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A Study of Epidemiology, Clinical Profile and Outcome of Dengue Fever among Children in the Age Group of 2 Months to 14 Years

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Abstract: ***Introduction: Dengue fever is caused by several arthropod-borne viruses. It is the most important emerging tropical viral disease of humans. Aims and Objectives: Primary Objective: To study the clinical profile of dengue fever in children in the age group of 2 months to 14 years. To study the outcome of children with dengue fever. Secondary Objective: - To study the unusual or atypical manifestations of dengue fever. Results: 150 children with dengue fever and categorized as dengue fever WITHOUT warning signs was seen in 78 cases (52%), dengue fever WITH warning signs was seen in 60 cases (40%) and severe dengue was seen in 12 cases (8%). Conclusion: The most common age group of presentation is 8 years to 12 years with common clinical manifestations are fever, vomiting's, body pains and abdominal pain and unusual manifestations like Encephalopathy in the form of altered sensorium and seizures, Acute renal failure in the form of oliguria and hypertension and Acute respiratory distress syndrome were seen in a small proportion of the patients in the present study. There was NO correlation between thrombocytopenia and bleeding manifestations. Complications observed were liver dysfunction and ARDS. Mortality in the study was 6%.***

Keywords: Dengue Virus, Bleeding manifestations, Thrombocytopenia, Hematocrit, Shock

1. Introduction

Dengue fever is caused by several arthropod-borne viruses. It is the most important emerging tropical viral disease of humans. The infection spreads by Aedes mosquitoes with major public health consequences in over 100 tropical and sub-tropical countries [1]. As the disease spreads to new geographical areas, the frequency of the outbreaks is increasing along with a changing disease epidemiology. The identification of cases is by distinct clinical features but they can present with varied manifestations. Dengue remains a puzzling disease in many aspects such as the virus-vector and host-virus relationship and clinical expression variability [1]. Definitive diagnosis of dengue fever requires laboratory tests like PCR or RT-PCR for the detection of dengue viral RNA or by the isolation of the virus from blood leukocytes or acute-phase serum which are costly. Hence there is a need for simple hematological and biochemical tests like platelet count, hematocrit, complete blood counts and IgM and IgG capture enzyme commercial immunoassays for early diagnosis of dengue viral illness which will be useful for case management and preventing morbidity and mortality [1].

2. Objectives

Primary Objective

1) To study the clinical profile of dengue fever in children in the age group of 2 months to 14 years.
2) To study the outcome of children with dengue fever.

Secondary Objective: - To study the unusual or atypical manifestations of dengue fever.

3. Materials and Methods

Study Design: Prospective observational study
Study Period: 2 years from June 2017- May 2019.
Sample Size: 150

Inclusion Criteria: Children in the age group of 2 months to 14 years admitted with fever of 2-7 days duration who fit into the clinical case definition for probable dengue fever were investigated and those patients who were positive for any one of the tests like NS1 Ag and/or IgM Ab were enrolled in the study.

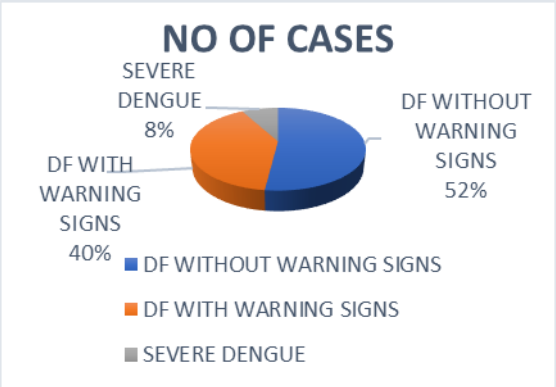
Exclusion Criteria: Children with any specific identified bacterial or viral febrile illness of more than 5 days duration and children with suspected dengue fever but were negative for the tests like NS 1Ag and IgM were excluded from the study.

Method of collection of data

Demographic data of enrolled children like age, sex, address were recorded. Complete clinical examination was done and details were recorded. Blood samples were collected from these children for complete blood count, hematocrit, liver function tests, NS1 Ag, IgM & IgG Ab, and other relevant investigations like chest X-ray and ultra sound abdomen were also done.

4. Results

150 children with dengue fever and categorized as dengue fever WITHOUT warning signs was seen in 78 cases (52%), dengue fever WITH warning signs was seen in 60 cases (40%) and severe dengue was seen in 12 cases (8%).



The common symptoms were fever which was present in all the cases (100%) followed by vomiting in 117 cases (78%), body pains in 105 cases (70%) abdominal pain in 78 cases (52%) and headache in 69
cases (46%).

Bleeding manifestations were seen in 70% cases with petechiae (53%) being the most common followed by melena (27%), hematemesis (15%) and epistaxis (5%).

Signs such as Erythematous rash was seen in 38 cases (26%), hypotension was observed in 57 cases (38%), shock in 18 cases (12%), hepatomegaly was seen in 32 cases (21%) and Positive tourniquet test was seen in 34 cases (22%).

Complications like Pleural effusion was seen in 12 cases (8%) in chest x-rays. Ascites was seen in 4 cases (2.6%) and gall bladder wall edema was seen in 12 cases (8%) in abdominal ultrasonography.

Table 1: Prevalence of Thrombocytopenia among the Patients

Platelet Count	Number of Cases, n = 140
1 lakh – 1.5 lakh	49
50,000 – 1 lakh	54
20,000 – 50,000	30
< 20,000	7

Table 2: Distribution of Cases according to Hematocrit

Hematocrit	Number of Cases
>40%	48 (32%)
30 – 39%	94 (62.6%)
<30%	8 (5.3%)

Table 3: Serological Tests

Serological test	No of cases done	No cases positive
NS 1 Ag	90	70 (77%)
Ig M Ab	150	80 (53%)

5. Discussion

In the present study the most common bleeding manifestation was petechiae in 55% of cases, followed by significant bleeding in the form of melena (24%), followed by hematemesis (18%), epistaxis (6%) and gum bleeds (3%). Melena constituted the most common form of internal bleeding in the present study and also in the study by Shah et al [2]. Hematemesis was reported as the most common manifestations in the study by Narayanan et al (2002) [3] whereas epistaxis was most common in the study by Faridi et al (2008) [4]. Ahmed et al (2008) [5] observed gum bleeds in 16%, hematemesis in 19%, epistaxis in 12%, melena in 8%, and subconjunctival hemorrhage in 4 % cases. In a study by Rategeri et al (2005) [6] gastro intestinal bleeds were seen in 22% and petechiae in 18% cases.

In the present study hepatomegaly was seen in 32% cases and splenomegaly in 8%. According to Faridi et al (2008) [4] hepatomegaly was seen in 54% and splenomegaly in 32.4% cases. In a study by Benerjee et al (2008) [7] hepatomegaly was in seen 15% and hepatosplenomegaly in 7% cases. In a study by Ahmed et al (2008) [5] hepatomegaly was seen in 35% and splenomegaly in 2% cases. Daniel et al (2005) [8] suggested an association of abnormal AST with a worst outcome.

In the present study thrombocytopenia was observed in 93% cases, which was little higher compared to the study by Kulkarni et al (2010) [9] which was (84%). According to Ahmed et al (2008) [5] 13 thrombocytopenia was observed in 68.5% and by Benerjee et al (2008) [7] thrombocytopenia was observed in 96%.

Though thrombocytopenia was seen in 93% cases, bleeding manifestations were observed in only 70 % cases, indicating that there is no correlation between thrombocytopenia and bleeding manifestations

In the present study hepatic dysfunction was seen in 24% children which was more when compared to the study done by Dhooria et al (2008) [10] in which it was seen in 14.8%cases.But in a study by Hayat et al (2010) [11], it was seen in 40%,Faridi et al (2008) [4] 64% and Mohan et al (2000) [12] 16 84% of cases.

The mortality observed in the present study was 6 %. Dhooria et al [10]and Rachel D et al (2005) [13] observed mortality rates of 3.7% and 3.2% respectively. Ashwin kumar et al [14] reported 2.4% and Anju Agarwal et al [15] reported 6% mortality

6. Conclusions

The most common age group of presentation is 8 years to 12 years with common clinical manifestations are fever, vomitings ,body pains and abdominal pain and unusual manifestations like Encephalopathy in the form of altered sensorium and seizures,Acute renal failure in the form of oliguria and hypertension and Acute respiratory distress syndrome were seen in a small proportion of the patients in the present study. There was NO correlation between thrombocytopenia and bleeding manifestations. Complications observed were liver dysfunction and ARDS. Mortality in the study was 6%.

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