



PREVALENCE OF DENGUE VIRUS INFECTION AMONG FEBRILE PATIENTS PRESENTING TO A TERTIARY CARE CENTRE IN CENTRAL RAJASTHAN IN YEAR 2022

Medical Microbiology

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ABSTRACT

Background :- Dengue is a common Mosquito borne disease caused By Dengue Virus & is transmitted by Aedes mosquito. Dengue is endemic to the indian Sub- continent and it is associated with explosive urban epidemics & has become a major public health problem in India. The present study was conducted to detect prevalence of dengue virus infection in Ajmer region, Central Rajasthan & to assess its epidemiological & seasonal trend. **Methods** :- A cross-sectional study (observational study) was conducted in all suspected cases of dengue virus infection visiting associated group of hospital of J.L.N Medical College, Ajmer from 1st Jan 2022 to 31st Dec 2022. ELISA Method was used to detect either dengue non-structural protein one (NS1) antigen or Dengue immunoglobulin M (IgM) antibodies in the Department Of Microbiology , JLN Medical College, Ajmer to confirm the diagnosis. **Result**:- out of 4076 samples 390 (9.56%) samples were positive for dengue virus infection (NS1/IgM) Maximum number of dengue, cases reported were males (61.02%) belonging to 31-40 years (16.52%) age group from urban area (53.84%). Seasonal trend showed a gradual increase in Dengue positives starting from July with a peak in August and slowly tapered by December. **Conclusion**:- Dengue is one of the major public health problem in India. A large number of cases were reported in the monsoon & post-monsoon period in the months from July to November which coincides with increased vector breeding. The Preventive measures can be taken both at personal and government level to reduce morbidity and mortality from dengue.

KEYWORDS

INTRODUCTION

Dengue virus is an enveloped positive single stranded RNA virus of flaviviridae family with 4 different serotypes and is transmitted to human by several species of the Aedes mosquito. Recently the fifth serotype (DEN-5) was discovered in 2013 from Bangkok. Dengue is endemic in many parts of India and epidemics are frequently reported from various parts of India and abroad. NSI Antigen of Dengue virus becomes detectable from day 1 of fever and remains positive upto 7 days. IgM appears first after 5 days of fever and disappears within 90 days. IgG is detectable at low titer in 14-21 days of illness and then it slowly increases. Low levels of IgG remains detectable for over 60 years & in the absence of symptoms, is a useful indicator of past infection.¹³

ELISA gained popularity in laboratory diagnosis due to early detection of the infection. The present study is aimed to know the prevalence of dengue virus infection in Ajmer region, Central Rajasthan & to assess its epidemiological & seasonal trend.

MATERIAL & METHODS

The study was conducted in the Department of Microbiology JLN Medical College & associated group of Hospital Ajmer from the period of Jan 2022 to Dec-2022. 3-5 ml of blood was collected from each patient by nursing personnel using aseptic precautions and serum was collected using standard precautions. Enzyme linked immunosorbent Assay (ELISA) test was performed by kits supplied by J-Mitra and National Institute of virology (NIV), Pune to detect the presence of NS1 antigen or IgM antibodies in the laboratory of Department of Microbiology of JLN Medical College, Ajmer. Detection of at least one component (NS1 or IgM) was considered to be positive for sero diagnosis.

RESULTS

Table - 1 : Number of Positive cases in each Month

Month	Total	Positive
Jan	115	11
Feb	86	25
March	115	42
April	131	22
May	181	32
June	174	02
July	380	64
August	628	68
Sept.	650	32

Oct.	677	41
Nov.	595	47
Dec.	344	04
Total	4076	390

Table – 2 : Age wise distribution of Dengue Suspected cases

Age (in years)	Total (Positive)	Positive %
< 1	108 (0)	0
1-10	409 (53)	12.95
11-20	847 (82)	9.68
21-30	832 (87)	10.45
31-40	460 (76)	16.52
41-50	494 (36)	7.28
51-60	445 (27)	6.06
> 60	377 (29)	7.69

Table – 3 : Sex wise distribution of Dengue cases

Gender	Number of cases	Percentage(%)
Male	238	61.02
Female	152	38.97

From Jan 2022 to Dec 2022, a total of 4076 blood samples were tested for dengue. Of the total samples tested, 9.56% (n=390) were found to be positive for dengue virus. Out of 390 dengue positive cases 202 (51.79%) were NSI positive, 188 (48.20%) were IgM positive.

The high number of suspected cases (n=628) were reported in the month of August out of whom 68 were positive (Table 1)

Highest number of dengue cases were reported in 31-40 years age group (16.52%) Dengue cases in age group 1-10 years, 11-20 years & 21-30 years were 12.95%, 9.68% and 10.45% respectively (Table-2)

Table 3 showed sexwise distribution of dengue cases. Out of all reported cases 61.02% cases were males and 38.97% cases were females. 53.84% belonged to urban area while 46.15% belonged to rural area.

DISCUSSION

In this study 9.56% patients were positive for dengue virus infection. These findings are in accordance with other study conducted in Udaipur, Rajasthan by Patel P. & Bhatnagar R.⁹

The higher prevalence of dengue infection was noted among males

than female. The male to females ratio was 1.6:1 which is comparable with the study in Delhi.¹⁰ High Prevalence amongst male is probably due to more outdoor activities by males in comparison to females which results in more exposure to day biting mosquitoes.

Highest number of dengue cases in this study were reported in 31-40 year age group (16.52%); Dengue cases in age group 1-10 year, 11-20 years and 21-30 years were 12.95%, 9.68% and 10.45% respectively. Children of age group 1-10 years are prone towards Dengue like illness due to lack of immunity. Young males belonging to 21-40 years of age are more susceptible to infection due to more outdoor activity. This was comparable to the study done by Deshkar et al¹² in which children & younger adults accounted for majority of Dengue positive cases. In the present study, it was found that maximum number of dengue cases were reported in July and August and tapered by December. During the rainy season, survival of vector *Aedes aegypti* is longer and therefore the risk of virus transmission is greater. During post monsoon period, stagnant water pool collected during rainy season acts as favourable breeding sites.¹¹

CONCLUSION

A Seasonal trend was observed for dengue infections with maximum cases in monsoon and post-monsoon months which coincides with increased breeding of mosquitoes during these seasons. Therefore Vector control measures should be started before monsoon to prevent the outbreaks of dengue. The study draws attention towards children of 1-10 years age group and young adults of 31-40 years age group. Dengue infection is no more an urban area infection but it has penetrated in rural areas also.

This study thus emphasizes the need for continuous sero-epidemiological surveillance for the timely formulation and implementation of effective dengue control programme.

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