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SEROPREVALENCE OF DENGUE AT A TERTIARY CARE HOSPITAL OF EASTERN INDIA

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ABSTRACT

Dengue is the most significant febrile illness caused by a RNA virus of family Flaviviridae, genus Flavivirus. Epidemiology of dengue is very complex and has changed considerably over past few decades. Early efficient diagnosis of dengue is of vital importance for clinical cure, surveillance activities, outbreak control and academic research. Material & methods: This study was undertaken at National Medical College, Kolkata from June, 2014 to December; 2014 during which samples were tested for dengue IgM antibody (by IgM capture ELISA) from suspected dengue cases. Results: Out of 250 samples tested 28% (n=70) were found to be positive for dengue virus. Dengue affected males and females in a ratio of 2.04:1. . The highest test positivity (58.57%) was found in adult population of >30 years of age. Discussion: Dengue is an important emerging disease in the Indian subcontinent. The prevalence of dengue seropositivity during the study period was 28%. Our study clearly demonstrated to the need for continuous surveillance and individual and community action for dengue control.

Key Words: Dengue, epidemiology, IgM capture ELISA.

INTRODUCTION

Dengue fever is an acute febrile arboviral disease caused by dengue virus belonging to the family Flaviviridae affects mainly tropical and subtropical countries like India [1,2]. Dengue is endemic in many parts of India and epidemics are frequently reported from various parts of this country [2,3]. The epidemiological features of dengue fevver in India is very complex and changed markedly over time in terms of prevalent strains, geographical territories involved [4,5]. The case fatality rate in patients with dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) can be as high as 44% [6]. Thereby early laboratory diagnosis of dengue is crucial. Proper medical management can able to reduce mortality rate below 1% in persons suffering from DHF & DSS [7]. It is also necessary for planning apprppriate control measures. The present study reports the seroprervalence of dengue infection occurred in our tertiary care set up.

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MATERIAL METHODS

The present study was conducted in National Medical College, Kolkata a tertiary care hospital from June, 2014 to December; 2014. Study was conducted from blood samples collected from central laboratory from clinically suspected dengue cases and stored with suitable conditions. Serum from the collected samples by centrifugation and used for dengue IgM capture ELISA test. A total of 250 serum samples were tested for dengue IgM antibody by ELISA method according to manufacturer instruction. The ELISA kit used for IgM assay was supplied from National Institute of Virology (NIV), Pune. In this study majority (60%) of the serologically positive cases were from urban areas in comparison to the rural area.

RESULTS

Of all the samples tested, 180 were male and 70 were female. Out of 250 samples tested 28% (n=70) were found to be positive for dengue virus. Among the 70 seropositive cases male were found to be 67.14% and female 32.85% cases. Thus dengue affected male and

female in a ratio of 2.04:1. Thrombocytopenia was evident in 23% (n=70) of cases. The highest test positivity (58.57%) was found in adult population of >30 years of age.(Table 1).

In the study, highest numbers of patients were tested for dengue in the month of September 2014(n=20) followed by October 2014 (n=14) and November 2014 (n=12). A gradual increase in dengue positive cases was noticed from June 2014 (n=5) with a highest peak in September (n=20) followed by October (n=14) and November (n=12) [Graph 1].

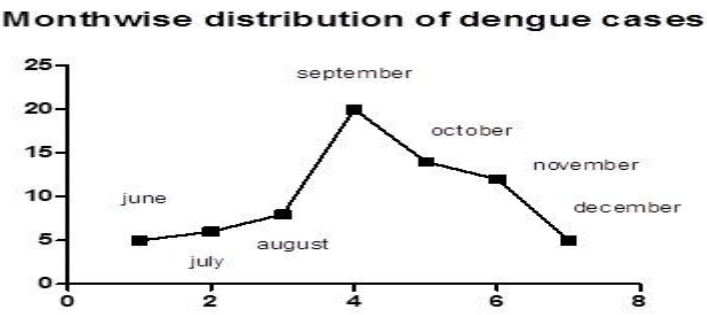
Out of 70 positive cases, 18 samples were from clinically suspected cases of DHF. All patients of DHF had a platelet count ≤100,000 /µl (WHO cut off for platelet count for DHF) [8]. Twelve of the 18 clinically suspected DHF cases had no manifestation of DSS.

Table 1. Age and sex distribution of dengue IgM ELISA positive cases

Age	Males			Total males	Females			Total females	Total
	DF	DHF	DSS		DF	DHF	DSS		
0-2 years	1	0	0	47	0	0	0	23	70
2-4 years	4	1	0		2	0	0		
5-9 years	4	1	2		2	0	1		
10-14 years	5	2	0		3	1	0		
15-30 years	8	2	1		4	1	1		
>30years	12	3	1		7	1	0		
Total	34	9	4		18	3	2		

DF= Dengue fever, DHF= Dengue hemorrhagic fever, DSS= Dengue shock syndrome.

Graph 1. Moth Wise Distribution of Dengue



DISCUSSION AND CONCLUSION

Dengue is an important vector borne infection of the tropical and subtropical country like India. All four serotypes are prevalent in India. This study emphasize on the status of dengue fever in Kolkata. Out of 250 samples tested 70(28%) were positive for IgM antibody. Thrombocytopenia was evident in 23% of cases. The prevalence of dengue virus infection among clinically suspected cases during this period was 28% which is similar to other studies [9, 10, 11]. Among the affected persons 72% were male and remaining female with male female ratio 2.57:1, showing male preponderance. Our findings are similar to that of findings of other authors. In our study majority of dengue positive cases were male. The low infection rate in females may be attributed to less outdoor activity and low reporting rate. The most commonly affected age group in this study was (>30 years) followed by (15-30yr) which is comparable to Kumar et al [12]. In this study, 58.57% of dengue seropositive cases were reported from age group 15-30 years and above. Similar findings were reported in previous Indian studies. There were some reports of vulnerability of childhood population towards dengue. But in our study we found no such association. Nidhi et al study clearly depicted higher dengue positive cases in younger age group (15-45 yrs) [13]. According to this study majority of dengue positive cases were from the urban areas followed by rural areas which clearly indicate that dengue infection is extending its base towards rural areas. Our study revealed that spread of dengue viral infection increases in post monsoon season [14]. The accumulation of stagnant water in post monsoon season helps in mosquito breeding which is responsible for increased occurrence dengue virus infection.

Out of 70 positive cases, 25.7% samples were from clinically suspected cases of DHF. All patients of DHF had a platelet count ≤100,000 /µl (WHO cut off for platelet count for DHF). Only six of the clinically suspected DHF cases had manifestation of DSS.

Our study result clearly indicates that there is an urgent need for continuous surveillance and individual and community action for dengue control.

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