



A Prospective Study On Clinical Profile Of Dengue Fever Cases In A Tertiary Care Hospital, Thiruvarur District, South India

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Background: Dengue virus is a leading cause of illness and death in the tropics and subtropics. In recent years, Dengue transmission had increased in urban and semi urban areas. It is endemic in more than 100 countries and significant differences were found in clinical profile.

Aim of the Study: To evaluate the clinical profile of Dengue fever cases.

Materials and Methods: This prospective observational study was conducted during the period from January 2019 to December 2020 at Government Thiruvarur Medical College. Serum samples were collected from clinically suspected cases of dengue fever and it was confirmed by NS1 antigen and IgM antibody by ELISA. Clinical details were recorded.

Results: During the study period, a total of 1331 patients were suspected to have dengue infection, of which 322 (24.19%) samples were found to be positive for dengue viral infection. A majority of the cases were males [223 (69.3%)] when compared with females [99 (30.7%)]. Fever was the most common (96%) clinical presentation, followed by headache (92%), malaise (80%), myalgia & arthralgia (63%), cough and sore throat (18%), hemorrhagic manifestations (14%), nausea & vomiting (12%), abdominal pain & diarrhea (10%), retro-orbital pain (5%) and rashes (1%). The study of hematological parameters showed thrombocytopenia was present in 116 (36%) patients, followed by leukopenia [58 (18%) and raised hematocrit [26(8%)].

Conclusion: The clinical profile and hematological parameters in clinically suspected dengue patients should be investigated early so that severe forms can be treated promptly.

Keywords: Dengue fever, Clinical profile, Hematological parameters

Introduction

Dengue is the most widely spreading vector-borne disease, transmitted by infected mosquitoes of *Aedes* species. Dengue virus belongs to genus

Flavivirus and four serotypes of dengue virus (DEN-1, DEN-2, DEN-3, and DEN-4) cause human infections. The WHO classified symptomatic dengue virus infection into dengue fever (DF), dengue hemorrhagic fever (DHF) and dengue shock

syndrome (DSS) in the year 1997. The year 2009, WHO revised the classification and categorized dengue patients according to different levels of severity as dengue without warning signs, dengue with warning signs (abdominal pain, persistent vomiting, fluid accumulation, mucosal bleeding, lethargy, liver enlargement, increasing hematocrit with decreasing platelets) and severe dengue [1,2,3]. Dengue fever was first reported in India during the year 1956 from Vellore district and the first dengue hemorrhagic fever was from Calcutta in 1963 [4]. In Tamil Nadu it was observed that Dengue virus serotypes 1-4 found in circulation [5]. The age and immune status of the host as well as the strain of the dengue virus determine the clinical presentation in dengue cases [6]. The aim of this study is to evaluate the clinical presentations and hematological findings of laboratory confirmed dengue fever cases. For primary care and management of the dengue cases, it is very important to elucidate the clinical presentation of dengue earlier and it is extremely vital for saving life of affected population.

Aim Of The Study:

This study aims to evaluate the clinical profile of Dengue fever cases.

Materials And Methods:

This prospective observational study was conducted during the period from January 2019 to December 2020 at Government Thiruvarur Medical College, Thiruvarur District, Tamil Nadu. Informed consent was taken from each patient and Institutional Ethical Committee approved the study. Serum samples were collected from clinically suspected cases of dengue and were confirmed by NS1 antigen ELISA (Panbio

Dengue Early ELISA, Standard Diagnostics Inc), IgM Capture ELISA (NIV, Pune) and IgG ELISA (Panbio Dengue IgG Capture ELISA, Standard Diagnostics Inc). A detailed history was taken and careful clinical examination was performed on all the positive cases. Hematological parameters such as platelet count, hemoglobin, hematocrit (HCT) levels, complete blood count (CBC), and white blood cell count (WBC) were also recorded.

Results

322 (24.19%) samples were found to be positive among a total of 1331 suspected dengue fever patients screened during the two years study period. Among these positives, 95% (N=306) were dengue IgM and 5% (N=16) were NS₁Ag. In our study population, the highest numbers of dengue-positive cases were screened in the year 2019 (28.1%) as compared to the year 2020 (19.1%) as shown in Table 1.

A majority of the cases was males 223 (69.3%) and females were 99 (30.7%). About 36% of positive cases belonged to age groups 13–24 years followed by age group 25-44 years (28.9%) and 0-12 years (26.4%) [Table 2]. Fever was the most common (96%) clinical presentation, followed by headache (92%), malaise (80%), myalgia & arthralgia (63%), cough and sore throat (18%), hemorrhagic manifestations (14%), nausea & vomiting (12%), abdominal pain & diarrhea (10%), retro-orbital pain (5%) and rashes (1%) [Table 3].

Thrombocytopenia was observed in 116 (36%) cases. Raised HCT was found in 26 (8%) cases and leukopenia (<4000/mm³) was found in 58 (18%) patients. [Table 4].

Table 1. Year wise distribution of dengue cases			
Year	Total no. of cases	Positive cases	Percentage (%)
2019	576	110	28.1
2020	755	212	19.1

Age group (years)	Males	Females	Total (%)
0-12	51	34	85 (26.4)
13-24	92	24	116 (36.0)
25-44	63	30	93 (28.9)
45-60	15	9	24 (7.5)
>60	2	2	4 (1.2)
Total	223 (69.3%)	99 (30.7%)	322

Clinical Features	No. of Cases (%)
Fever	309 (96%)
Headache	296 (92%)
Malaise	258 (80%)
Myalgia	203 (63%)
Arthralgia	203 (63%)
Sore throat	58 (18%)
Cough	58 (18%)
Hemorrhagic Manifestations	45 (14%)
Nausea & Vomiting	39 (12%)
Abdominal pain	32 (10%)
Diarrhea	32 (10%)
Retro-orbital pain	16 (5%)
Rashes	3 (1%)

Parameters	No. of Cases (%)
Thrombocytopenia (<1,50,000/mm ³)	116 (36%)
Leukopenia (<4,000/mm ³)	58 (18%)
Raised hematocrit	26 (8%)

Discussion

Dengue is coming out as an important emerging community health problem and all over India outbreaks of dengue infection is occurring regularly [7, 8]. The effective clinical evaluation, laboratory testing, and qualified professionals who know how to recognize warning signs and give appropriate guidance to prevent expanded dengue are required to provide adequate care to patients with suspected dengue in primary health care settings. Health professionals should be able to recognize when the infection develops into severe dengue, especially in children, given that in the initial stages the illness can often be asymptomatic. Ensuring adequate and timely clinical monitoring at all levels of care is vital, given that there is no specific treatment or widely available vaccine for dengue [9]. With distinct clinical features, it is possible to identify the dengue cases earlier. In our study, we evaluated the different clinical features of dengue cases.

In this study, the highest numbers of dengue-positive cases were screened in the year 2019 (28.1%) as compared to the year 2020 which was similar to the previous study [10, 11]. This study revealed that the majority of the cases (36%) were in the age group of 13–24 years followed by age group 25–44 years (28.9%). In this study, males [223 (69.3%) were predominant than females [99 (30.7%). These findings well correlate with previous studies [12, 13].

Fever was the most common (96%) clinical presentation, followed by headache (92%), malaise (80%), myalgia & arthralgia (63%), cough and sore throat (18%), hemorrhagic manifestations (14%), nausea & vomiting (12%), abdominal pain & diarrhea (10%), retro-orbital pain (5%) and rashes (1%). These findings are concordant with previous studies [12, 14]. In our study, thrombocytopenia (<150,000/mm³) was present in 116 (36%) patients, which is slightly less than the study conducted by Ahmed NH *et al* [15]. Hemoconcentration with an increase in the hematocrit of 20% or more is considered to be definitive evidence of increased vascular permeability and plasma leakage [2]. In our study, we have found raised HCT in 26 (8%) patients and 18% had leucocyte count <4000, almost similar to a study by Khatroth S [16].

To conclude, the clinical features of the dengue fever cases are becoming different in various outbreaks,

even in the same geographical area and with the time period. The clinical findings help clinicians in early diagnosis of dengue by suspecting these features as of dengue and can prevent dengue associated morbidity and mortality. Thus our study makes clear that a continuous sero-epidemiological surveillance for the early dengue infection and definite diagnosis of dengue cases are the need of the hour.

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