

Original research article

Study Of Clinical Profile And Presentation Of Dengue Fever In Patients Admitted In A Tertiary Care Hospital Of Bihar-A Prospective Study**Dr. Atulika Prakash¹, Dr. Sachin Sinha², Dr. Uma Shankar Prasad³****¹ 3rd Year Post Graduate, Department of Medicine, Nalanda Medical College and Hospital, Patna, Bihar, India.****² 2nd Year Post Graduate, Department of Medicine, Nalanda Medical College and Hospital, Patna, Bihar, India.****³ Professor and Head, Department of Medicine, Nalanda Medical College and Hospital, Patna, Bihar, India****Corresponding Author: Dr. Sachin Sinha****Abstract**

Objective: Dengue fever is the most common arbovirus borne illness known to humans with mortality reaching 20% without treatment. The current study was designed to assess clinical profile and presentation of dengue fever

Method: prospective observational study done in Nalanda Medical College and Hospital (NMCH), Patna . 224 patients with confirmed dengue were included and clinical, hematological, biochemical and radiological parameters were noted.

Result: Male preponderance was seen with maximum cases below 30 years of age. Maximum patients required admission for less than 10 days. Fever, nausea, vomiting, headache, loose stools, bleeding, cough, pain abdomen and loss of appetite were the commoner presenting complains. Thrombocytopenia was found the most consistent laboratory finding followed by leucopenia and raised liver enzymes. Radiological findings were rare. Mortality rate was nil.

Conclusion: Fever, gastroenterological symptoms and bleeding with low platelets, low leucocytes and raised liver enzymes should prompt the physician to look for Dengue infection. With timely diagnosis and proper management the prognosis of the disease is good.

Introduction

Dengue fever is an infectious mosquito-borne disease caused by one of the four serotypes of dengue virus (DENV-1 to DENV - 4) belonging to the family Flaviviridae. Infection with one dengue serotypes confers lifelong homotypic immunity to that serotype and a very brief period of partial heterotypic immunity to other serotypes, but a person can eventually be infected by all 4 serotypes. Several serotypes can be in circulation during an epidemic¹. Dengue is transmitted by the bite of mosquitoes of the genus *Aedes*, principally *Aedes aegypti* and *Aedes albopictus*².

Dengue infections can result in a wide spectrum of disease severity ranging from an acute febrile illness Dengue Fever (DF) to the life threatening dengue haemorrhagic fever (DHF)/Dengue Shock Syndrome(DSS) which if left untreated, are associated with mortality as high as 20%^{3,4,5}

Symptoms of dengue fever includes mild to high grade fever with headache, pain behind eye, muscle and joint pain, sore throat, altered taste sensation and centrifugal maculopapular rash. Severe dengue is characterized by abdominal pain, persistent vomiting, shock, bleeding, thrombocytopenia and difficulty in breathing. Atypical manifestations of dengue fever(DF) are more common than that reported in the past and neurological ,cardiac and other manifestations are being reported more frequent⁶

Early diagnosis and careful management increases the survival of patients, so clinical suspicion of dengue is important which depends on the recognition of its sign and symptoms among patients of acute febrile illness⁷

Currently the disease is endemic in India and a cause of great concern to public health⁸. The present study is an attempt to elucidate the clinical and laboratory profile of serologically confirmed hospitalized cases of dengue fever.

Aim and Objective

To study the clinical and laboratory profile in Dengue Fever in patients admitted at Nalanda Medical College and Hospital (NMCH) Patna

Material and Methods

A prospective observational study was carried out at Nalanda Medical College and Hospital (NMCH), Patna, Department of Medicine from 1st August 2019 to 31st January 2020.

All patients 14 years and above with confirmed dengue, who were hospitalized with ELISA for IgM Dengue antibody with or without Non Structural Antigen 1 (NS-1) were included in the study.

The patients with concomitant chikungunya, malaria, typhoid fever, leptospirosis etc. were excluded from this study. Detailed history and clinical examination was performed on each patient.

Following observations were done at presentation and during the course of illness.

- i) Age and sex of patients
- ii) Clinical presentation
- iii) Total duration of stay in hospital
- iv) Laboratory parameters including platelet count, leucocytes count, liver transaminases, hematocrit and blood urea nitrogen (BUN)/creatinine
- v) ECG for development of myocarditis, Ultrasonography (USG) for ruling out organomegaly and ascites, Chest X Ray(CXR) for Changes of Acute Respiratory Distress Syndrome (ARDS) and Pleural Effusion
- vi) Complications in the form of shock, bleeding, Renal Failure, Acute Respiratory Distress Syndrome, Myocarditis, any neurological complication and death

After the first data collection, patients were monitored periodically (clinically as well as laboratory and radiological investigations) as and when required till resolution.

The study was approved by hospital ethics committee and informed consent was obtained from each patient.

Results

Total 224 (N) patients were studied in this study in which there was clear cut male dominance. The male population consisted of 146 patients (65.18%) as compared to females who constituted of 78 (34.82%) cases. Most 131 (58.48%) patients belonged to young age group in range 14-30 years. The number of cases decreased with higher age groups and no cases were found above 76 year [Table 1]

Most 154(68.75%) patients required admission for 5-10 days followed by 65(29.01%) cases who required stay less than 5 days. Only 2(0.89%) patients required admission for a duration more than 20 days [Table 6].

Fever was the most common presenting complain in 155(69.20%) cases followed by nausea and vomiting in 65(29.02%) cases, generalized headache 57(25.45%), loose stools 18(8.04%), bleeding in 14(6.24%), cough in 12(5.36%), anorexia and pain abdomen in 9(4.02%) cases each, generalized itching and arthralgia in 8(3.57%) cases each. Exclusive back pain was present in 6(2.68%) cases and maculopapular skin rash found in 3(1.34%)

cases only. Shortness of breath, burning micturition, constipation and retroorbital pain were found in 2(0.89%) cases each. Similarly leg edema, unconsciousness with convulsions and palpitations constituted presenting symptoms in 1(0.45%) patient each. [Table 2]

Laboratory investigations showed thrombocytopenia in 128(57.14%) cases with platelet count below 20000/mm³ in 19(8.48%) cases. Leucopenia was found in 72(32.14%) cases. Raised transaminases with slight predilection for Aspartate Transaminase (AST) was seen. AST was high in 64(28.57%) cases compared to Alanine Transaminase (ALT) high in 62(27.67%) cases. Haematocrit was raised in 39(17.41%) cases. BUN/Creatinine was high in only 1(0.45%) case. [Table 3]

Serial Electrocardiography (ECG) was essentially normal in all cases. USG revealed ascites in 5(2.23%), hepatomegaly in 3(1.34%) cases and splenomegaly in 4(1.81%) cases. CXR was suggestive of pleural effusion and ARDS in 1(0.45%) case each. [Table 4]

Most common complication was bleeding in the form of epistaxis, hematemesis or per vaginum bleeding in 14(6.24%) cases followed by ascites in 5(2.23%) cases and shock in 2(0.89%) cases. Acute Renal Failure (ARF), ARDS, pleural effusion and febrile convulsion with loss of consciousness were found in 1(0.45%) case each. No cardiologic complication was recorded. There were no deaths. [Table 5]

Table 1: Age and Sex characteristics

AGE (YEARS)	MALE	FEMALE	TOTAL
14 - 30	98	33	131
31- 45	34	36	70
46- 60	9	6	15
61- 75	5	3	8
> 76	0	0	0
TOTAL	146	78	224

Table 2: Clinical Features (N = 224)

Clinical features	MALE	FEMALE	TOTAL (%)
Fever	106	72	155(69.20)
Nausea and vomiting	40	25	65(29.02)
Headache	29	28	57(25.45)
Loose stools	13	5	18(8.04)
Bleeding (gi/nasal/pv)	10	4	14(6.24)
Cough	11	1	12(5.36)
Loss of appetite	5	4	9(4.02)
Pain abdomen	5	4	9(4.02)
Itching	1	7	8(3.57)
Giddiness	8	0	8(3.57)
Joint pain	4	3	7(3.12)
Backache	2	4	6(2.68)
Skin rash	3	0	3(1.34)
Shortness of breath	2	0	2(0.89)
Burning micturition	2	0	2(0.89)
Constipation	2	0	2(0.89)
Retro-orbital pain	1	1	2(0.89)
Leg edema	1	0	1(0.45)
Unconsciousness/ Febrile convulsions	0	1	1(0.45)

Palpitations	1	0	1(0.45)
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Table 3: Lab parameters

	MALE	FEMALE	TOTAL (%)
THROMBOCYTOPENIA			
< 1,00,000/cu.mm	93	35	128(57.14)
< 50,000/cu.mm	31	10	41(18.30)
< 20,000/cu.mm	17	2	19(8.48)
LEUCOPENIA(<4,000/cu.mm)	54	18	72(32.14)
RAISED AST/SGOT (IU/L)	41	23	64(28.57)
RAISED ALP/SGPT(IU/L)	39	23	62(27.67)
RAISED HAEMATOCRIT (>45%)	38	1	39(17.41)
RAISED BUN/CREATININE (>3)	1	0	1(0.45)

Table 4: Radiological and ECG parameters

	MALE	FEMALE	TOTAL (%)
USG (WHOLE ABDOMEN)			
splenomegaly	4	0	4(1.81)
hepatomegaly	3	0	3(1.34)
ascites	3	2	5(2.23)
CHEST X-RAY			
Pleural effusion	1	0	1(0.45)
ARDS	1	0	1(0.45)
ECG for myocarditis	0	0	0

Table 5: Complications

	MALE	FEMALE	TOTAL (%)
BLEEDING (epistaxis/per vaginum bleed/gastrointestinal bleed)	10	4	14(6.24)
ASCITES	3	2	5(2.23)
SHOCK	0	2	2(0.89)
ACUTE RENAL FAILURE	1	0	1(0.45)
PLEURAL EFFUSION	1	0	1(0.45)
ARDS	1	0	1(0.45)
ANY NEUROLOGICAL COMPLICATIONS	0	1	1(0.45)
ECG CHANGES FOR MYOCARDITIS	0	0	0
DEATH	0	0	0

Table 6: Hospitalization duration

DAYS	MALE	FEMALE	TOTAL (%)
<5	40	25	65(29.01)
5-10	106	48	154(68.75)
11-15	0	4	4(1.78)
16-20	0	0	0
>20	1	1	2(0.89)
	146	78	

Discussion

In our study male patients were more than female patients, this was similar to study conducted by Karoli et al⁶. Our study showed that younger age groups are more likely to be involved than older age groups contradicting earlier evidence of more incidence in the higher age groups⁹. In addition to fever, headache and nausea, vomiting, the other presenting features in our study were loose stools, epistaxis, per vaginum bleeding, black stools/hematemesis, cough, anorexia, giddiness, itching, shortness of breath, burning micturition, constipation, leg edema, palpitation and shock. Retroorbital pain, skin rash, joint pain and backache were not as common as they used to be in past. Other studies supportive of atypical presentation are Karoli et al⁶ and Pawaria et al¹⁰. The duration of stay required to be in hospital was less than 10 days for maximum patients. Only 2 patients required more than 20 days to recover.

2 female patients who presented in Dengue Shock Syndrome (DSS) recovered completely after Intensive Care Unit (ICU) management with Noradrenaline support and other symptomatic treatment. Only 1 patient landed in ARF with BUN/Creat >3 with ARDS and he recovered well after BIPAP support, strict fluid management and platelet transfusion and symptomatic management in ICU setup. Similarly, one patient who presented with unconsciousness and febrile seizures responded well to symptomatic management and had no neurological complications later on. Those who developed complications were in younger age groups, a finding supported by Mishra AK et al⁷. No cardiac complications were found⁷. Bleeding occurred in 6.24% patients and thrombocytopenia was found in 57.14% cases. This finding was suggestive of poor correlation between low platelet count and bleeding⁷. Liver enzymes were raised with slight predilection for AST in almost 28% cases. This finding is contradictory to study by Rachel D et al¹¹ which showed almost 83% cases to have raised transaminases.

Mortality rate was nil in our study. A similar study by Ahmad AB et al suggests similar mortality rate¹².

Conclusion

With environmental changes and vast urbanization Dengue Fever incidence is increased with more cases now coming up with atypical presentation. Younger age groups with male predilection are affected more. With timely diagnosis and management hospital stay is less than 10 days. Thrombocytopenia is a poor marker of bleeding suggesting of other causative factors in dengue fever. Complicated cases have good prognosis with in hospital care and adequate monitoring.

References

1. CDC. Imported dengue--United States, 1997 and 1998. *Morb Mortal Wkly Rep.* 2000;49:248-5.
2. Engelthaler DM, Fink TM, Levy CE, Leslie MJ. The reemergence of *Aedes aegypti* in Arizona. *Emerg Infect Dis* 1997; 3:241-2.
3. WHO Fact sheet N° 117: Dengue and dengue haemorrhagic fever. (2008) Available: <http://www.who.int/mediacentre/factsheets/fs117/en/>
4. Dengue and Dengue Hemorrhagic Fever: Information for Health Care Practitioners - CDC Division of Vector Borne Infectious Diseases. Available: <http://www.cdc.gov/ncidod/dvbid/dengue/dengue-hcp.htm>.
5. WHO (2009) Dengue Guidelines for Diagnosis, Treatment, Prevention and Control WHO (2009) http://whqlibdoc.who.int/publications/2009/9789241547871_eng.pdf.

6. Karoli R, Fatima J, Siddiqi Z, Kazmi KI, Sultania AR. Clinical profile of dengue infection at a teaching hospital in north India. *J Infect Dev Ctries* 2012;6:551-4.
7. Mishra AK, Kumar S, Kumar P, Ahmad A, Kumar S, Saha KK, Choudhary MK, Kumar N. Study on Clinical Profile of Dengue Fever in a Tertiary Care Centre of Bihar. *Int J Sci Stud* 2018;6(5):43-46.
8. Cecilia D. Current status of dengue and Chikungunya in India. *WHO South East Asia J Public Health* 2014;3:22-6.
9. Guha- Sapir D, Schimmer B. Dengue Fever: New Paradigms for a Changing Epidemiology. *Emerg Themes Epidemiol.* 2005;2:1
10. Pawaria A, Mishra D, Juneja M et al. Atypical manifestations of Dengue Fever. *India Pediatr* 2014;51:495-6
11. Rachel D, Phillip AZ. A study of clinical profile of dengue fever in Kollam, Kerala, India. *Dengue Bull* 2005;29:197-202
12. Ahmad AB, Bhattacharya DK, Baruah S et al. a study on clinical and lab profile of dengue fever in a tertiary care hospital in Assam, India. *Int J Med Res Prof* 2017;3:113-6

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