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Research Article

A prospective study of prevalence rate epidemiology, risk factors and clinical course of dengue fever in tertiary care hospital

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Abstract

Introduction: The origin of word "dengue" is derived from the 'Swahili phrase ka-dinga pepo' which describes the disease is being caused by an evil spirit. The dengue virus, a member of the genus Flavivirus of the family Flaviviridae, is an arthropod –borne virus that includes four different serotypes (DEN-1, DEN-2, DEN-3 and DEN-4). Objectives: To investigate the most affected age groups. To investigate the most affected gender. To evaluate social life (occupation, smoker, alcoholic, diet) of dengue positive patients. To investigate the prevalence /incidence in a particular area/population. To observe intensity and severity of signs and symptoms of various dengue positive effected patients. To evaluate the patient's concomitant diseases. To investigate further complications which might occur during dengue affected patients. Method: A prospective case series study was done on patients admitted in Maharaja Institute of Medical Sciences, Vizianagaram, AP, India.

Results: In our study we included total of 100 patients. Out of 100 patients 54 were females and 46 were males. Number of smokers was 06 and 94 were non smokers out of 100 patients. Alcoholics were 04 and non-alcoholics were 96. Most of the patients were from rural background comprising 70% and remaining 30% who were from urban areas. A symptom of high grade fever was experienced by 68 patients and symptoms of Myalagia by 64%. Most of the patients experienced vomiting/s episode/s. out of 100 patients 55 patients had developed headache. Almost all patients have shown drop in platelet count (thrombocytopenia) as a most potential symptom. 12% of patients had hypertension and 4% of patients had diabetes as co-morbidity. 8% of patients shown re-occurrence of dengue infection.

Introduction

The origin of word "dengue " is derived from the 'Swahili phrase ka-dinga pepo' which describes the disease is being caused by an evil spirit. In 1906, an Aedes mosquito transmitting the dengue fever was confirmed and in 1907, dengue was the second disease after 'Yellow fever ' that was shown to be caused by virus. The dengue virus, a member of the genus Flavivirus of the family Flaviviridae, is an arthropod –borne virus that includes four different serotypes (DEN-1, DEN-2, DEN-3, and DEN-4) [1]. Dengue is the most extensively spread mosquito borne disease, transmitted by infected mosquitoes of Aedes species. The revised WHO classification of 2009 categories dengue patients according to different levels of severity as dengue without warning signs, dengue with warning signs (abdominal pain, persistent vomiting, fluid accumulation, mucosal bleeding, lethargy, liver enlargement, increasing haematocrit with decreasing platelets) and severe dengue. Dengue is wide spread throughout the tropics, with local variations in risk influenced by rainfall, temperature and unplanned rapid urbanization. Dengue fever is an

arthropod bone virus of the genus Flavivirus, and within the family Flaviviridae [2].

Aims And Objectives

Aim

To conduct a prospective observational case series study in dengue fever positive patients and to analyze various parameters among them.

Objectives

To investigate the most affected age groups. To investigate the most affected gender. To evaluate social life (occupation, smoker, alcoholic, diet) of dengue positive patients. To investigate the prevalence /incidence in a particular area/population. To observe intensity and severity of signs and symptoms of various dengue positive effected patients. To evaluate the patient's concomitant diseases. To investigate further complications which might occur during dengue affected patients. To obtain information about the recurrence of infection. To evaluate the number of blood units transfused in dengue positive patients. Investigate/evaluate duration of hospitalization of dengue positive patients.

Study Criteria

Inclusion Criteria

- Only true dengue positive patient were included.
- All genders of more than 3 years infected with dengue were included.
- Patient with dengue positive and with concomitant diseases was also included.

Exclusion Criteria

- Pregnant women, pre post-operative patients and age group of below 3 years and more than 70 were excluded.
- Persons who are not willing to participate in the study were excluded.

Method

A prospective case series study was done on patients admitted in Maharaja Institute of Medical Sciences, Vizianagaram, AP, and India.

Results And Discussion

Age

Out of total 100 population, the details regarding their age groups represented that , 3-10 years (45%) patients were more than 11-20 years (15%) , 21-30 years (13%), 31-40years (10%) followed by 41-50years (11%),and below 61-70years (03%) ,51-60 years (02%) accounting the dengue fever.

Table 01: Age group representing number of patients and its percentage.

Age	Number of patients	Percentage (%)
3-10 years	45	45%
11-20 years	15	15%
21-30 years	13	13%
31-40 years	10	10%
41-50 years	11	11%
51-60 years	02	02%
61-70 years	03	03%

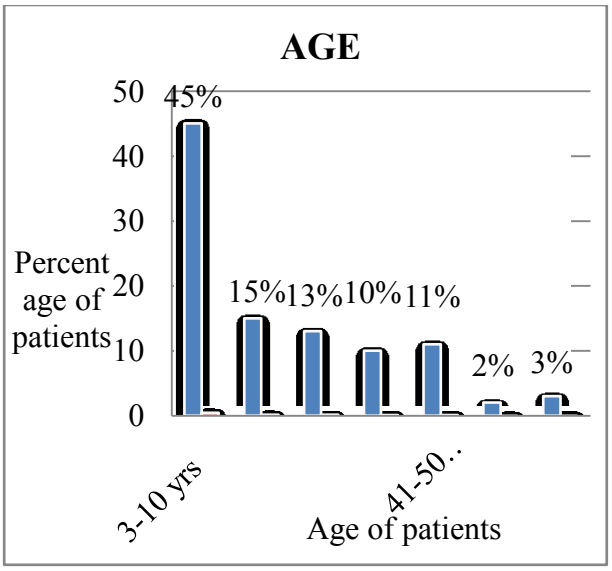

Figure 01: Age group vs Number of patients and its percentage.

Gender

The observation of 100 patients, females occupied 54%and males comprised 46%. It indicates that high prevalence of dengue fever effected in women.

Table 02: Gender representing number of patients and its percentage.

Gender	Number of patients	Percentage (%)
Females	54	54%
Males	46	46%

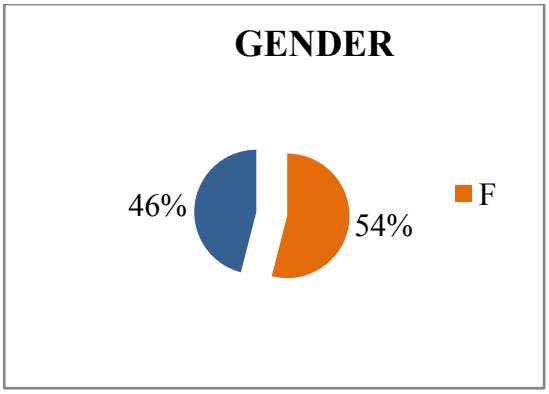

Figure 02: Female vs. male patients of dengue fever.

Smoking

Smoking habit may not trigger to disease directly but cigarette smoke is proven to cause co-morbid conditions. (respiratory problems).Out of 100 patients, we observed that smokers were 06 and non-smoker were 94 .In percentages 06 %(smokers) and 94 %(non-smokers) respectively.

Table 03: Represents the smoking habits of patients and their percentage.

Smoking	Number of patients	Percentage (%)
Yes	06	06%
No	94	94%

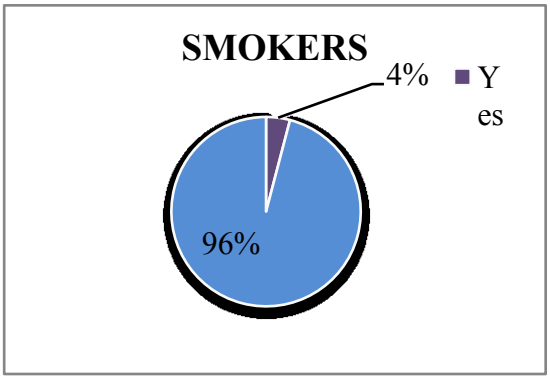

Figure 03: Smokers vs. Non smoker's patients in dengue fever.

Alcoholics

Alcohol is in the same way the smoking does; it too may cause co-morbid conditions. Out of 100 patients, we observed that alcoholics were 04 and non-alcoholics were 96 members with their 04% and 96% respectively.

Table 4: Represents the number of alcoholics and non – alcoholics patients and their respective percentage.

Alcoholics	Number of patients	Percentage (%)
Yes	04	04%
No	96	96%

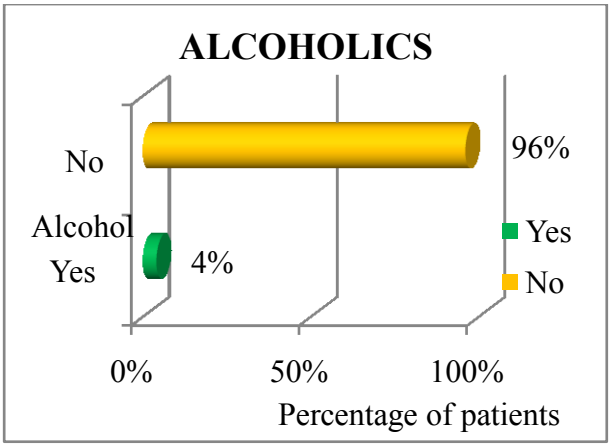

Figure 04: Alcoholics vs. non – alcoholic's patients in dengue fever.

Demographics

As we observed out of 100 patients, rural 70% when compared to urban 30%. It indicates those rural patients are more affected when compared to urban patients.

Table 05: Represents the demographics of dengue fever patients.

Demographics	Number of patients	Percentage (%)
Rural	70	70%
Urban	30	30%

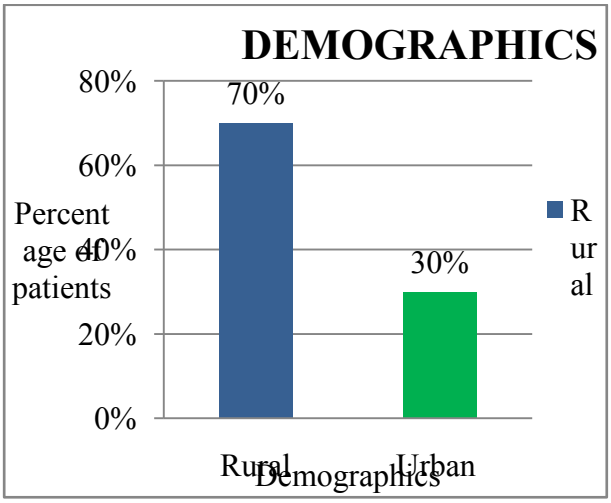

Figure 05: Rural vs. Urban patients in dengue fever.

Grade Of Fever

In the total study population, 68% patients are experienced with high grade fever when compared to low grade fever 32%. It indicates that patient with dengue fever experienced with high grade fever.

Table 06: Represents high grade and low grade fever percentages in dengue fever.

Grade of fever	Number of patients	Percentage (%)
High grade fever	68	68%
Low grade fever	32	32%

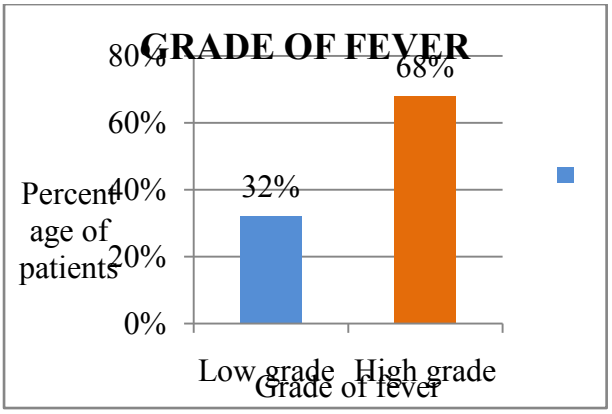

Figure 06: High grade vs. low grade patients in dengue fever.

Incidence Of Myalagia

Out of 100 patients, 64 % patients were experienced with myalagia condition and remaining 36% are not experienced. It shows that dengue fever patients are high incidence of myalagia.

Table 07: Represents incidence of myalagia in dengue fever patients.

Incidence of myalagia	Number of patients	Percentage (%)
Yes	64	64%
No	36	36%

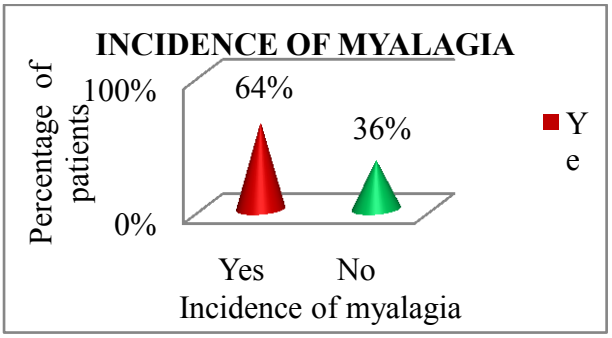

Figure 07: Graphical representation of incidence of myalagia.

Vomiting Episodes

As we observed that , vomiting episodes are represented more in 2nd episode were seen 30% when compared to 1st episode 15% and 3rd episode 21% , greater than 3episode were 14% ,remaining were not experienced with vomiting.

Table 08: Represents vomiting episodes of dengue fever patients.

Vomiting episodes	Number of patients	Percentage (%)
1st episode	15	15%
2nd episode	30	30%
3rd episode	21	21%
>3rd episode	14	14%
No	20	20%

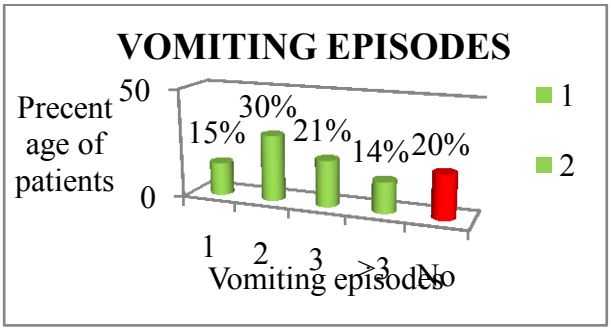

Figure 08: Vomiting episodes and its percentage in dengue fever patients.

Severity Of Headache

Out of 100 patients, we observed that 55 % patients are experienced with headache and remaining 45 % were not experienced with it. It indicates that dengue fever patients may experienced with headache

Table 09: It shows the number of patients and its percentage of severity of headache in dengue fever patients.

Severity of headache	Number of patients	Percentage (%)
Yes	55	55%
No	45	45%

Figure 09: Represents the percentage of severity of headache in dengue fever patients.

Thrombocytopenia Gradings

Thrombocytopenia has always been one of the criteria used by WHO guidelines as a potential indicator of clinical severity of dengue fever .Out of 100 patients ,38% patients are more with Grade 3 when compared to Grade 1are 30% and Grade 4 are 19% followed by Grade 2 are 13% . It indicates that a dengue fever patient shows Grade 3 thrombocytopenia levels.

Table10: Represents the number of patients and its percentage of thrombocytopenia grading in dengue fever patients

Thrombocytopenia Grades	Number of patients	Percentage (%)
Grade 1	30	30%
Grade 2	13	13%
Grade 3	38	38%
Grade 4	19	19%

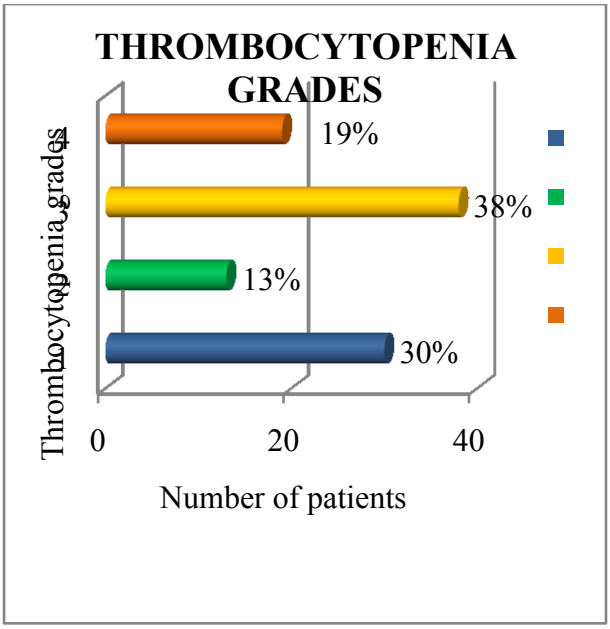

Figure 10: It shows the thrombocytopenia grading in dengue fever patients.

Hypertension

As we observed that out of 100 patients, there are 12% patients present with hypertension ,remaining 88% were non –hypertension patients.

Table 11: It shows number of hypertension patients and its percentage.

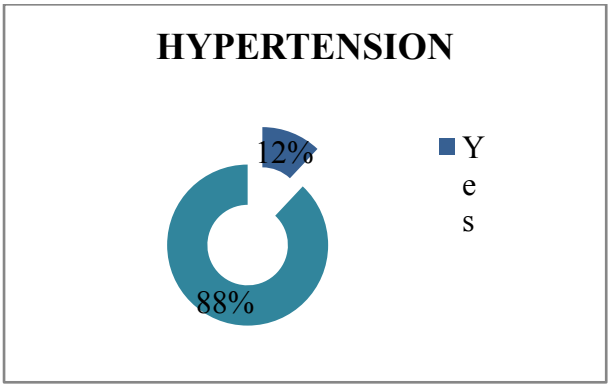

Figure 11: Represents hypertension patients in dengue fever.

Diabetes

Out of 100 patients, 4% of patients are present with diabetes; remaining 96% patients were non diabetic.

Table 12: Represents number of patients and its percentage of diabetes in dengue fever patients.

Diabetes	Number of patients	Percentage (%)
Yes	04	04%
No	96	96%

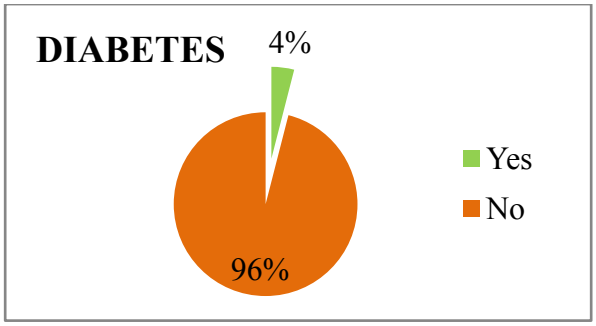

Figure 12: It shows percentage of diabetic patients in dengue fever.

Rate Of Recurrence

Out of 100 patients, there are 08% patients show re-occurrence symptoms of dengue fever; remaining 92% doesn't show the re-occurrence symptoms.

Table 13: Shows number of patients and its percentage of recurrence of dengue fever.

Rate of recurrence	Number of patients	Percentage (%)
Yes	08	08%
No	92	92%

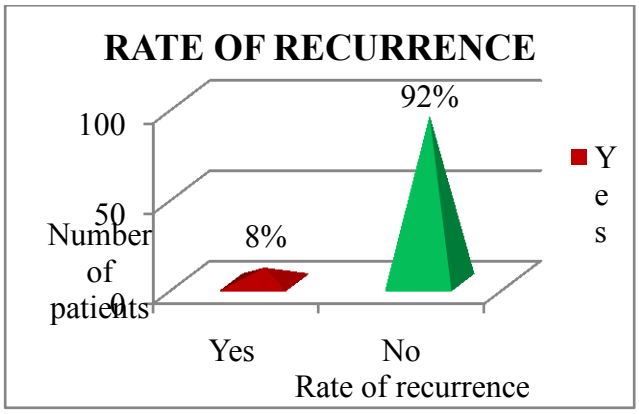

Figure 13: Represents rate of recurrence percentage in dengue fever patients

Blood Transfusion Units

Out of 100 patients, 10 units of blood were done in 05% patients, 20 units of blood were done in 10 % patients, and 20-40 units of blood were done in 04% and in remaining 81% patient's blood transfusion were not done.

Table 14: Represents the number of blood transfusion units and its percentage in the dengue fever patient.

Blood transfusion units	Number of patients	Percentage (%)
10 units	05	05%
20 units	10	10%

20- 40 units	04	04%
No	81	81%

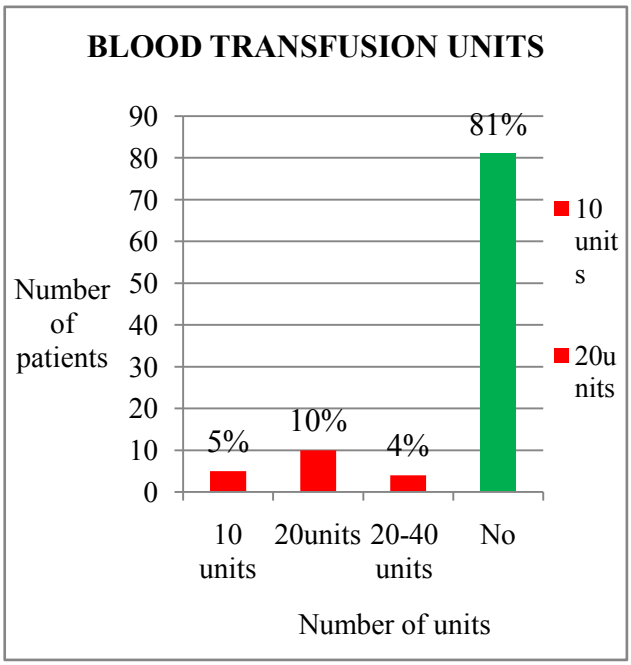

Figure 4: The blood transfusion percentage in dengue fever patients

Length Of Hospital Stay

There is a difference in stay of hospital among the 100 patients , 58% patients stay length is 4-6 days when compared to 22 % patients stay length is 7-9 days, followed by 10% patients stay length is 1- 3 days and 10% patients stay length is greater than 10 days.

Table 15: Represents length of hospital stay of patients and its percentage

Length of hospital stay	Number of patients	Percentage (%)
1-3 days	10	10%
4-6 days	58	58%
7- 9 days	22	22%
>10 days	10	10%

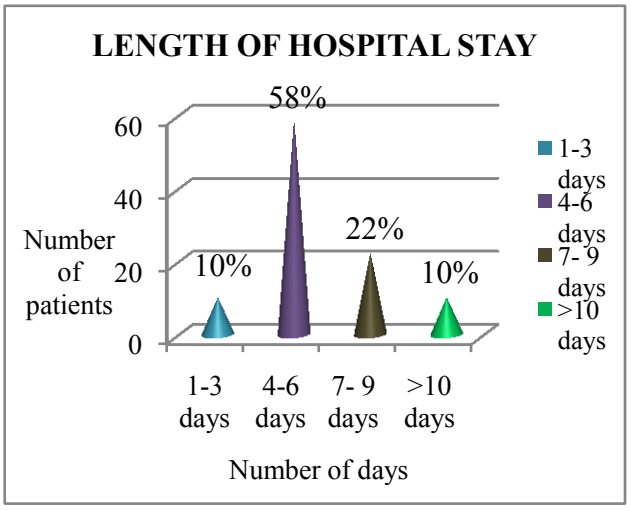

Figure 15: The percentage length of hospital stay in dengue fever patients.

Conclusion

Irrespective of age, infection can be spread and infected. Neatness places a major role in controlling the spread of a kind of infection. Of course, education seeds the society in preventing and controlling of disease. In rural areas, population should be educated in controlling and prevention of infection and get the benefits of hygienic, a kind of infection have a particular clinical manifestations in here in dengue fever they found the infected person can suffer any kind of myalgia, fever, vomiting, headache.

The dengue hemorrhagic fever is severe form dengue, bleeding and plasma leakage. Platelet count is directly related to the number of complications. As platelet count decreased the rate of complications increased. Dengue hemorrhagic, dengue shock syndrome is associated with increased mortality Risk factors like diabetes, hypertension, were at greater risk of developing dengue hemorrhagic fever. These risk factors can be used to guide of patients who require closed clinical monitoring and early hospitalization. The degree of thrombocytopenia is always proportion to number of blood transfusion the severity of symptoms can lead to prolonged hospitalization. Rate of recurrence might be due to poor immunity of particular patients or improper hygienic or less controlling the spread of infection.

Clinical pharmacist should play a crucial role in educating and prevention of dengue infection to uneducated rural area population. Also should take responsibilities in monitoring the condition of hospitalized patient which can revert in decrease the signs and symptoms.

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