A CLINICAL PROFILE OF DENGUE FEVER IN OSMANIA GENERAL HOSPITAL

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ABSTRACT

The prospective study of clinical profile of Dengue Fever admitted in Osmania General Hospital with Dengue Positive patients. The study shows diseases more common in males and associated with various symptoms and complications; 10% with thrombocytopenia, some patients with bleeding manifestations and ARDS, total mortality of patients with Dengue Fever is 6%.

KEYWORDS

Dengue Fever, Clinical Profile.

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INTRODUCTION

Dengue Fever (DF), an acute febrile viral disease is the most common arboviral illness transmitted worldwide, caused by infection with one of the four serotypes of dengue viruses and transmitted by mosquitoes of the genus *Aedes*.¹

Infection with any of the four types of dengue virus can cause dengue fever, Dengue Haemorrhagic Fever (DHF) or Dengue Shock Syndrome (DSS), characterised by major clinical manifestations: high fever, haemorrhagic phenomena often with hepatomegaly and in severe cases signs of circulatory failure.¹

It is the most common arboviral infection, which infects man.² It is the second most important mosquito-borne infection in terms of morbidity, mortality and economic costs.³ Dengue fever is one of the most important emerging diseases of tropical and subtropical regions.⁴ Disease is predominant in urban and suburban areas and now in rural areas also.⁴ Around 2.5-3 billion people live in areas where dengue virus can be transmitted. Each year approximately 50 million infections occur with five lakh cases of DHF and at least 12,000 deaths mainly among children.⁵

From being a sporadic illness, epidemics of dengue have become a common occurrence worldwide. Dengue fever and dengue haemorrhagic fever is endemic in areas of South East Asia, i.e. Bangladesh, India, Indonesia, Maldives, Myanmar, Sri Lanka and Thailand. Dengue is a major cause of hospitalisation and death, especially among children in these regions.⁵ India is endemic for DF and DHF. All the four serotypes are found in the country. Case fatality rates in endemic countries are 2.5%.⁵ During epidemics of dengue, attack rates among susceptible are 40-90%.⁶ The incidence of dengue and global distribution of dengue have greatly increased in recent years.⁶ An increased disease burden has been linked to the resurgence of mosquito vector *Aedes aegypti*, overcrowding,

urbanisation and increasing travel. Despite its significant health and economic impacts, as of yet there is no specific and the outcome depends on medical care provided by the doctor to the patient.⁷

AIM OF THE STUDY

To study the clinical profile of Dengue Fever in 50 patients admitted to Osmania Hospital with dengue fever, i.e. positive for dengue IgM antibodies.

METHODS

The study was conducted at the upgraded Department of Medicine, Osmania General Hospital, Hyderabad. The study population included 50 patients presenting with fever. Dengue fever was diagnosed in those clinically suggestive of Dengue fever and who are tested positive for IgM Dengue antibodies.

Inclusion Criteria

- All pts. admitted with pyrexia during Oct' 11 to Oct' 13.
- Males and Females >12 yrs. of age.
- Seropositivity for IgM Dengue antibodies.

Exclusion Criteria

- Pts. who are not Seropositive for IgM Dengue antibodies.
- Males and Females < 12 yrs.
- Pts. with fever due to other causes.

The initial approach to the patient presenting with fever include a comprehensive history, physical examination and appropriate laboratory testing. The first step should be to confirm a diagnosis of Dengue fever and document the clinical manifestations in different patients.

RESULTS

A total of 50 subjects are taken into the study who fulfilled the criteria of dengue fever and IgM positive. Only classical dengue cases are studied and other cases are excluded. Both males and females are included. Among them 3 (66) are males and 17 (34) are females accounting for a ratio of M:F of 1.9:1.

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	No. of Patients	(%)
Males	33	66
Females	17	34

Table 1: Patient Distribution

Chart 1: Patient Distribution

Age Distribution of the Patients

Age group of study subjects included a wide range from 2nd to 6th decade, i.e. ranging from 14 years to 60 years. Commonest age group is the 3rd decade.

Age	No. of Patients				%
	DF	DHF	DSS	Total	
13 – 19	1	1	0	2	4%
20 – 29	9	4	1	14	28%
30 – 39	9	6	1	16	32%
40 – 49	7	4	1	12	24%
50- 59	2	2	1	5	10%
60 – 69	0	1	0	1	2%
Total	28	18	4	50	100

Table 2: Age Wise Distribution of Patients

Chart 2: Age Wise Distribution of Patients

Age in Years

From Table 2 and Graph 1, it is clear that majority of the cases having dengue infection belong to the age group of 30-39 years, wherein 61% belong to 1-10 years' group and 24% belong to 11-20 years' group. Dengue fever is seen most commonly in 1-20 years' group. DHF and DSS are seen most commonly in the 1-10 years.

Time Period	No. of Patients				%
	DF	DHF	DSS	Total	
October 09-December 09	10	7	1	18	36
January 2010-March 2010	1	1	0	2	4
April 2010-June 2010	0	0	0	0	-
July 2010-September 2010	2	1	0	3	6
October 2010-December 2010	8	6	1	15	30
January 2011-March 2011	2	0	1	3	6
April 2011-June 2011	0	0	0	0	-
July 2011-September 2011	1	2	1	4	8
October-11	3	2	0	5	10

Table 3: Distribution of Cases Throughout the Year

From the above data, it is noticed that majority of the cases have occurred during the months of August, September, October and November, i.e. in the monsoon and post-monsoon season.

Analysis of symptoms and signs is done in the 50 study patients and the findings observed are as shown in the table. Out of 50, 22 patients had bleeding manifestations.

Symptoms	No. of Patients				Percentage
	DF	DHF	DSS	Total	
Fever	28	18	4	50	100
Headache	14	10	4	28	56
Rash	0	11	2	13	26
Myalgias	10	8	3	21	42
Bleeding Manifestations	0	18	4	22	44
Jaundice	0	2	1	3	6
Altered Sensorium	0	0	2	2	4
Respiratory Distress	0	0	2	2	4

Table 4: Analysis of Various Symptoms

Table 7 shows that all the cases had fever (100%). Other common symptoms included headache (56%), joint pain (66%), myalgia (42%), rash (26%), haemorrhage (44%), altered sensorium (4%), jaundice (6%) and CNS symptoms (4%).

Chart 3: Analysis of Various Symptoms

Chart 4: Distribution of Clinical Symptoms in DF, DHF and DSS

Clinical Signs	No. of Patients				%
	DF	DHF	DSS	Total	
Tachycardia	6	11	3	20	40%
Bradycardia	3	8	2	13	26%
Hypotension	0	0	4	4	8%
Hepatomegaly	0	3	1	4	8%
Splenomegaly	1	3	1	5	10%
Ascites	0	1	1	2	4%

Table 5: Analysis of Clinical Signs

Bleeding manifestations occurred in 44% of patients out of 50 patients studied.

Figure 4 shows the details of bleeding manifestations, which occurred in 22 patients (44%). Gastrointestinal Tract (GIT) bleeding in the form of melena and haematemesis (6%), bleeding gums (16), haematuria (6%), bleeding from puncture sites (24%), haemoptysis (2%), bleeding from multiple sites (24%), skin, i.e. petechiae, rash, ecchymosis (26%) was the most frequent.

Chart 5: Analysis of Clinical Signs

Diagnosis	No. of Patients	%
DF	28	56
DHF	18	36
DSS	4	8

Table 6: Clinical Spectrum of Cases

Chart 6: Clinical Spectrum of Cases

Table 7 and Graph 8 shows the clinical spectrum of disease. DF was the most common manifestation (56%), DHF is lesser (36%) and DSS is the least (4%).

The mean haematocrit value of dengue positive cases in our study was 34.2 ± 5 . These values fall within the normal range of haematocrit. In DHF and DSS, an increase in haematocrit levels were noted. Haemoconcentration, i.e. haematocrit increase by greater than 20% signifies one of the criteria for diagnosing DHF/DSS.

Diagnosis	No. of Cases	Haematocrit Range
DF	28	35.2–38.8
DHF	18	34.0–39.2
DSS	4	36.4–45.4

Table 7: Mean Haematocrit Levels in Dengue Positive Cases

Platelet Count	No. of Patients				%
	DF	DHF	DSS	Total	
<10,000	0	2	3	5	10
10,000-1 Lakh	26	16	1	43	86
>1 Lakh	2	0	0	2	4

Table 8: Association of Platelet Count with Dengue Positive Cases

From Table 9 it is clear that thrombocytopenia <10,000 is seen in 10% of cases, 10,000 - 1 lakh in 86% of cases and >1 lakh in 4% of cases.

Chart 7: Association of Platelet Count with Dengue Positive Cases

Thrombocytopenia was more associated with DSS than with DHF and DF.

Analysis of Complications

Out of 50 patients 11 (22%) patients developed complications, 2 (4%) had ARDS, 11 (22%) had pleural effusion, 3 (6%) had pneumonia, 3 (6%) had renal failure, 2 (4%) had encephalopathy and 3 (6%) had multi-organ failure.

Complications	No. of Patients				%
	DF	DHF	DSS	Total	
Dengue with ARDS	0	0	2	2	4%
Dengue with Pleural Effusion	1	8	2	11	22%
Dengue with Pneumonia	0	2	1	3	6%
Dengue with Renal Failure	0	0	3	3	6%
Dengue Encephalopathy	0	0	2	2	4%
Dengue with Multi-Organ Failure	0	0	3	3	6%

Table 9: Complications

Investigations	No. of Patients				%
	DF	DHF	DSS	Total	
Hb <12 gm%	5	4	2	11	22%
Hb 12-14 gm%	11	8	1	20	40%
Hb >14 gm%	12	6	1	19	38%
TLC 4000-11,000	15	7	1	23	46%
TLC >11,000	3	4	1	8	16%
TLC <4,000	10	7	2	19	38%
SGOT >45	2	6	3	11	22%
SGPT >45	2	5	3	10	20%
Bilirubin >2	0	2	1	3	6%
Haematocrit >45	1	9	3	13	26%
Platelets <10,000/cu mm	0	2	3	5	10%
Platelets 10,000-1 Lakh/cu mm	26	16	1	43	86%
Platelets >1,00,000/cu mm	2	0	0	2	4%

Table 10: Investigations

The haemoglobin ranges from 4-16 with a mean value of 10.4 gm%. WBC counts ranged from 3,600 - 22,400 with a mean value of 8,600.

The mean haematocrit value of dengue positive cases in this study is 36.4 with a wide range of 28.2 - 48.4. These values fall within the normal range of haematocrit. In DHF and DSS, an increase in haematocrit levels were noted.

Haemoconcentration, i.e. haematocrit increase by greater than 20% signifies one of the criteria for diagnosing DHF/DSS. In our study, not much variation of haematocrit was observed. This may be due to the non-availability of pre-illness haematocrit, modification of haematocrit by treatment (Blood transfusion, colloid transfusion, etc.).

SGOT and SGPT ranged from 21-456 with a mean value of 64.6 (Normal 5-45 IU/lit).

Grade	No. of Cases	%	Recovered Cases	Expired
DF	28	56%	28	0
DHF	18	36%	17	1
DSS	4	8%	2	2
Total	50	100%	47	3

Table 11: Final Diagnosis and Outcome

Out of 50 patients, 47 (94%) recovered completely and 3 (6%) patients who presented with complications expired.

DISCUSSION

The study was conducted at the Upgraded Department of Medicine, Osmania General Hospital, Hyderabad. The study population included 50 patients satisfying the criteria of dengue fever. Only IgM positive cases are taken into study.

The commonest age group of the patients was 30 - 39 years with a range of 14 - 60 years. This was comparable to other studies of Priyadarshini et al⁸ and Neeraja et al.⁹

Sl. No.	Author	Year	Place	Age
1.	Neeraja et al	2004	Hyderabad	20-39
2.	Ashwini Kumar et al	2008	Udupi	20-30
3.	Priyadarshini et al	2010	Pune	20-30
4.	Present Study	2011	Hyderabad	30-39

Of the 50 patients in the study group, 33 patients (66%) are males and 17 patients (34%) are females. The Male-to-Female ratio was 1.9:1.

This was corresponding to the other studies by Agarwal¹⁰ et al, Ashwini Kumar¹¹ et al and Neeraja M et al. The reason for this may be due to more exposure of the males to the bite of vector *Aedes aegypti* due to their clothing habits or outdoor activities.

In a study conducted by Kamal S et al,⁴ females were more commonly affected.

Sl. No.	Author	Year	Place	M:F
1.	Neeraja et al	2004	Hyderabad	2:1
2.	Agarwal et al	2006	Lucknow	1.9:1
3.	Ashwini Kumar et al	2008	Udupi	1.7:1
4.	Priyadarshini et al	2010	Pune	4.1:1
5.	Present Study	2011	Hyderabad	1.9:1

The disease shows seasonal distribution. It is observed that disease was more seen during the months of August, September, October and November, which corresponded to the monsoon and post-monsoon season. Most of the other studies have similar observation.

Sl. No.	Author	Year	Place	Month/Season
1.	Neeraja et al	2004	Hyderabad	Aug-Oct.
2.	Ashwini Kumar et al	2008	Udupi	Aug-Nov.
3.	Priyadarshini et al	2010	Pune	Jul-Nov.
4.	Present Study	2011	Hyderabad	Aug-Nov.

Most of the cases have occurred from the months of May to November, which corresponds to the monsoon or post-monsoon season. This can be attributed to the presence of an environment favourable for the breeding of the vector *Aedes aegypti*.

In our study dengue illness manifested as DF (56%), DHF (36%) and DSS (4%). This corresponds to a study by Priyadarshini et al. A study by Malavige et al¹² showed more number of DHF cases than DF cases.

Sl. No.	Author	Year	Place	Clinical Profile
1.	Neeraja et al	2004	Hyderabad	DF-85% DHF-5% DSS-10%
2.	Malvige et al	2006	Srilanka	DF-30.6% DHF-75% DSS-18.7%
3.	Ashwini Kumar et al	2008	Udupi	DF-83.9% DHF-8.8% DSS-7.3%
4.	Priyadarshini et al	2010	Pune	DF-70% DHF-27.3% DSS-2.7%
5.	Present Study	2011	Hyderabad	DF-56% DHF-36% DSS-8%

Other studies by Ashwini Kumar et al and Neeraja et al show more number of DF and DHF patients and less of DSS patients.

The various clinical features in our study included fever (100%), Headache (56%), joint pain (36%), jaundice (6%), myalgia (42%), backache (25%), rash (26%), haemorrhage (44%), CNS symptoms (4%), respiratory distress (4%) and splenomegaly (8.3%).

Clinical features are compared with those in other studies in the table below.

Sl. No.	Study	Fever %	Joint Pain %	Headache %	Myalgia %	Rash %	Haemorrhage %	CNS %	Hepatomegaly %	Splenomegaly %
1.	Neeraja et al	100	15	74	53	41	7	-	80	-
2.	Ashwini Kumar et al	99.1	-	47.6	64.6	67.2	67.2	10	-	-
3.	Priyadarshini et al	99	20.3	61	60.6	25.7	69	-	11	7
4.	Rachel Daniel et al	96.8	-	77.2		13.2	15.2	1	12	-
5.	Agarwal et al	99	9	97	90	40	54	-	4	2
6.	Present Study	100	36	56	42	26	44	4	8	10

The mean haematocrit value of dengue positive cases in our study was 34.2 ± 5 . These values fall within the normal range of haematocrit. In DHF and DSS, an increase in haematocrit levels were noted.

Hemoconcentration, i.e. haematocrit increase by greater than 20% signifies one of the criteria for diagnosing DHF/DSS.

In our study 5/50 (10%) had thrombocytopenia $<10,000$, 86 (43%) of the cases had platelet counts between 10,000 - 1 lakh and 2 (4%) had more than 1 lakh platelet count. This corresponds to observations of Rachel Daniel et al¹³ and Khan E et al.¹⁴

In this study, out of 50 patients 47 (94%) recovered completely and mortality was seen in 3 (6%) of patients who presented with complications which correlates with Neeraja et al.

Sl. No.	Author	Year	Place	Mortality %
1.	Rachel Daniel et al	2003	Kollam	3.3%
2.	Neeraja et al	2004	Hyderabad	5%
3.	Malavige G. N. et al	2006	Srilanka	3.7%
4.	Ashwini Kumar et al	2008	Udupi	2.4%
5.	Present Study	2011	Hyderabad	6%

CONCLUSIONS

- Most common age group affected was 30-39 years. Disease was more common in males than females.

- Disease was more common in the months of August-November, i.e. monsoon and post monsoon season DF was seen in 56% of cases, DHF was seen in 36% of cases and DSS was seen in 8% of cases.
- The various symptoms associated were fever (100%), headache (56%), joint pain (36%), myalgia (42%), jaundice (6%), rash (26%), haemorrhage (44%), CNS symptoms (4%), hepatomegaly (8%) and splenomegaly (10%).
- Thrombocytopenia $<10,000$ is seen in 10% of cases, 10,000 - 1 lakh in 43% of cases and >1 lakh in 86% of cases.
- Bleeding manifestations and severe thrombocytopenia <1 lakh was associated more with DHF and DSS than with DF cases.
- Out of 50 patients, 11 (22%) patients developed complications. Among them 2 (4%) had ARDS, 11 (22%) had pleural effusion, 3 (6%) had pneumonia, 3 (6%) had renal failure, 2 (4%) had encephalopathy and 3 (6%) had multi-organ failure.
- There was an association between thrombocytopenia and bleeding.
- Haematocrit values were within the normal range; this was accounted to the modification of haematocrit by treatment with blood or colloid.
- Out of 50 patients 47 (94%) recovered completely and 3 (6%) patients who presented with complications expired.

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