



Clinical Profile of Dengue in Children in a Teaching Hospital

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Abstract

Aim: To study the clinical profile of children with dengue.

Methods: An observational prospective study conducted in the paediatric ward in a medical college in Jammu, India over 12 months. Patients were classified based on World Health Organization (WHO) 2011 criteria for dengue.

Results: Out of the 54 enrolled, mean age of presentation was 6.82 year with M:F ratio of 1.1 :1. 85% were living in urban areas and most of the children (64.81%) lived above the ground floor and mosquito net was not used by 75% of the total. Only 12(22.24%) out of all, required hospitalization. Fever was the most common clinical presentation, seen in all the patients followed by vomiting (55.55%), rash (53.70%), malaise (48.14%), pain abdomen (46.29%). Bleeding was present in 18.51% of the affected children where epistaxis was more frequent than the gum or gastrointestinal bleed. Serositis in the form of pleural effusion and ascites was seen in (7.4%) and (9.25%) respectively.

Conclusion: Dengue is a febrile illness having wide spectrum of clinical presentation in children ranging from

flu like illness to life threatening haemorrhage and shock. Classical Dengue fever (DF) was most prevalent in the paediatric population and the outcome was favourable. Early recognition and prompt initiation of appropriate treatment are vital to reduce disease related morbidity.

Keywords: Dengue Fever, Children, India, Clinical Profile, mosquito borne

Introduction

Dengue is a mosquito-borne viral disease transmitted by female mosquitoes mainly of the species *Aedes aegypti* and, to a lesser extent, *Aedes Albopictus*. It is caused by a virus of the Flaviviridae family and there are four distinct, but closely related, serotypes of the virus that cause dengue (DENV-1, DENV-2, DENV-3 and DENV-4). It causes a wide spectrum of disease ranging from subclinical disease to severe flu-like symptoms in those infected. Recovery from infection is believed to provide lifelong immunity against that serotype. However, cross-immunity to the other serotypes after recovery is only partial, and temporary.[1] Of the 2.5 billion people globally at risk of DF and its severe forms dengue haemorrhagic fever (DHF) and dengue shock

syndrome (DSS) South-East Asia accounts for approximately 1.3 billion or 52%. [2] At present, Dengue is endemic in 112 countries in the world [3] and approximately 2.5 billion people live in Dengue endemic countries [4]. Asian countries showed that the percentage of admitted cases developing shock, ranged from 9 to 60% with in-hospital case fatality rate 0.2 to over 9% [4]. Early recognition and prompt initiation of appropriate treatment are vital to reduce disease related morbidity [5]

Although the clinicopathological profile of Dengue has been studied before, data from the northern part of our country are lacking. In this study, we analysed the variation in clinical features, outcome and possible risk factors among Dengue infected children. With there being an increasing number of cases being detected, a study of the basic clinical and haematological aspect of the disease is important. Thus, this study was undertaken to study the clinical profile of the patients with dengue at a tertiary care centre in Jammu, India

Methods

This was an observational prospective study conducted on patients visiting OPD in 54 children of either gender up to 15 years of age for a period of 2 months from July 2019 to June 2020. Children who came to the OPD for consultation and diagnosed as Dengue cases were enrolled in this survey. The case definition, diagnosis and management used for dengue fever, severe dengue and atypical manifestations were as per the revised World Health Organization (WHO) guidelines 2011[6]. The diagnosis was confirmed by NS1 antigen-based ELISA test.

Exclusion criteria were simultaneous infection, severe malnutrition, long term steroid use, hemolytic diseases such as thalassemia, and malignant diseases. All other relevant and other additional investigations were done as per the clinical course of illness. In this study we

analysed the variation in clinical features, outcome and possible risk factors among dengue infected children, The clinical manifestations and laboratory findings like haemoglobin estimation, total platelet count, haematocrit estimation, NS1 antigen, and IgM antibody of each group of illness were recorded and documented.

Results

Baseline characteristics

Among the 54 studied (Table 1) children 24.07% were between 0-5 year, 50% between 6-10 years and 14.81% between 11-15 years of age. Male and female participants were almost equal with a M:F ratio of 1.1 :1. 85% of studied children were living in urban areas. In our study it was seen that most of the children (64.81%) lived above the ground floor and mosquito net was not used by 75% of the total. 59.25% of patients were admitted in the hospital for 4 to 7 days. 5 out of 54 patients were admitted for >7 days.

Clinical Presentation

Fever was the most common clinical presentation (Table 2) seen in all the patients followed by vomiting (55.55%), rash (53.70%), malaise (48.14%), pain abdomen (46.29%). Bleeding was present in 18.51% of the affected children where epistaxis was more frequent than the gum or gastrointestinal bleed. Serositis in the form of pleural effusion and ascites was seen in (7.4%) and (9.25%) respectively. 44.44% patient showed positive tourniquet test.

Discussion

In this study it was observed that the incidence of the disease is more among the younger age group (6-10 years) accounting for (50%) of the total cases with a slight male preponderance and the male to female ratio was 1.1: 1. In a study by Choudhury [8] the commonest age group was above 10 years with male predominance and male to female ratio was 2:1. In other studies like

Agarwal et al [9], Narayana et al [10] and Gomber et al [11] similar male preponderance was seen. In a study by Srinivasa [3] maximum patients belong to urban area which was similar to our study where 85% of cases belonged to urban dwellings, though WHO has reported shift of Dengue to rural areas. A seasonal pattern was also observed in this study and the highest incidence was recorded the post monsoon (September-December) seasons during the one-year study period. Other studies like Wong Koon S et al [12] have also described the seasonal pattern of Dengue, mostly in the rainy season due to abundance of mosquito breeding in the season.

In present study, fever, vomiting, rash, malaise and were the common symptoms followed by abdominal pain representing (100%), (55.55%), (53.70%), (48.14%), and (46.29%) respectively. Agarwal et al [9] in their study in Delhi showed fever, abdominal pain and vomiting as the commonest symptoms. In one more study by Wang et al [14], vomiting (60.5%) and abdominal pain (32.5%) were the commonest presenting symptoms in Dengue infected children. Headache was seen in (11.11%) studied children whereas about (28.8%) observed headache in Narayanan et al [10], (77%) in Kalyanarooj et al [14] and (22%) in Ratageri et al [15] studies. In our study myalgia was found in (9.2%) cases only whereas in a study [16] in India (16.3%) cases had myalgia. Among bleeding manifestation epistaxis and malena were the most common bleeding manifestation noted in study by Srivastava [17] and Ahmed et al [18] which was similar to this study (18.51%) In another study by Ratageri et al [15] the common bleeding manifestations were GI bleeding (22%) and petechiae (18%)

In this study signs of serositis like pleural effusion was seen in 7.4% of cases however study by Shubhankar Mishra [20] detected (25.77%) cases having pleural effusion hepatomegaly and ascites was seen in (44.44%)

and (9.25%) cases respectively whereas other studies [19] showed hepatomegaly in (86.9%), ascites (93.4%), pleural effusion (82.6%).

Conclusion

It was observed that Dengue, a febrile illness, had wide spectrum of clinical presentation in children ranging from flue like illness to life threatening haemorrhage and shock. Classical Dengue fever (DF) was most prevalent in the paediatric population and the outcome was favourable. Early recognition and prompt initiation of appropriate treatment are vital to reduce disease related morbidity.

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Legend Table

Table 1: Demography and risk factors of the studied children

| Clinical profile | Number (%) |
|----------------------|-----------------------|
| Age | Mean age is 6.82years |
| 0-5 years | 13(24.07%) |
| 6-10 years | 27(50%) |
| 11-15 years | 8(14.81%) |
| Sex | |
| Male | 29 |
| Female | 25 |
| M: F | 1.1:1 |
| Managed on OPD basis | 42(77.76%) |
| Hospitalized | 12(22.24) |
| 0-4 days | 6(50%) |
| 5-7 days | 3(25%) |
| >7 days | 1(8.33%) |

| | |
|-----------------------------|------------|
| Day of admission /OPD visit | |
| 0-4 days | 22(40.74%) |
| 5 to 7 days | 27(50%) |
| >7 days | 5(9.25%) |
| Housing | |
| Ground floor | 35(64.81%) |
| Above ground floor | 19(35.18%) |
| Mosquito net | |
| Used | 14(25.92%) |
| Not used | 40(75%) |
| Source of stagnant water | |
| Yes | 32(59.25%) |
| No | 22(40.74%) |
| Urban | 46(85%) |
| Rural | 9(16.67%) |

| | | |
|------------------|---|-------|
| Headache | 6 | 11.11 |
| Pleural effusion | 4 | 7.4 |
| Ascites | 5 | 9.25 |

Table 2: Clinical symptoms And Signs of Dengue Infection

| Clinical features | Frequency | Percentage |
|----------------------------|-----------|------------|
| Fever | 54 | 100 |
| Vomiting | 30 | 55.55 |
| Rash | 29 | 53.70 |
| Malaise | 26 | 48.14 |
| Positive tourniquet test | 24 | 44.44 |
| Hepatomegaly | 24 | 44.44 |
| Pain abdomen | 25 | 46.29 |
| Petechiae | 19 | 35.18 |
| Hypotension | 2 | 3.7 |
| Tachycardia | 3 | 5.55 |
| Retro orbital pain | 4 | 7.4 |
| Bleeding | 10 | 18.51 |
| Epistaxis | 6 | 70% |
| Gi bleed | 3 | 30% |
| Gum bleed | 2 | 20% |
| Loose motions | 3 | 5.55 |
| Myalgia/arthritis/backache | 5 | 9.2 |