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Original Research Article

Seroprevalence of Dengue Infection in and Around Rajamahendravaram Andhra Pradesh

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Abstract:

Introduction: Dengue is an acute, mosquito borne infection. Diagnosis can be made from single serum sample, detection of IgM antibody seems to be a valuable tool for the rapid diagnosis. With this a study was conducted to find the prevalence of dengue infection.

Methods: It was a cross sectional study conducted in the Department of Microbiology, Government General Hospital, Rajahmundry. Both gender with clinically suspected included in the study. Non cooperative individuals and those without fever symptoms and unconscious patients were not included in the research. Blood was collected form larger median cubital or basilic or cephalic veins, processed for IgM ELISA as per the manufacturer guidelines. Chi-square test used to find the statistical correlation. P <0.05 was considered to be statistically significant.

Results: Out of 2560 (100%) study members, IgM was detected in 315 (12.3%) and the male female ratio was 1.17. Gender wise statically there was no significant difference. Age wise, highest (8.4%; 215) positivity was in 16 – 30 years group. Highest (65%) number of study population were reported from tribal area and seasons wise, highest (70.5%; 247) number were found in monsoon period.

Conclusion: More dengue seropositivity was identified more in monsoon season along with male prevalence. Early recognition, prompt management, vector surveillance and control strategies must be intensified.

Keywords: Dengue, Infection, Report, Study.

Introduction

Dengue is an acute, mosquito borne infection. Dengue virus, part of Flaviviridae family is the causative agent. It is endemic throughout the globe and reported from tropical and subtropical countries. [1] Dengue is endemic in many parts of Indian subcontinent also, responsible for 71 lakh cases and 7200 deaths in the last decade. [2]

There are four serotypes, DEN1 to DEN4 of this virus. Dengue fever presented with variety of clinical symptoms ranging from mildly symptomatic dengue fever (DF) to more life threatening dengue shock syndrome (DSS) as well as dengue haemorrhagic fever (DHF). [3, 4] It may cause death if not treated properly. As per the reports the infection is high especially in rainy season due to high Aedes aegypticus population, vector of dengue. [5 – 7] Management is the most challenging issue of dengue. Whereas diagnosis can be made from single serum sample, detection of IgM antibody seems to be a valuable tool for the rapid diagnosis of dengue infection. 8 With this a study was conducted to find the prevalence of dengue infection.

Methods

It was a cross sectional study conducted in the Department of Microbiology, Government General Hospital, Rajahmundry. Study was conducted from June 2022 to June 2023, 12 months period. Oral consent was taken from the participants. Individuals of any age, both genders with clinically suspected fever patients were included in the study. Non cooperative individuals and those without fever symptoms and unconscious patients were not included in the research.

After recruiting, the study was explained clearly. The participants were allowed to ask doubts if any. After clarifying the entire doubts blood sample was collected by venue puncture by observing the universal (standard) safety precautions. Blood was

collected form larger median cubital or basilic or cephalic veins. After selecting the vein, tourniquet was applied 3 – 4 inches above the collection site. The puncture site was cleaned with 70% alcohol pad, moving in and outward spiral movement; the area was allowed to dry before proceeding. Slowly sample was collected by puncturing the vein. Then the blood sample was processed for IgM ELISA as per the manufacturer guidelines. The data were analysed using SPSS version 21.0. Data was presented in mean and percentreport. Chi-square test used to find the statistical correlation. P <0.05 was considered to be statistically significant.

Results: Out of 2560 (100%) study members, IgM was detected in 315 (12.3%) and the male female ratio was 1.17. Gender wise statically there was no significant difference (Table 1).

Age wise, highest (8.4%; 215) positivity was in 16 – 30 years group and 46 – 60 group showed minimal (1.1%) (Table 2).

According to geographical area, highest (65%) number of study population was reported from tribal area followed by rural area (563; 22%) and urban area (282; 11%). Seasons wise, highest (70.5%; 247) number were found in monsoon period and lowest (103; 29.4%) in non-monsoon season.

Table 1: Gender wise distribution of the study participants; n (%)

Gender	Detected	Not detected	Total
Male	170 (6.6)	1238 (48.4)	1408 (55)
Female	145 (5.7)	1007 (39.4)	1152 (45)
Total	315 (12.3)	2245 (87.7)	2560 (100)
Statistical analysis	$\Psi^2 = 0.1545$; P = 0.69428		
	Statistically not significant		

Table 2: Age wise dengue incidence among the study participants; n (%)

Age	Detected	Not detected	Total
≤15	35 (1.4)	728 (28.5)	762 (29.8)
16 – 30	215 (8.4)	800 (31.2)	1015 (39.7)
31 – 45	42 (1.6)	413 (16.2)	475 (18.6)
46 – 60	27 (1.1)	210 (8.2)	237 (9.3)
>60	31 (1.2)	40 (1.5)	71 (2.8)
Total	315 (12.3)	2245 (87.7)	2560 (100)

Discussion:

Dengue is a mosquito-borne virus, causes high morbidity rate causing economic losses in many tropical and subtropical regions of the world. [9, 10, 11] Dengue virus is rapidly spreading as the result of urbanization, climatic changes and increased human movements. DENV is emerged as the most common vector-borne viral infection in the current century. In our study more no of cases occur in tribal areas followed by rural and urban area. In other studies more cases occurs primarily in rural areas, but has recently become of urban distribution due to development of extensive urbanization in rural areas. [12]

In the present study total 2560 suspected dengue infection members were included to detect the presence of IgM antibody by ELISA. Out of these, 350 (13.67%) were positive for IgM ELISA; the reported incidence was 21.46% by Satish J et al. [13] and 21.43% by Amith kumar et al. [14] It was 47.6% by Mawahib H. Eldigail et al. [15]

In the present study, according to the age group, more (61.4%) positive cases were detected in 16 – 30 years. Similar findings were reported in the literature. [13, 16, 17] A seasonal trend of dengue over a period of 1 year was assessed. According to the intensity of the rain fall, whether data in monsoon was maximum (70.57%). Similar findings were reported by Satish J et al. [13] Studies showed that highest number of cases during August to November by Deshkar ST et al. [18] September to October by Bidar Garg A et al. [19] and October by Guptha et al. [20]

The reason for monsoon peak in our study may be due to prime occupation of the people being agriculture and increased breeding of vector mosquitoes owing to collection of rain water in domestic and peri-domestic areas.

Conclusion:

Dengue is endemic in India. Seropositivity of dengue infection is more in monsoon season along with male prevalence. Early recognition, prompt management, vector surveillance and control strategies must be intensified.

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