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A Retrospective Study on the Prevalence and Management of Dengue Fever

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ABSTRACT

Dengue fever (DF) is the most common acute febrile viral disease among all the arthropod-borne viral diseases caused by a single-stranded RNA virus of Flaviviridae family. The study was a retrospective observational study in Medical Records Department of Karuna Medical College Chittur, Palakkad for 6 months. DF is a common acute febrile illness which comes as an epidemic in various parts of the country including Kerala. In our study, we evaluated 350 serologically confirmed dengue cases in which most of the cases were enrolled in the month of May- June (Monsoon season). In our observation we found that most of complications were thrombocytopenia, leukopenia, persistent vomiting, plasma leakage and shock. Hepatic, ophthalmic and cardiac complications were rarely observed and the mostly observed one is bleeding complications. The major clinical manifestations were found to be fever, vomiting, myalgia, rashes, headache and abdominal pain. Our study concludes that the symptomatic treatment was given by IV fluids to maintain the homeostasis, steroids which are prescribed prior to platelet transfusion. The effective pain management is obtained with NSAIDs.

INTRODUCTION

- Dengue fever (DF) is the most common acute febrile viral disease among all the arthropod-borne viral diseases caused by a single-stranded RNA virus of Flaviviridae family.[1]

- It is caused by four closely related but serologically distinct dengue virus called DEN-1, DEN-2, DEN-3, and DEN-4.[2] Dengue virus infection is transmitted by the bite of *Aedes aegypti* and *Aedes albopictus* mosquitoes.

- Dengue infection was classified according to WHO classification 2009 as :

- Dengue without warning signs,

- Dengue with warning signs

- Severe dengue (SD).

- DF: Fever with any two of Nausea, vomiting, rash, myalgia, leucopenia, positive tourniquet test.[3]

- DF with warnings signs DFWS: The above with anyone of: Abdomen pain, tenderness, persistent vomiting, ascites, pleural effusion, mucosal bleeding, lethargy, restlessness, hepatomegaly and increase in hematocrit (HCT) with a rapid decrease in platelet count. [4]

- SD: The above with at least one: Severe plasma leakage such as shock and pleural effusion, severe bleeding, severe organ involvement-liver, central nervous system, and heart.

- In India dengue virus was isolated for the first time in 1945, first evidence of occurrence of dengue fever was reported in 1956 from Vellore district of Tamil Nadu and the first dengue hemorrhagic fever. [5]

- During 2013 about 74168 cases were reported with 168 deaths, the highest number of cases was reported from Punjab followed by Tamil Nadu, Gujarat, Kerala and Andhra Pradesh. [6]

- At present very few studies have been conducted in this part of our country. As also exact clinical and laboratory profile is important for diagnosis and successful management thus crucial for saving life, hence this study was undertaken to analyze varied clinical and

laboratory profile for all serologically confirmed (Dengue IgM antibody positive) adult patients admitted at KMCH, Palakkad, Kerala during the period of October 2018 to June 2019.

AIM:

To study the prevalence, clinical manifestations and therapeutic management of dengue fever.

- Role of NSAID'S and steroids in dengue management.
- To evaluate the significance of colloids in shock management.
- Role of newer drugs in platelet management.

STUDY DESIGN:

- The study was a retrospective observational study in Medical Records Department of Karuna Medical College Chittur, Palakkad for 6 months. The study protocol was approved by Institutional Ethical Committee IHEC/07/2018 of KMCH. The Retrospective study is conducted in a total 350 dengue fever cases obtained from the MRD department, the patient case sheets were collected on the basis of inclusion and exclusion criteria.

STATISTICAL ANALYSIS:

- Graph pad PRISM (version 6.0) software in which chai- square test and student T-Test used for the level of significance.

INCLUSION CRITERIA:

- Patients who all are serologically confirmed to have dengue fever.
- Patients showing test positive for NS1 antigen with or without antibodies.
- Patients with either IgM or IgG antibodies positive for both or those positive for both antibodies are included in the study.
- No other confounding factors such as co-infection that may alter the clinical and laboratory results.

EXCLUSION CRITERIA:

- Dengue with co-morbid conditions that may affect the outcome such as major congenital anomalies and debilitating chronic illness.
- Patients with incomplete medical records.
- Negative cases for dengue serology.
- Patients with less than two CBC readings.
- Cases with any co-morbidity that may alter the laboratory and clinical findings such as other viral infections.

DATA COLLECTION:

- A Retrospective study in complications of dengue fever was conducted after attaining ethical committee permission from Karuna Medical College Chittur, Palakkad. Data were entered in a standard pro forma prepared by literature review and expert opinion. Dengue infection was classified according to WHO classification 2009, as Dengue without warning sign, Dengue with warning sign and severe dengue (SD).
- **1. DENGUE FEVER (DF):** Fever with any two of nausea, vomiting, rashes, myalgia, leucopenia, positive tourniquet test.
- **2. DENGUE FEVER WITH WARNING SIGNS (DFWS):** The above with any one of: abdomen pain, tenderness, persistent vomiting, ascites, pleural effusion, mucosal bleeding, lethargy, restlessness, hepatomegaly, increase in hematocrit(HCT) with a rapid decrease in platelet count.
- **3. SEVERE DENGUE** (SD): The above with at least one of severe plasma leakage such as shock and pleural effusion, severe bleeding, severe organ involvement-liver, CNS, heart.
- A predesigned data collection form used to collect the prescription details, laboratory investigations and other details from the case sheets of year (2016-2018) from the MRD it include relevant Information like demographic details, past medical history and medication history, reason for admission, laboratory findings, specific diagnosis, and drug related information (dose, frequency, route) from case recordings the evaluation of the complications

associated with dengue fever is being noted also studies for the effective management of dengue fever complications were done.

RESULTS AND DISCUSSION

Table No. 1: Age-wise distribution of study population

Age (in Years)	Frequency (n=350)	Percentage (%)
1-19	41	11.7
20-39	182	52
40-59	127	36.2

➢ Table 1 shows the age wise categorization observed during the study. Most of the patients were under the age group of 20-39 years (52%) followed by 40-59years (36.2) and 1-19 (11.7%).

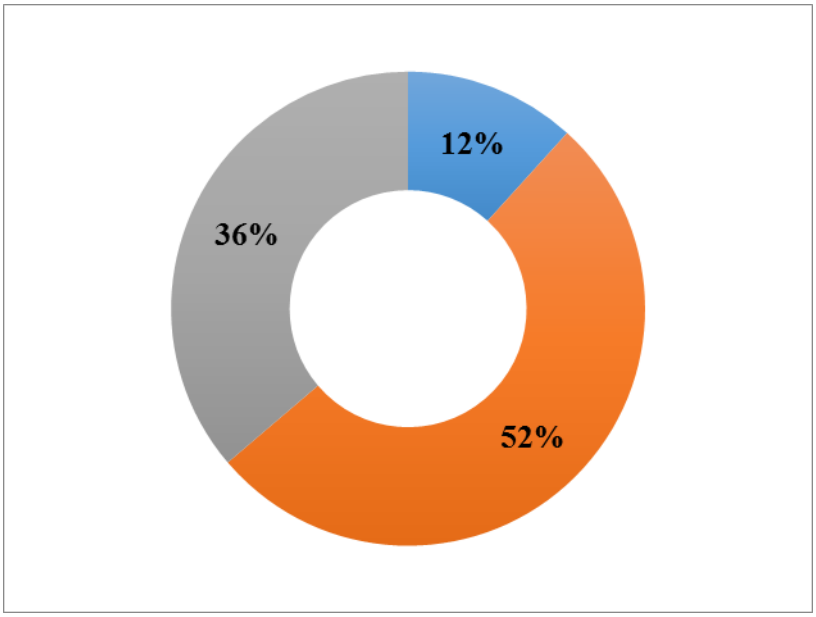

Figure No. 1: Age-wise distribution of patients with dengue fever

Table No. 2: Gender-wise distributions of cases

Gender	Frequency (n=350)	Percentage(%)
Male	196	56
Female	154	44

➢ Among the total number of patients (n=350) on comparing the gender-wise prevalence it reveals that there is a higher frequency of dengue positive cases in males 56% (n=196) than in females 44% (n=154). Similar studies conducted by ***Yunita F et al., (2012)***[7] shows 45% males in a total of 80 patients and ***Kumar S et al., (2016)***[27] shows 80% males in a total of 100 patients which shows higher prevalence in males.

Table No. 3: Number of cases enrolled by month

Month	Frequency (n=350)	Percentage %
April	10	2.8
May	85	24.2
June	89	25.4
July	70	20
August	58	16.5
September	15	4.2
October	23	6.5

➢ A total of 350 patients included in the study, in which high frequency of cases are enrolled in the month of May 24.2% (n=85) and June 25.4 %(n=89). Similar studies conducted by ***Kalayanarooj S et al., (1997)***[8] and ***Kanugolu K.T et al., (2015)***[9]shows that most of the dengue cases are enrolled in May, June months.

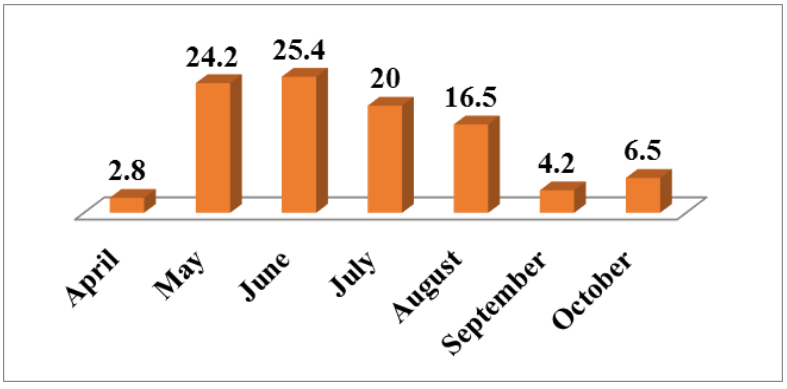

Table No. 4: Distribution of IV fluids in the treatment of dengue fever

IV Fluids	Frequency (n=350)	Percentage %
RL	75	21.4
NS	55	15.7
DNS	85	24.2
RL, DNS	135	38.5

➢ Table 4, represents the distribution of IV fluids in the treatment of dengue fever. In dengue fever patients IV fluid therapy is one of the significant treatment options for maintaining the fluid load of the patients. In this table, most of the patients are treated with RL and DNS (n=135) 38.5%, followed by the RL (n= 75) 21.4% and DNS (n=85) 24.2%. The corresponding treatment with IV fluids has being observed in the journal done by ***Biswas A et al., (2015)***[10].

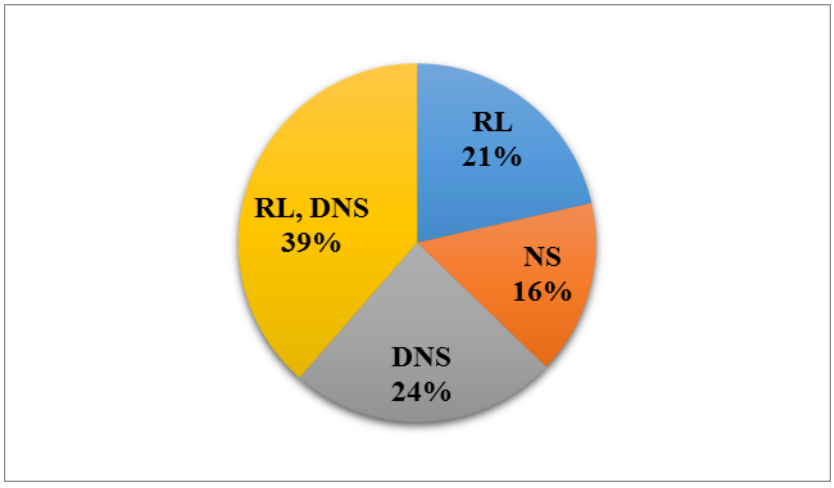

Figure No. 2: Distribution of IV fluids in the treatment of dengue fever

Table No. 5: Management of dengue fever with NSAIDS

NSAIDS	Frequency (n=350)	Percentage %
Paracetamol	75	21.4
Diclofenac	55	15.7
Paracetamol, Diclofenac	220	62.8

In Table 5, describes about the management of dengue fever with NSAIDS. In the symptomatic management of dengue fever NSAIDS play a significant role. The paracetamol and Diclofenac combine given cases are more commonly observed (n=220) 62.8%, followed by paracetamol alone given cases are (n=75) 21.4% and Diclofenac.

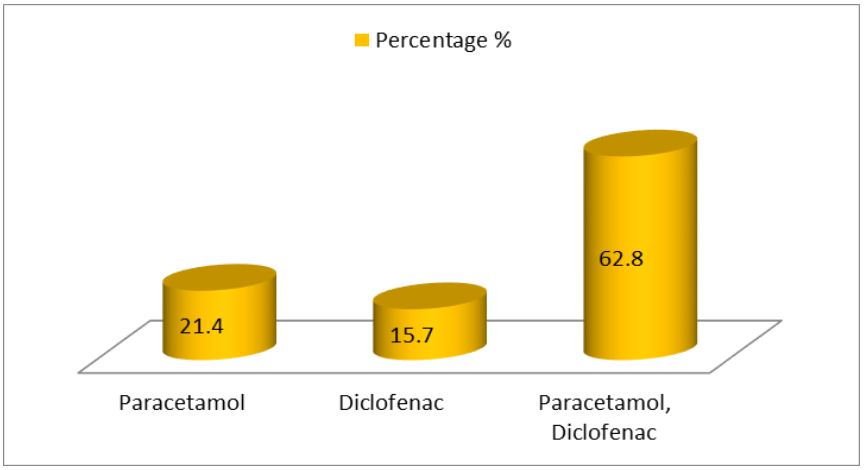

Figure No. 3: Management of dengue fever with NSAIDS

Table No. 6: Arrangement of dengue fever with other classes of drugs

Drugs	No of patients
T. Ceftriaxone	150
T. Cefuroxime	25
T. Cefixime	137
T. Ondansetron	261
T. Pantoprazole	232
T. Rabeprazole	9
T. Omeprazole	19
Ranitidine	87
Syp. Dexorange	45
Syp. Zincovit	36
Syp. A-Z	23
T. Feromira	11
C. Becozine	34
T. Allercet	2

Table 6, shows that the management of dengue fever with other classes of drugs. This includes the various antibiotics mainly ceftriaxone in 150 cases. In the gastro-intestinal agents most commonly observed one is pantoprazole 232 cases, followed by the iron supplements like Syp. Dexorange, T. Ferromira, C. Becozinc and rest of the symptomatic treatment is being given to the patient.

Table No. 7: Distributions of colloids and platelet transfusion in the management of shock

Colloids/platelet transfusion	Frequency (n=350)	Percentage %
Albumin	13	3.71
Platelet Transfusion	27	7.7
Nil	310	88.5

In Table 7, shows that the distribution of colloids and platelet transfusion in the management of shock. This is being done in patients with severe dengue includes severe plasma leakage, platelets less than 20,000 and dengue shock syndrome. This describes the platelet transfusion is done in 27 cases(7.7%) and Albumin is the major colloid given in 13 cases(3.7%), which is similar to the study conducted by ***Nhan N.T et al.,(2001)***[11] in which most of the patients are treated with colloid-dextran (21%) and platelet transfusion (45%).

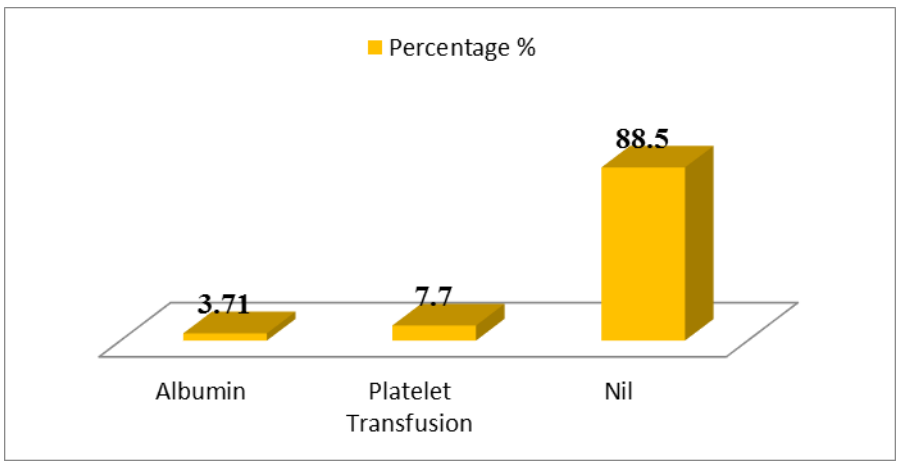

Figure No. 4: Distribution of colloids and platelet transfusion in the management of shock

Table No. 8: Management of dengue fever with/without herbal medicine

Drug	Frequency (N=350)	Percentage %
Carica Papaya	263	75.1
Without carica papaya	87	24.8

Table 8, represents the management of dengue fever with or without herbal medicine describes about the Carica papaya. Carica papaya L belongs to the Caricaceae family is believed to increase the platelet count in dengue fever patients.263 (75.1%) of cases were observed the treatment with Carica papaya and 87(24.8%) of cases were being treated without Carica papaya. Most of the patients were treated with Carica papaya and the efficacy is being observed in such cases.

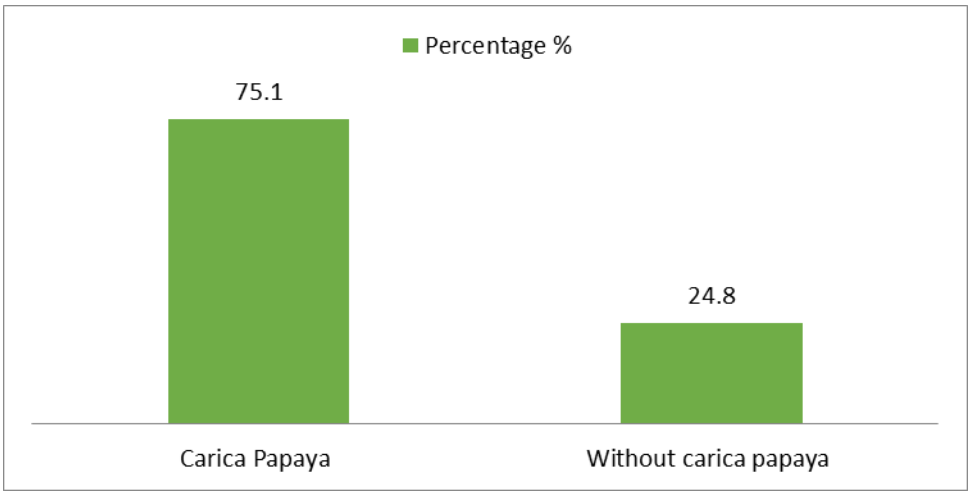

Figure No. 5: Management of dengue fever with/without herbal medicine

CONCLUSION

DF is a common acute febrile illness which comes as an epidemic in various parts of the country including Kerala. In our study, we evaluated 350 serologically confirmed dengue cases in which most of the cases were enrolled in the month of May- June (Monsoon season). In our observation we found that most of complications were thrombocytopenia, leukopenia, persistent vomiting, plasma leakage and shock. Hepatic, ophthalmic and cardiac complications were rarely observed and the mostly observed one is bleeding complications. The major clinical manifestations were found to be fever, vomiting, myalgia, rashes, headache and abdominal pain. Our study concludes that the symptomatic treatment was given by IV fluids to maintain the homeostasis, steroids which are prescribed prior to platelet

transfusion. The effective pain management is obtained with NSAIDs. The major life threatening complication of dengue fever observed was severe plasma leakage which occasionally leads to shock. The effective treatment with colloids (Albumin) helps to restore the cardiac index and reduce the elevated hematocrit level prevents the occurrence of Dengue Shock Syndrome. Knowledge and understanding of the varied presentations of DF in a region will definitely help in improving the outcome of this potentially fatal disease.

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