The Study of Clinico-epidemiological Features of Dengue Cases Admitted in Tertiary Care Hospital, Latur, Maharashtra

Kendre Varsharani V.[*], Shekde S. D.[**], Chinte L. T.[*]

[*]Assistant Professor,[**]Medical officer and Postgraduate Student

Dept. of Community Medicine, Government Medical College, Latur, Maharashtra, INDIA.

[**]Corresponding Address:

drsachinshekde@gmail.com

Research Article

Abstract: **Background:** Dengue infections may be asymptomatic or may lead to,-"classical" dengue fever or dengue hemorrhagic fever without shock, or dengue hemorrhagic fever with shock. Dengue fever and its severe forms have become major public health concerns. Over past three decades, there is dramatic global increase in the frequency of dengue fever and its severe forms. **Objectives:** 1) To study socio demographic characteristics of dengue patients admitted in Tertiary Care Hospital, Latur. 2) To study the seasonal variations of dengue and outcome of dengue patients admitted in Tertiary Care Hospital. **Methodology:** This is cross-sectional record-based study conducted in a Tertiary Care Hospital, Latur. Required data from all dengue positive cases by Rapid visual test from 2011 to 2013 like age, sex, residence, clinical features, investigations etc. was collected from Medical Records Department (MRD) and analyzed. **Statistical analysis:** Percentages, median, range. **Results:** This study included 190 patients. Majority were males, 121(63.68%) and in the age group of 15-44 years, 99(52.10%) and majority belonging to Latur district, 132(69.23%). Maximum number of cases was seen in 2012, i.e.90 (47.37%) and most of the cases occurred during September-December months. Fever was present in all the cases i.e.(100%), followed by body ache (62 %). , headache (50%) vomiting (48%), and abdominal pain (40%). Majority of the cases presented with dengue fever, i.e.166 (87.37%), followed by 16(8.42%)) dengue hemorrhagic fever, and 8 (4.21%) with dengue shock syndrome. Most common clinical complications was ARDS, 13(6.84%). Two patients of renal failure were referred to higher centre .Deaths were reported in 10(5.26%) patients. **Conclusion:** Dengue is the most common infection causing mortality and morbidity mainly among productive age group. Early diagnosis and treatment, vector control measures should be strengthened and community awareness should be increased, during peri-monsoon period. Every case of fever should visit physician immediately to prevent complications.
Keywords: Dengue, dengue hemorrhagic fever, outcome

Introduction

The word "dengue" is derived from the Swahili phrase Ka-dinga pepo, meaning "cramp-like seizure"[1]. Dengue viruses (DV) belong to family Flaviviridae and there are four serotypes of the virus referred to as DV-1, DV-2, DV-3 and DV-4[1].
India is one of the seven identified countries in the South-East Asia region regularly reporting incidence of DF and Dengue Hemorrhagic Fever outbreaks and may soon transform into a major niche for dengue infection[2] The first evidence of occurrence of DF in the country was reported during 1956 from Vellore district in Tamil Nadu. Recurring outbreaks of DF/DHF have been reported from various States/UTs namely Andhra Pradesh, Delhi, Goa, Haryana, Gujarat, Karnataka, Kerala, Maharashtra, Rajasthan, Uttar Pradesh, Pondicherry, Punjab, Tamil Nadu, West Bengal and Chandigarh[3]. Improper disposal of waste and sewage are responsible for high mosquito densities. This is the cause for post monsoon epidemics in country like India.[4] Dengue fever is characterized by fever, headache, muscle and joint pains, rash, nausea and vomiting. It can lead to-"classical" dengue fever, dengue hemorrhagic fever without shock, dengue hemorrhagic fever with shock. It has become a major public health concerns. About 50 million infections occur worldwide annually[5]. There is dramatic global increase in number of dengue cases. There is 10 fold rise in India i.e.5534(2007) to 50222 cases(2012) ; 5 fold rise in Maharashtra i.e. 614(2007) to 2931 cases(2012) in number of dengue cases in last five years as per data from NVBDCP(2012). The rural spread of the vector is relatively recent occurrence associated with the development of rural water supply schemes, improved transport system, scarcity of water and life style changes.[5] With this background, present study was conducted to study socio demographic characteristics and outcome of dengue patients admitted in Tertiary Care Hospital and also the seasonal variations of dengue.

Methodology

This study was a Hospital record based cross sectional study conducted at Tertiary Care Hospital attached to Government Medical College, Latur .It was done during the period July 2013 to Dec 2013.
Sample size: Total 190 cases of dengue, occurred during consecutive three years,2011-2013 were taken as sample.

All patients i.e.190 positive for dengue tested for Dengue NS1 Antigen and Dengue specific IgM and IgG antibodies by rapid immune-chromatography (ICT) test (Dengue Day 1 kit Mfd by J. Mitra and Co. Pvt. Ltd) which is a rapid visual test ; were included in this study. Patients with NS1antigen with or without antibodies,patients with either IgM or IgG antibodies positive or those positive for both antibodies included in the study. A pre-tested structured data sheet was used as a tool for data collection. Data retrieved from the records included demographic data like age, sex,residence(rural/urban),district from where they belong, clinical features, any coexisting conditions and disease outcome etc. This data was entered in Microsoft Excel and analyzed. Quantitative variables were expressed with median and range while qualitative data was expressed with percentages. Chi square test and Fisher's exact test were used as the test of significance by using statistical software Graph pad prism 5.

Results

Table 1: Socio-demographic characteristics of dengue patients

Variable	Number	Percentage
Age		
<5	6	3.16
5-14	38	20
15-44	99	52.10
45-60	27	14.21
>60	20	10.53
Median age-22; Range-2-71		
Sex		
Male	121	63.84
Female	69	36.31
Religion		
Hindu	120	63.16
Muslim	29	15.26
Buddhist	41	21.58
Residence		
Urban	111	58.42
Rural	79	41.58

Table 2: Monthwise distribution of dengue cases

Month	Year			
	2011	**2012**	**2013**	**Total**
Jan-April	2(1.03)	0	17(8.95)	19(9.98)
May-August	8(4.12)	7(3.68)	21(11.06)	36(18.95)
Sept-December	22(11.58)	83(43.7)	30(15.79)	135(71.08)
Total	32(16.73)	90(47.38)	68(35.8)	190(100)

χ^2= 49.05, df=4, p <0.0001 highly sign
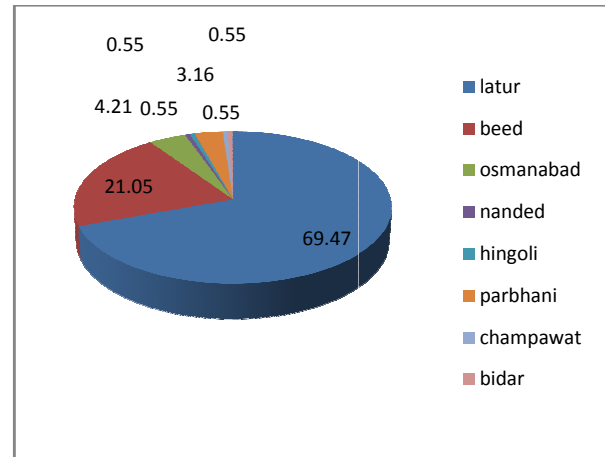
Figure 1: Districtwise distribution of dengue cases
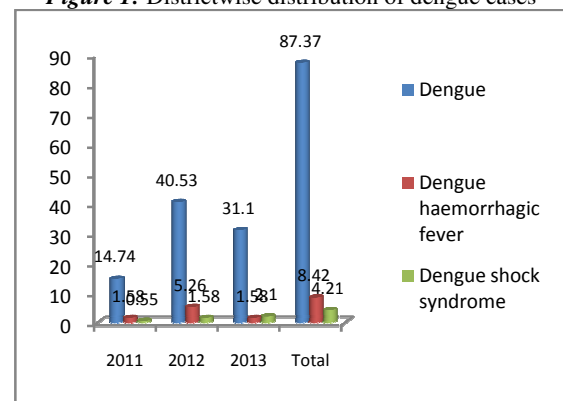
Figure 2: Distribution of dengue cases according to diagnosis

Table 3: Distribution of dengue cases according to symptoms

Symptoms	Number	Percentage
Fever	190	100
Myalgia	118	62.1
Headache	95	50
Vomitting	92	48.42
Abdominal pain	76	40
Skin rash	42	22.1
Breathlessness	20	10.53
Petechiae	18	9.47
Diarrhoea	12	6.31
Altered sensorium	10	5.26
Common cold	6	3.16
Hematuria	4	2.10
Ecchymosis	3	1.58
Red eyes	3	1.58
Hematemesis	2	1.05
Decreased urine frequency	2	1.05

Table 4: Laboratory findings in dengue cases

Test	No.	Percentage
Thrombocyte count		
<1 lakh	172/190	90.53
<50,000	60/190	33
<10000	16/190	8.42
PCV		

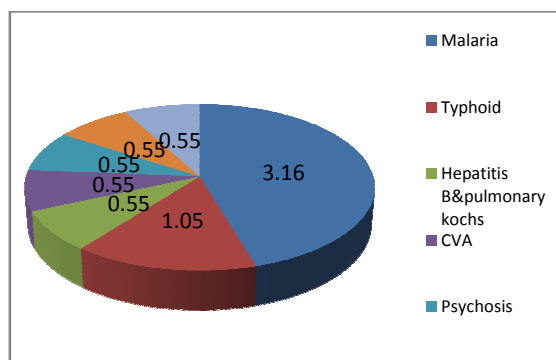|		
>45%	24/165	14.54
Leucocytes		
<4000	82/190	43.16
P.S.for malaria +	6/190	3.16
Widal +	2/190	1.05

Figure 3: Distribution of comorbid conditions

Table 5: Complications among dengue cases

Complications	Number	Percentage
Dengue with ARDS	11	5.79
Dengue with pnemonitis and ARDS	1	0.55
Dengue encephalopathy and ARDS	1	0.55
Dengue with multiorgan failure	2	1.05
Dengue encephalopathy	2	1.05
Dengue with renal failure	2	1.05

Table 6: Association of co-morbid condition and outcome of dengue patients

Outcome	Co-morbid condition		Total
	Present	Absent	
Survived	6(3.19)	172(91.16)	178(94.68)
Died	7(3.72)	3(1.59)	10(5.32)
Total	13(6.91)	175(92.75)	188(100)

Fisher exact test-Highly significant(p<0.001)

When the socioeconomic characteristics of the dengue patients were studied,(Table 1) depicts that most of the dengue cases occurred in the age group of 15-44 years,52.10%.Median age was 22,with range,2-71 years. Male patients were more i.e.63.84%,Hindus were morei.e.63.16%.Patients from rural area were more i.e.58.42%. Most of the cases occurred during the period September to December i.e. 71.08% with a pick in October (2012) and pick in November in 2011& 2013.Very few cases occurred during the period January-April i.e. 9.98%(Table 2). About 69.47% cases belonged to Latur district, others were belonged to Beed, Osmanabad, Nanded, Hingoli, Parbhani districts by decreasing order of number of cases. Two patients came from Chhattisgarh (Champavat) and Karnataka (Bidar). Fig.2 shows that, in most of the cases i.e.87.37% the

diagnosis was dengue fever, followed by dengue hemorrhagic fever and dengue shock syndrome. Fever was present in all the dengue cases, followed by myalgia, headache, vomiting, abdominal pain, skin rash etc. Petechiae was common hemorrhagic manifestation i.e.9.47%,followed by others like hematuria, echymosis, red eyes, hematemesis(Table 3). When laboratory findings of the patients were seen(Table 4),90.53% patients had thrombocytopenia(platelets<100000),among them 8.42% patients had platelets<10000.About 14.54% patients had haematocrit raised by 20% of their baseline. Leucopenia was present in 43.16% cases. Peripheral smear and widal test was positive in 3.16% and 1.05% respectively. The commonest co-morbid condition as malaria seen in 3.16% patients, followed by typhoid, Hepatitis & pulmonary kochs, CVA, psychosis, COPD, ANC etc.(Fig.-3). ARDS was the common complication seen in dengue patients(6.89%),followed by encephalopathy, multiorgan failure, renal failure, pneumonitis etc.(Table 5) As the facilities for dialysis were not available, two patients with renal failure were referred to higher center. In this study, 94.68% patients survived and 5.32% died(Table 6).The case fatality rate was 5.32% and survival rate was 94.68%.

Discussion

When the agewise distribution of dengue cases was seen, most cases occur in 15-44 yrs age group. These findings are similar to the study by S. Saini[6] in western Maharashtra, Prakash Doke[9] in Maharashtra, whereas these findings are different from study in Kolkata by Bhaswati Bandyopadhyay[8] in which majority of the cases were in the age group 11–30 years. Male patients were more in this study as compared to the study by S. Saini[6] and Ritu Karoli[7] in North India and similar to study in Karnataka by Ashiwini Kumar[10], PM Ukey[12] in Central India. Most cases in this study occurred during September-December with a pick in October(2012) and pick in November in 2011 & 2013 similar to the study[6]. The presence of stagnant water after rain fall favors the mosquito breeding which leads in an increased occurrence of dengue[5]. Ashiwini Kumar[10] reported the pick in September. PM Ukey[12] reported more cases of dengue during September to November. In this study, as it was done in tertiary care hospital, patients come from various districts mostly Latur & Beed district followed by other districts. Also patients come from nearby states. In this study, the number of dengue hemorrhagic fever were less as compared to the study by Ritu Karoli[7].The commonest symptom in dengue patients was fever in this study. It was headache in study[7],fever in study[9,10,11]. Common hemorrhagic manifestation was petechiae in this study similar to Ashiwini Kumar[10].Thrombocytopenia was present in 90.53% cases, this finding was similar to

Ritu Karoli[7], Rachel Daniel[11] (Kerala). ARDS was most common complication similar to Ashiwini Kumar[10.] Case fatality rate in this study was more as compared to hospital based studies by Ashiwini Kumar[10], Rachel Daniel[11]. The case fatality rate was higher in the outbreak in West Bengal, study by A.K.Hati[13].

Conclusions

Dengue is the most common infection causing mortality and morbidity mainly among productive age group i.e.15-44 yrs. Most of the patients were males and from rural residence. From this, we can say that, dengue is increasing in rural area also. Most cases occur during post monsoon period i.e. September-December. Common co-morbid condition was malaria. This means, both anopheles and aedes mosquitoes were prevalent in that area stressing the need for mosquito control. Co-morbid conditions were significantly associated with death as compared to survival.

Recommendations

Special preventive strategies should be planned during post monsoon period.
Every case of fever should visit physician immediately to prevent complications, in rural area also. More attention should be given to patients with comorbid conditions.

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