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Clinico-Demographic Profile and Outcome of Pediatric Dengue Patientsina Tertiary Care Hospital.

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Abstract:*This study was done with the objectives to study the demographic, clinical, laboratory profile and outcome of Dengue illness in Pediatric patients. This retrospective study was done in children up to 12 years of age with Dengue illness from 2012 to 2015 admitted in the Pediatric ward and Pediatric Intensive Care Unit of Gauhati Medical College & Hospital, Guwahati, Assam. Data of 88 children with Dengue illness was analyzed. Thirty cases were diagnosed in 2012, 41 cases in 2013, 2 in 2014 and 15 cases were there in 2015. Most common age group affected was 6-12 years, where 75 (85.22%) cases were in this age group and the youngest child was 9 months old. This study showed a male to female ratio of 1.93:1.Clinical features in order of frequency were fever (100%), bodyache (45.45%), vomiting (40.9%), headache (36.36%), chill and rigor (22.72%), pain abdomen (18.18%), retro orbital pain (18.18%) loose watery stool (4.54%) and bleeding manifestations (2.26%). Features of acute pancreatitis and pleural effusion were found in 1 (1.13%) case each. Out of 88 cases, 1 was DHF, 1 was DSS and remaining 86 were with Dengue Fever. No mortality was found in this study.*

I. Introduction

Dengue is the most rapidly spreading mosquito borne viral disease in the world. In the last 50 years incidence has increased 30 folds with increasing geographical expansion to new countries and into present decade, from urban to rural setting.[1]

Fifty million dengue cases occur annually and 2.5 billion people live in dengue endemic countries (i.e. the tropical and subtropical countries).[2] About 5 lacs people with DHF are hospitalized annually. Of these around 90% are children less than five years of age.[2]

Dengue and DHF is endemic in more than 100 countries in the WHO regions of Africa, the Americas, the Eastern Mediterranean, South East Asia and the Western Pacific.

In India, Dengue cases have increased from 28292 in 2010 to 99913 in 2015 and death due to Dengue has increased from 110 in 2010 to 220 in 2015.[3] Assam recorded 237 dengue cases in 2010 with 2 deaths and the total number of cases rose to 1076 in 2015 with 1 death.[3]

II. Material and Methods

This retrospective study was conducted in the Department of Pediatrics, Gauhati Medical College & Hospital, Guwahati, a tertiary care teaching hospital in the north eastern part of India. The study was approved by the institutional ethical committee. The study included all children up to 12 yearsof age fulfilling WHO case definition of Dengue illness and who were found positive for NS1 antigen or Dengue specific IgMorIgGantibody attending the Department of Pediatrics from year 2012 to 2015.

III. Results and Observations

A total of 88 children with Dengue illness were hospitalized during the study period i.e. from 2012 to 2015.

Table 1: Year wise distribution of cases.

Year	No of cases
2012	30
2013	41
2014	02
2015	15

In 2012, 30cases of Dengue illness were admitted which increased to 41 cases in 2013 and then dipped to 2 in 2014 and then again increased to 15 cases in 2015. This variation may be because of cyclical pattern of the disease.[4]

Table 2: Month wise distribution of cases.

Month	2012	2013	2014	2015	Total
August	0	2	0	0	2
September	1	20	0	2	23
October	15	16	1	8	40
November	12	2	0	5	19
December	2	1	1	0	4

Above table shows that Dengue cases were found from August through December. The peak season is in the month of September, October and November. These months are post monsoon in this part of the country.

Table 3: Area wise distribution of cases.

Area	Patient
Urban plain	46 (52.27%)
Urban hilly	26 (29.54%)
Rural plain	11 (12.5%)
Rural hilly	5 (5.68%)

From the above table it is seen that 64.77% of the patients belonged to plain area and 35.23% of the patients belonged to hilly area. Seventy two (81.8%) patients were from urban area and only 16 (18.1%) caseswere from rural area.

Table 4: The age wise distribution of Dengue cases.

Age	2012	2013	2014	2015	Total
< 1 year	0	3	0	0	3 (3.40%)
1-3 year	2	0	0	1	3 (3.40%)
3-6 year	3	4	0	0	7 (7.95%)
6-12 year	25	34	2	14	75 (85.22%)

The youngest child was 9 months old. Out of total 88 cases, 75(85.23%) patients were in the age group of 6 to 12 years, children between 3 and 6 years were 7 (7.95%) and children in the age group of 1 to 3 years were 6 (3.37 %).Of the total cases 58 were male and 30 were female. Out of 88 cases, 1 was DHF, 1 was DSS and remaining 86 were Dengue Fever.

In all cases, fever was present as it was included in the case definition of Dengue illness. Other significant features were body ache, cough, vomiting, headache, chill and rigor, pain abdomen, retro orbital pain, chest pain and loose watery stool. Bleeding manifestation was seen in 2 cases in the form of epistaxis, skin bleed and gastro-intestinal bleed.

Table 5: Clinical features in cases.

Clinical Feature	Number of cases and Percentage (%)
Fever	88 (100%)
Body ache	40 (45.45%)
Cough	40 (45.45%)
Vomiting	36 (40.9%)
Headache	32 (36.36%)
Cold	24 (27.27%)
Associated chill and rigor	20 (22.72%)
Joint pain	20 (22.72%)
Pain abdomen	16(18.18%)
Retro-orbital pain	16 (18.18%)
Nausea	8 (9%)
Chest pain	4 (4.54%)
Bleeding manifestations	2(2.26%)
Pancreatitis	1(1.13%)
Pleural effusion	1(1.13%)

NS1 Antigen was positive in 63cases, Dengue specific IgM was positive in 25 cases and IgG was positive in 2 cases. Both NS1 Antigen and IgM Antibody were positive in 9 cases. Out of total 88 cases, leucopenia (WBC Count < 11000/cmm) was found in 11 (12.5%) cases. One (1.13%) case had total count below 4000/cmm and 10 (11.36%) cases had leucocyte count between 4000 and11000/cmm. Platelet was less than 20000/cmm in only 1(1.13%) case, between 20000 to 50000/cmm in 8 (9.09%) cases, between 50000 to 150000/cmm in 50 (56.81%)cases and it was more than 150000/cmm in 29 (32.95%) cases.

There was no case fatality in the present study group.

IV. Discussion

The year wise breakdown of cases from 2012 to 2015 showed increase in cases from 30 in 2012 to 41 in 2013. Then cases dipped to 2 in 2014 and again increased to 15 in 2015. Similar findings were reported by HemantKumaretal, who found a steady rate in admission rate from 2011 to 2013 which was also similar to findings reported by Kumar A et al.[4,5]Sanghamitra et al from Odissa found increase in admission from 2010 to 2012.[6]

Dengue illness occurs throughout the year with a peak during monsoon and post monsoon season due to high density of vector. The present study shows that outbreak occurred from August to December. Dengue outbreak in India have generally occurred between August and November.[7]M.J. Kulkarni et al in their study of Dengue cases in a tertiary care center in Jaipur reported cases from September to November.[8] Mohan D.K. reported most of the cases during the month of June to September.[9]A study of 766 patients of Dengue in 2011-2013 in A.J. Institute of Medical Sciences and Research Center, Mangalore, Karnataka, reported cases throughout the year with peak admission in April followed by May and June.[4]

The present study showed a male to female ratio of 1.93:1. M.J. Kulkarni in 2010 found two third patients to be males.[8]In contrast to this, a study reported by CV Prathyusa et al from Andhra Pradesh state showed almost equal distribution of male and female ratio in 2012.[10]Equal sex distributions was reported by study of Jonathan G. Lin et al from Malayasia.[11] Male to female ratio in a study by Mohan Kashikanti et al in 2013 found a ratio of 1.2:1.[9]Majority of patients (92.03%) were found to be males and females constituted 7.96% by a study done by Hemant Kumar et al.[4]A. Abrol et al reported male to female ratio of 1:1 from a study in Chandigarh.[12]

In this study, the youngest patient was 9 months old. The youngest patient reported by Jonathan G. Lin et al in a study done in 2000-04 was 4 months old.[11]Youngest agereported by C.V. Prathyusha et al was 6 months.[10] M.J. Kulkarni et al reported 6 cases of newborn admitted for dengue.[6]

The most common age group affected in this study was 6-12 years which constituted 76 (85.39%) cases followed by 3-6 years which was 7.8%. Jonathan G. Lin reported majority of cases from age group of 6-12 years which accounted for 64% of the cases.[11] M.J. Kulkarni et al reported similar finding of almost half of the patients in the age group of 6-12 years.[8] Mean age reported by C.V. Prathyusha et al was 9.77 (SD 4.1) years.[10] Mean age reported in a study by O. Norlijah et al from Malaysia was 6-9 years.[13]

In our study, fever was present in all cases (100%). Other features were body ache (45.45%), cough (45.45%), vomiting (40.9%), headache (36.36%), chill and rigor (22.72%), pain abdomen and retro orbital pain (18.18% each) and chest pain and loose watery stool (4.54% each).Two (2.26%) patients had bleeding manifestations in the form of epistaxis, skin bleed and gastro intestinal bleeding. One patient had features of acute pancreatitis and 1 patient had pleural effusion.

O. Norlijahfound thatvomiting topped the list after fever which was present in half of the cases.[13]A study by A. Abrol et al found headache in 52.6% cases, myalgia in 63.1% , vomiting in 26.3%and diarrhea in 21.05% cases.[12]Our study findings were similar to a study by V.H. Ratageri who reported the clinical features in order of frequency a fever (100%), vomiting (82%), pain abdomen (61%), restlessness (65%) and headache (22%).[14] M.J. Kulkarni et al reported bleeding manifestation (44.5%) followed by vomiting (35.2%), pain abdomen (22.1%) and myalgia (10%).[8] The common symptom reported by C.V. Prathyusha et al were fever (100%), followed by bleeding manifestations (68.7%), abdominal pain (58%), vomiting (42%), myalgia (32%) and itchy rash (28%).[10] Sanjay Kumar Mandal et al in their study found fever in 100% cases followed by headache (62.16%), rash (37.84%), bleeding (13.51%), ascites (8.1%),pleural effusion (18.91%) and neurological manifestation (11.11%).[15]

Out of total 88 cases, 1 (1.13 %) case had Dengue Hemorrhagic Fever, 1 (1.13%) case had Dengue Shock Syndrome and 86 (97.74%) cases were Dengue Fever. In a study conducted by V. Ratageri et al in Karnataka, DF was found in 18%, DHF in 60% and DSS in 20% cases[14] C.V. Prathyusha et al from a study from Andhra Pradesh reported DF in 32.5%, DHF I in 3.75 % , DHF II in 36.25%, DHF III in 21.2% and DHF IV in 6.25%.[10]

In our study, thrombocytopeniawas seen in 67.04% cases and in remaining 32.95% cases platelet count was normal. In a study by Jonathan G. Lin et al platelet count was 129000±53000(range of 38000 to 418000).[11] In a study reported by S.K. Mandal et al from Kolkata, 37.84% patients had platelet count below 50000/cmm and rest 62.16% patients had more than 50000/cmm.[15]Kulkarni et al found thrombocytopenia in 84% cases. Ahmed et al in 2000 reported thrombocytopenia in 68.5% cases.[8] In our study platelets was below 20000/cmm in only 1 (1.13%) case, between 20000 to 50000/cmm in 8 (9.09%) cases, between 50000 to 150000/cmm in 50 (56.81%) cases and it was more than 150000 in 29 (32.95%) cases. In the study C.V. Prathyusha et al they graded thrombocytopenia as 50000-100000/cmm in 38.2%, 20000-50000/cmm in 38.2% and below 20000/cmm in 3.6% cases.[10]Malarige et al (2007) found platelet count between 50000-100000/cmm in 24.2%, 20000-50000/cmm in 46% and below 20000/cmm in 30% cases.

In the present study out of total 88 cases, leucopenia was found in 11 (12.5%) cases. In their study, C.V. Prathyusha et al found leucopenia in 66.2% cases.[10]Arif et al(2008) found leucopenia in 13%. Ratageri et al (2005) reported leucopenia in 26% cases.[14] V.K. Singh et al (2014) reported leucopenia below 4000/cmm in 29% cases.[7]

No mortality was found in this study. M.J. Kulkarni et al reported a case fatality rate of 1.1%.[8] 0.13% cases resulted in fatality in a study byHemant Kumar et al.[4] C.V. Prathyusha et al reported a mortality of 6.25%.[10]

We conclude that Dengue cases are showing a cyclical trend with male preponderance with maximum cases in 6 to 12 years age group. Most common symptom was fever followed by body ache, headache, vomiting, cough and chill and rigor. Most cases were with dengue fever and no death was there in our study.

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