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Original Research Article

Occurrence of dengue infected patients in a tertiary care centre

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ABSTRACT

Background: Dengue virus is a member of arbovirus, family flaviviridae, genus flavivirus. These are found in common tropical areas of the world or the transmitted through bite of the female mosquito Aedes aegypti and chiefly occurs during the rainy season. It is classified into three parts Dengue Fever, Dengue hemorrhagic fever, Dengue shock syndrome. The signs of dengue: fever, headache, retro orbital pain, muscles pain, joints pain or rashes are usually seen on 3-7 days. DF is also called break bone fever.
Aim & Objective: To study the occurrence of dengue infected patients. To determine the frequency of dengue patients presenting with fever of less than 5 days in NS1 Antigen ELISA. To determine the frequency of dengue infected patient presenting with fever for more than 5 days in IgM ELISA.
Materials and Methods: The study was carried out from period of 2019 to 2021. Blood samples were collected from 161 patients. Serum was separated from blood samples. NS1 Ag detection was done from ELISA method & IgM Ab was detected by using Dengue MAC Capture ELISA test.
Result: A total of the 161 blood samples were tested, 85 (53%) were positive & 76 (47%) were negative for dengue. The dengue infection was commonly found in males than females, the common age groups of patients presenting with dengue was 11-30years.
Conclusion: Our study focused on continuous monitoring and community action for individuals and dengue controls. This research will help to improve the ways of surveillance, prevention and control.

1. Introduction

Dengue virus is a member of arbovirus (arthopods), family flaviviridae, genus flavivirus, these are found in common tropical areas of the world or the transmitted through bite of the female mosquito name Aedes aegypti and chiefly occurs during the rainy season.[1,2] This mosquito bites during the day time.[3]

Dengue is the most immediately circulating mosquito-borne viral disease in the world. Dengue are endemic in more than hundred countries (American, African, south east or western pacific region etc). The main signs and symptoms of dengue like- fever, headache, retro orbital pain, muscles pain, joints pain, abdominal pain or rashes are usually seen between 3-7 days. The major complication are thrombocytopaenia and bleeding. The four main serotypes of dengue virus to based on antigenic and genetic characteristics are (DEN -1,2,3,4).[3–5] The 5th serotype of dengue virus was found in Malaysia.[6]

This virus is ss encapsulated RNA virus and is composed of 3 structural protein genes, which encode the nucleocapsid or core C protein, a membrane-associated (M) protein, an enveloped (E) glycoprotein and 7 non-structural (NS) proteins.[7]

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2. Materials and Methods

The study was carried out in the department of microbiology, TMMC&RC. Samples were collected from clinically suspected patients of dengue attending medicine unit of all age groups. Patients were included as per the inclusion and exclusion criteria. Other diagnosed cases of fever like malaria, typhoid, chikungunya etc were excluded in this study.

2.1. Specimen collection

Serum sample were collected from clinically suspected cases of dengue patients. 5ml blood sample was collected by vein puncture after following aseptic precaution. Blood sample was collected in plain vial. Sample was centrifuge at 3000rpm for 5min. Serum was separated from blood. The serum was tested for NS1 antigen ELISA (J Mitra®) and IgM antibody ELISA (MAC ELISA) which was interpreted as per manufacturer guideline.[8,9]

3. Result

Total 161 suspected cases of dengue were included in this study among which 85 (53%) samples were found positive of dengue infection after performing ELISA test (NS1 Ag test & IgM Ab test).

Table 1: Dengue positive cases

Total number	Dengue positive	Dengue negative
161	85	76

Graph shows the Dengue positive cases. Out of 161 cases 85 (53%) positive for dengue infection and 76 (47%) samples were negative. All age groups were included in this study.

Table 2: Gender wise distribution

Total	Male	Female
85	57	28

Out of 85 clinically diagnosed dengue, male 57 (67%) were more in number as compare to females 28 (33%).

Table 3: NS1 ag & IgM ab distribution of dengue patient on the basis of dengue ELISA NS1 & IgM test-

Dengue infection	Number of patients	Percentage
NS1 & IgM positive	49	58%
NS1 positive	20	23%
IgM positive	16	19%
Total	85	100%

This table and graph shows that the both NS1/IgM, NS1 Ag and IgM Ab distribution of dengue infection. Total 85 patients were positive in which 49 patients were NS1 & IgM positive, 20 patient were NS1 positive and 16 patients were IgM positive.

Table 4: On the basis of clinical symptoms in 85 dengue positive cases(n=85)

Symptoms	Number of patients	%
Fever	85	100%
Pain behind the eyes	25	29%
Rashes	5	6.25%
Headach	18	21%
Abdominal pain	14	17%
Vomiting	3	4%
Muscle/joint pain	20	23%

85(100%) of the patients were suffering from fever and symptoms such as orbital pain was seen in 25 (29%) cases, rash in 5 (6.25%) cases, headache in 18 (21%) cases, abdominal pain in 14 (17%) cases, vomiting in 3 (4%) cases, and muscle & joint pain in 20 (23%) cases.

Table 5: On the basis of genders wise distribution of both NS1/IgM, NS1 & IgM in positive cases of dengue (n=85)

DI	Male	Female	Total
NS1&IgM +ve	36 (63%)	14 (50%)	49 (58%)
NS1 +ve	14 (25%)	5 (19%)	20 (23%)
IgM +ve	7 (12%)	9 (31%)	16 (19%)
Total	57 (100%)	28 (100%)	85 (100%)

Table 5 shows the gender wise distribution of NS1/IgM Ag /Ab, NS1 Ag and IgM Ab distribution of dengue patients. Out of 85 positive cases by ELISA test. 63% males were both NS1Ag and IgM Ab positive, 25% males were only NS1 positive and 12% males were IgM positive, while 50% females were both NS1Ag and IgM Ab positive, 19% females were NS1 positive, and 31% females were IgM positive.

4. Discussion

This study conducted in the department of microbiology TMMC & RC Moradabad, UP.

In our study 161 samples from patients with clinical findings of dengue were analysed for NS1Ag, DEN IgM Ab using ELISA method, of the 161 samples 85 cases (53%) were positive (+ve) for dengue infection. A similar study was conducted by Deshkar ST et al in Maharashtra[10] whose prevalence was 3,822 (24.49%) positive and 11,784 (75.51%) negative respectively. Garg A. et al in 2011[11] tested 1227 samples of serum from suspected patients of dengue out of which 242 (19.7%) were positive for DV infection.

Gender wise distributions in our study showed that males affected were 57 (67%) and females were 28 (33%) similar study was conducted by Kumar M et al[12] in which 53.71%

were males and 19.51% were females. Males were affected more than females, due to more no. of males working predominantly and so were more prone to infection by mosquitoes. 11-20 years group showed maximum males (15) infected with dengue where as in females 21-30 age group showed maximum infection (9), Study done by Deshkar ST et al[10] showed 26.71% of cases in age group of 11 to 20 years.

In our present study shows gender wise distribution of both NS1Ag/ IgM Ab, NS1 & IgM in positive cases of dengue. Out of 85 positive cases, 63% males were positive by both NS1 & IgM, 25% males were positive only by NS1 Ag and 7% were positive by only IgM Ab. While 58% females were positive by both NS1 & IgM, 23% females were positive only by NS1 Ag and 19% were positive by only IgM Ab.

A study conducted by Padhi S et al[13] showed 21.2% of dengue IgM seropositivity was among females and 20.9% among males.

This study is analogous to the which was done by Racherla RG et al[14] showed NS1 antigen positivity was significantly higher in males. Another study conducted by Chakravarti A et al[15] NS1 Ag positivity was significantly associated with females while IgM Ab positivity was significantly associated with males. Our study is similar with the study done by Racherla RG et al.

5. Conclusion

Our result provided current information regarding the occurrence of dengue infected patients in our area, the incidence of dengue was 53% (85/161) during the outbreak.

The dengue infection was commonly found in males than females. Common age groups of patients presenting with dengue was 11-30years and fever was most common presenting symptom (100%), followed by muscles/joint pain (23%), headache (21%), pain behind the eyes (29%), abdominal pain (17%), rash (6.25%), vomiting (4%). Dengue infection was found to be increased during monsoon or post monsoon period. The result of our study focuses on continuous monitoring and community action for individuals and dengue controls.

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7. Conflicts of Interest

The authors declare no potential conflict of interest with respect to research, authorship, and/or publication of this article.

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