A 3 YEAR RETROSPECTIVE STUDY ON SERODIAGNOSIS OF ACUTE DENGUE INFECTION IN PATIENTS ATTENDING A TERTIARY CARE HOSPITAL IN CHENNAI. (2009-2011)

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Abstract :
Dengue fever and dengue haemorrhagic fever (DFDHF) have become a serious public health problem in many parts of India in recent years. We report a retrospective analysis of the dengue positivity in the samples of suspected cases of dengue fever for three years period (2009 to 2011) at the Institute of Microbiology, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai, Tamil Nadu, India. Patients older than 12 years were included in this study. Serum samples from 3009 suspected cases (1678 male and 1331 female) were obtained. Samples were subjected to IgM Capture ELISA. Platelet count was noted from every patient. Of the 3009 patients, 499 (16.58) were positive for dengue IgM antibody. Statistically significant increase of positive patients was noted during the year 2010 and 2011 when compared to 2009. There was a noticeable increased occurrence during the cooler months and during the monsoon and post-monsoon months. Significant proportion of patients (28.26) belong to the age group of 20 years. Decrease in platelet count (1, 00,000cellsml) was found to be significantly associated with dengue IgM positivity cases. The dengue IgM seropositivity among the suspected cases indicates active dengue virus infection. Platelet count can be used as a base line test for the diagnosis of acute dengue infections at a primary health care level. Continued surveillance and monitoring of vector control and disease prevalence is the want of the day to prevent morbidity and mortality due to dengue infection.

Keyword : Dengue infection-dengue haemorrhagic fever-dengue shock syndrome-platelet count

Introduction: Dengue viral infections are the most important arboviral infections of man and the most important vector borne infection after malaria, with a wide geographical distribution in the tropical and subtropical areas of the world especially urban and semi- urban areas, and causes up to 100 million infections annually.

The global prevalence of dengue has risen dramatically and dengue is now endemic in more than 100 countries[1, 2]. Dengue virus belongs to the genus flavivirus and family flaviviridae,transmitted by Aedes aegypti and Aedes albopictus mosquitoes[3]. Dengue fever begins abruptly with high fever, chilliness, headache, retrobulbar pain, conjunctival congestion, puffiness and facial flushing. Dengue may progress to Dengue hemarragic fever (DHF) and Dengue shock syndrome (DSS)[4]. Dengue has caused epidemics on and off in parts of Tamilnadu during the past few decades. The prevalence of dengue vector and silent circulation of dengue viruses have been detected in rural and urban Tamilnadu, which is ever increasing[5,6]. Considering this prospective, a retrospective analysis of data for three years from 2009-2011 was done on the samples received for Dengue testing at A tertiary care hospital in Chennai.

Material and Methods:
This retrospective study was performed in the Institute of microbiology, Madras Medical College, Chennai. Study period was three years from January 2009 to November 2011.Patients older than 12 years were included in this study. Samples were received from suspected cases of dengue fever as a part of diagnostic protocol from Outpatient department, medicine and other wards. Approximately 2-5ml of blood was collected, serum separated and subjected to ELISA. IgM Capture ELISA was performed using kit from National Institute of Virology, Pune. Platelet count was noted from every patient. Statistical analysis was carried out using Statistical Package for Social Sciences (SPSS) and Epi-info softwares by a statistician. The proportional data of this study were tested using Pearson's chi square analysis test, Fisher exact probability test and binomial proportion test.

Results
During the study period, the total number of samples screened was 3009 of which 499 were positive for dengue IgM antibodies. Among the total number of patients, 55.76% were males and 44.23% were females and their age ranged from 15 to 83 years with a mean age of 34.7 years.
Table 1: Year wise distribution of dengue fever and dengue IgM positive cases over a three year period (2009-2011)
There was a statistically significant increase of positive patients during the year 2010 and 2011 when compared to 2009.
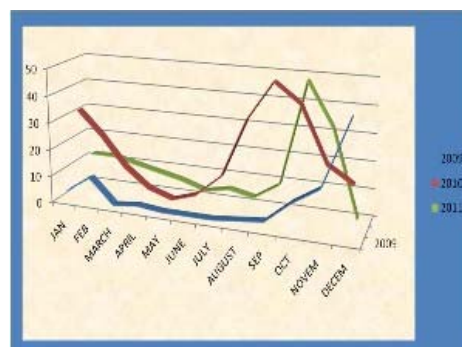
Chart 1.Year wise distribution of dengue IgM positive cases over a three year period (2009-2011)

There is no significant gender differentiation among case distribution. (p=0.176). Overall increase in the seropositivity among both males and females during the study period was noted with a peak in 2010. Table 3: Age wise distribution of suspected cases of dengue fever and dengue IgM positive cases over three year period (2009-2011) A significant proportion of patients (28.46%) were in the age group of < 20 years. Table 4: Correlation between Dengue IgM positivity and platelet count of the patient:

Decrease in Platelet Count (< 1, 00,000/ml) was found to be significantly associated with dengue IgM positive cases.

Hence continuous surveillance of vector control and monitoring of dengue prevalence is necessary.

Dengue cases cluster during the mon-

Year	Total No. of suspected dengue cases (n)	Total No. of Dengue IgM positive cases (%)	p value
2009	829	95(11.45%)	
2010	1063	256(24.08%)	<0.001
2011	1117	148(13.24%)	
TOTAL	3009	499(16.58%)	

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TOTAL	3009	499(16.58%)	

Age (years)	Total No of suspected Dengue cases (n)	No of Dengue IgM positive cases (%)	p value
<20	843	240(28.46%)	
21-40	1396	190(13.61%)	<0.001
41-60	602	49(8.13%)	
>60	168	20(11.9%)	

Discussion:

During the study period, the total number of samples screened were 3009 of which 499 cases (16.58%) were positive for Dengue IgM Antibody (Table 1).There was a statistically significant increase in number of cases in 2010 and 2011 when compared to 2009 (p<0.001). Gunasekaran et al 2011[7]. in Chennai, has noted the seroprevalence of 36.77% in suspected dengue cases in the year 2006-2008. We have recorded a seroprevalence of 16.58% in the year 2009-2011. This apparent decrease of incidence could be explained by the fact that our study population did not include paediatric population. Dengue is maintained in vector (silent cycle) and poses a potential threat for the start of an epidemic.

soon and post monsoon season. This clustering was even observed in our study (chart 1). There was three clusters noted, one in NOV2009-FEB2010, one in AUG2010-NOV2010 and the third one OCT2011-Till date. In tropical areas, the vector is active year round and dengue occurs throughout the year, with increased transmission during the rainy season. This is due to higher mean temperature and attendant shorter extrinsic incubation period in the vector and to higher humidity and enhanced survival of adult mosquitoes[4]. These findings are similar to various studies conducted in India[8-13]. Progressive increase in seropositivity was noted both in the males and females during the study period with a peak in 2010(Table 2). There was no statistically significant

finding says still platelet count can be used as a base line test for the diagnosis of acute dengue infections at a primary health care level. These findings are similar to RD Kulkarani et al 2011[14]. In conclusion, dengue transmission peaks during monsoon and post monsoon every year. Our study indicates that continued surveillance and vigilant monitoring of vector control and disease prevalence is the want of the day to prevent morbidity and mortality due to dengue infection.

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