DENGUE IN AND AROUND NAGPUR- CENTRAL INDIA

Sharmila Raut, Ashwini Patil

1. Professor & Head, Department of Microbiology, Dr. Shankarrao Chavan Government Medical College, Nanded.
2. Assistant Professor, Department of Microbiology, Government Medical College, Nagpur.

CORRESPONDING AUTHOR

Dr. S. S. Raut,
302, Kuber Regency,
Congress Nagar, Near All India Reporter,
Nagpur- 440 012
E-mail: sharmilakuber@gmail.com,
Ph: 0091 9021366222

ABSTRACT: Dengue infection has been known to be endemic in India for over the centuries as a benign and self limiting disease. Dengue epidemics had been regularly reported from north India but no reports are available from central India. Here we report the data of dengue epidemics from March 2008- June 2010 from Nagpur region (Central India). A total of 289 serum samples from clinically suspected cases of dengue fever admitted in GMCH, Nagpur, over a period of 3 years (Mar 2008-June 2010) were tested for dengue specific IgM antibodies using IgM capture ELISA (MAC ELISA). Amongst a total of 289 serum samples tested for dengue IgM antibodies, 85(29.41%) were positive for dengue IgM antibodies. Children <10 yrs were most commonly affected with male predominance. Maximum number of cases occurred in the year 2009. Although the epidemiology of dengue is changing with dengue serotype 3 as an emerging serotype, dengue infections are seen every year, thus making it as an epidemic disease in Central India also.

KEY WORDS: Dengue, IgM capture ELISA, DF (Dengue fever), DHF (Dengue haemorrhagic fever).

INTRODUCTION: Dengue infection has been known to be endemic in India for over the centuries as a benign and self limiting disease.¹ In recent years, the disease has changed its course manifesting in severe form as dengue hemorrhagic fever and with increasing frequency of outbreaks.³ Dengue is emerging as a major health problem in India. Since the first epidemic in Kolkata during 1963-64, many places in India have experienced dengue infection. Delhi has experienced seven outbreaks of dengue virus since 1967 with the last reported in 2003. All four serotypes are circulating and cause epidemics. Earlier serotype 2 was implicated as the etiology of major epidemics in Delhi in the year 1996 and Gwalior in 2001². The implication of dengue serotype 3 as an etiology of DHF epidemic recently confirms re-emergence of serotype 3 as a dominant form on the Indian subcontinent⁴. Similar outbreak of dengue in Mumbai in 2003⁵ has been reported. Dengue epidemics had also occurred in central India. Here we report the data of dengue epidemics from March 2008- June 2010 from Nagpur region (Central India).

MATERIAL AND METHODS: A total of 289 serum samples from clinically suspected cases of dengue fever classified as undifferentiated fever/ dengue fever/ DHF (WHO classification

) admitted in GMCH, Nagpur, over a period of 3 years (Mar 2008- June 2010) were tested / for dengue specific IgM antibodies.

The samples were screened for the presence of IgM antibodies using IgM capture ELISA (MAC ELISA) supplied by NIV Pune. OD was measured at 450nm using ELISA reader.

RESULTS: During the study period (2008-2010), a total of 289 serum samples were tested for dengue IgM antibodies, by ELISA test.

Year wise distribution of samples being 52 in 2008, 223 in 2009 and 14 in 2010. Of these 85(29.41%) were positive for dengue IgM antibodies. Year wise distribution of dengue IgM positive over 3 years period is shown in table 1.

Maximum number of samples were received in the year 2009. There was an increase in the number of samples in the monsoon season (August to November). Overall males predominated over females (1.65:1). Age wise distribution of IgM positive cases in all three year clearly indicates that children (<10 yrs) were more commonly affected (table 2). Fever was the commonest presentation (98%). 30 % of the patients had hemorrhages & 4% had altered sensorium. In 76% of patients, the platelet count was between 5,0000 /mm³-10,0000/ mm³, while only in 24% of patients it was less than 5,0000/mm³.

DISCUSSION: Dengue is emerging as a great burden in our country. All 4 types of dengue virus have been isolated from affected Indian population. Cyclical epidemics of dengue are becoming more frequent. The outbreak in 1996 was the largest one to occur in Delhi⁶ following which vigorous steps were taken to prevent and control DF/ DHF. Most of the patients in the present study were children (<10 years) as compared to the older age group (>10Yrs). This observation is quite in accordance to the studies reported from south India^{5, 7}. However studies from Delhi^{6,8} found out the adults to be more susceptible to infection than children. Erythematous rash was found in 8% of the patients. This percentage is lower than previously reported dengue fever epidemics in Delhi⁹. Bleeding from various sites /hemorrhage was found in 30% of cases. A similar high percentage of patients with bleeding manifestations was found during 1998 and also in the year 2005. The causes of bleeding in DF are not well established, but could be due to thrombocytopenia, consumption coagulopathy, capillary fragility or platelet dysfunction. Although 24% of cases shows significant thrombocytopenia (<50000/mm³). No correlation could be established between the platelet count or bleeding manifestations and hence it indicated other features contributing to the bleeding diatheses. Since no platelet function tests or coagulation profile was available, the exact cause could not be elucidated. Dengue specific IgM antibodies were found in 29.41% which is comparable with other studies^{2,10}. The sensitivity of this test depends on the duration of prodromal illness. The disadvantage of MAC ELISA is the delayed appearance of antibodies from 5-10 days after the onset of illness in case of primary dengue virus infection and 4-5 days in secondary infection. The requirement of paired sera, subsequently in convalescent phase, if negative in acute phase also delays diagnosis. Detection of NS1 antigen assays hold promise in early diagnosis in dengue infection¹¹.

CONCLUSION: Although the epidemiology of dengue is changing with dengue serotype 3 as emerging serotype, dengue infection are seen every year, thus making it as an epidemic disease in central India also. Appropriate investigation, strict monitoring and

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prompt supportive management can reduce mortality of dengue. Detection of NS1 antigen assays hold promise. Also prevention of transmission by mosquito control & maintaining water sanitation is required to effectively control dengue epidemic.

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Table 1 YEAR WISE DISTRIBUTION OF DENGUE CASES

Year	Total cases	Positive
2008	52 (17.99%)	04 (7.69%)
2009	223 (77.16%)	80 (35.87%)
2010	14 (04.85%)	01 (07.14%)
Total	289	85

Table 2 AGE WISE DISTRIBUTION OF MALES AND FEMALES

Age	Male	Female	Positive male	Positive female
0-10 yrs	107	83	42 (39.25%)	28 (35.8%)
11-20 yrs	27	17	06 (22.22%)	04 (23.5%)
21-30 yrs	16	03	02 (12.50%)	01 (33.3%)
31-40 yrs	20	03	01 (05%)	00
41-50 yrs	07	02	01 (14.29%)	00
>51 yrs	03	01	00	00
Total	180	109	52	33