

Clinico-Epidemiological Profile and Laboratory Parameters of Dengue Fever: A Cross-Sectional Study of 145 Cases at a Tertiary Care Center in Southern Odisha.

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Abstract

Background: Dengue fever is an arboviral disease with a rapidly increasing global footprint, presenting a major public health challenge in tropical regions like Odisha. This study aims to evaluate the clinical presentations, laboratory parameters, and treatment outcomes of dengue fever among patients admitted to a tertiary care hospital in Southern Odisha. **Methods:** A prospective, hospital-based cross-sectional study was conducted at Maharaja Krishna Chandra Gajapati (MKCG) Medical College and Hospital, Berhampur, involving 145 confirmed cases of dengue over an 18-month period. Diagnosis was confirmed via Dengue NS1 antigen and/or IgM ELISA. Patients were categorized according to the World Health Organization (WHO) 2009 guidelines. Clinical, biochemical, and demographic data were systematically recorded and analyzed. **Results:** Out of 145 patients, there was a male predominance (62.1%) with a mean age of 33.4 years. The most common clinical manifestations were fever (100%), myalgia (79.3%), and headache (68.9%). Based on WHO criteria, 56.6% had Dengue without warning signs, 31.0% had Dengue with warning signs, and 12.4% presented with Severe Dengue. Thrombocytopenia (platelet count less than 100,000 per microliter) was observed in 68.2% of cases, and hepatic transaminase elevation was present in 64.8%. The overall mortality rate was 2.1%. **Conclusion:** Dengue fever in Southern Odisha predominantly affects young adult males. A high index of suspicion for warning signs—such as severe abdominal pain, mucosal bleeding, and rapidly dropping platelet counts—is crucial. Early recognition and meticulous fluid management remain the cornerstones of preventing severe dengue mortality.

Keywords: Dengue fever, NS1 Antigen, Thrombocytopenia, Severe Dengue, MKCG Medical College, Odisha.



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INTRODUCTION

Dengue is a mosquito-borne viral infection transmitted primarily by the *Aedes aegypti* mosquito. Driven by rapid urbanization, changing climatic conditions, and increased population mobility, the incidence of dengue has grown dramatically around the world in recent decades. In India, it has become an endemic disease with recurrent seasonal outbreaks, placing a substantial burden on the healthcare infrastructure.

The clinical spectrum of dengue ranges from an asymptomatic or mild self-limiting febrile illness to severe, life-threatening complications characterized by plasma leakage, severe bleeding, or organ impairment. The state of Odisha, particularly the coastal and southern districts, experiences high vector density during the post-monsoon months. Maharaja Krishna Chandra Gajapati (MKCG) Medical College and Hospital, Berhampur, serves as the primary tertiary referral center for Ganjam and its neighboring districts, encountering severe and complicated cases from across the region.

Understanding the changing regional clinico-pathological trends is vital for early diagnosis, triage, and effective management. This study was undertaken to map the clinical features, laboratory deviations, and maternal-fetal outcomes of 145 patients admitted with dengue fever at MKCG MCH.

MATERIALS AND METHODS

Study Design and Setting

This was a prospective observational study conducted in the Department of General Medicine at MKCG Medical College and Hospital, Berhampur, Odisha. The study was carried out over an 18-month duration, capturing two consecutive post-monsoon seasons to ensure an adequate representation of cases.

Patient Selection Criteria

A total of 145 consecutive patients admitted to the inpatient wards with a confirmed diagnosis of dengue were enrolled.

Inclusion Criteria

Patients aged 18 years and above, presenting with an acute febrile illness, and confirmed positive for Dengue Non-Structural Protein 1 (NS1) antigen and/or Dengue-specific IgM antibodies by Enzyme-Linked Immunosorbent Assay (ELISA).

Exclusion Criteria

Patients with co-infections such as malaria, typhoid, scrub typhus, leptospirosis, or established chronic liver/kidney disease that could confound laboratory parameters.

Data Collection and Classification

A detailed history and meticulous clinical examination were performed for all subjects. Daily monitoring of vital signs, fluid intake and output, and hemorrhagic manifestations was recorded. Baseline laboratory investigations included complete blood counts, packed cell volume (PCV), liver function tests, renal function tests, and coagulation profiles.

Patients were classified strictly according to the WHO 2009 Dengue Guidelines into three categories:

1. Dengue without warning signs
2. Dengue with warning signs (abdominal pain, persistent vomiting, clinical fluid accumulation, mucosal bleed, lethargy, hepatomegaly, or increasing hematocrit with concurrent decreasing platelets)
3. Severe Dengue (severe plasma leakage leading to shock, severe bleeding, or severe organ involvement).

Statistical Analysis

Data were tabulated in Microsoft Excel and analyzed. Continuous variables are expressed as mean and standard deviation, while categorical variables are presented as frequencies and percentages.

RESULTS

Demographic Profile

The study included 145 patients, demonstrating a clear male predominance. The most heavily affected demographic was the younger working-age population.

Parameter	Frequency (N=145)	Percentage
Gender		
Male	90	62.1%
Female	55	37.9%
Age Group (Years)		
18 to 30	62	42.8%
31 to 45	48	33.1%
46 to 60	25	17.2%
Greater than 60	10	6.9%

Clinical Manifestations

All 145 patients presented with a history of fever. Classic symptoms of dengue, including myalgia and severe headache, were prevalent. Warning signs, such as recurrent vomiting and abdominal pain, were frequently observed in patients progressing to severe disease stages.

Clinical Feature	Frequency (N=145)	Percentage
Fever	145	100.0%
Myalgia / Body ache	115	79.3%
Headache	100	68.9%
Nausea / Vomiting	78	53.8%
Retro-orbital Pain	52	35.8%
Abdominal Pain	48	33.1%
Maculopapular Rash	35	24.1%
Mucosal Bleeding (Epistaxis/Gums)	18	12.4%
Altered Sensorium	4	2.8%

WHO Disease Classification

Based on the WHO 2009 criteria, the majority of the patients were managed before progressing to severe disease, though a significant subset required intensive care.

WHO 2009 Category	Frequency (N=145)	Percentage
Dengue without warning signs	82	56.6%
Dengue with warning signs	45	31.0%
Severe Dengue	18	12.4%

Laboratory Parameters

Thrombocytopenia and deranged hepatic transaminases (AST/ALT) were the most consistent laboratory anomalies. Hemoconcentration, indicated by a hematocrit increase of greater than 20% from baseline, was a key marker for plasma leakage in patients with severe dengue.

Laboratory Finding	Frequency (N=145)	Percentage
Platelets less than 100,000	99	68.2%
Platelets less than 50,000	41	28.3%
Leukopenia (WBC less than 4,000)	65	44.8%
Elevated SGOT (AST)	94	64.8%
Elevated SGPT (ALT)	82	56.5%
Hematocrit rise greater than 20%	31	21.4%

Treatment Outcomes

Treatment was primarily supportive, involving judicious crystalloid fluid resuscitation, antipyretics (acetaminophen), and close monitoring of hemodynamics. Platelet transfusions were strictly reserved for patients with active bleeding or prophylactic administration when platelet counts dropped below 10,000 per microliter.

A total of 142 patients (97.9%) were successfully discharged after clinical recovery. Three deaths (2.1%) were recorded, all of which occurred in patients presenting with late-stage Severe Dengue characterized by uncompensated Dengue Shock Syndrome (DSS) and multi-organ dysfunction.

DISCUSSION

This study outlines the complex clinico-laboratory landscape of dengue fever in Southern Odisha. The distinct male predominance (62.1%) aligns with several Indian studies, likely reflecting greater outdoor occupational exposure to the diurnal *Aedes* mosquito. The highest incidence was noted in the 18 to 30 years age bracket, highlighting the economic impact of the disease on the active workforce.

Fever, myalgia, and headache were the most consistent presenting symptoms, mirroring the classical “break-bone fever” description. However, the presence of gastrointestinal symptoms—specifically nausea, vomiting (53.8%), and abdominal pain (33.1%)—should alert clinicians, as these are critical warning signs under the WHO 2009 guidelines. Our findings correspond with regional literature emphasizing that right hypochondriac pain is often a precursor to capillary leak and gallbladder wall edema.

Hepatic involvement was a prominent feature in our cohort. Elevated AST levels were seen more frequently and at higher levels than ALT. This pattern is characteristic of dengue virus infection, as the virus can directly induce hepatocyte apoptosis, while AST is also released from damaged myocytes. Monitoring transaminase levels serves as an effective surrogate marker for disease severity.

Thrombocytopenia (platelets less than 100,000) was observed in 68.2% of our cases. It is crucial to note that bleeding manifestations did not perfectly correlate with the degree of thrombocytopenia; several patients with counts between 20,000 and 40,000 exhibited no clinical bleeding. This reinforces the modern clinical consensus that prophylactic platelet transfusions in stable patients without active bleeding are unnecessary and may be counterproductive, a protocol strictly adhered to in this study.

The mortality rate of 2.1% underscores the lethal potential of Dengue Shock Syndrome when patients present late to a tertiary care facility. Aggressive but carefully titrated fluid therapy during the critical phase (days 3 to 7 of illness) proved essential in averting progression to shock in patients presenting with warning signs.

CONCLUSION

Dengue fever continues to pose a significant seasonal threat in Southern Odisha, predominantly affecting young adult males. The disease presents a diagnostic challenge due to its rapid evolution from a simple febrile illness to a potentially fatal disease characterized by plasma leakage and organ dysfunction. High clinical suspicion for WHO warning signs, early recognition of hemoconcentration, and protocol-driven fluid management are the most effective strategies for reducing morbidity and ensuring limb and life salvage. Vector control programs and community awareness regarding early hospital presentation remain paramount in mitigating the impact of future outbreaks.

REFERENCES

1. World Health Organization. Dengue Guidelines for Diagnosis, Treatment, Prevention and Control: New Edition. Geneva: World Health Organization; 2009.
2. National Vector Borne Disease Control Programme (NVBDCP). Dengue/DHF situation in India. Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India.
3. Bhatt S, Gething PW, Brady OJ, et al. The global distribution and burden of dengue. *Nature*. 2013;496(7446):504-507.
4. Gupta N, Srivastava S, Jain A, Chaturvedi UC. Dengue in India. *Indian J Med Res*. 2012;136(3):373-390.
5. Sharma Y, Kaur M, Singh S, Pant L, Kudesia M, Jain S. Seroprevalence and trend of dengue cases admitted to a government hospital, Delhi - 5-year study (2006-2010): A look into the age shift. *Trop J Med Res*. 2012;15(1):15-20.
6. Dash PK, Sharma S, Srivastava A, et al. Emergence of dengue virus type 4 (Genotype I) in India. *Epidemiol Infect*. 2011;139(6):857-861.
7. Karoli R, Fatima J, Singh G, Maini S. Clinical profile of dengue infection at a teaching hospital in North India. *J Infect Dev Ctries*. 2012;6(7):551-554.
8. Mandal SK, Ganguly J, Sil K, et al. Clinical profile of dengue fever in a teaching hospital of eastern India. *Natl J Med Res*. 2013;3(2):173-176.
9. Narayanan M, Aravind MA, Thilothammal N, Prema R, Sargunam CS, Ramamurthy N. Dengue fever epidemic in Chennai—a study of clinical profile and outcome. *Indian Pediatr*. 2002;39(11):1027-1033.
10. Rachel Daniel, Somasundaram A. Clinical profile of dengue fever in a tertiary care hospital. *Int J Adv Med*. 2017;4(1):210-213.
11. Pothapregada S, Kamalakannan B, Thulasisingam M, Bhatia VK. Clinico-demographic profile of atypical manifestations of dengue fever. *Indian J Pediatr*. 2016;83(6):493-499.
12. Srichaikul T, Nimmannitya S. Haematology in dengue and dengue haemorrhagic fever. *Baillieres Best Pract Res Clin Haematol*. 2000;13(2):261-276.
13. Jayashree K, Manasa J, Pallavi P, Manjunath GV. Evaluation of platelets as predictive parameters in dengue fever. *Indian J Hematol Blood Transfus*. 2011;27(3):127-130.
14. Fernando S, Wijewickrama A, Gomes L, et al. Patterns and causes of liver involvement in acute dengue infection. *BMC Infect Dis*. 2016;16:319.
15. Agarwal R, Kapoor S, Nagar R, et al. A clinical study of the patients with dengue hemorrhagic fever during the epidemic of 1996 at Lucknow, India. *Southeast Asian J Trop Med Public Health*. 1999;30(4):735-740.