Original Article

Study on Dengue fever in children: A Tertiary care hospital during dengue out-break.

Tamanna Begum[1], Sadika Kadir[2], Khayerul Islam[3], Rafiqul Islam[4], Romela Yeasmin[5], Salina Nasrin[6] Asif Imran [7]

Abstract:

This is a prospective observational study conducted in the department of Paediatrics from June to August 2019 during the time of dengue outbreak. All children age up to 14 years with either positive NSI antigen or serological Gg, IgM test Kit or ELISA methods were taken into the study**.** Total 39 cases were enrolled in this study. Mean age was 7.2 ± 2 years, majority were in the age group of 5-10 years (51%) followed by <5 years (38%),> 10 years (35%) respectively. Male predominance was observed in this study (69.20%). Most of the patient admitted in August (73%), then July (33%) and June (15%) during dengue outbreak. The common symptoms were fever100%, rashes (6.8%), body ache (25% and warning sign like vomiting (45%) and others. Among the enrolled cases dengue fever was (75%) than DHF (7.5%), DSS (2.5%) respectively. About 75% were NSI positive and 2.5% were 1gM ±IgG. Thrombocytopenia present in100% cases, among them 38% with plate <15000.Lowest limit was >20-30 thousands (5%) cases. All patient was treated with IVF, platelet was transfused in 20%, FFP was given (20%). Dengue has wide range of symptoms mild to severe. Complication is rare platelet transfusion is not randomly required despite of thrombocytopenia. Supportive treatment and patient monitor are very important in management of Dengue**.**

Keywords: Dengue, Children, Thrombocytopenia

Introduction

Dengue is a viral infection caused by four types of viruses (DENV-1, DENV-2, DENV-3, DENV-4) belonging to the *Flaviviridae* family. The viruses are transmitted through the bite of infected *Aedes aegypti* and *Aedes albopictu*s female mosquitoes that feed both indoors and outdoors during the daytime (from dawn to dusk)[1,2]. These mosquitoes thrive in areas with standing water, including puddles, water tanks, containers and old tires. Lack of reliable sanitation and regular garbage collection also contribute to the spread of the mosquitoes.[34.]

Recently there has been report of fifth serotype according to the meeting in Bangkok 2013. In some cases. The first confirmed epidemic of DHF was recorded in PHILIPPINES in 1953-1954 and in Thiland in 1958[1,3,5]. Since then member countries of the WHO South –East Asia and Western Pacific regions have reported major

1. Professor & Head of the Department of Paediatrics, Z.H Sikder women's medical college and hospital, Dhanmondi, Dhaka
2. Assistant Professor, Department of Paediatrics, Z.H Sikder women's medical college and hospital, Dhanmondi, Dhaka
3. Professor, Department of Paediatrics, Z.H Sikder women's medical college and hospital, Dhanmondi, Dhaka
4. Associate Professor, Department of Paediatrics, Z.H Sikder women's medical college and hospital, Dhanmondi, Dhaka
5. Medical officer, Department of Paediatrics, Z.H Sikder women's medical college and hospital, Dhanmondi, Dhaka
6. Medical officer, Department of Paediatrics, Z.H Sikder women's medical college and hospital, Dhanmondi, Dhaka
7. Registrar, Department of Paediatrics, Z.H Sikder women's medical college and hospital, Dhanmondi, Dhaka

Address of correspondence

Dr. Tamanna Begum, Professor and Head of Department of Paediatrics, Z.H Sikder women's medical college and hospital, Dhanmondi, Dhaka. Mobile no:01711637371; Email: dr_tbegum@yahoo.com

dengue outbreaks at regular frequencies. World Health Organization estimate indicate that 390 million manifests clinically. A study of prevalence of dengue (2012), estimated that 3.9 billion people in 128 countries are at risk of infection with dengue fever3,4,7.

The first epidemic of dengue haemorrhagic fever in Bangladesh occurred in mid-2000 when 5,551 dengue infection were reported, mainly among in adult. The case-reported deaths. According to WHO, the woarst outbreak occurred in 2002 with 6,232 cases and 58 deaths. The prevalent seretypes of dengue until 2000 in Bangladesh were DENV1, DENV2 and DENV3 with the highest number of reported cases attributed to DENV3.A similar situation can be seen in other countries such as India and Srilanka, where DENV3 has been reportrd most of the time in DF/DHF related illnesses[2,4,7].

Diagnosis is confirmed by either isolation of the virus, viral antigen or genome by "severe dengue "polymerase chain reaction analysis as well as demonstration of a 4-fold or greater increase in antibody titer. In 2009 the WHO formulated new guide lines for the diagnosis of probable dengue, dengue with warning signs and a category called "severe dengue" [1,3,5].

Treatment of uncomplicated dengue fever is supportive such as antipyretics, fluid and electrolytes replacement. Aspirin is contraindicated and should not be used because of its effects on hemostasis.

Methods:

It was a prospective observational study conducted in department of paediatrics, Z. H. Shikder Women's medical college Hospital from June 2019 to August 2019. All children aged up to 14 years with positive dengue tests, either NS1 antigen, IgM, IgG antibody rapid serological test kit or ELISA, were taken into as the sample study group. As the duration of history of fever might be fallacious the patients were subjected to all three serological tests. Children who were positive for malaria, meningitis, and enteric fever were excluded from the study. The total number of patients included in our study was 39.

The clinical history, physical findings and laboratory investigations that help in diagnosis of Dengue fever were analyzed and recorded. All data were entered in the Microsoft Excel worksheet and analyzed using proportions. The diagnosis of Dengue fever, Dengue Haemorragic fever, Dengue Shock Syndrome and expanded Dengue Syndrome was based on the ' Pocket guideline for Dengue case management July 2019 'written consent was taken from the parents before enrolling in the study

Observations and Results

The total number of cases was 39, Mean age was 7.2±2 years. Majority were age group of 5-10 years 51% followed by<5 years 38% and 35% were >10 years age group (table-1).Male predominance (69.20%) was observed in this study (fig 1) .Majority of the patient were admitted in August (73%) than July (33%) and in June (15%) during the period of dengue outbreak. Among the enrolled children most common symptoms were fever (100%), followed by body-ache (25%) and rashes (6.8%). Some children were presented with warning sign as vomiting (45%) and bleeding episode in the form of bleeding gum, epistaxsis malena, haematemesis (Table-2). Clinically dengue was diagnosis as dengue fever, dengue haemorrhagic fever (DHF), dengue shock syndrome (DSS) and Expanded dengue syndrome (EDS) (Table-3). Distribution of plateles count was shown in (Table-4). Serological tests as NSI antigen and IgG, IgM antibody was done all the cases (Table-5). Treatment was given mainly fluid and supporting and few cases were given plateles, FFP (Fresh frozen plasma). Table - 6

Table I: Age distribution of enrolled children (n=39)

Age (in years)	N=39	Percentage (%)
<5 yrs	7	17.95%
5-10 yrs	20	51.28%
>10 yrs	12	30.77%
Total	**39**	**100%**

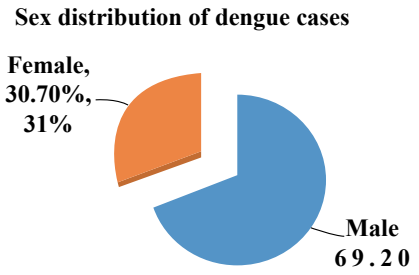


Figure 1: Sex distribution of dengue cases admitted (n-39)

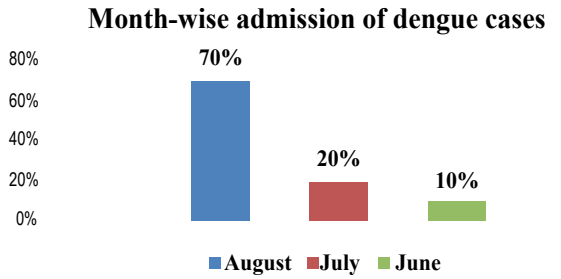


Figure 2: Patient admitted in month (%) during Dengue outbreak.

Table.2: Clinical parameter of Dengue patients (including Warning sign)**

Symptoms	N	Percen1tage(%)
Fever	39	100
**Vomiting	20	45.45
Bodyache	11	25
Joint pain	4	9.09
Rash	3	6.81
Headache	9	20.45
Diarroea/loose stool	4	9.09
**Subconjunctivalhge	1	2.27
**Gum bleeding	1	2.27
**Restlessness/lethergy	1	2.27
**Epistaxis	1	2.27
**Haematemesis	1	2.27
**Malena	3	6.81

***Multiple response**

Table 3: Diagnosis of Dengue in studied children (n-39)

Type of Dengue	Frequency (%)
Dengue fever	30(76.9%)
DHF	3(7.6%)
DSS	1(2.5%)
EDS	1(2.5%)
Dengue with other disease	4(10.2%)

DHF-Dengue haemorragic fever, DSS-Dengue shock syndrome, EDS - Expanded dengue syndrome

Table 4: Distribution of platelet count according to type of Dengue

Platelet Count	DF	DHF	DSS	EDS	Dengue with Others	Number (n=39)	%
20-30 thousand	2	0	1	0	0	3	7.6
30-40 thousand	4	1	0	1	1	7	17.9
40 -50 thousand	9	1	0	0	0	10	25.6
50-100 thousand	8	0	0	0	1	9	23.07
100-150thousand	4	0	0	0	2	6	15.3
>150 thousand	4	0	0	0	0	4	10.2

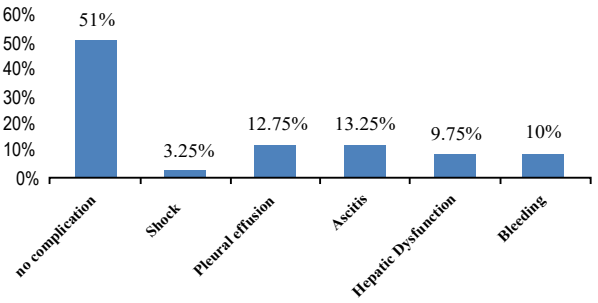
Table 5: Serological tests in studied children

Serological test	Frequency (%)
NS1	31(79.48%)
IgM ± IgG	4(10.25%)
NS1+Antibody positive	4(10.25%)

Table 6: Management of enrolled children

Management	N (%)
Paracetamol	39(100%)
IV fluid	39(100%)
Platelet	8(20%)
Fresh frozen plasma	8(20%)
Inj. Albumin	2(5%)

***Multiple response**



***Multiple response**

Discussion:

In this prospective study 39 cases were analyzed. Male predominance (69.2%). Majority of the patient age were within 5-10 years (51%) and mean age was 7.2±2, which was similar carried out in Banglore, Karnatak and India[9,10,11].

Majority of the case found in month of August during rainy season and outbreak than subsequently July and June 2019, which was similar as the outbreak of 2000 and 2002[1,12,13].

Among the enrolled children dengue fever was more common (100%) than dengue hemorrhagic and then dengue shock syndrome. About (75%) were NS1 positive and (25%) were negative and dengue IgM and or IgG positive. Similar result was found in Ramkisna et al[5,6,9]. Symptoms found on this study were fever followed by bodyache, rashes, vomiting, abdominal pain. hemorrhagic manifestation in the form of melena and hematemesis. Majeed et al 2017 showed similar findings[3,4,14,15].

If thrombocytopenia was present among the children platelet count was between ±20,000 thousands or less than Haemorrhagic manifestation in the form of hematemesis and melena found in children. Majeed et al 2017 showed only 3% had bleeding episode in the form of gum bleeding and hematemesis, in north Indian state by Seema A et al[16,17,18,19]. All patients were treated with intravenous fluid and antipyretic. A small percentage of patients that is required platelets transfusion and Fresh frozen plasma.[17,18]

In this study, complication observed children like shock, pleural effusion and hepatic dysfunction. In our study few dengue cases came associated with pneumonia and enteric fever. Another study by Honwarth from Australia found hepatic dysfunction[20]

Conclusion:

Dengue has a wide range of symptoms at presentation. Careful history and clinical examination are very important. Supporting treatment and close monitoring can prevent the complications. Platelet transfusion is not randomly required despite of thrombocytopenia. Other acute disease diagnosed simultaneously during course of illness may influence the outcome of dengue syndrome. Prevention is important to reduce the recurrent attack and out-break of the diseases.

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