CLINICO-EPIDEMIOLOGICAL STUDY OF DENGUE CASES ADMITTED IN TERTIARY CARE HOSPITAL: RECORD BASED STUDY

Jayashree D. Naik¹, Swapnil R. Jain², Sandeep Babar³, Sachin Sharma⁴, Madhuri P. Mathurkar⁵, Vishwanath G. R⁶, Sandesh V. Kamble⁷, Vivek Patil⁸

¹Professor & HOD, Department of Community Medicine, Government Medical College, Miraj, Maharashtra.

²Assistant Professor, Department of Community Medicine, Government Medical College, Miraj, Maharashtra.

³Junior Resident, Department of Community Medicine, Government Medical College, Miraj, Maharashtra.

⁴Junior Resident, Department of Community Medicine, Government Medical College, Miraj, Maharashtra.

⁵Junior Resident, Department of Community Medicine, Government Medical College, Miraj, Maharashtra.

⁶Junior Resident, Department of Community Medicine, Government Medical College, Miraj, Maharashtra.

⁷Junior Resident, Department of Community Medicine, Government Medical College, Miraj, Maharashtra.

⁸Junior Resident, Department of Community Medicine, Government Medical College, Miraj, Maharashtra.

ABSTRACT

BACKGROUND

Dengue fever is one of the major tropical diseases caused by the dengue virus. Dengue is generally found in tropical and sub-tropical climates worldwide, often in urban and semi-urban areas. Dengue haemorrhagic fever is one of the leading causes of severe illness and death among children.

AIM AND OBJECTIVES

Study of clinico-epidemiological features, study of seasonal variations and outcome of dengue cases admitted in Tertiary Care Hospital, Miraj, Maharashtra.

MATERIAL AND METHODS

A record based retrospective study was undertaken to determine the clinico-epidemiological determinants of all Dengue positive cases admitted from January 2012 to December 2015 in Tertiary Care Hospital, attached to Government Medical College, Miraj. Sample size was 195. Dengue positive cases were diagnosed by rapid visual test (Dengue Day 1 Kit) and Mac-Elisa test. The reported data on dengue cases was collected from medical record section.

RESULTS AND CONCLUSIONS

Fever was the most common symptom present in almost 100% cases, followed by headache 94.73% and joint pain 93.78% in our study. Majority of cases (59.81%) were in age group of 19-45 yrs. in our study. Majority were male (60.77%) belonging to Hindu religion (77.50%) and were from urban area. There was rise in the number of dengue cases year wise and was significantly associated ($P < 0.05$).

KEYWORDS

Dengue, Miraj, Epidemiology, Seasonal Variation.

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INTRODUCTION

Dengue made its debut as early as 1780, when Benjamin Rush described the condition as "Break Bone Fever." A mosquito borne fast emerging viral infection manifesting in four serotypes capable of causing Dengue Fever (DF), Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS), poses an increasingly perilous situation due to lack of antiviral drugs or vaccine.¹ The first clinically recognized dengue epidemics occurred almost simultaneously in Asia, Africa and North America in the 1780s.² India is one of the seven identified countries in the South-East Asia region regularly reporting incidence of DF and DHF outbreaks and may soon transform into a major niche for dengue infection.

The first evidence of occurrence of DF in the country was reported during 1956 from Vellore district in Tamil Nadu.³ The global incidence of DF and DHF has increased dramatically in recent decades and has turned this disease into a serious public health problem, especially in the tropical and sub-tropical countries.⁴

Major demographic changes such as uncontrolled population growth, unplanned urbanization resulting in substandard housing and need for water storage has greatly aided vector proliferation.⁵ With changing epidemiology in this region, dengue poses a significant economic burden on the healthcare system of the region, resulting in increased hospitalization and loss of work days.⁶ Dengue is the most rapidly spreading mosquito-borne viral disease in the world.

In the last 50 years, incidence has increased 30-fold with increasing geographic expansion to new countries and in the present decade from urban to rural settings. An estimated 50 million dengue infections occur annually and approximately 2.5 billion people live in dengue endemic countries.⁷ Keeping above context in mind, the present study was conducted.

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Corresponding Author:

Dr. Swapnil R. Jain,

Assistant Professor,

Department of Community Medicine,

Government Medical College, Pandurpur Highway,

Miraj-416410, Maharashtra.

E-mail: sjvicky85@gmail.com

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1. To study clinico-epidemiological features of dengue cases admitted in Tertiary Care Hospital, Miraj, Maharashtra.
2. To study outcome of dengue cases admitted in Tertiary Care Hospital, Miraj, Maharashtra.

MATERIAL AND METHODS

It was a record based retrospective study undertaken to assess the clinico-epidemiological profile of all Dengue positive cases admitted from January 2012-December 2015 (Four calendar year) in Tertiary Care Hospital attached to Government Medical College, Miraj. Inclusion Criteria: Those patients who are having either one or two symptoms of Dengue (Fever, Headache, Joint Pain, Myalgia, Weakness, etc.) and came positive by rapid visual test (Dengue Day 1 Kit) were included in the study. Cases were confirmed by Mac-Elisa testing. Total 209 patients were interviewed after considering eligibility criteria in study period. The data was collected from Medical Record Department (MRD) of Government Medical College. Ethical clearance was obtained from Institutional Ethical Committee. Statistical analysis was done by using frequency, percentages, median, range, chi-square for linear trend after entering data in Microsoft Excel 2007.

RESULTS

Fever was the most common symptom present in almost 100% cases, followed by headache 94.73% and joint pain 93.78% in our study [Table 1]. Majority of the cases were of dengue fever (71.29%) followed by dengue haemorrhagic (21.05%) fever, then DHF with shock (7.66%) [Table 2]; 197 (94.26%) cases had thrombocytopenia (<1 lakh) in our study [Table 3]. Table 4 shows that majority of cases (59.81%) were in age group of 19-45 years in our study. Majority were male (60.77%), belonging to Hindu religion (77.50%) and were from urban area. In current study with regard to outcome of admitted dengue cases, majority (93.78%) were cured, while case fatality rate was found to be 2.39%. [Table 5] Maximum cases were in year 2015 followed by 2014, 2013 and 2012, concluding that number of cases were increasing on yearly basis. [Fig. 1] Applying chi-square test for linear trend showed that there was rise in the number of dengue cases year wise and was significantly associated ($P < 0.05$) [Table 6].

DISCUSSION

Dengue is an important emerging disease of tropical and sub-tropical regions. Since first confirmed case of dengue in India during the 1940, intermittent reports of infection and its sequelae have come from various parts of country. Fever was the most common symptom present in almost 100% cases followed by headache 94.73% and joint pain 93.78% in our study. [Table 1] Commonest symptom in dengue patients was fever in the study by Kendre VV.³ It was headache in study by Karoli R et al. (2012).⁸ Kumar H et al.⁹ concluded that fever was present in almost all cases, i.e. 746 (97.38%) followed by headache 427 (55.74%) in 100% cases in a study by Abrol A et al.¹⁰ 197 (94.26%) cases had thrombocytopenia (<1 lakh) in our study. [Table 3] Similarly, Kendre VV et al. (2014).³ concluded with the laboratory findings of the patients that 90.53% patients had thrombocytopenia (platelets <100000), while it was in 7.4% patients in a study by Abrol A et al.¹⁰

Thrombocytopenia was seen in 393 (23.1%) dengue IgM-positive patients in study by Ahmed NH et al.⁴

Table 4 shows that majority of cases (59.81%) were in age group of 19-45 yrs. in our study. Kendre VV et al. (2014).³ in their study found that most cases occur in 15-44 yrs. age, also Doke P et al.¹¹ in a study in Maharashtra had similar findings with regards to age group, whereas Bandyopadhyay B et al.¹² in their study revealed that majority of the cases were in age group of 11-30 years. Age group which was most affected (41.65%) was 15-24 years in a study by Bhabhor H et al. (2014).¹³ Kumar H et al.⁹ found that majority belonged to the age group of 15-44 years (88.6%). In current study case fatality rate was 2.39% [Table 5], which is much less than study by Kendre VV et al. (2014).³ where case fatality rate was 5.32% and it was much less in study by Kumar A et al.¹ Bhabhor H et al. 2014.¹³ reported that case fatality rate was 1.76%, while it was only 0.13% in Kumar H et al.⁹

Maximum cases were in year 2015 followed by 2014, 2013 and 2012, concluding that number of cases were increasing on yearly basis. [Fig. 1] Bhabhor H et al. (2014).¹³ reported that maximum (27.60%) number of cases were observed in October. Ahmed NH et al.⁴ reported that the maximum cases diagnosed were in September ($n=782$; 46.0% of 1,700), followed by October ($n=448$; 26.4% of 1,700). Kumar H et al.⁹ in their study revealing year-wise breakdown of cases found steady rise in admission rate from 2011 to 2013, i.e. from 4.17% in 2011 to 73.89% in 2013.

CONCLUSION

Dengue is the most common infection causing mortality and morbidity mainly among productive age group, i.e. 19-45 yrs. Most of the patients were males and from urban residence. Most cases occur during post-monsoon period, i.e. September-December. The present study highlights the importance of dengue fever to clinician in area of epidemiology and outcome of disease, its varied manifestations, complications and outcome of the disease with no specific antiviral therapy or vaccination in sight, mortality from dengue fever can only be prevented by its early diagnosis and timely management.

Recommendations

Every case of fever should visit physician immediately to prevent complications, in rural area also. The present study thus indicates the need for starting continuous sero-epidemiological and entomological surveillance in study area and timely implementation of an effective control programme to prevent Dengue outbreaks in the future.

Limitations

Present study has the limitations that are inherent to any record-based study and these include likelihood of many manifestations having been missed in the case sheets. Due to time constraints and non-availability of records, few socio-demographic variables like occupation, mosquito breeding areas could not be studied which could be considered as limitation of the study.

RESULTS

Symptoms	Frequency (n-209)	Percentage
Fever	209	100
Weakness	207	99.04
Headache	198	94.73
Joint pain	196	93.78
Myalgia	97	46.41
Petechiae	61	29.19
Body ache	13	06.22
Skin rash	13	06.22
Fatigue	09	04.31
Abdominal pain	08	03.83

Table 1: Distribution of Dengue cases according to symptoms (* Multiple Responses)

Diagnosis	Dengue Cases	Percentage
Dengue fever	149	71.29
Dengue haemorrhagic fever	44	21.05
DHF with shock	16	07.66
Total	209	100

Table 2: Distribution of Dengue cases according to Diagnosis

Platelets Count (Per cubic mm)	Dengue Cases	%
< 20000	16	07.66
20000 – 50000	40	19.14
50000 – 100000	141	67.46
> 100000	12	05.74
TOTAL	209	100

Table 3: Distribution of Dengue cases as per Platelets Count

Socio-Demographic Variable	Frequency	Percentage
Age	<5	1
	5-18	23
	19-45	125
	46-60	39
	>60	21
Gender	Male	127
	Female	82
Religion	Hindu	162
	Muslim	38
	Buddhist	7
	Christian	2
Residence	Urban	95
	Urban Slum	17
	Rural	97
TOTAL	209	100

Table 4: Socio-Demographic Profile of Dengue Cases

Outcome	Dengue Cases	Percentage
Cured	196	93.78
Absconded	7	03.35
Referred to higher centre	1	00.48
Died	5	02.39
Total	209	100

Table 5: Outcome of Dengue Cases (4 years)

Fig. 1: Line Diagram showing year and month wise distribution of Dengue Cases

Month	Year			
	2012	2013	2014	2015
Jan-Mar	6	9	5	7
Apr-June	7	11	6	5
Jul-Sept	6	10	10	30
Oct-Dec	21	16	26	36
Total	38	46	47	78

Table 6: Year and Month wise distribution of Dengue Cases (Chi-square for Linear Trend)

($\chi^2 = 19.32$, df = 9, P value = 0.0226)

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