Research Article

A RETROSPECTIVE OBSERVATIONAL STUDY ON THE CLINICAL MANIFESTATIONS OF DENGUE FEVER IN A TERTIARY CARE TEACHING HOSPITAL, PALAKKAD

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ABSTRACT

*D*engue is the most common mosquito-borne viral disease of humans that in recent years has become a major international public health concern. The principal vector is the day biting Aedes aegypti, which typically breeds in clean stagnant water in a wide variety of sites, including man-made containers in domestic and per domestic urban areas.

Methodology: The study is to analyse the clinical manifestation and complication of dengue fever from the medical record department of a tertiary care teaching hospital. This is a retrospective observational study conducted at the medical record department in Karuna medical college hospital Chittur, Palakkad during a period of 6 months from November 2018-April 2019.

Result: Among the 350 dengue serology positive cases, 156 (44.5%) had DF with no warning signs, 110 (31.4%) had DFWS, and 84 (24%) had SD. Out of this, 196(56%) were male patients and 154(44%) were female patients. Male patients were more enrolled in the study. Most of the patients were under the age group of 20-39 years (52%) followed by 40-59years (36.2) and 1-19(11.7%). Fever, vomiting, abdominal pain, myalgia and rash continue to be the common presentation. The most common complications encountered in this were thrombocytopenia and leucopenia. The haematological parameters such as WBC, HCT, Hb and Platelet count can be used as markers to assess the severity of dengue illness and thus initiating appropriate therapy.

Conclusion: Clinical and laboratory parameters of acute febrile illness in children can act as early prognosticators of dengue fever and its severity.

KEYWORDS: Dengue fever, Thrombocytopenia, Leukopenia, warning signs, Raised hematocrit.

INTRODUCTION

Dengue is an important mosquito borne infection in terms of morbidity and mortality. In recent years it has become a major public health concern. The dengue virus is anthropoid borne virus arbovirus, belonging to the family Flaviviridae and genus Flavivirus. It is a mosquito borne viral infection and is transmitted, primarily by *Aedes egypti* and sometimes by *Aedes albopictus*1.Dengue is caused by four distinct serotypes of viruses; DEN-1, DEN-2, DEN3 and DEN4.2Dengue virus causes a spectrum of illness ranging from in apparent, self-limiting dengue fever (DF) to a life threatening dengue haemorrhagic

fever (DHF) and dengue shock syndrome(DSS) [1]. Infection with one serotype confers lifelong immunity against the particular serotype but the patient is still liable for infection with the other serotypes and even secondary infection has more risk of complications [2]. The primary infection in a nonimmune person usually causes dengue fever (DF) and subsequent infection by a different serotype causes more severe illness like DHF/DSS. Clinical manifestations of dengue seem to be changing. Fever, rash, body ache, and bleeding manifestations are being the common presentation.

Dengue fever has emerged as an important infectious disease in Kerala state. According to the survey done by the centre of Research in Medical Entomology, Kerala started reporting deaths due to DF as early as 19976. Understanding the clinical and laboratory profile of DF is essential for early diagnosis and appropriate patient management which can improve the outcome of this potentially morbid and occasionally fatal disease in general population [3].

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METHODOLOGY

This is a reterospective observational study done in the Department of Medical Record Department, Karuna Medical College Hospital, Chittur, Palakkad, during the period November 2018 to April 2019. This study was approved by institutional ethical committee of Karuna Medical College (IHEC/07/2018). Complete medical reports of all dengue case which included signs and symptoms, methods of diagnosis, managements, duration of stay and clinical outcome was retrieved from patient's information reports. Collection of data was included based on the patients those who were clinically diagnosed with dengue and those who were serologically positive for dengue fever, Dengue with comorbid conditions, patients with incomplete medical records were excluded. Specially designed data collection form pertaining to patient's demographic details, medical and medication history, predisposing factors, laboratory investigations, current treatment of dengue was used.

The evaluation of the complications associated with dengue fever is being noted also studies for the effective management of dengue fever complications were planned to perform. The data entered in the pre forma included symptoms and the clinical findings both at the time of presentation, as well as during hospitalization.[9]Laboratory analysis relevantto DF included HCT, hemoglobin (Hb), total count at the time of admission as well as lowest platelet count, values during hospitalization. Results of rapid qualitative immune chromatographic test for detection of NS1 antigen, IgM and IgG antibodies were also recorded.[10] other parameters studied include blood product transfusions, duration of hospitalization, and outcome in the form of improvement with or without complications. The statistical analysis was performed. Data were entered in the Microsoft Excel software and was analyzed by and Microsoft Excel 2010.

RESULTS

A total 350 cases were enrolled in our study, During the study period, a total of 350 patients were enrolled. Out of this, 196(56%) were male patients and 154(44%) were female patients. Male patients were more enrolled in the study (Table 1).

Most of the patients were under the age group of 20-39 years (52%) followed by 40-59 years (36.2) and 1-19(11.7%) (Table 2).

We evaluated 350 serologically confirmed dengue cases which were further classified according to the WHO classification as DF, DFWS and SD. Among the 350 dengue serology positive cases, 156 (44.5%) had DF with no warning signs, 110 (31.4%) had DFWS, and 84 (24%) have Sever Dengue (Table 3).

Dengue can be diagnosed by isolation of the virus by serological tests or molecular methods. The dengue serology confirmation test NS1 antigen positive cases 220 (62.8%), Dengue card test IgG, IgM antibody positive cases 75 (21.4%) and the cases with both NS1 antigen and Dengue card test 55 (15.7%) (Table 4).

Studies suggest that the low platelet count is one of the major causes of bleeding in these patients. The distribution of elevated platelet counts among dengue suspected cases show that the severe thrombocytopenic patients which lead to platelet transfusion (7.7%), severe thrombocytopenia cases (37.7%), followed by thrombocytopenia (43.7%) and the normal platelet count (5.1%) (Table 5).

The classic picture of dengue is high fever with no localising sources of infection, a petechial rash with thrombocytopenia and relative leukopenia. In case of dengue, this test will reveal leukopenia. The presence of leucocytosis and neutrophilia excludes the possibility of dengue and bacterial infection must be considered. Out of 350 cases, (52.8%) was found to be normal, (33.7%) of cases were having very low WBC count, a high range of WBC count were observed in least number of cases (0.05%). Also WBC counts were not done in some cases (12.8%), although it's a significant haematological parameter. In most of cases the WBC count is being elevated in accordance with platelets (Table 6).

This shows that out of 350 cases, (31.4%) of the patients having very low haemoglobin level, most of the cases haemoglobin level was found to be normal (46.2%), In (22.2%) of the cases the haemoglobin level was not checked (Table 7).

A haematocrit level increase greater than 20% is a sign of hem concentration and precedes shock. The haematocrit level should be monitored at least every 24 hours to facilitate early recognition of dengue haemorrhagic fever and every 3-4 hours in severe cases of dengue haemorrhagic fever or dengue shock syndrome.The haematocrit levels in dengue suspected cases,(38.5%) of the cases having normal haematocrit level.A high level of haematocrit was found in (19.1%) of the cases, those patients with least level includes (6.1%).In some of the cases the haematocrit parameter was not done were (36%) (Table 8).

The common clinical features of dengue fever based on WHO classification the data were entered in the standard preform included symptoms and clinical findings both at the time of presentation, as well as during hospitalisation. In Dengue fever most of the patients 89(57%) were presented fever with nausea, rash, vomiting, rapid decreased platelet count, followed by the patients with nausea, rash, vomiting 42(26.9%).Table 9(b) represents the Dengue fever with warning signs that includes, Abdominal pain, tenderness and persistent vomiting is predominantly observed in the cases of 69(62.7%) and the least observed symptoms are abdominal pain together with lethargy 41(37.2%).As shown in Table 9(c), the Severe dengue is being classified based on the severe plasma leakage 73(86.9) and shock syndrome is being observed as 11(13).this is the most dangerous stage of dengue fever (Table 9).

Table No. 1: Gender-Wise Distributions of Cases

Gender	Frequency (n=350)	Percentage (%)
Male	196	56
Female	154	44

Table No. 2: Age- Wise Distribution of Cases

Age in Years	Frequency (n=350)	Percentage (%)
1-19	41	11.7
20-39	182	52
40-59	127	36.2

Table No. 3: Clinical Spectrum of Dengue Cases

Diagnosis	Frequency (n=350)	Percentage (%)
Dengue fever	156	44.5
Dengue With Signs	110	31.4
Sever Dengue	84	24

Table No. 4: Distributions of Cases with Respect to Dengue Serology Test

Serology Test	Frequency (n=350)	Percentage (%)
Dengue Card Test(IgG , IgM)	75	21.4
Ns1 Ag	220	62.8
Dengue card test & Ns1 Ag	55	15.7

Table No. 5: Elevated Platelet Count Among Dengue Suspected Cases

Platelet count	Frequency(n =350)	Mean ± SD	Percentage %
Less than 20000	27	13527.04 ± 2576.918	7.7
20000-40000	132	28837.88 ± 4893.447	37.7
40000-60000	153	51761.44 ± 5518.368	43.7
60000-80000	9	69700 ± 7856.049	2.5
1-1.2 lac	5	1.08 ± 0.083666	1.4
1.2- 1.4 lac	6	1.283333 ± 0.083106	1.7

Table No. 6: Range of Distribution of WBC Count

WBC	Frequency (n =350)	Mean ± SD	Percentage %
Normal	185	5548.865 ± 1820.125	52.8
Low	118	2311.864 ± 972.0161	33.7
High	2	12650 ± 919.23	0.05

Table No. 7: Range of Distribution of Haemoglobin Level

Hb gm%	(Frequency n =350)	Mean ± SD	Percentage %
Normal	162	13.44074 ± 2.04358	46.2
Low	110	8.367273 ± 2.143653	31.4

Table No. 8: Range of Distribution of Haematocrit Levels

Hematocrit	Frequency (n=350)	Mean ± SD	Percentage (%)
Normal	135	47.29778 ± 3.422761	38.5
Low	22	30.3913 ± 5.564736	6.2
High	67	59.52687 ± 9.190387	19.1

Table No. 9: Assessment of WHO classification of Dengue Fever

1.Dengue fever		
Symptoms	Frequency (n=156)	Percentage %
Nausea, Rash Vomiting	42	26.9
Nausea, Rash, Vomiting, Myalgia	25	16.02
Nausea, Rash Vomiting, Rapid Decreased Platelet Count	89	57.05
2. Dengue Fever with Warning Signs		
Symptoms	Frequency (n=110)	Percentage %
Abdomen pain, Persistent vomiting, Tenderness	69	62.7
Abdomen pain, Lethargy	41	37.2
3. Severe Dengue		
Symptoms	Frequency (n=84)	Percentage %
Severe Plasma Leakage	73	86.9
Shock	11	13

DISCUSSION

The study describes the clinical features, laboratory findings and outcome DF, DFWS, and SD in serologically confirmed dengue patients. We had 156 (44.5%) cases of DF with no warning, 110 (31.4%) cases with warning signs, and 84 (24%) cases of SD. The high incidences of DF with no warning signs are more common compare with other two categories. The maximum numbers of dengue cases in our study were seen in months of may-august which indicated an active viral transmission during monsoon and post-monsoon which also correlates with the study conducted by Peter P Vazhayill[1] Sindhu Thomas Stephen[2] and Vinoth Kumar [3] *et al.* A male predominance 196 (56%) seen was similar to various studies [3, 4].

Common clinical features include fever, vomiting, headache, myalgia, abdominal pain, tenderness, athralgia and rash these are the symptoms encountered more often as shown in previous studies [5, 8]. Some of the clinical complications not much prevalent in our study which is against some of the studies [7, 10].

The laboratory parameters Out of 350 cases, (52.8%) was found to be normal, (33.7%) of cases were having very low WBC count, a high range of WBC count were observed in least number of cases (0.05%). Also WBC counts were not done in some cases (12.8%), although it's a significant haematological parameter. The fibrile phase is the symptomatic stage and leukopenia may present in this stage. Also increasing leukopenia precedes the stage of plasma leakage in a study by Christopher J Gregory *et al* which dealt with the utility of tourniquet test and WBC count as a marker to differentiate dengue fever from other febrile illnesses, the authors showed that 87% of dengue cases had leukopenia compared to 28% of non-dengue cases [11] in our study 118(33.7%) shows leucopenia (52.8%) was found to be normal.

In our study the incidence of leucopenia was 33.7% which was lesser than the studies by Kalyoonrooj *et al* and Rajesh Deshwal [10]. It is possible that a substantial subset of patients in our study could have presented after the fibrile phase of illness.

Raising hematocrit levels are marker of the critical phase of dengue infection in our study the incidence of high hematocrit level 67(19.1%) In another study by kailash C Meena *et al* the percentage of patients with raised hematocrit was 9.8%

which was not much similar due to the study population. In both the studies the hematocrit level is increased during the critical phase of illness [7, 11].

CONCLUSION

DF is a common acute febrile illness which comes as an epidemic in various parts of the country. In our study most common age group affected is 20-39 years with maximum number of cases during the monsoon and post monsoon season. Fever, vomiting, abdominal pain, myalgia and rash continue to be the common presentation. The most common complications encountered in this were thrombocytopenia and leucopenia. The haematological parameters such as WBC, HCT, Hb and Platelet count can be used as markers to assess the severity of dengue illness and thus initiating appropriate therapy. Knowledge and understanding of the varied presentations of DF in a region will definitely help in improving the outcome of this potentially fatal disease. DF continues to be a major health hazard in children. Strong clinical suspicion, early diagnosis with rapid tests and strict adherence to revised WHO guidelines definitely favours a very good outcome

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