Dengue Infection: Prevalence Study at a Hospital of Western up India

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ABSTRACT   *Background: Dengue is the most common and widespread arthropod-borne viral infection in the world today. Aim: study to describe the, prevalence of dengue infection by laboratory serological findings. Material and Methods: A total of eighteen hundred eighty (1880) blood samples were tested for dengue infection, During the period of eleven months (February 2015 to December 2015), by NS1 Ag and IgM Ab ELISA test. Results and observation: Total samples 1880 were tested, out of which 987(52.2%) samples were found positive for dengue virus fever by NS1 Ag and IgM Ab ELISA method test. In the total positive sample, nine hundred eighty seven, out of which 65(6.59%), by NS1 Ag (ELISA) ,887(89.86%) by IgM Ab (ELISA) & 35(3.54%) samples by NS1Ag along with IgM Ab (ELISA) and 549(55.62%) male & 438(44.37%) female were found positive. total positive sample (987) has been tested from August to December. Discussion: Dengue virus was isolated in India in 1944, but the scientific studies addressing various problems of dengue disease have been carried out at limited number of Centres.*

INTRODUCTION

Dengue is the most common and widespread arthropod-borne viral infection in the world today. It is recognised in over 100 countries throughout the tropics and subtropical areas and threatens the health of approximately 40% of the world's population, of nearly 2.5 billion people.[1] Dengue fever is an acute, mosquito-transmitted viral disease characterized by fever, headache, arthralgia, myalgia, rash, nausea, and vomiting.[2]. Dengue viruses (DV) belong to the family Flaviviridae, and there are four serotypes of the virus referred to as DV- 1, DV-2, DV-3, and DV-4[3]. The mosquito vectors, principally *Aedes aegypti*, become infected when they feed on humans during the usual five-day period of viraemia. The virus passes from the mosquito intestinal tract to the salivary glands after an extrinsic incubation period, a process that takes approximately 10 days and is most rapid at high ambient temperatures [4]. Laboratory confirmation of dengue infection is crucial as the broad spectrum of clinical presentations, ranging from mild febrile illness to several severe syndromes, can make accurate diagnosis difficult. Among the methods available for dengue diagnosis, virus isolation provides the most specific test result. However, facilities that can support viral culture are not always available. The detection of the viral genome or viral antigens also provides evidence of infection. Serological assays are most commonly used for diagnosis of dengue infection as they are relatively inexpensive and easy to perform compared with

Culture or nucleic acid-based methods [5].Therefore the aim of the study to describe the, prevalence of dengue infection by laboratory serological findings.

MATERIAL AND METHODS

A total of eighteen hundred eighty (1880) blood samples were tested for dengue infection in the Virology laboratory, department of Microbiology, LLRM Medical College Meerut. During the period of eleven months (February 2015 to December 2015), by NS1 Ag and IgM Ab ELISA test .

RESULT AND OBSERVATION

Total samples 1880 were tested, out of which 987(52.2%) samples were found positive for dengue virus fever by NS1 Ag and IgM Ab ELISA method test. **(Table.1).** In the total positive sample, nine hundred eighty seven, out of which 65(6.59%), by NS1 Ag (ELISA) ,887(89.86%) by IgM Ab (ELISA) & 35(3.54%) samples by NS1Ag along with IgM Ab (ELISA) and 549(55.62%) male & 438(44.37%) female were found positive. **(Table.2)**.total positive sample has been tested from August to December **(Table.3).**

Table.1: Profile of total samples.

Tests	Total Tested Samples	Total Positive Samples
NS1 Ag (ELISA)	109	65
IgM Ab (ELISA)	1880	887
NS1 Ag & IgM Ab (ELISA)	109	35

Table.2: Profile of total positive samples (n =987)

Tests	Total positive samples (n= 987)	Male	Female
NS1 Ag (ELISA)	65	32	33
IgM Ab (ELISA)	887	500	387
NS1 Ag & IgM Ab (ELISA)	35	17	18
TOTAL	987	549(55.62%)	438(44.37%)

Table.3: Profile of total positive sample with reference to season (Month of August to   December), (n= 987).

Month/Tests	NS1Ag	IgM Ab	NS1 &IgM	TOTAL
August	0	3	0	3
September	0	236	0	236
October	37	522	18	577
November	28	126	17	171
December	0	0	0	0
TOTAL	65	887	35	987

Table.4: Age wise distribution of positive sample.

Age of patients	NS1 Ag	IgM Ab	NS1& IgM
0-5	2	33	1
06-10	16	69	9
11-20	30	275	20
21-30	7	228	1
31-40	7	130	4
41-50	0	66	0
51-60	2	50	0
>60	1	36	0
Total	65	887	35

Table.5: Profile of positive sample with reference to adults and Children's.

Tests	< 15 year	> 15 year	Total
Ns1 Ag	44	21	65
IgM Ab	239	648	887
NS Ag & IgM Ab	26	9	35
Total	309(31.30%)	678(68.69%)	987

DISCUSSION

Dengue virus was isolated in India in 1944, but the scientific studies addressing various problems of dengue disease have been carried out at limited number of Centres [6]. This article provides a comprehensive overview of the dengue infection in Meerut and adjoining area over the period February 2015–December 2015. In the our study highest positive sample seen in the age group of 11-30 yr by Ns1 Ag and IgM Ab ELISA TEST, this is same as Bandyopadhyay et al[7]. male & female ratio is also same. Larger proportions of serologically positive cases were observed among adults, with a positive prevalence of 56.4% among children and 58% among adults, in our study this prevalence is 31.30% in children's and 68.69% in adults.(table.5). Gupta et al.[8] says that positive samples were seen in the age group 21–30 years. There was an increase in the number of samples received in the post monsoon period (September to November), in our study positive samples also seen from the month of September to November (table.3). And Chakravarti and Kumara [9] also reported maximum cases in the age group 21–30 years with male preponderance. however, reported maximum cases in the age group 0–10 years with female preponderance, Sarkar et al.[10]. The seasonal occurrence of positive cases has shown that post monsoon period is the most affected period in Bangladesh as well [11]. However, a retrospective study from Myanmar during 1996–2001 reported the maximum cases of dengue during the monsoon period [12]. The severity of this outbreak was lesser as compared to the DHF epidemic that occurred in year 1996 caused by the serotype Den-2[13]. Serotype Den-2 is reported to be the one mainly associated with DHF, the more severe form of the disease [14,15] .

CONCLUSION

Dengue is now a global threat and is endemic or epidemic in almost every country located in the tropics. While we wait for new tools such as vaccines, antiviral drugs and improved diagnostics, better use should be made of the interventions that are currently available. The challenge that awaits us in the near future will be how to scale up to deploy these new tools.

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