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Original Research Article

A study on the clinical features of dengue virus infected pediatric patients

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ABSTRACT

Background: Dengue fever is currently the most important arthropod borne viral disease. During recent outbreaks in India, the clinical manifestations which were shown by the patients were slightly different from those in previous years. The present study was done to analyze the clinical features of all pediatric cases admitted for dengue to three tertiary care teaching hospitals in eastern India, to facilitate early treatment and better outcome.
Methods: A direct history and clinical examination-record based descriptive study was conducted on pediatric patients admitted with signs and symptoms suggestive of dengue fever to two hospitals in West Bengal and one in Bihar, during the period between January 2016 and December 2017. The data obtained were analyzed with correlative studies.
Results: Total 200 patients of Dengue viral infected pediatric patients were included in the study. All these 200 children presented with fever. 126(63%) children had myalgia and arthralgia, 111 (55.5%) had headache, 58 (29%) presented with gastrointestinal infections, 51 (25.5%) had rash and 26 (13%) had hemorrhagic manifestations. Features of shock were present in 14 (7%) children, retro-orbital pain in 13 (6.5%) children and generalized swelling in 9 (4.5%) children.
Conclusions: Increased awareness about the changing clinical features of dengue in pediatric cases in the present scenario as observed in recent epidemics, at least in eastern India is needed to further reduce mortality and complications of dengue cases.

Keywords: Dengue virus, Clinical features, Pediatric patients

INTRODUCTION

Dengue fever is currently the most important arthropod borne viral disease because of its widespread distribution and its potential for extensive outbreaks of life – threatening diseases. It has been known as a disease entity since1780, when Benjamin Rush described the condition as "break bone fever". In early nineties suddenly this hitherto unfamiliar infection surfaced in Indian scenario and then disappeared after taking a significant number of tolls. Again, in recent years it has started to demand the attention of all public health care providers having come as a menacing epidemic covering the entire country. It is a mosquito borne, fast emerging, viral infection affecting humans and manifesting in four serotypes (DEN 1-4).[1]

Approximately 2.5 billion people, living mainly in urban areas of tropical and subtropical regions, are estimated to be at risk of acquiring mosquito borne dengue virus

infection.[2] Dengue virus belong to genus Flavivirus and family flaviviridae, are mosquito borne viruses. Principal vector Aedes aegypti is a day biting mosquito of public importance that breeds in natural or artificial waters. Dengue illnesses are caused by any one of the four serologically related viruses, designated as DEN -1. DEN-2, DEN-3 and DEN-4.[3]

Dengue is endemic in more than 100 countries, most cases are reported from Southeast Asia and the western Pacific regions. Around 50 million cases and 24,000 deaths are estimated to occur due to dengue virus infection in these 100 endemic countries. This includes hospitalization of nearly half a million cases of dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS), of which mostly (90%) are children. Treated (DHF) is associated with a 1% mortality rate while mortality rate among untreated cases rises up to 20%.[4]

The various manifestations of dengue viral infection may not have a distinct line of demarcation. Apart from the clinical features, reports of rare presentations have recently become more frequent.[5,6] During recent outbreaks in India, the clinical manifestations which were shown by the patients were slightly different from those in previous years.[7] There have been many reports of difficulties in the use of the previous classification, which were summarized in a systematic literature review.[8] Difficulties in early diagnosis and applying the criteria for early suspicion of DHF and DSS particularly in pediatric populations, together with the increase in clinically severe dengue cases which did not fulfill the strict criteria, led to the requirement for thorough analysis and reconsideration of clinical features in all cases of dengue fever in children, infants and neonates. The present study was done to analyze the clinical features of all pediatric cases admitted for dengue to three tertiary care teaching hospitals in eastern India.

METHODS

A direct history and clinical examination-record based descriptive study was conducted on pediatric patients admitted with signs and symptoms suggestive of dengue fever to two hospitals in West Bengal and one in Bihar, during the period between January 2016 and December 2017.

Clinical history was taken from every patient properly. General examination was done. After that we had conducted systematic examination of every patient. We had taken consent from the family members of each patient before inclusion into the study. We had taken institutional ethical committee clearance before beginning of the study

We had done routine investgations of all the patients. MAC- ELISA based estimation of NS1 antigen and IgM for confirmation of diagnosis of dengue fever. The medical records were perused for collecting data about these cases using a pre-designed proforma. Data were analyzed for the clinical presentations, outcome, severity and laboratory investigations along with correlative studies of these findings. Only MAC-ELISA (NS1 antigen/IgM) positive dengue viral infections under 12 years age group were included in the study. Children with fever due to other causes were excluded in the study. Those children with dengue virus infection whose family members did not give permission were also not included in the study.

RESULTS

Total 200 patients of Dengue viral infected pediatric patients admitted in three tertiary care teaching hospitals, two in West Bengal and one in Bihar, were included in the study.

Out of these 200 children, 5 (Male 3, Female 2) were infants, 19 (Male 12, Female 7) were toddlers, 41 (Male 23, Female 18) were pre-school children and 135 (Male 78, Female 57) were school going children. Total male pediatric patients were 116 (58%) in number and total female pediatric patients were 84 (42%) in number.

Table 1: Age group wise distribution of children with dengue fever.

Age group (year/s)	Male	Female	Total
Infant (below 1)	3	2	5
Toddler (1-3)	12	7	19
Pre-school (3-6)	23	18	41
School age (above 6)	78	57	135
Total (%)	116 (58%)	84 (42%)	200 (100%)

All these 200 (100%) children presented with fever. 126 (63%) children had myalgia and arthralgia, 111 (55.5%) had headache, 58 (29%) presented with gastrointestinal infections, 51 (25.5%) had rash and 26 (13%) had hemorrhagic manifestations. Features of shock were present in 14 (7%) children, retro-orbital pain in 13 (6.5%) children and generalized swelling in 9 (4.5%) children.

Table 2: Clinical manifestations of dengue fever.

Clinical features	No. of patients	Percent
Fever	200	100
Myalgia/Arthralgia	126	63
Headache	111	55.5
Gastro intestinal symptoms	58	29
Rash	51	25.5
Haemorrhagic manifestations	26	13
Features of shock	14	7
Retro-orbital pain	13	6.5
Generalised swelling	9	4.5

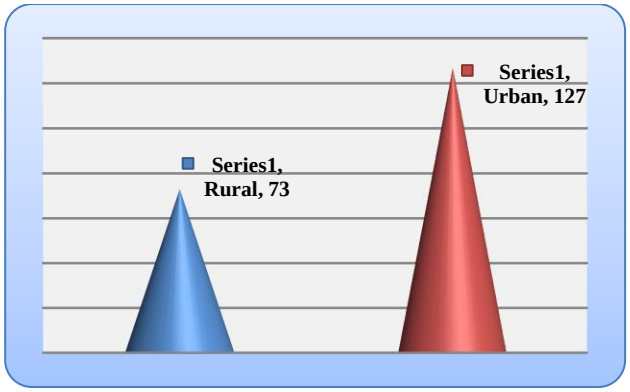

Figure 1: Rural urban distribution of the patients.

Most of these children were from urban region (127 out of 200) and only 73 were from rural region. Amongst the 200 pediatric patients admitted and treated only three (1.5%) children died despite all effective measures advocated. Two due to Dengue Shock Syndrome (DSS) and one due to acute respiratory distress syndrome (ARDS).

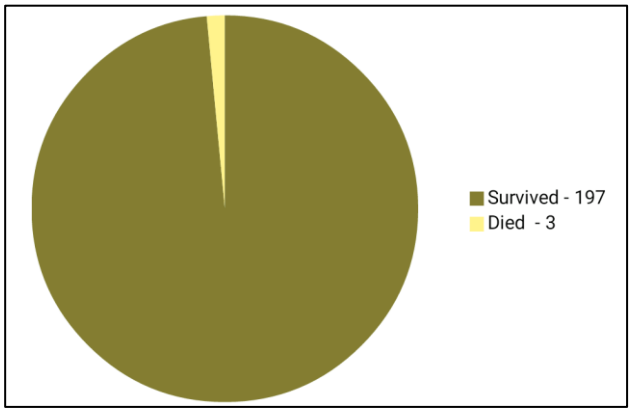

Figure 2: Mortality of pediatric dengue patients.

DISCUSSION

Present study shows that there have been no cases of admission to Neonatal Intensive Care Unit in dengue cases as we did not get even a single proven case of dengue of this age (less than one month). However, infantile morbidity with Dengue was only 5 cases during our whole 2 years period of study but out of those 5, two had to be admitted to Pediatric Intensive Care Unit (PICU) for intensive management both having been suffering from DSS. Raj et al in their study from Ahmedabad found several paediatric patients (age not specified) admitted in PICU to combat not only DSS but also acute respiratory distress, neurological symptom, bone marrow suppression and also myocytis.[9]

Manjunath et al found that males were more commonly affected than females, same as in our study and the most common age group was between 5 and 10 years of age.[4] Similar age group was found in study of Raj et al also. Our study tallied well with those two studies, ours being 135 belonging to 6 to 12 years age group out of 200 children studied.

The mortality rate in this study was only 1.5% (3 out of 200). Two having died because of DSS and one due to acute respiratory distress syndrome (ARDS). The study done by Raj et al showed that 6 out of 196 died, the causes being 3 due to shock with a ARDS and DIC, 2 due to shock with encephalopathy and DIC, and one due to shock with encephalopathy only.[9] In the study of Manjunath et al the mortality was 8.6% compared to Anju et al (mortality 6%) and Ahmed et al (mortality 3%).[10,11]

Present study got 36.5% of the cases from rural areas and the rest 63.5% of the patients from urban areas only. No study was found to compare with these findings but several press reportings agree to our findings.

In Manjunath's study, the most common presenting symptom was fever (92.3%), followed by vomiting (42.5%) and pain abdomen (38.1%).[4] In the study by Shah et al, again fever was the highest (99.2%), followed by myalgia (64.6%), vomiting (47.6%), headache (47.6%) and pain abdomen (37.5%).[12] In present study the results were that the fever was the highest (hundred percent), followed by myalgia (63%), headache (55.5%) and gastrointestinal symptoms (29%). We also got rash (25.5%), petechial hemorrhages (13%), retro orbital pain (6.5%) and so on. 7% of present cases presented with the features of shock. There was generalized swelling in 4.5% cases.

Current study reveals that like other studies our cases of pediatric dengue patients did not show up encephalopathy, bone marrow depression, acute respiratory distress, myositis, disseminated intravascular coagulation or symptoms of ARDS. On the other hand, unlike other studies we got cases of retro orbital pain, severe arthralgia and significant rashes. Interestingly, all of our child dengue cases invariably presented with fever.

This prove that each epidemic in every region is unique in itself and clinical features do vary from one episode to another. So, no rash decisions regarding the severity or non severity of the disease should be entertained under light of these finding. Each case in every epidemic should be very judicially looked into and case based decisions should be made everywhere.

CONCLUSION

In the recent few years, the world has seen varied clinical presentations of dengue fever in different epidemics, even in the same regions with periods of time. Where some known features are still manifesting, a few atypical features are noted from several parts of the world. A thorough knowledge of the changed signs and symptoms in the present scenario, and timely interventions are

needed to identify the cases, so that its complications, outbreak and mortality can be minimized.

Moreover, community awareness, early diagnosis and management and vector control measures need to be strengthened, especially during peri-monsoon period, in order to curb the increasing number of dengue cases.

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REFERENCES

1. Guzman MG, Kouri G. Dengue: An update. Lancet Infect Dis. 2002;2:33 42.
2. Halstead SB. Dengue. Lancet. 2007;370:1644-52.
3. Yamashiro T, Disla M, Petit A, Taverus D, Castro-Bello M, Lora-Orste M et al. Seroprevalence of IgG specific antibodies for Dengue virus among adults and children in Santo Domingo, Dominican Republic: Am J Trop Med Hyg. 2004;71(2):138-43
4. Manjunath MN, Chaithanya CN, Sharanya R. A study on clinical features and cost incurred by dengue syndrome patients admitted to tertiary care hospital. BJMP.2015;8(2):811.
5. Gulati S, Maheshwari A. Atypical manifestations of dengue. Trop Med Int Health. 2007;12:1087-95.
6. Misra UK, Kalita J, Syam UK, Dhole TN. Neurological manifestations of dengue virus infection. J Neurol Sci. 2006;244:117-122.
7. Seema A, Singh V, Kumar S, Kumar A, Dutta S. The changing clinical spectrum of dengue fever in the 2009 epidemic in North India: a tertiary teaching hospital based study. J Clin Diagnos Res. 2012;6(6):999-1002.
8. Bandyopadhyay S, Lum LC, Kroeger A. Classifying dengue: a review of the difficulties in using the WHO case classification for dengue haemorrhagic fever. Trop Med Int Health. 2006,11(8):1238-55.
9. Raj AS, Munshi S, Shah BH. A study on the clinical presentation of Dengue fever in children. IJSR. 2016;5(4):2272-5.
10. Aggarwal A, Chandra J, Aneja S, Patwari AK, Dutta AK. An epidemic of dengue hemorrhagic fever and dengue shock syndrome in children in Delhi. Indian Pediatr. 1998;35(8):727-32
11. Ahmed S, Arif F, Yahya Y, Rehman A, Abbas K, Ashraf S et al. Dengue fever outbreak in Karachi 2006: a study of profile and outcome of children under 15 years of age. J Pak Med Assoc. 2008;58(1):4-8.
12. Shah I, Deshpande GC, Tardeja PN. Outbreak of dengue in Mumbai and predictive markers of dengue Shock Sydrome. J Trop Pediatr. 2004;50:301-5.

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