



EVALUATION OF SEROLOGICAL MARKERS & PLATELET COUNT IN DENGUE INFECTIONS IN PMCH, PATNA

Microbiology

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ABSTRACT

Introduction- The dengue virus is arthropod borne virus-Arbovirus, belonging to family flaviviridae and genus flavivirus. It is a mosquito borne viral infection and is transmitted, primarily by *Aedes aegypti* and sometimes by *Aedes albopictus*. Dengue is caused by four distinct serotypes of viruses; DEN-1, DEN-2, DEN-3 AND DEN-4. **Material and Method-** 493 blood samples were taken from clinically suspected cases of dengue fever reporting at the hospital. Study was done from August 2022 to August 2023. Maximum number of patients were of age group 21-30 years and male: female ratio 3:1. The serum samples comprised of both acute and early convalescent phases depending on the reporting time of the patients. NS1 Ag assay in comparison to IgM- ELISA in acute or early convalescent sera was evaluated. **Observation (Result)-** A total of 118 patient (out of 493) admitted in our hospital were diagnosed to have dengue. In October maximum no. of cases (52) were seen positive followed by September (39) cases were positive. This was followed by November (11) cases were positive. The present study included 30 (25%) female and 88 (75%) male patients

KEYWORDS

INTRODUCTION

The dengue virus is arthropod borne virus- Arbovirus, belonging to family flaviviridae and genus flavivirus. It is a mosquito borne viral infection and is transmitted primarily by *Aedes aegypti* and sometimes by *Aedes albopictus*. Dengue is caused by four distinct serotypes of viruses; DEN-1, DEN-2, DEN-3 AND DEN-4. Dengue viruses causes a spectrum of illness ranging from inapparent, self limiting classical dengue fever (DF) to life threatening dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS)

It is the most common arboviral infection which infects man. It is the second most important mosquito borne infection in terms of morbidity and mortality. DF and DHF is endemic in areas of south east Asia i.e India, Bangladesh. India is endemic for DF and DHF. All four serotypes are found in the country.

As increased disease burden has been linked to the resurgence of mosquito vector *Aedes aegypti*, overcrowding, urbanization and increasing travel. Outcome depends on medical care provided by the doctor to the patient.

MATERIAL AND METHOD

493 blood samples were taken from clinically suspected cases of dengue fever reporting at the hospital. Study was done from August 2022 to August 2023.

Maximum number of patients were of age group 21-30 years and male: female ratio 3:1. The serum samples comprised of both acute and early convalescent phases depending on the reporting time of the patients. Acute phase serum samples were collected from patients who reported within 1 to 4 days and early convalescent phase serum were collected from patients who had greater than 5 days of fever.

NS1 Ag assay in comparison to IgM- ELISA in acute or early convalescent sera was evaluated. The impact of NS1Ag as an early marker of DHF was also noted.

Detailed history of the cases was taken of Name, Age, Sex, Address, Signs and symptoms & duration of fever.

Inclusion Criteria

Fever of 2 to 7 days duration with 2 or more of the following feature headache, retroorbital pain, myalgia /arthralgia, rash and haemorrhagic manifestation.

Exclusion Criteria

Patient having only fever with no symptoms. Specimen collection-3-5 ml blood was collected in a sterile vial following venepuncture.

Half of the blood was allowed to clot and then centrifuged at 3000 rpm for 5 min to separate the serum. To other half of blood, EDTA was

added and then anticoagulated blood was used for hematocrit and platelet count estimation.

DENGUE NSI antigen card test was done initially. Results were read at 20min. Positive results may appear as early as 2- 10 min. However negative results may be confirmed after 20 min only.

Enzyme linked immunosorbent assay (ELISA) was done for all the 188 NS1 POSITIVE samples to detect the presence of IGM anti dengue virus antibody. Each kit is supplied with one Positive control and Negative control.

Platelet count and hematocrit were determined with patient EDTA blood, using automated counters.

OBSERVATION (RESULT)

A total of 118 patient (out of 493) admitted in our hospital were diagnosed to have dengue.

In October maximum no. of cases (52) were seen positive followed by September (39) cases were positive. This was followed by November (11) cases were positive. The present study included 30 (25%) female and 88 (75%) male patients.

112 (95%) patients were diagnosed to have DF and 6 (5%) patients were diagnosed to have DHF

A total of 100 (84%) patients had low platelet count (<100,000). The hematocrit value ranged from 20- 60%.

DISCUSSION

Serum samples from patients with C/F of dengue were analyzed for NS1 antigen detection and anti-dengue IgM antibody using National Institute of Virology (NIV), Pune kit. Out of 493, 188 cases (24%) were positive for NS1 Ag and IgM antibody. This is comparable to study by Huber et al and by Baruah J. Low incidence was seen by Banerjee et al from Lucknow 2005. In this study male (75%) cases were seen and females (25%) was seen.

This corresponds to studies by Vijay Kumar TS et al, Dash PK et al and Neeraja M et al. The reason may be due to more exposure of males to the both vector *Aedes*, due to their clothing and outdoor activities.

Disease was more seen in month of September, October & November (cases seen during this period 337/493) which corresponds to monsoon and post monsoon season. Nearly all studies corresponded to this study.

In this study dengue illness manifested as DF (95%) and DHF (5%) No case of DSS was observed. The finding observed is similar to Neeraja

Metal.

In our study 100 (84%) patient had thrombocytopenia. Studies by Cherian T et al, Singh NP et al and Khan E et al showed incidence of thrombocytopenia in 94.7%, 61.39%, & 81.4%, respectively.

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