ORIGINAL ARTICLE

Clinical features & outcome of dengue cases at a tertiary care centre

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Abstract

Background: *Dengue is a very common seasonal public health problem causing significant mortality every year. In 2019 an outbreak occurred in Bangladesh. Few new manifestations and multi organ involvement were found.*

Objective: *The objective of the study was to see the clinical and laboratory manifestations and outcome of dengue fever in a medical college hospital.*

Methods: *It was an observational study in a medical college hospital in Bangladesh. Study period was one year. The patients were confirmed cases of dengue. Apart from detailed clinical history, examination of patient, relevant investigations and follow up was done until discharge.*

Result: *Total number of cases was 98. Out of them 62 (63.2%) were male and 36 (36.73%) were female. Fever was most common (100%) manifestation and duration of fever ranged from 5 to 8 days with a mean duration of 6.3 (± 1.0) days. Among other symptoms generalized body ache was most common (63, 64.3%). Generalized weakness was present in 60 cases (61.2% cases) Bleeding manifestations was present in 41 cases; abdominal manifestations were found in 11 cases. Blood for NS1 was positive in 94 (95.9%) cases; most cases (71, 72.4%) became positive between 2nd to 4th day. Ninety (91.9%) cases developed thrombocylopcnia and it started at 5th day in 45 (45.9%) cases. Blood transfusion was given in 12 (12.2%) cases & Platelet transfusion was given in 3 (3.1%) cases. Complete recovery was in 96 (98%) cases and Death occurred in 2 (2.0%) cases.*

Conclusion: *Bleeding was a dominant presentation. Some atypical manifestations like gastro intestinal features were also observed. These findings will help physicians in early diagnosis of dengue.*

Keywords: *Dengue, Fever, Thrombocytopenia, Hematocrit.*

Introduction

Dengue is an acute infection characterized by fever, headache, muscle and joint pains, rash, nausea and vomiting. Dengue infections may also be asymptomatic or may lead to (a) "classical" Dengue fever (DF), or (b) Dengue hemorrhagic fever (DHF) without shock, or (c) Dengue hemorrhagic fever (DHF) with shock. It is caused by an arbovirus and spread by Aedes mosquitoes. Among all flaviviruses, it is the most common. The dengue virus is a RNA virus and is of 4 serotypes (DEN 1-4). The virus serotypes are closely related but antigenically distinct. Infection with one serotypes of Dengue Virus (DENV) provides lifelong immunity to that serotypes, but results only in partial and transient protection against subsequent infection by the other three serotypes. It is possible for a person to be infected as many as four times, once with each serotype. It is well established that re infection with different DENV serotypes increases the risk of developing DHF. Since 2000, Bangladesh has esperienced dengue fever in every year. All four serotypes have been detected, with DENV-3 predominance until 2002.[1]

Approximately half of the world's population is at risk, especially people residing in tropical and subtropical climates. Dengue infection is a major challenge to public health, especially in South-East Asia for several years. The incidence of dengue has increased dramatically around the world in recent decades. Bangladesh had sporadic transmission of dengue virus from 1964 to 1999, but the first outbreak due to dengue virus type 3 occurred in 2001 with dengue outbreaks occurring at increasing frequency and magnitude since then. Rapid increase in the dengue cases in 2019 became a public health concern in

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Bangladesh. Dengue has a wide geographical distribution and can present with a diverse clinical spectrum.[2] Maximurn patients present with fever and some directly present with bleeding manifestations. In recent years gastrointestinal manifestations and shock is becoming more common. Over 50 million cases of dengue hemorrhagic fever (DHF) occur in Asian countries.[3] Reported case fatality rate is about 5%.[4] For reduction of morbidity and mortality early diagnosis and prompt treatment is essential.

Detailed evaluation of clinical and laboratory parameters will help in better understanding of the disease process and will help in development of treatment and thus will improve outcome of the disease. The objective of this study was to assess the manifestations of the dengue infection and to evaluate the outcome of dengue fever in a tertiary care hospital.

Materials and methods

It was a prospective observational study in a medical college hospital in Bangladesh. Study period was from January 2019 to December 2019. The whole number of patients included in our study was 98 (n=98). Confirmed cases of dengue fever admitted in Dengue isolation ward of Khu1na medical college hospital were taken into account by purposive sampling method. All patients were with positive dengue tests, either NSI antigen or IgM. Patients who were positive for malaria, meningitis, and enteric fever were excluded from the study. This was an observational study and no interruption of investigations and management was done.

History included age and sex, fever, headache, myalgia, arthralgia, retro-orbital pain, nausea, vomiting, jaundice, breathlessness, sore throat, bleeding from nose, bleeding from gum, blood in vomiting, blood in stools, blood in urine and blood in sputum. The patient was examined in detail for various clinical signs like pallor, icterus, cyanosis, lymphadenopathy, edema of feet, facial edema, and signs of dehydration like weak and thready pulse, sunken eyes etc, conjunctival congestion and presence of rashes over the body. Detailed examination was also done for the signs of bleeding manifestations like Purpura, Petechiae, ecchymoses, low blood pressure i.e. hypotension, cold and clammy peripherals, etc.

Cases were followed up daily for the clinical and laboratory parameters. Blood parameters were monitored every day till remarkable improvement seen clinically and haematologically. TC of WBC, Total Platelet Count, Hb%, haematocrit for each patient were recorded. Daily vitals were monitored. Chest X ray, ultrasonography, and liver function tests were done on selected cases.

The patients were treated with oral paracetamol intravenous fluids, blood and platelet transfusion and inotropes, when necessary. The frequency of various signs and symptoms and the laboratory tests were calculated. The results were tabulated and correlated. The outcomes were recorded.

Results

Total number of cases was 98. Of them 62 (63.3%) was male and 36 (36.7%) was female. The male female ratio was 1.7: 1. Most of the patients 27 (27.6%) was in the age group of 21-30 years followed by age group of 13-20 years (26.5%). (Table I). Sixty two (63.3%) patients were attacked at the month from June to October. Average Hospital stay was 7.4 (± 1.3) days. Duration of fever ranges from 5 to 8 days with a mean duration of 6.3 (± 1.0) days.

Table 1
Distribution of cases on age and gender

Demographic variables	No	Percentage
Sex		
Male	62	63.2
Female	36	36.7
Age group (Years)		
13-20	26	26.5
21-30	27	27.6
31-40	20	20.4
41-50	16	16.3
51-60	7	7.1
>60	2	2.1

Fever was present in all 98 (100%) cases. Among other symptoms generalized body ache was present in 63 (64.3%) cases, generalized weakness in 60 cases (61.2%) cases, headache in 49 (50%) cases (Table II).

Table II
Clinical Features of dengue cases

Symptoms	No	Percentage
Fever	98	100
Generalized bodyache	63	64.3
Generalized weakness	60	61.2
Headache	49	50
Bleeding	41	41.8
Ascites	4	4.1
Vomiting	4	4.1
Pleural effusion	2	2.0
Diarrhoea	2	2.0
Abdominal pain	1	1.0

Bleeding manifestations was present in 48 (48.9%) cases-out of them melaena in 20 (20.4%) and rash in 7 (7.1%) cases (Table III).

Table III

Patterns of bleeding

Types of b1eeding	No	Percentage
Melaena	20	20.4
Rash	7	7.1
Per vaginal bleeding	5	5.1
Gum bleeding	4	4.1
Haematochezia	3	3.1
Haemoptysis	3	3.1
Sub conjunctival haemorrhage	2	2.0
Haematemesis	2	2.0
Haematuria	1	1.0
Epistaxis	1	1.0

Abdominal manifestations were found in 11 (11.2%) cases - ascites in 4(4.1%) cases; vomiting in 3(3.1%) cases, diarrhea in 3 (3.1%) cases, abdominal pain in 1(1.1%) case. Pleural effusion was present in 2 (2.0%) cases. Pulse volume was decreased in 30 (30.6%) cases. Mean Pulse pressure was 36.2 (±7.7) mm Hg. Nine (9.2%) patients were presented with Shock. Of them 2 (2.1%) died.

Blood for NSI was positive in 94 (95.9%) cases, most cases (72.4%) become positive between 2nd to 4th day. Among them 31 (31.6%) become positive at 3rd day of fever followed by 20 (20.4%) cases at 2nd day; 20 (20.4%) cases at 4th day (Table IV). Anti IgM was positive in 4 (4.1%) cases; 2 (2.0%) at 4th day and 2 (2.0%) at 5th day of illness.

Table IV

Days of Dengue NS1 positivity

Day	No	Percentage
1	5	5.1
2	20	20.4
3	31	31.6
4	20	20.4
5	17	17.3
6	1	1.0

Total count of WBC was normal in 73(74.5%) cases but among them in 50 (51.0%) cases it is at lower limit (4000-5000 /cc). Leucopenia was found in 21(21.5%) cases and leukocytosis in 4(4.1%) cases. 90(91.8%) cases developed thrombocy-

topenia. Platelet count starts declining at 5th day in 45(45.9%) cases; 20(20.4%) cases at 4th day (Table V).

Table V

Day of onset of thrombocytopenia

Day	No	Percentage
3	10	10.2
4	20	20.4
5	45	45.9
6	15	15.3

Lowest platelet count was at 6th day in 41(41.8%) cases, at 7th day in 31(31.6%) cases & at 5th day in 18 (18.4%) cases. Mean Hct value is 40.13 (± 5.0). Hct value decreased in 48.0% of male and 30.6% cases of female patients. [Table VI).

Table VI

Hct value of study cases

Sex	Hct (%)	No	Percentage
Male			
	<42	47	48.0
	42-54	15	15.3
	>54	0	0
Female			
	<38	30	30.6
	38-46	3	3.1
	>46	3	3.1

SGPT was increased in 53 (54.1%) cases. In 40 (40.8%) cases values were between 41-80 IU/L and in 13 (13.2%) cases value were above 80 IU/L. S creatinine was increased in 20 (20.4%) cases. Transfusion was given in 15 (15.3%) cases. Among them Blood transfusion was given in 12 (12.2%) cases & Platelet transfusion was given in 3 (3.1%) cases. Complete recovery was in 96 (98.0%) cases and Death occurred in 2 (2.0%) cases.

Discussion

In our study male was more common than female. The male to female ratio was 1.7:1. In a study by Raut A male was 75% and female 25%.[5] According to Jalily QA dengue fever occurs more in male patients than their female counterparts.[6] Most of the patients (53%) was between age 13-30 years. This finding is similar to a study by Hasan SR where 58.9% cases were within 13-30 years of

age.[7] Average hospital stay was 7.4(+ 1.26) days. In a study by Ghazala mean duration was 6 days.[8]

Fever was most common (100%) presentation. Kashinkunti M suggests that fever was the most common presenting symptom (100%) in and around India.[9] In another study by Shultana K fever was present in 100% cases.[10] In our study duration of fever ranges from 5 to 8 days with a mean duration of 6.3 (± 1.0) days. In this study we found that generalized body ache was second most common (63, 64.3%) presentation. Generalized weakness was present in 60 cases (61.2% cases), headache in 49 (50%) cases. Similar Results are found in different studies.[11,12] Bleeding manifestations were present in 48 (45.0%) cases. Among them melaena in 20, rash in 7, per vaginal bleeding in 5, gum bleeding in 4, haematochazia in 3, haemoptysis occurred in 3 cases. In a study bv Jain De et al found 31.6% of patients had bleeding episodes in the form of petechiae (12.8%) and malena (7.9%).[13] Epistaxis was most common bleeding manifestation (70%) in another study in Banglacdesh.[10] Pulse volume was decreased in 30 (30.6%) cases and normal in 68(69.4%) cases. But more cases of low pulse volumes were found (65% cases) in a study by Choudhury J where Mean Pulse pressure was 36.2 (±7.7) mm Hg.

Abdominal manifestations were found in 11(11.2%) cases. Among them Ascites was found in 4 (4.1%) cases; vomiting in 3 (3.1%) cases, diarrhoea in 3 (3.0) cases, abdominal pain in 1(1.0) case. In a study by Padyana abdiominal manifestations were more prevalent as like vomiting in 58.3%, abdominal pain 41.7%, diarrhea in 20.8% cases.[11] Pleural effusion was present in 2 (2.0%) cases. It was present in 9% cases in a study by Sreenivasulu T.[2]

Blood for NSI was positive in 94 (95.9%) cases & Anti IgM was positive in 4 (4.1%) cases: most cases 71 (72.4%) of NSI became positive between 2nd to 4th day. Among them majority cases 31 (31.6%) of NSI become positive at 3rd day of fevcr. In the study done by metha, 52% cases were positive for NSIAg while 41% and 26% were positive for IgG and IgM respectively.[14]

Total count of WBC was normal in 73 (74.5%) cases but among them in 50 (51.0%) cases were at the lower end of normal limit. (4000-5000 /cc). Leucopenia was found in 21 (21.4%) cases and leukocytosis in 4 (4.1%) cases. Leucopenia was present in 9.3% cases in a study by Alam S.[15] Thrombocytopenia was very common (91.8%) in our study and also in other studies.[5] Platelet count started declining in most cases (46.0%) at 5th day. Lowest platelet count was at 6th day in 30 cases, 7th day in 21 cases; 5th day in 18 cases. In a study by Thai KT platelets began to drop

below 100 000/mm^{3} from day 4 of the disease and both tended to recover on day 9.[16] Mean Hct value is 40.1 (±5.0). In our study Hct value was decreased in most of the cases (78.6%). This finding is contradictory to most of the studies.[17,18] SGPT was increased in 53 (54.1%) cases. In 40 (40.8%) cases values were between 41-80 IU/L and in 13 (13.2%) cases above 80 IU/L. In a study by Nayak et al liver involvement was noted among 97.3% cases.[19] S creatinine was increased in 20% cases in our study.

Blood transfusion was needed in 12 (12.2%) cases and Platelet transfusion was needed in 3 (3.1%) cases. These findings were similar to a study by Tewari KN et al.[20] In our study complete recovery occurred in 96 (97.95%) cases and death in 2 (2.0%) cases. In a study by Ghazala the mortality rate was found about 10%.[8] Another study in Bangladesh reported 6% mortality rate.[15]

Regarding limitation, dengue cases with atypical presentation and multi organ dysfunction couldn't be evaluated in detail. Large scale study involving multiple centre might have given a better picture.

Conclusion

Dengue has wide spectrum clinical presentation starting from flu like illness to life threatening hemorrage and shock with many new and atypical manifestations. Thus, a high index of suspicion for early diagnosis, monitoring and prompt fluid management and supportive treatment can significantly decrease case fatality rate.

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