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Clinico-pathological profile of dengue cases in children: a retrospective record based study in a teaching hospital of eastern India

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I. Introduction

with the advent of COVID-19 pandemic, major attention of the healthcare community has been drawn to this dreaded and massive pandemic quite justly. At the same time, it has become ever more important to identify and keep track of our old diseases. One of such mild looking disease with deadly potential is Dengue fever. On top of that the apparent sudden decrease in number of dengue cases in 2020[1] could be due to under reporting or under diagnosis of dengue cases by a healthcare system which has already been overburdened by the massive COVID- 19 pandemic [1]. All this has made it more justified to be very keen on identifying each and every cases of dengue fever in the community and in the hospitals. The objective of the current study is to update clinicians about the clinic-pathological features of dengue in children. The aim is to make policy maker aware that the dengue in children is still a major public health problem which can be prevented and thus huge economic gains can be achieved if the morbidity and mortality due to dengue is decreased.

II. Method

This hospital based retrospective record-based study was done in a tertiary care teaching hospital from eastern India. Bed head tickets of diagnosed Dengue patients (positive NS1 Elisa for a patient with fever less than 5 days and positive IgM Elisa for a patient with fever more than 5 days) where collected from the medical record department (from January 2018 to December 2018) of the hospital. In total, 202 cases could be found in the above-mentioned time period. All the relevant data pertaining to clinical features and laboratory investigations were meticulously collected. Subsequently the data were analysed in MS Excel® software. The study included children from the age of 1 month to 12 years.

III. Results

A record of a total of 202 patients with dengue fever were collected from the medical record department with prior permission from the hospital authorities. The cases contained both classical dengue fever (188, 93.06%), dengue haemorrhagic fever (8, 3.96%) and dengue shock syndrome (6, 2.97%). Out of 202 cases 112 cases where male (55.4%) and 90 were female (44.55%). The majority of the cases (112, 56%) belonged to school age children (5 to 10 years). The second common age group to be infected was one to 5 years with a total number of 47 cases (23.26%). The next commonly affected age group was 11 to 12 years age group comprising of 36 cases (17.56%.) The least commonly affected age group was less than one year age group comprising of only 7 cases (3.46%).

Although data was collected from January 2018 to December 2018, the dengue cases started to come up from July, which peaked for the next 4 months (August to November). There was decrease in December.

One major diversion from the established epidemiological trends of dengue, that was found in the study was that 140 cases (69.30%) were from the village areas (panchayat areas) as compared to 57 cases (28.21%) being from the town (municipality areas). 3 cases were from the city and one case was reported from a suburban area.

The principal complaint of the patients was fever and all the cases were presented with fever. The duration of fever on admission however, very significantly. The majority of patients presented with fever for less than 5 days (92 cases; 45.54%). about 71 cases(35.14%) patients presented with fever of more than 5 days but less than a week duration. surprisingly, 39 cases(19.30%) presented with fever for more than a week with the longest being a duration of 14 days. The second most common clinical feature that was found in this study was vomiting (73; 36.13%) with dry cough being the third most common symptom (58; 28.71%). Body ache was present in 57 patients (28.21%) followed by abdominal pain (40; 19.8%), headache (18; 8.91%) and skin rash (28; 13.86%). Arthralgia (11; 5.44%) and retro orbital pain (11; 5.44%) were the next. Lymphadenopathy was found in 5 patients (2.47%), bleeding manifestations occurred in 7 patients (3.46%). Redness of eyes was present in 15 cases (7.42%). Interestingly, 15 patients presented with loose motions (7.42%), 8 patients presented with pruritus (3.96%). Other atypical clinical features elicited in this study included convulsion (4; 1.98%), drowsiness (3; 1.48%), jaundice (1), neck rigidity (2)and sore throat.

Among common signs hepatomegaly was found in 38 cases (18.8%), low volume pulse in 38 cases (18.8%) and splenomegaly was present in 13 cases (6.43%). All the clinical features elicited in the study at tabulated in table 1.1

Table 1.1 Presenting complaints in confirmed pediatric dengue cases

Clinical feature	Frequency	Percentage
Fever	202	100%
Body ache	57	28.21%
Cough	65	32.17
Vomiting	73	36.13%
Skin rash	28	13.86%
Abdominal pain	40	19.80
Retro-orbital pain	11	5.44%
Arthralgia	12	5.94%
Headache	18	8.91%
Lymphadenopathy	5	2.47%
Bleeding Manifestation	7	3.46%
Hepatomegaly	38	18.81%
Splenomegaly	13	6.43%
Low volume pulse	38	18.81%
Redness of eye	15	7.42%
Toxic look	12	5.94%
Drowsiness	3	1.48%
Convulsion	4	1.98%
Neck stiffness	2	0.99%
Jaundice	1	0.49%
Loose motion	15	7.42%
Urticaria	3	1.48%
Pruritus	9	4.45%
Sore throat	1	0.49
Positive tourniquet test	23	11.38%

The investigations done in these cases were haemoglobin levels, total leukocyte count, platelet count, liver enzymes, serum bilirubin, C-reactive protein and USG whole abdomen. There was presence of anaemia in about 84 cases (41.58%) [the cut off of < 9.5 gram/dl was taken for infants < one year,< 10.5 gram/dl for children aged 6 month to 6 years, < 11 gram/dl for children aged 6 years to 12 years]. Such high number of cases of anaemia probably reflects the high baseline prevalence of anaemia in the local population.

Leukocytopenia (TLC < 4,000/cmm) was present in 125 cases (61.88%). Thrombocytopenia was detected in 122 (60.39%) patients. Liver enzymes was elevated in 21 (10.39%) cases. Hyperbilirubinemia was present in 1 patient. However, Leucocytosis was present in 30 cases (14.85%) and C-reactive Protein was elevated in 33 cases (16.33%). USG whole abdomen showed hepatomegaly in 32 Cases (15.84%), Splenomegaly in 10 cases(4.95%), pleural effusion in 8 cases (3.96%), ascites in 10 cases (4.95%) and increased gall bladder wall thickness was found in 6 cases (2.97%) (Table 1.2).

Although of controversial benefit, platelet transfusion was given in 3 patients with platelet count <25,000/cmm. Whole blood transfusion was done in 3 patients. Among 202 patients 4 patients left against medical advice, one patient was referred to another centre, and two patients succumbed, while rest of the patients recovered.

Table 1.2 Frequency of laboratory findings in Dengue fever

Laboratory findings	Frequency	Percentage

Leucocytopenia (TLC < 4000/cmm)	125	61.88%
Thrombocytopenia (<1,50,000/cmm)	122	60.39%
Increased Liver enzyme (ALT, AST)	21	10.39%
C-Reactive Protein	33	16.33%
Leucocytosis	30	14.85%
USG Whole Abdomen		
i. Hepatomegaly	32	15.84%
ii. Splenomegaly	10	4.95%
iii. Ascites	10	4.95%
iv. Pleural effusion	8	3.96%
v. Increased GB wall thickness	6	2.97%

IV. Discussion

Dengue, despite the recent drop in detection rate due to COVID-19 pandemic, is endemic in many countries of the world; however most of the cases are reported from the South East Asia and western Pacific region [1,2]. Over the last 2 decades, India has become endemic for Dengue and many author's had reported periodic epidemic outbreaks in various geographical areas in India [3-8]. The studied hospital is a tertiary care teaching hospital situated in the eastern part of India, in the sub-urban areas of the state of West Bengal. In the recent past, we have seen several such outbreaks of dengue fever. The clinical features of Dengue has probably undergone change in the recent years. With more atypical symptoms, like features of upper respiratory tract infection, altered consciousness and jaundice are now being seen with increased frequency in dengue patients. This has mandated the health care community to promptly identify the atypical clinical features of dengue for early detection and institution of care.

In our present study we have found that in a significant section of patients (39;19.3%) Dengue was diagnosed after having fever for more than 7 days. This is probably a high risk scenario where, complications of Dengue fever could have been missed and a more prompt detection of the disease could have been done. This requires an increased level of alertness in the part of the health care providers and better awareness in the part of the population at risk.

The present study also shows that, symptoms of the upper respiratory infections such as cough (including dry cough), cold, nasal blockage, runny nose, is quite common. These were seen in 65 patients (32.17%). Interestingly, loose motion has also been found to be present in 15 cases (7.42%), which could have been due to a coinfection or may suggest another atypical manifestation.

There have been presence of neurologic manifestations like altered consciousness (3;1.48%), presence of neck stiffness (2;0.99%) and convulsions (4;1.98%). However, neurologic involvement like encephalitis, Gullian Barre syndrome had been formerly reported by other authors [9,10]. Elevated liver enzymes is also found in our study in 21 cases (10.39%). Unconjugated hyperbilirubinemia is found in one case. Another interesting finding is presence of Leucocytosis (30;14.85) and elevated C-reactive Protein (33;16.33%) and could be de to co-infection. This necessitated administration of antibiotics in a relatively large number of patients (116;57.42%).

V. Conclusion

In the era of evidence based medicine, clear cut and well formulated guidelines are available for treatment. Guidelines for treatment of Dengue has been laid down by the WHO, but, the management of atypical conditions due to Dengue infection like encephalopathy or hepatic failure has not been included. Thus it becomes of paramount importance on the part of the treating paediatrician to be aware of the atypical presenting symptoms for early and prompt diagnosis and proper management of the atypical complications , once they develop. It is also imperative to say that, patient education and awareness of the disease among the pediatric population and their care givers remains an essential part of control of dengue.

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