis FA. Early clinical and laboratory indicators of acute dengue illness. J Infect Dis. 1997;176(2):313-21.
4. Guzmán MG, Kourí G. Dengue diagnosis, advances and challenges. Int J Infect Dis. 2004 Mar;8(2):69-80.
5. Baskar C, Babu ASKK, Anandan H. Clinical Profile and Outcome of Dengue Fever in Pediatrics.2016;5(10):79-81.
6. Surangrat Pongpana, Apichart Wisitwong, Chamaiporn Tawichasri, Jayanton Patumanond Prognostic Indicators for Dengue Infection Severity, Int J Clin Pediatr 2013;2(1):12-18.
7. Bokade C M., Chauhan Urmila and Kamat Pranoti.2016, Study of Hepatic Dysfunction In Dengue Fever And It's Predictor of Outcome. Int J Recent Sci Res. 7(9), pp. 13360-13363.
8. Venkata Sai PM, Dev B, Krishnan R. Role of ultrasound in dengue fever. Br J Radiol. 2005; 78:416-8.
9. Khongphatthanayothin A, Lertsapcharoen P, Supachokchaiwattana P, La-Orkhun V, Khumtonvong A, Boonlarptaveechoke C, Pancharoen C. Myocardial depression in dengue hemorrhagic fever: prevalence and clinical description. Pediatric Critical Care Medicine. 2007 Nov 1;8(6):524-9.
10. Chhina RS, Goyal O, Chhina DK, Goyal P, Kumar R, Puri S. Liver Function Tests in patients with Dengue viral infection. Dengue Bulletin 2008; 32:110-7.
11. Wong M, Shen E. The Utility of Liver Function Tests in Dengue. Annals Academy Of Medicine 2008;37(1):82-3.
12. Mohan N, Goyal D, Karkra S, Perumal V. Profile of Dengue Hepatitis in Children from India and its correlation with WHO Dengue Case Classification. Asian Pacific Journal of Tropical Disease 2017;7(6):327-31.
13. Jadhav R, Lohiya S, Agarkhedkar S, Lohakare A, Salunkhe S. Study of Dengue fever with special reference to predictors of spontaneous bleeding in Dengue Infection. J Pharm Biomed Sci 2015;5(11):851-6.