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Research Article

Clinical profile and outcome of dengue fever in hospitalized children of South Rajasthan, India

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ABSTRACT

Background: Dengue fever is rising globally and also in India. Dengue can present with varied clinical manifestations. The mortality rate can be reduced by timely diagnosis, strict monitoring and proper fluid resuscitation.
Methods: In this study children with positive dengue rapid test in the age group of 0-15 years were included. All cases were classified as WHO new case classification guideline and detailed clinical profile were recorded in proforma.
Results: Out of 65 cases, males were 53% and females were 47% with maximum number of cases seen in the age group of 5-10 years (46%). We reported children with dengue without warning signs (23%), dengue with warning signs (64%), and severe dengue (12%) of cases. Fever was observed in all cases. Myalgia and headache was most common symptom followed by mucosal bleed. Hepatomegaly was observed in 90% of cases. Only one case had central nervous system involvement. Lab parameters include raised hematocrit (84%), thrombocytopenia (80%) and leucopenia (44%). Crystalloids were used in (76%). Colloids were not used. Blood products were required in 5 cases. No mortality was observed in our study.
Conclusions: Children in the age group of 5-10 years were most commonly affected. Early diagnosis with rapid test, dengue case classification by revised WHO guideline, strict monitoring, appropriate fluid management and judicious use of blood product have yielded a fruitful outcome.

Keywords: Child, Dengue, Revised classification, Warning signs, WHO

INTRODUCTION

Dengue fever (DF) has been identified as an emerging infectious disease in India. Dengue is the most important mosquito borne disease which is found to be endemic in more than 100 countries.[1] In Southeast Asian countries, dengue is the major cause of pediatric morbidity and mortality.[2] Apart from outbreak in urban area disease is also spreading in rural areas.[3] There are certain salient clinical features for diagnosis of disease but it can also present with varied clinical manifestations.[4] The elucidation of clinical profile is very important for patient management and thus crucial for saving life. Due to limitations of World Health Organization (WHO) 1997 dengue classification guidelines WHO revised their guidelines in 2009[5] and accordingly the clinical classification was revised as dengue without warning signs, dengue with warning signs, and severe dengue which was much easier to understand.[6-8] The present study is an attempt to describe the salient clinical as well as laboratory findings of serologically confirmed hospitalized cases of dengue fever.

METHODS

Study setting and design

This observational study was conducted at Geetanjali Medical College and Hospital, Udaipur from July 2015 to December 2015. All children below15 years of age that

had clinical features suggestive of dengue illness and confirmed by rapid dengue test (IgM, IgG and NS1Ag) were included in the study. Children with other significant disease were excluded from study. Informed consent was taken from parents and the study is approved by Institutional Ethical Committee.

A detailed history was taken to determine symptomatology. Detail clinical examination which include vitals, general, and systemic examination findings were recorded in a predesigned proforma at the time of admission. Haematological parameters like packed cell volume, platelet count were done in all patients. Liver function test, coagulation profile, blood sugar with electrolytes, ultrasound abdomen, and chest radiography were performed if clinically indicated. The patients were classified according to revised WHO guideline and managed appropriately. The requirement of crystalloids or colloids and the use of blood products were also recorded.

Statistics

The data was entered and analyzed using SPSS. The Symptomatology, clinical features, laboratory parameters and outcome of these children were taken for analysis.

RESULTS

A total of 65 children were included in this study. As par WHO classification 42 (64 %) cases belongs to dengue with warning sign. 8 cases have severe dengue and 15 cases had dengue without warning sign (Table 1). 35 (53%) were boys and 30 (47%) were girls. Male to female ratio was 1.16:1.

Table 1: Distribution of dengue cases as per revised WHO classification.

Classification	Number of cases
Dengue without warning signs	15 (23.0)
Dengue with warning signs	42 (64.6)
Severe dengue	8 (12.3)
Total	65

The most common age group was between 5 to 10 years (46%) followed by 1-5 year group. Infants were only 7.6 % and the youngest one was 7 months old.

Table 2 shows the age wise distribution of dengue cases as per revised WHO classification.

Clinical symptoms

Fever was observed in all dengue patients with mean duration of 5.6 days. The common presentation by these children includes headach (64%), myalgia (63%), bleeding (58%) and decreased urine output (53%) each.

Table 3 indicates frequency of clinical symptoms according to the types of dengue fever patients.

Table 2: Age-wise distribution of dengue cases as per revised WHO classification.

Age group	Dengue without warning signs	Dengue with warning signs	Severe dengue	Total
<1 year	0	3 (7.1)	2 (25)	5 (7.6)
1-5 years	4 (26.6)	12 (28.5)	1 (12.5)	17 (26.1)
5-10 years	8 (53.3)	18 (42.8)	4 (50)	30 (46.1)
10- 15 years	3 (20)	9 (21.4)	1 (12.5)	13 (20)
Total	15	42	8	65

Percentages as given in parenthesis

Table 3: Frequency of clinical symptoms according to type of dengue fever cases.

Clinical symptoms	Dengue without warning signs	Dengue with warning signs	Severe dengue	Total
Nausea and vomiting	3	21	6	30 (46.1)
Abdominal pain	0	19	5	24 (36.9)
Lethargy/restlessness	0	18	7	25 (38.4)
Myalgia	5	31	5	41 (63)
Facial puffiness	0	16	7	23 (35.3)
Abdominal distension	0	15	8	23 (35.3)
Fast breathing	0	0	4	4 (6.1)
Headache	5	32	3	42 (64.6)
Rash	7	8	5	20 (30.7)
Decreased urine output	3	26	6	35 (53.8)
CNS manifestation	0	0	1	1 (1.5)
Bleeding	0	31	7	38 (58.4)

CNS: Central nervous system

Clinical features

Among the clinical findings, hepatomegaly and splenomegaly were noted in 90% and 26% of the cases, respectively. Clinical fluid accumulation in form of ascites and pleural effusion with reduced air entry were observed in 40% and 43 % of cases. Severe shock was

observed in 5 cases. Bradycardia was noted in 18% of children during recovery.

Table 4 shows the frequency of common clinical signs noted according to the types of dengue fever cases.

Table 4: Frequency of clinical signs noted according to types of dengue fever cases.

Signs	Dengue without warning signs	Dengue with warning signs	Severe dengue	Total
Bradycardia	0	16	2	18 (27.6)
Hypotension	0	0	5	5 (7.6)
Hepatomegaly	13	38	8	59 (90.7)
Splenomegaly	5	10	2	17 (26.1)
Decreased air entry	0	21	7	28 (43)
Ascites	0	18	8	26 (40)

Investigation

NS 1 antigen test was positive in 80% of cases, IgM in 52% and dengue IgG was positive in 36% of cases.

Evidence of raised hematocrit (>35%) were observed in 84% of cases.

Thrombocytopenia (<1-lakh) was observed in 80% of cases with 10% of patients have platelet count <20,000/ mm, most of the cases had platelet count between 50,000 and 1-lakh.

Leucopenia (<5000) was observed in 44% of cases.

Abnormal liver enzymes were observed in 38% of patients.

Ultrasound abdomen was done in 31 patients. The most common USG findings were Gall bladder edema (84%), pleural effusion (70%), and ascites (78%).

Table 5 shows haematological parameter in dengue fever cases.

Table 5: Hematological parameter in dengue fever cases.

Investigation	Number of cases (%)
Raised hematocrit >35%	84%
Thrombocytopenia (<1-lakh)	80%
Leucopenia (<5000)	44%

Management

Crystalloids either ringer lactate or normal saline were used in 76% of cases. Blood products (packed red blood cell) were used only in 4 patients. Only one case received platelet transfusion (platelet count <10,000). No mortality was observed during the study period due to dengue.

DISCUSSION

A total of 65 cases were enrolled during the study period from July 2015 to December 2015. The 5-10 year age group was most commonly affected similar finding was observed in other studies.[9,10] Boys was slightly more affected then girls which was similar to the observations made by Sahana et al.[10] Fever was observed in all patients. Myalgia and headach was the most common symptom and hepatomegaly was the most frequent finding noted in our study as observed in previous studies.[12,13]

Epistaxis was the most common bleeding manifestations noted which was similar to observations made in other studies.[10,14] Central nervous system (CNS) involvement was seen only in one patient which was less than previous studies.[10,11] Dengue encephalopathy should always be considered as a possibility in a child presenting with neurological symptoms in endemic areas.[15] Respiratory distress caused by pleural effusion was observed in 7 patients.

In this study high hematocrit (84%), low platelet count (80%), and leukopenia (44%) were observed which important clues to the diagnosis of dengue fever was. Elevated liver enzymes were observed in 38% of the patients and all patients with severe dengue had high values of enzymes as noted in previous studies.[10,16] Gallbladder wall edema (84%) was most common ultrasound abdomen finding observed which was similar to previous studies.[10,17]

In our study, Non-Structural protein 1 antigen was positive in 80% of cases which indicate high sensitivity of the test for early diagnosis of disease.[18] IgM and IgG was positive in 52% and 36 % cases.

Although 76% of dengue children required crystalloids (normal saline), colloids were not used in any patients. Blood products were limited only to 5 cases in contrast to previous study (24.7%).[10]

CONCLUSION

Children of age group of 5-10 years were commonly affected by dengue. Myalgia and headache was most common symptom and hepatomegaly was most common finding in cases. Despite high frequency of thrombocytopenia only one child requires platelet transfusion. By adopting new WHO guideline based management it is easier to classify dengue cases and

appropriate treatment will further decrease mortality due to dengue fever.

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