Original article

SEROPREVALENCE OF DENGUE FEVER IN A TERTIARY CARE CENTER AT KANPUR

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Abstract

Dengue, a Flavivirus and chikungunya, an Alphavirus, transmitted by Aedes mosquitoes, are a cause of great concern to public health in India. Every year, thousands of individuals are affected and contribute to the burden of health care. **Material and Methods:** Blood samples from clinically suspected cases of dengue virus infection were received in Microbiology laboratory during the study period of one years March 2015 to February 2016 and all samples were tested for either NS1 or IgM or IgG antibodies. **Result:** Out of 650 serum samples, 243 (37.5%) were positive for dengue fever either NS1 or IgM or IgG antibodies. Among Dengue positives, 61.3% were males an 38.9% were females and 55.09% were in the age group 21-30 yrs. Most of the cases were reported between October and November 2015(49.3% and 22.6% respectively ). **Conclusion:** This study suggest health authorities and people should make efforts to prevent further increase in dengue cases by community awareness, early diagnosis and management and vector control measures.

**Keywords:** Dengue fever, NS1

Introduction

Dengue is an acute viral infection with potential fatal complications[1]. Dengue fever is a disease caused by a family Flaviviridae that are transmitted by mosquito Aedes aegypti and also by Ae. albopictus. There are four serotypes DV-1, DV-2, DV-3 and DV-4. DV is a positive-stranded encapsulated RNA virus and is composed of three structural protein genes, which encode the nucleocapsid or core (C) protein, a membrane-associated (M) protein, an enveloped (E) glycoprotein and seven non-structural (NS) proteins[1]. All four serotypes can cause the full spectrum of disease from a subclinical infection to a mild self limiting disease, the dengue fever (DF) and a severe fatal disease, the dengue haemorrhagic fever/dengue shock syndrome (DHF/ DSS). The WHO 2009 classification divides dengue fever into two groups: uncomplicated and severe[2]. Dengue
infection in a previously nonimmune host produces a primary response of antibodies characterized by a slow and low-titer antibody response. IgM antibody is the first immunoglobulin isotype to appear. In a suspected case of dengue, the presence of antidengue IgM antibody suggests recent infection and IgG antibody indicate past infection.

India is one of the seven countries in the South-East Asia region regularly reporting incidence of dengue outbreaks due to its high incidence which constantly threatens the health care system.[3] The prevalence of dengue in Indian subcontinent is changed over time. Previously Dengue was assumed to be an urban disease but from few decade large number of dengue fever cases were reported from bigger cities also.[4]

The purpose of this study is to present a comprehensive report on the prevalence of dengue fever cases, between March 2015 to February 2016.

**Material and methods**

This study was conducted in Rama Medical College & Hospital in Department of Microbiology. A total of 650 serum samples from clinically suspected dengue patients attending outdoors, casualty services and indoor patients were included in this study from March 2015 to February 2016. Five milliliter of blood was collected from all suspected cases of dengue fever. Serum was separated from all blood samples and was further tested for NS1 Ag and the presence of IgM and IgG Dengue antibody by dengue Duo Cassette rapid strip test (J. Mitra & Co.Pvt.Ltd.). Tests were done and results were interpreted as per the literature provided.

**Result**

Total 650 cases were examined for dengue fever. 243 were positive for either NS1 antigen or IgM antibody or IgG antibody; prevalence was 37.38%. [Fig-1] Among the 243 positive cases, 79 were in the age group 21-30 yrs. (55.09%), 60 were in the age group 11-20 yrs. (27.54%), 56 were in the age group <10 yrs. (10.18%). [Fig-2] Among all positive cases male female ratio were 1.6:1.[Fig-3]

![Fig-1: No. of Positive cases](image1)

**Fig 2: Age distribution among positive cases.**
The analysis of month-wise distribution of Dengue cases proved that maximum cases were reported during the months October 2015 and November 2015. [Fig-4]

**Fig 3: Sex distribution among positive case**

**Discussion**

This study reveals the prevalence of Dengue infection in the tertiary care center during the March 2015-February 2016 by evaluating the fever cases reported in Rama Medical College Hospital and research center, Kanpur. This study showed that among 650 suspected cases, 243 (37.5%) cases were Dengue positives either NS1 or IgM or IgG. While P S Gill et al.\(^5\) reported 29.9% prevalence in Haryana, Barde PV\(^6\) et al found 18% Dengue positives in Madhya Pradesh.

Nidhi Pandey et al.\(^7\) reported very high IgM positivity in 2008, 2009 and 2010 were 54.5%, 51.9% and 64.9% respectively. In increasing years positivity decreases that may due to increases awareness regarding dengue transmission and prevention but still rate of dengue fever is more.

In this study rate of dengue fever positivity was more in 21-30 year followed by 11-20 and >10 year while other studies documented in >15 years.\(^7,8,9\) and Jimy Antony et al.\(^10\), Ashwini kumar et al.\(^11\), Krunal D et al\(^12\), found common age group were above 30 years.

Male were more infected than females, a usual trend seen in this study also other study\(^7,8,9\) also report same result that may because of more exposure of male due to outdoor work.

Rain, temperature and relative humidity are reported as the major and important climatic factors, which could alone or collectively be responsible for an infection. Because these environments are very favorable for mosquito breeding that are important source of dengue transmission. In north India, the largest proportion of dengue positive cases have been recorded in the post-monsoon
period\textsuperscript{[13]}. Our findings were similar post monsoon month from August 2015 positive case of dengue fever were started but maximum reported in during the month of October 2015 and November 2015. From March 2015 to July 2015 and in January 2016-February 2016 there is a sudden decrease in the number of positive cases.

This is a hospital based study and may not represent the true community picture as only highly suspected or confirmed cases are reported here. Increase in awareness, better diagnostic facilities, availability of more sensitive and specific diagnostic tests can influence reporting pattern to some extent.

Conclusion

Therefore, preventive measures against dengue infection should be taken during and after the end of monsoon, avoid water stagnant and emphasize to take proper measures to control vectors breeding for transmitting the infection.

References

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