Original Research Paper

Medical Microbiology

SPECTRUM OF DENGUE IN ADULT PATIENTS IN A TERTIARY CARE HOSPITAL OF TRIPURA

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ABSTRACT

Background: Dengue is one of the most important arthropod borne viral diseases in humans. Dengue fever is a viral infection transmitted by aedes mosquitoes and is a significant public health problem in many tropical and subtropical countries. The clinical spectrum of dengue fever can vary widely, ranging from asymptomatic infection to severe and potentially life-threatening illness.[1] **Materials And Methods:** A descriptive cross sectional study was undertaken in the Department of Microbiology in collaboration with Department of Medicine in a tertiary care hospital of Tripura for a period of one year. A total of 178 patients with Acute Febrile Illness (AFI) were included in the study. Patients with AFI were tested for detecting Dengue viral infection by MAC ELISA and NS1 Antigen detection test depending upon duration of illness. **Conclusion:** Dengue viral infection is a dangerous and debilitating disease that is a growing threat to the global health. The expanding geographical distribution of both the virus and the mosquito vector is leading to increased frequency of epidemics. Considering the spread of the disease and its complications, it is recommended that special preventive strategies should be planned to reduce the morbidity and mortality.

KEYWORDS : Denv, Afi, Ns1, Mac Elisa

INTRODUCTION:

Dengue is a mosquito-transmitted virus, and dengue fever is the leading cause of arthropod borne viral disease worldwide, posing a significant global health concern. This disease is also known as break bone or 7-day fever. Dengue fever is a viral infection transmitted by aedes mosquitoes and is a significant public health problem in many tropical and subtropical countries.[1] In India, Dengue viral infection is endemic in almost all the States since past two centuries. Dengue Viruses (DENVs) belong to the genus Flavivirus and family Flaviviridae. Dengue Virus infections were believed to be caused by four different serotypes, DENV - 1, DENV - 2, DENV - 3 and DENV - 4, but in 2013, the fifth variant DENV-5 has also been isolated.[1] The clinical spectrum of dengue fever can vary widely, ranging from asymptomatic infection to severe and potentially life-threatening illness.[3] Over the past 50 years, the incidence of Dengue has dramatically increased.[4] Around 2.5 billion people are at risk and more than 25,000 deaths are being reported annually.[5] The Dengue virus has an incubation period of 4–10 days. With primary infection, the symptoms are very mild and range from subclinical infection or mild dengue fever, while more severe symptoms include high fever, severe headache with retro orbital pain, myalgia, arthralgia, and rash. Some patients progress to Dengue Hemorrhagic Fever/Dengue Shock Syndrome (DHF/DSS).[6] Without proper treatment, fatality rates may exceed 20%.[7] Infection by one serotype confers lifelong immunity to that serotype but not to others.[8] The severity of dengue viral infection is influenced by secondary infection with heterologous antibodies. Urbanization and population explosion combined with changes in climate have aggravated the cases of DHF in India.[9,10,11]

Aim and Objective: The aim and objective of the study was to determine the spectrum of dengue in adult patients attending a tertiary care hospital of Tripura.

MATERIALS AND METHODS:

A descriptive cross sectional study was undertaken in the Department of Microbiology in collaboration with Department of Medicine in a tertiary care hospital of Tripura for a period of one year following approval of institutional ethics committee. After taking informed consent data were collected using a structured questionnaire taking detailed clinical history regarding patient's age, sex, area of residence, occupation, , clinical features. After that 5 ml of blood was collected and were tested for detecting Dengue viral infection by MAC ELISA and NS1 Antigen detection test depending upon duration of illness. A total of 178 patients were included in the study. MAC ELISA was performed if duration of fever was more than 7 days and NS1 Antigen was detected if duration of fever was less than 7 days. Data were entered into Microsoft excel and analysis was done using Microsoft excel to calculate percentages.

RESULTS:

A total of 178 AFI cases were tested for Dengue virus infection by serology. Out of 178 patients, 103 (57.86%) were male and 75 (42.13%) were female patients which is depicted in figure number 1. Majority of the patients belonged to the age group of 41-50 years of age followed by 21-30 years. Lowest age group of patients in the study was >60 years. Age group distribution is depicted in figure number 2. Depending upon the duration of fever, 18 cases were tested for NS1 antigen where 2 (11.11%) cases were positive for NS1 Antigen, and 160 cases were tested for MAC ELISA, of which 22 (13.75%) cases were positive for MAC ELISA. Figure number 3 depicts diagnostic test performed depending upon duration of illness. Out of 178 patients, all (100%) had fever. Apart from fever, the most common manifestation was headache followed by arthralgia. Rash was seen in one case. Most of the patients in the study were daily labourers by occupation (22.31%) followed by unemployed individuals (19.62%).77 (43.25%) patients were from rural areas and 101 (56.74%) were from urban areas. Maximum number of cases were reported in the month of November.
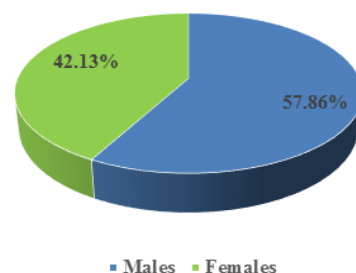

Males **Females**

Figure no 1: Gender wise distribution

Figure no 2: Age wise distribution

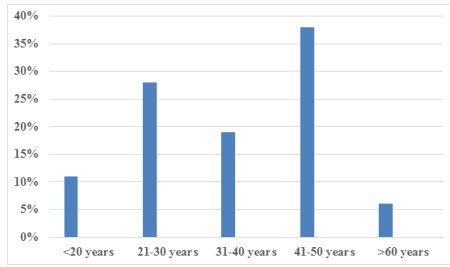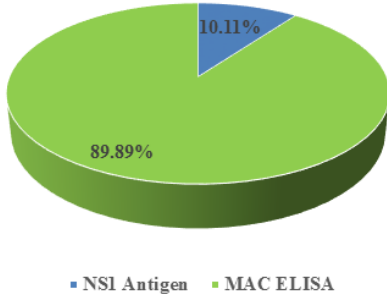■ NS1 Antigen   ■ MAC ELISA

Figure no 3: Diagnostic test performed

DISCUSSION:

Dengue viral infection is emerging as a serious public health problem globally. The expanding geographical distribution of both the virus and the mosquito vector is leading to increased frequency of epidemics. In our study, 11.11 % cases were positive for NS1 Antigen which is contrary to a study conducted in 2018 where NS1 Antigen were positive in 81% cases[12] 13.75% cases were positive for MAC ELISA which is consistent with a study conducted by Majumdar T et al.[11] 57.86% cases were male and 42.13% were female in our study. A male preponderance was also seen in a study conducted by Mehta SR et al in 2018 which reported 63% males and 37% females.[12] A male preponderance was also seen in some other studies[13] whereas a study conducted by Helal Uddin AF et al reported a female preponderance in 2023.[3] Majority of the patients in this study belonged to the age group of 41-50 years of age followed by 21-30 years. Lowest age group of patients in the study was >60 years. Most common clinical presentation in this study was fever followed by headache, arthralgia which is also consistent with other studies.[12,14,15] Most of the patients in the study were daily labourers (22.31%) by occupation in the study which might be due to their greater extent of outdoor activities and more chance of getting exposed to the vectors.. Maximum number of cases were reported in the month of November which is similar to a study conducted in Northeast India.[11]

CONCLUSION:

Dengue is a challenging disease with multisystemic, varied, atypical, and sometimes life-threatening presentations.[16] Awareness of these rare manifestations helps in early recognition, correct diagnosis, prompt intervention, and appropriate treatment. In this study, we found that the dengue viral infection is common in middle aged people, with male predilection, which might be possibly because of their greater extent of outdoor activities which would render them to get exposed to mosquitoes. Considering the spread of the disease and its complications, it is recommended that special preventive strategies should be planned during the monsoon period. Parental health education about the fever warning signs and early referral may prevent complications and/or deaths. Hence continuous sero-epidemiological surveillance, timely interventions, vaccines research, and vector control measures are required to identify the cases so that outbreaks, complications, and mortality can be reduced.

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