



## BRADYCARDIA-AN ALARMING SIGN IN DENGUE FEVER

## General Medicine

**Dr. Bathala Haritha Reddy\*** Final year Post Graduate, Department of General medicine, Narayana Medical college and hospital, Nellore, Andhra Pradesh. \*Corresponding Author

**Dr. Sandhireddy Charan Sai** Intern, Narayana medical college and hospital, Nellore, Andhra Pradesh.

**Dr. Rachepalli Sandesh Kumar Reddy** Senior Resident, Dept of general medicine, Narayana medical college and hospital, Nellore, Andhra Pradesh.

## ABSTRACT

Dengue Fever is one of the most common vector borne disease which is caused by bite of *Aedes aegypti* in Tropical parts of world. Bleeding manifestations are most common signs due to Thrombocytopenia. Relative Bradycardia which is becoming one of the cause of mortality in Dengue Fever. This study aims to observe, changes in Heart rate in Dengue Fever. **Materials and methods:** This was an observational study done at Narayana medical college and hospital, Nellore, from June 2021 to October 2022 on 150 patients satisfying inclusion and exclusion criteria, demographic data and clinical features and laboratory evaluation was done for patients in the study (vitals signs (pulse/heart rate, Blood pressure, respiratory rate, temperature) was noted for all patients. **Results:** Out of 150 patients, 43.3% have relative bradycardia and 30% patients have absolute bradycardia with ECG showing sinus bradycardia in 28% of patients. **Conclusion:** Relative bradycardia in dengue fever patients is present in association with thrombocytopenia and is important contributing factor to mortality in patients with dengue fever.

## KEYWORDS

Dengue, relative bradycardia, Thrombocytopenia, clinical manifestations.

## INTRODUCTION:

Dengue is most common mosquito (*Aedes aegypti*) transmitted virus and leading cause of Arthropod-borne viral disease it is also known as break-bone fever. It is creating large burden in tropical countries of world.

Dengue fever is caused by DENV serotypes (1-4) it is single stranded RNA viruses of genus flavivirus. It is estimated that around 100 million people have affected with dengue globally and around 25,000 deaths annually.

The manifestation of dengue can be ranging from mild symptomatic dengue fever to dengue haemorrhagic fever and dengue shock syndrome characterized by 3 phases i.e febrile phase with high grade fever, associated with flushing, arthralgia, headache, sorethroat, nausea, vomitings, blanchable macular rash, followed by critical phase with increased capillary permeability rapid decrease in platelet count and rise in haematocrit, finally causing shock. if recovery occur, there is gradual reabsorption of ECF the patient will display bradycardia at this time.

Relative bradycardia is also present in leptospirosis, typhus, typhoid, malaria etc. To date very few studies have highlighted cardiac manifestations of dengue fever, Hence this study was taken to see pattern of heart rate and ECG changes in dengue fever.

## AIMS AND OBJECTIVES

To study the patterns of heart rate and ECG changes in dengue fever

## MATERIAL AND METHODS

An observational study was done at Narayana medical college and hospital, Nellore, from June 2021 to October 2022 on 150 patients satisfying inclusion and exclusion criteria.

## Inclusion criteria:

All the patients presenting to emergency department or OPD, who were admitted and tested positive for Dengue NS1 antigen or dengue IgM serology or both were included in the study.

## Exclusion criteria:

1. Patients with only dengue IgG positive on rapid card test were excluded from the study.
2. Patients with any other febrile illness like malaria, typhoid, leptospira, scrub typhus, Covid-19, or other microbial infections coexisting with dengue were excluded from the study.

3. Known case of cardiac disease/chronic illness patients.
4. patients on beta blockers.
5. Critically ill patients were excluded from the study.

History of presenting illness, clinical features of all the study patients were noted. Investigations done include complete haemogram, renal function tests, dengue serology (NS1Ag, IgM, IgG) by ELISA method, Malaria parasite smear, leptospira serology (IgM, IgG), scrub typhus serology (IgM, IgG), RTPCR-COVID 19, complete urine examination, coagulation profile (PT, INR, aPTT), liver function tests. ECG was done and heart rate of less than 60 was considered abnormal, heart rate was noted at admission and periodic values were noted

## RESULTS

150 patients were studied, of which 112 (62.2%) were males, 68 (37.8%) were females

Table 1: Age wise distribution of study patients

AGE Group(Yrs)	NUMBER OF CASES	PERCENTAGE
16-30	55	36.6%
31-40	43	28.6%
41-50	28	18.6%
51-60	10	6.6%
>65	14	9.3%

Table 2: Distribution of serology for dengue fever

DENGUE SEROLOGY	NUMBERS OF CASES	PERCENTAGE
NS1Ag positive	73	48.6%
IgM positive	28	18.6%
NS1Ag and IgM positive	45	30%
IgM, IgG positive	4	2.6%

Table 3: Distribution of clinical features among study participants

CLINICAL FEATURES	NUMBER OF CASES	PERCENTAGE
Fever	150	100%
Headache	125	83.3%
Retroorbital pain	135	90%
N/V	98	65.3%
Rash	84	56%

Arthralgia	96	64%
Petechiae	74	49.3%

**Table 4: Platelet counts among study individuals**

PLATELET COUNT (cells/cu.mm)	NUMBER OF CASES	PERCENTAGE
<30,000	33	22%
30,000-60,000	78	52%
60,000-1,00,000	26	17.3%
>1,00,000	13	8.6%

**Table 5: Pulse rate or Heart rate among study participants**

HEART RATE	NUMBER OF CASES	PERCENTAGE
<40	120	8%
40-60	45	30%
60-100	65	43.3%
>100	28	18.6%

**Table 6: ECG changes among study participants**

ECG CHANGES	NUMBER OF CASES	PERCENTAGE
Sinus rhythm	78	52%
Sinus bradycardia	42	28%
Sinus tachycardia	30	20%
AV-block	0	0%

## DISCUSSION

This study conducted in a tertiary care centre on 150 patients with dengue fever highlighted the variations in heart rate and ECG changes. Cardiac dysfunction in case of dengue is underdiagnosed due to associated hypotension, pulmonary edema and capillary leak.

These cardiac manifestations are due to depression of myocardial function in dengue fever. During the study period out of 150 patients, 43.3% of patients have relative bradycardia but 30% of patients have heart rate in the range of 40-60 and 8% of patients have heart rate <40. ECG also showed sinus bradycardia in 28% of patients. This is comparable to study done by Gupta et al in 2008 which showed 18% with bradycardia, 64% with relative bradycardia, 18% with tachycardia. The exact pathophysiology of bradycardia in dengue-not known.

## CONCLUSION

We have identified that relative bradycardia is a clinical feature of dengue fever, along with thrombocytopenia. So it is gaining a major concern hence awareness regarding bradycardia can help in early recognition of dengue complication and decrease mortality associated with dengue virus infection.

## REFERENCES

- Smyth and Powell 1954; Boon, 19672.
- Halstead SB. Dengue fever and dengue hemorrhagic fever. In: Kliegman RM, Behrman RE, Jenson HB, Stanton BF, eds. e148 Nelson Textbook of Pediatrics. 18th ed. Philadelphia: Saunders Elsevier, 2007: 1412-5.3.
- SM Arif H Ahmed, KZ Khokon, AK Azad, MA Faizi; Dengue Haemorrhagic Fever with Bradycardia. J Medicine 2009;10:36-37.
- Guzman MG, Kouri G. Dengue: an update. *Lancet Infect Dis.* 2002;2:33-42. 10.1016/S1473-3099(01)00171-2 [PubMed] [CrossRef] [Google Scholar]
- Fisher D. To the vector borne...mosquito-transmitted diseases in Singapore. *Singapore Med J.* 2005;46:596. [PubMed] [Google Scholar]
- Wilder-Smith A, Earnest A, Paton NI. Use of simple laboratory features to distinguish the early stage of severe acute respiratory syndrome from dengue fever. *Clin Infect Dis.* 2004;39:1818-23. 10.1086/426029 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- Guzman MG, Kouri G. Dengue diagnosis, advances and challenges. *Int J Infect Dis.* 2004;8:69-80. 10.1016/j.ijid.2003.03.003 [PubMed] [CrossRef] [Google Scholar]
- Ostergaard L, Huniche B, Andersen PL. Relative bradycardia in infectious diseases. *J Infect.* 1996;33:185-91. 10.1016/S0163-4453(96)92225-2 [PubMed] [CrossRef] [Google Scholar]
- Cunha BA. The diagnostic significance of relative bradycardia in infectious disease. *Clin Microbiol Infect.* 2000;6:633-4. 10.1046/j.1469-0691.2000.0194E.x [PubMed] [CrossRef] [Google Scholar]
- Khongphathanayothin A, Suesaowalak M, Muangmingsook S, Bhattarakosol P, Pancharoen C. Hemodynamic profiles of patients with dengue hemorrhagic fever during toxic stage: an echocardiographic study. *Intensive Care Med.* 2003;29:570-4. [PubMed] [Google Scholar]
- Wali JP, Biswas A, Chandra S, Malhotra A, Aggarwal P, Handa R, et al. Cardiac involvement in dengue haemorrhagic fever. *Int J Cardiol.* 1998;64:31-6. 10.1016/S0167-5273(98)00008-4 [PubMed] [CrossRef] [Google Scholar]
- Blatteis CM, Li S, Li Z, Feleder C, Perlik V. Cytokines, PGE2 and endotoxin fever: a re-assessment. *Prostaglandins Other Lipid Mediat.* 2005;76:1-18. [PubMed] [Google Scholar]