

SEROPREVALENCE OF DENGUE IN TERTIARY CARE CENTRE AT LUCKNOW

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ABSTRACT: CONTEXT: Dengue virus infection has emerged as notable public health problem in recent decades because of high mortality and morbidity associated with it. Dengue with its two severe clinical manifestations dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) is endemic in India and epidemics are frequently reported from many parts of India and abroad. It infects 50-100 million people worldwide a year with half a million life threatening infections requiring hospitalization resulting in 12,500 to 25,000 annual deaths. Hence early and rapid laboratory diagnosis which is usually done by serology is crucial for Dengue patients. **AIMS:** To determine seroprevalence of dengue in tertiary care centre **SETTINGS AND DESIGN:** Retrospective study done in tertiary care hospital. **METHODS AND MATERIAL:** A total of 668 blood samples were collected from suspected patients of Dengue in Era's Lucknow Medical College and Hospital from February 2010 to January 2011. They were then centrifuged to obtain sera which was tested by immunochromatographic card strip (SD Standard Diagnostics) Statistical analysis used: p value applied in positive cases. **RESULTS:** Out of 668 sera of suspected patients admitted in our hospital, 183(27.4%) were IgM positive. Out of this 19% were also positive for IgG. Besides these, 33.46% were only IgG positive which showed past infection with Dengue. **CONCLUSIONS:** Dengue cases were more during September to December with their tapering number in January ie in post monsoon season. Dengue IgM sensitivity among the suspected cases indicates active dengue virus activity. Studies need to be done to identify circulating serotypes of dengue virus to design preventive strategies.

KEYWORDS: Dengue, serology, patients

INTRODUCTION: Dengue virus infection has emerged as notable public health problem in recent decades especially in the tropical and subtropical countries because of high mortality and morbidity associated with it ¹. Dengue with its two severe clinical manifestations dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) is endemic in India and epidemics are frequently reported from many parts of India and abroad. ² It infects 50-100 million people worldwide a year resulting in 12,500 to 25,000 annual deaths.³In India a recent epidemic was noted in Delhi, Lucknow and many other places in Northern India in year 2010.⁴Hence early and rapid laboratory diagnosis which is usually done by serology is crucial for Dengue patients. The present study reports a Dengue

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haemorrhagic fever outbreak in a periurban slum area of Lucknow, Uttar Pradesh, India from February 2010 to January 2011.

MATERIALS AND METHODS: Patients suspected to be as dengue patients, were included irrespective of their age and sex. They had come to the Tertiary care hospital with complaint of fever, headache, malaise, myalgia and arthralgia, or who developed a maculopapular rash on the 3rd or 4th day of illness. Others with haemorrhagic manifestations such as epistaxis, bleeding gums and conjunctival haemorrhage were also included in the study. The cases of DF and DHF were diagnosed as per the criteria laid down by WHO⁵.

Blood samples were collected from 668 clinically suspected DF or DHF cases attending Tertiary care hospital in Lucknow from February 2010 to January 2011, with prior consent of the patients. Sera were separated from 668 patients and tested for dengue- specific IgM and IgG antibodies by immunochromatographic strip⁶.

RESULTS:

Table 1: Month-wise distribution of seropositive cases based on detection of antibody

MONTH	TOTAL SUSPECTED CASES	IgM ONLY	IgG ONLY	IgG+ IgM	TOTAL POSITIVE CASES
FEB.2010	1	0	0	0	0
MAR.2010	2	0	0	0	0
APR.2010	4	0	1	0	1
MAY 2010	7	1	1	0	2
JUN.2010	9	0	1	0	1
JUL.2010	15	1	1	0	2
AUG	11	1	2	0	3
SEPT. 2010	79	6(21.43%)	6(21.43%)	16(57.14%)	28(35.44%)
OCT. 2010	396	36(23.37%)	49(31.82%)	69(44.80%)	154(38.89%)
NOV. 2010	128	15(21.74%)	20(28.98%)	34(49.27%)	69(53.90%)
DEC. 2010	11	0	0	0	0
JAN. 2011	1	0	0	0	0
	668	60(23.07%)	87(33.46%)	119(45.77%)	260(38.92%)

Table 2: Age groups of Dengue Cases

AGE INTERVALS	POSITIVE CASES
0-10 yrs	29(11.15%)
11-20 yrs	65(25.00%)
21-30 yrs	86(33.07%) p value=0.001
31-40 yrs	42(16.15%)
41-50 yrs	21(8.08%)
51-60 yrs	8(3.07%)
61-70 yrs	9(3.46%)

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Table 3: Sex distribution in positive cases

MONTH	POSITIVE MALES	POSITIVE FEMALES	TOTAL POSITIVE
FEB.2010	0	0	0
MAR.2010	0	0	0
APR.2010	1	0	1
MAY.2010	1	1	2
JUN.2010	0	1	1
JUL.2010	2	0	2
AUG.2010	2	1	3
SEP.2010	20(11.50%)	8(10.39%)	28(11.15%)
OCT.2010	105(60.34%)	49(63.64%)	154(61.35%)
NOV.2010	49(28.16%)	20(25.97%)	69(27.50%)
DEC.2010	0	0	0
JAN.2010	0	0	0
	180(69.23%) p value =0.001	80(30.77%)	260(38.92%)

It was found that the maximum prevalence was seen in months of Sep, Oct and Nov 2010. Age group of 10-30 years was most affected as 151 cases (58.07%). Tests conducted revealed that most patients had hypoproteinemia, thrombocytopenia with platelet counts varying from 50,000 - 1,00,000/mm³ and elevated liver enzymes. Out of 668 sera of suspected patients 183 (27.4%) were IgM positive which indicated recent dengue infection. Out of this 19% were also positive for IgG indicating convalescent phase. Besides these, 33.46% were only IgG positive which showed past infection with dengue. Rest of the other patients showed clinical manifestations of dengue with even low platelet counts but the serology was negative probably due to early investigations for antibody detection.

DISCUSSION: Lucknow is situated in North India on the bank of Gomti River. Thus there are lots of marshy places which provide excellent mosquito breeding places. Further, this may be partially attributed to the rapid unplanned urbanization with unchecked construction activities and poor sanitation facilities contributing fertile breeding grounds for mosquitoes. It is also true that an increase in the alertness among medical fraternity and the availability of diagnostic tools have contributed to the increased detection of cases.

In our study maximum prevalence was seen in months of Sep, Oct and Nov 2010 in the age group of 10-30 years as 151 cases (58.07%). It is consistent with other Indian studies, as most of them have reported 15 to 45 years as the most affected age group as cited by studies done in Central India, Delhi, Karnataka and ^{1,7,8}. However in several International studies, dengue has been reported as mainly a pediatric public health problem ⁹. The youngest positive case was 5 years and oldest case was 70 years old.

In the present study, out of 668 sera of suspected patients 183 (27.4%) were IgM positive which indicated recent dengue infection. It is consistent with study done by PM Ukey et al. in which 31.3% patients were serologically positive for dengue infection¹.

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Out of this 19% were also positive for IgG indicating convalescent phase. Besides these, 33.46% were only IgG positive which showed past infection with dengue.

Analysis of the data was done on monthly basis. Male to Female positivity for IgM was 2.25:1. Male preponderance and the age group of 15-30 years indicate more transmission of dengue infections at work sites. It is congruent with several other studies from Delhi and Karnataka^{7,8}. But in few reports both the sexes were equally affected¹.

In the present study maximum dengue cases occurred during the post monsoon season, i.e., from September to November 2010 only. It is similar to most of the previous outbreaks in India and may be because this time period is very favorable season for high breeding of the vector, i.e., *Aedes aegypti*. The correlation between occurrence of dengue and monsoon season is further supported by similar findings from Delhi, Chandigarh and Ludhiana^{7,10,11}. This seasonal outbreak of disease transmission is very important at local level for effective control measures.

Preventive measures against dengue infection should come into full swing during water stagnation periods after the initial bouts of rainfall and at the end of monsoon. Dengue IgM sensitivity among the suspected cases indicates active dengue virus activity and more studies need to be done to identify circulating serotypes of dengue virus to design preventive strategies.

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