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Original Research Article

Retrospective study of clinical profile and outcome of pediatric dengue cases in a teaching hospital

Alok Kumar M. K.[1]*, Timmangouda R. Patil[2], Santhosh Veerabadhraiah[3]

[1]Department of Pediatrics, AIMS and SAHRC, B.G. Nagara, Mandya, Karnataka, India
[2]Consultant Pediatrician, Shanthi Hospitals, Bagalkot, Karnataka, India
[3]Department of Pediatrics, S. Nijalingappa Medical College, Navanagar, Bagalkot, Karnataka, India

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***Correspondence:**
Dr. Alok Kumar M.K.,
E-mail: alokmk1988@gmail.com

ABSTRACT

Background: Dengue fever is an acute febrile illness caused by 4 closely related viral serotypes of the genus Flavivirus. Dengue has a broad range of clinical manifestations and often with unpredictable clinical evaluation and outcome. So this study has been done to see the wide range of clinical presentation of dengue and its outcome.
Methods: It is a retrospective study done in tertiary hospital during the period of 8 months. Study was done by collecting the previous records from hospital record section. There were 48 cases of serologically confirmed cases of dengue which satisfied the inclusion and exclusion criteria were included in the study.
Results: In our study there were 52% of the cases of dengue fever, 16.6% of cases were dengue fever with warning signs and remaining 31.4% of patients were severe dengue. Common Clinical symptoms at admission were fever (100%), vomiting (77%), respiratory distress (56.25%), generalised weakness (54.1%) and pain abdomen (33.3%). Less common symptoms were loose stools (6.25%), periorbital puffiness (6.25%), altered sensorium (4.1%), oliguria (2%) and bleeding manifestations (2%). Out of these dengue children 70.8% of these children improved without complication, 20.8 % of children improved with complication, in the form of ARDS, acute liver failure, DSS, meningitis, 6.25 % of these children went DAMA and 2 % of children expired.
Conclusions: In our study atypical presentations like respiratory distress, loose stools meningitis were commonly noted and bleeding manifestation at admission was rare in our study. Platelet transfusions have little role in management of dengue patients. Early diagnosis, careful monitoring and proper fluid management goes a long way in reducing the mortality due to dengue hemorrhagic fever and shock syndrome.

Keywords: Atypical presentations, Complications, Dengue fever, Thrombocytopenia, Warning signs, WHO

INTRODUCTION

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. In the last 50 years, incidence has increased 30-fold with increasing geographic expansion to new countries and, in the present decade, from urban to rural settings. Dengue has become a major international public health concern and is now endemic in more than 100 tropical and subtropical countries. The World Health Organization (WHO) estimates that there may be 50 million dengue infections worldwide every year.[1,2] India alone accounts for almost 34 % of global dengue burden.[3]

Dengue fever is an acute febrile illness caused by closely related viral serotypes of the genus Flavivirus.[4] Dengue virus is a single stranded RNA virus having four serotypes.[1-4] Dengue virus is transmitted by the bite of

infected female *Aedes Egypti* mosquito.[4] Initial dengue infection may be asymptomatic (50-90%), may result in a nonspecific febrile illness, or may produce the symptom complex of classic dengue fever (D F).[5] Classical dengue fever is characterized by fever, headache, retroorbital pain, myalgia, nausea, vomiting, often rash. More severe form of dengue is characterized by decline in fever, haemorrhagic manifestations, haemoconcentration, severe abdominal pain, protracted vomiting, hypotension and shock. Dengue illness is characterized by three distinct phases like febrile phase, critical phase, recovery phase.[6]

The exact clinical and laboratory profile is crucial for diagnosis as well as successful management of the patients. The present study is an attempt to describe the salient clinical as well as laboratory findings of serologically confirmed hospitalized cases of dengue fever. Aim of the study was to study the clinical and laboratory profile of dengue cases, to study the outcome in dengue illness.

METHODS

It is a retrospective cross sectional hospital based study done in SNMC and HSK Hospital Bagalkot, Karnataka, India from October 2015 to May 2016. All serologically confirmed case of dengue fever from 0 to 14 years of age were included in the study. Dengue with co-infections and children having major co morbid conditions which affect the outcome like major congenital malformations, surgeries were excluded from study.

Study was done by collecting the previous records from hospital record section. There were 48 cases of serologically confirmed cases of dengue which satisfied the inclusion and exclusion criteria were included in the study. The parameters which were studied were clinical presentation, examination findings at admission, lab analysis included are haemoglobin (Hb), haematocrit (HCT), total count (TC), platelet count, serology of dengue, ultrasound abdomen and thorax, chest x-ray, SGPT and relevant other investigation which were done to rule out other causes , treatment received during the hospitalisation, duration of hospital stay, outcome in the form of improved without complication, improved with complication, DAMA and death.

Statistical analysis was done using SPSS software, 11.0. Trial version. Data were tabulated in Microsoft excel later analysed using SPSS. Chi - square test was applied for qualitative data and student t - test for quantitative data. P <0.05 was considered statistically significant.

RESULTS

A total of 48 cases of dengue were studied during the study period. Children were categorized according to WHO criteria into dengue fever, dengue fever with warning signs and severe dengue.

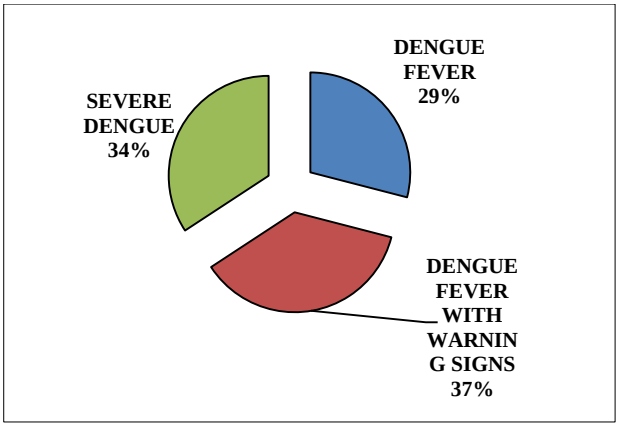


Figure 1: Distribution of dengue cases.

Common Clinical symptoms at admission were fever (100%), vomiting (77%), respiratory distress (56.25%), generalised weakness (54.1%) and pain abdomen (33.3%). Less common symptoms were loose stools (6.25%), periorbital puffiness (6.25%), altered sensorium (4.1%), oliguria (2%) and bleeding manifestations (2%).

On examination signs noted were hepatomegaly (54.1%), abdominal tenderness (43.1%), polyserositis (41.6%), and bleeding manifestation in the form of mucosal and skin bleeds (35.41%), hypotension (31.25%), and meningeal signs (16.6%).

Diagnosis of dengue was made by using ELISA technique, NS1, IGG and IGM, NS1 (81.2%), IGM (45.8%), IGG (33.3%) individually were found positive. NSI and IGM (35.4%), IGM and IGG (8.33%), NS1, IGM and IGG (6.25%) in combination were found positive.

Investigation done at admission and during the course of hospital stay divided into investigation at admission, lowest levels during the course and at discharge for Hb, HCT, and platelet count. 54.1% cases showed leukopenia (TC <5000) at admission.

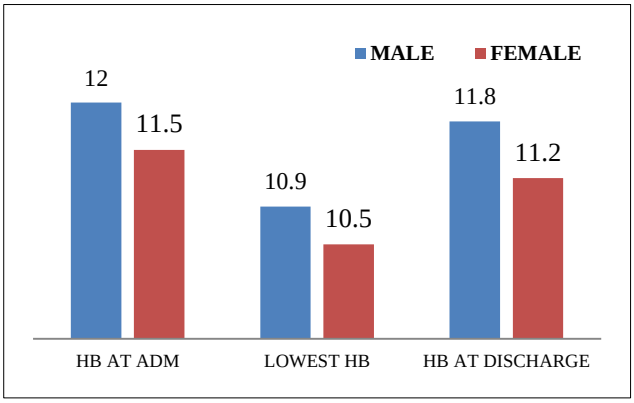


Figure 2: Haemoglobin levels.

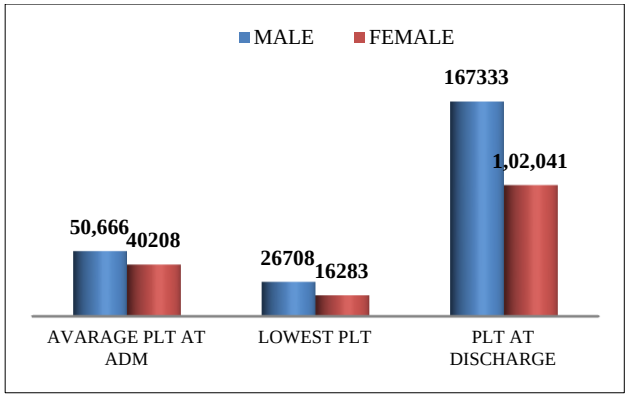


Figure 3: Platelet count.

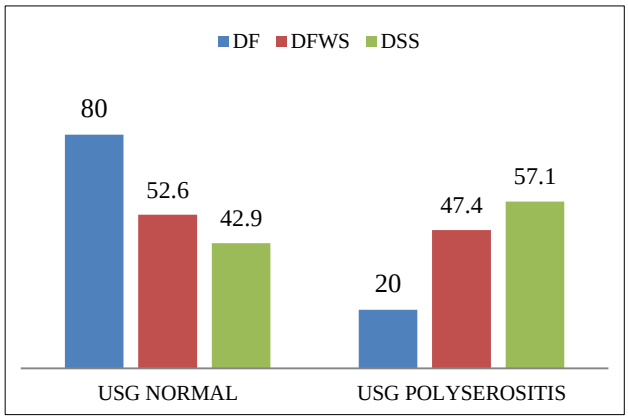
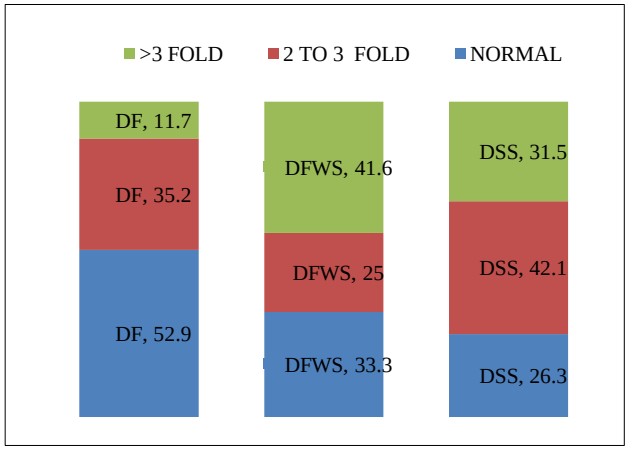


Figure 4: Ultrosound findings.

Ultrasound was done to see for polyserosits manifesting in the form of pleural effusion and ascites in these children. Chest x-ray showed pleural effusion in 22.9% cases.



DF- Dengue fever, DFWS- DF with warning signs, DSS- Dengue shock syndrome.

Figure 5: SGPT levels in dengue.

SGPT levels were done at admission and repeated when child deteriorated. 38.2% had normal values and 62.8% had more than 2 fold rise of which 28.2% had more than 3 fold rise during hospital stay. Out of 48 children one child went into acute fulminant hepatic failure with significant elevated liver enzymes more than 3000.

Treatment was initiated in these children according to WHO protocol. Average duration of crystalloids required was 4.7 days. 47.9 % of these children were received antibiotics at admission. 16.6 % of these children required platelet transfusion during the course of illness. PRBC transfused in 4.1% of these children. Ionotropes reqired in 12.5% of children. 20.8 % of these children required oxygen in the form of CPAP, face mask or mechanical ventilation.

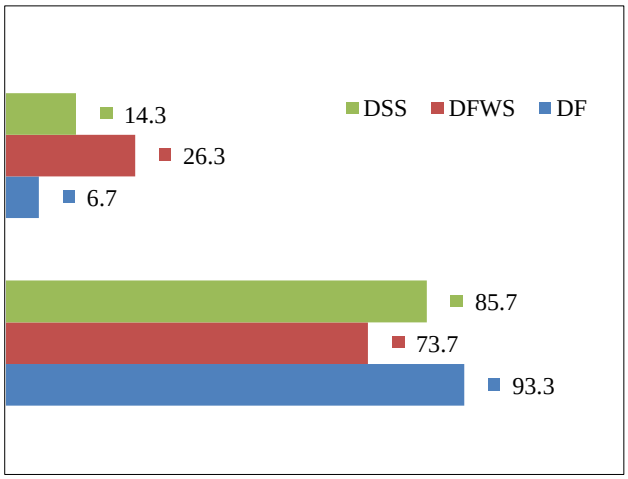


Figure 6: Requirement of platelet transfusion.

Out of these dengue cases, 70.8% of these children improved without complication, 20.8 % of children improved with complication in the form of ARDS, acute liver failure, DSS, meningitis. 6.25 % of these children went DAMA that is discharge against medical advice and 2 % of children died.

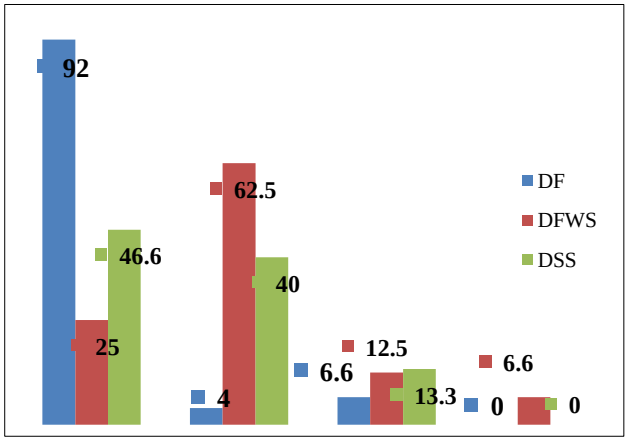


Figure 7: Outcome of dengue cases.

DISCUSSION

In our study 52% of the cases were dengue fever, 16.6% of cases were dengue fever with warning signs and

remaining 31.4 % of patients were belong to severe dengue.

Average duration of fever noticed in our study was 5±2.5 days it is in correlation with the study done by Nimmagadda S et al (5.64 days).[7] Fever was the major presenting complaints (100%) in our study which is correlating with the majority of the earlier studies like Patil G et al (98.6%), Jakribettu R P et al (100%).[7-9]

Vomiting is the next common presentation in our study (77%), which is not correlating with the study done by Mallhi et al (55.2%) and Jakribettu R P et al (42.03%).[9,10] Respiratory distress was the next common presentation (56.25%) in our study which is more higher than in other study done by Mallhi et al (17.7%).[10]

Generalised weakness and myalgia was the presenting manifestation in 54.1% of children which is in correlation to study done by Nimmagadda S et al (54.6%).[7] Other studies like Mallhi et al (72.4%) did not have correlation to our studies.[7] Pain abdomen was the presenting symptom (33.3%) of cases which is not in correlation to the earlier studies Nimmagadda et al (41.3%), Mallhi et al (44.8%).[7,10]

Atypical presentation of dengue in our studies were, loose stools (6.25%), periorbital puffiness (6.25%), bleeding manifestation (2%), oliguria (2%). Common atypical presentation noted in other studies include hepatitis, diarrhea, renal failure, myocarditis, encephalitis, atrial fibrillation (Nimmagadda S.S et al).[7]

Table 1: Clinical manifestation and lab values of dengue cases at admission to hospital (p <0.05 significant).

Blood pressure	Normotension (68.8%)	Hypotension (31.3%)	P = 0.727
Bleeding manifestation	Absent (64.6%)	Present (35.4%)	P = 0.75
Abdominal tenderness	Absent (56.3%)	Present (43.8%)	**P = 0.04**
Hepatomegely	Absent (45.8%)	Present (54.2%)	P = 0.06
Polyserositis	Absent (58.3%)	Present (41.7%)	**P = 0.04**
Meningeal signs	Absent (77.1%)	Present (22.9%)	P = 0.07
Respiratory distress	Absent (43.75%)	Present (56.25%)	**P = 0.03**
Vomiting	Absent (30%)	Present (70%)	**P = 0.01**
IG M	Absent (54.2%)	Present (45.8%)	P = 0.65
IG G	Absent (66.7%)	Present (33.3%)	P = 0.05

In our study vomiting, abdominal tenderness, respiratory distress and polyserositis were significantly present.

We have observed that dengue patients has mean total leukocyte count of 4885±420 at admission and lowest total count during stay was 3594±298 which is increased to 5586±315 at the time of discharge. This occurs due to bone marrow suppression that occurs due to dengue virus. Other studies done earlier like Jakribettu RP et.al (4984±302) also show leucopoenia.[9] Our study had leucopoenia at admission in 54.1% of children as compare to Mandal SK et al (29.73%) and Patil G et al (28.78%).[8,11]

Mean HCT at admission noted was 35.79±4.8, lowest HCT after treatment 32.0±3.8 at discharge mean HCT was 35.24±3.0.which occurs due to haemo concentration which occurs during illness and decrease in haematocrit after treatment.[12]

Average platelet count noted at admission was 46276±5605 (89.5%) lowest noted was 21,825±3031 and at discharge 1,37,425±10,398. Some children had lowest platelet count of less than 10000 with still no bleeding manifestations and not requiring platelet or PRBC transfusion. 42% cases had thrombocytopenia in study done by Goyel et al.[13]

Liver enzymes SGPT significantly elevated at admission with mean of 111.5±15.9. 2% of children had acute fulminant hepatic failure with raised SGPT levels 3000. Cause may be direct effect of dengue viral infection along with ischemic hepatitis due to hypo perfusion to kidney. 56.2 % of children in our study had more than 3 fold rise in enzyme level which is in correlation to study done by Nimmagowda S et al (58.7%) and Kamath R S et al (36.6%).[7,15]

In the present study patient was managed according to WHO protocol with crystalloids, antipyretics, and symptomatic treatment. Fulminant hepatic failure noted in 2% of children responded to correction of shock and N acetyl cysteine. 16.6% of these children required platelet transfusion, and 4.16% of children required PRBC transfusion.

In the present study 2% of mortality noted when compare to other study done by Patil G et al (1.44%).[8] Average duration of hospital stay in our study was 7±2.4 days which is similar to studies done earlier.

CONCLUSION

In our study atypical presentations like respiratory distress, loose stools meningitis, were commonly noted and bleeding manifestation at admission was rare in our study. Stastically significant number of children can be managed symptomatically with IVF and electrolytes. Minimum of children requires PRBCs and platelet transfusion. Platelet transfusions have little role in management of dengue patients. Early diagnosis, careful monitoring and proper fluid management goes a long way in reducing the mortality due to dengue hemorrhagic fever and shock syndrome.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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