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CLINICAL PROFILE OF DENGUE FEVER IN CHILDREN IN WESTERN BIHAR

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ABSTRACT

Background: In India, dengue epidemics are becoming more frequent (WHO, 2008). The majority of dengue viral infections are self-limiting, but complications may cause high morbidity and mortality. The objective of this study is to assess the clinical profile of the dengue infection in children less than 12 years of age and to evaluate the outcomes of dengue fever from july 2019 to October 2019 at the Pediatric Department of jwaharlal medical college bhagalpur, the tertiary care hospital in bhagalpur

Methods: In this retrospective study, medical records were reviewed and analyzed. Patients with suspected dengue infection were classified further into 2 groups, Dengue fever (probable dengue, dengue with warning signs) and 'Severe Dengue' (dengue hemorrhagic fever and/or dengue shock syndrome (DHF/DSS) according to WHO.

Results: A total of 77 cases were classified into 67 (87%) non-severe and 10 (13%) severe dengue cases. The most common age of presentation was above 10yrs. The mean age of admission was 8.9yrs. The most common presenting symptom was fever seen in 93% followed by vomiting in 68%. Elevation in Aspartate transaminase (SGOT) and thrombocytopenia were found in 32.4 %.

Conclusions: High grade fever, vomiting, abdominal pain and skin rash with normal or low platelet count were the presenting features. Early diagnosis, monitoring and prompt supportive management can reduce mortality.

KEYWORDS : Clinical profile, Children, Dengue fever, Dengue outbreak

INTRODUCTION

The incidence of dengue has grown dramatically around the world in recent decades. The actual numbers of dengue cases are underreported, and many cases are misclassified. One recent estimate indicates 390 million dengue infections per year of which 96 million manifests clinically.[1]

The first evidence of occurrence of dengue fever in India was reported from Vellore in Tamil Nadu and the first dengue hemorrhagic fever outbreak occurred in kolkata. Dengue viruses (DV) belong to family Flaviviridae and there are four serotypes of the virus referred to as DV-1, DV-2, DV-3 and DV-4. It is transmitted mainly by Aedes aegypti and Aedes albopictus.

All four serotypes can cause the full spectrum of disease from a subclinical infection to a mild self-limiting disease, the dengue fever (DF) and a severe disease that may be fatal, the dengue haemorrhagic fever/dengue shock syndrome (DHF/DSS). Dengue viral infections affect all age groups.

Tropical Disease Research section of WHO have suggested that rather than differentiating between DF and DHF, it may probably be better to use the terms' Dengue'(probable dengue , dengue with warning signs) and 'Severe Dengue' with no emphasis on bleeding or on a specific platelet count cut-off.[5] Case Fatality Rate due to dengue which was 1.5% in 2006 has declined to less than 1% in 2020.[6]

The common symptoms and signs observed were fever, headache, myalgia, arthralgia, bleeding manifestations and shock. The exact clinical presentation in children is important for patient management and thereby saving the life. The objective of the present study is to study the clinical presentations of dengue fever in children.

METHODS

This retrospective study was done in our medical college, the main health care provider in Bhagalpur district of Bihar. .

Medical records were reviewed for all patients aged less than 12 years who were admitted between july2020and october 2020 with a diagnosis of dengue infection upon either admission or discharge. An initial diagnosis of dengue infection was defined as a physician's presumptive diagnosis upon admission to the hospital. The final diagnosis was made by the attending physician upon discharge.

Patients with suspected dengue infection were classified further into 2 groups, dengue fever (probable dengue, dengue with warning signs) and 'Severe Dengue' (dengue hemorrhagic fever and/or dengue shock syndrome (DHF/DSS)), according to all available clinical and laboratory data and based on the World Health Organization (WHO) criteria for dengue classification4. Confirmed cases of DF and severe dengue were defined based on the respective clinical profiles along with serological evidence of acute dengue infection by either NS1 antigen or IgM Elisa.

RESULTS

The total number of cases were 77, out of which 67 were non-severe dengue and 10 were severe dengue according to WHO guidelines.[2] There were 49 (63.3%) males and 28(36.4%) females in present study. Severe dengue was seen more in females than males and vice versa for non-severe dengue.

The maximum number of cases, 36 (46.7%) was seen in the group above 10 years of age. The mean age of hospitalized patients was 8.96yrs. 59.7% of patients were admitted in the hospital for 3-6 days. The mean duration of hospitalization was 5.04 days. The mean delay in admission after appearance of fever was 3.66 days Table 1.

Table 1: demographics of children hospitalized with dengue infection.

		N (%)	N (%)	Mean (SD)
Age	<1 Year	1 (1.5)	0 (0.0)	8.96 (3.909)
	1-5 Years	14 (20.9)	1 (10.0)	
	6-10 Years	18(26.9)	7 (70.0)	
	>10 Years	34 (50.7)	2 (20.0)	
sex	F	20 (29.9)	8 (80.0)	
	M	47 (70.1)	2 (20.0)	
Duration of hospital stay	0-3days	13 (19.4)	2 (20.0)	5.04 (1.922)
	3-6 days	44 (65.7)	2 (20.0)	
	> 6 days	10 (14.9)	6 (60.0)	
Day of admission after onset of fever	0-3 days	34 (50.7)	8 (80.0)	3.66 (1.603)
	3-6 days	28 (41.8	2 (20.0)	
	>6 days	5 (7.5)	0 (0.0)	

The most common symptoms noticed were fever 93% followed by vomiting in 68%, headache in 36%, rash in 20%, myalgia in 15% and the least common symptoms noticed were convulsions 3.8% and diarrhea in 1% Table 2. Among the liver enzymes, SGOT was elevated in a larger proportion (32.4%) of patients when compared to Alanine aminotransferase (SGPT) of 22.07%. SGOT and SGPT values were higher in almost all ten patients with severe dengue infection.

32.46% presented with thrombocytopenia of <100000 cells/mm^3. Almost all severe dengue cases had thrombocytopenia whereas only 22.38% of non-severe dengue cases had thrombocytopenia at admission to hospital.

Table 2: Clinical Symptoms And Signs Of Children And Adolescents Hospitalized With Confirmed Dengue Infection Diagnosis.

Parameters	Number (n=77)	%
Fever	72	93
Vomiting	49	68

Headache	28	36
Rash	16	20
Abdominal pain	16	20
Muscle pain	12	15
Petechiae	7	9
Gastro intestinal bleeding	7	9
Oliguria	5	6
Seizures	3	3.8
Diarrhea	1	1.2

38.9% of children were having leucopenia at admission itself. Raised hematocrit was seen in 53.25% of the cases Table 3.

Table 3: Laboratory parameters.

		N (%)	N (%)
TLC	Leukopenia (<4000 Cells/mm^3)	26 (38.8)	4 (40.0%)
	Leukocytosis (>11000 cells/mm^3)	1 (1.5)	0 (0.0%)
	Normal TLC(4000–11000/mm^3)	45 (59.7)	6 (60.0)
SGOT	50-200 U	52 (77.6)	0 (0.0)
	200-1000 U	14 (20.9)	9 (90.0)
	>1000 U	1 (1.5)	1 (10.0)
SGPT	50-200 U	60 (89.6)	0 (0.0)
	200-1000 U	7 (10.4)	10 (100)
	>1000 U	0	0
Total Platelet	>1,00,001	52 (77.6)	0 (0.0)
	1,00,000	12 (17.9)	6 (60.0)
	<50,000	3(4.5)	4 (40.0)
	>36.3%	32 (47.8)	9 (90.0)
	<36.3%	35 (52.2)	1 (10.0)

12.98% of the cases were detected to have pleural effusion by chest X-ray.Ultrasound of the abdomen detected hepatomegaly in 20.77% of the cases, which is the most common finding followed by ascites (14.28%) and gall bladder wall edema (11.68%) Table 4.

Table 4: Radiological Findings And Dengue Serology.

Parameters	Variables	Non-Severe Dengue	Severe Dengue
	N (%)	N (%)	
Pleural	No	60 (89.6)	7 (70.0)
Effusion	Yes	7 (10.4)	3 (30.0)
No		61 (91.0)	0 (0.0)
Hepatomegaly	Yes	6 (9.0)	10 (100)
Gall Bladder	No	64 (95.5)	4 (40.0)
Wall Edema	Yes	3 (4.5)	6 (60.0)
No		65 (97.0)	1 (10.0)
Ascites	Yes	2 (3.0)	9 (90.0)
No		14(20.9)	1 (10.0)
Dengue NS1	Yes	53(79.1)	9 (90.0)
No		57 (85.1)	10(100)
Dengue IgM	Yes	10 (14.9)	0 (0.0)
Both IgM and	No	64(95.5)	9 (90.0)
NS1	Yes	3 (4.5)	1 (10.0)

In present study, the majority of the patients were positive for NS1 followed by IgM (Table 4) as a large number of patients presented within 4 days of fever. Most of the patients had fever and they were treated with antipyretics (paracetamol) in appropriate doses. Patients who presented with warning signs and stable vital signs were initially encouraged to take oral fluids; if they were not tolerated, intravenous fluids were started according to the WHO guidelines. Among 77 patients, 12.98% of the cases needed vasopressors and the majority were severe dengue cases. In present study all 77 cases of severe and non-severe dengue recovered.

DISCUSSION

Dengue disease has been ranked by the World Health Organization (WHO) as the fastest spreading vector-borne viral disease. The possible reason for the outbreak of dengue may be due to drought to use of cooler in bihar and stagnant rain water have led to an outburst in mosquito growth in the state . There are very few studies based on the revised new dengue classification.

As per the WHO TDR 2009 dengue guidelines, dengue cases were analyzed. In present study, the total number of cases analysed were 77, out of which 67(87.01%) were categorised as cases of non-severe dengue and 10 (12.98%) were cases of severe dengue. The maximum numbers of cases were seen in the group >10 years of age (46.7%) and the least affected age group was infants. Male and female ratio in present study was 1.75:1. This was probably due to covered dress used by females. This similar pattern of age and sex predilection was also seen in the retrospective analysis of the 2006 North Indian Dengue outbreak.

Duration of hospitalization was more in case of severe dengue patients. In present study fever was present in most of the cases, followed by vomiting and abdominal pain similar to the study conducted in Karachi, Pakistan.[11] Bleeding in dengue is multifactorial. The most common bleeding manifestations in both severe and non-severe dengue were petechiae, purpura, and ecchymosis. The various clinical findings like hypotension, pleural effusion, and respiratory distress were notable and were analogous to other studies. Leukopenia was seen, which was similar to other prospective observational study.

The earliest haematological abnormality was a progressive decline in total WBC count in patients of dengue. In present study thrombocytopenia was seen to be more in those with severe dengue. Liver involvement in the form of hepatomegaly and increased transaminases was observed in this study. These data were similar to the results described by Mohan et al. Laboratory parameter packed cell volume (PCV) is used regularly to evaluate plasma leakage in dengue infection. Only half of children and adolescents with confirmed dengue infection had initial hematocrit measurements above 36.3% at admission. But it was also reported in previous studies that in some cases the fluid leakage does not achieve a high degree haemoconcentration even if the patient is in shock; this explains our findings. In some DF patients the rise of PCV could have been due to dehydration as a result of poor intake and vomiting.

There are no clear-cut guidelines for Haemon-concentration in the Indian population. Gastrointestinal bleeding was seen only in 9% of children. This could be due to early in recognition of epidemic and seeking medical attention at the beginning stage itself. Pleural effusion was most commonly seen in severe dengue. Among the complications, present study reveals hepatic dysfunction in 32.4%, and shock in 12.98% of cases which is less when compared to other studies of Horvath from Australia and Sharma from India.[16,17] With reference to the mortality, none of them died in this study. This may be due to early identification and appropriate management as per the guidelines.

CONCLUSION

High grade fever, vomiting, abdominal pain and skin rash with normal or low platelet count were the presenting features. Early diagnosis, monitoring and prompt supportive management can reduce mortality.

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