

Clinical, Haematological and Biochemical Profile of Dengue Fever Cases Admitted In Tertiary Care Hospital

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Abstract

Original Research Article

Background: Dengue, a vector borne disease is a major public health problem caused due to arboviruses. Dengue fever, dengue haemorrhagic fever (DHF) with or without shock have both typical and atypical clinical presentations. **Aim:** To study clinical, haematological and biochemical profile of dengue fever cases. **Material and Methods:** Observational, descriptive, cross sectional study was conducted in medicine wardon 170 dengue cases admitted in hospital with IgM Dengue antibody positive status. **Results:** Male to female ratio was 1.57:1. Highest number of cases were found in 21 to 40 years of age group. Fever was associated with all dengue cases followed by headache (74.7%), myalgia (69.4%) and abdominal pain (43.5%). Thrombocytopenia was found in 162 out of 170 dengue cases. Raised SGOT and SGPT levels found in 40.6% and 28.2% cases respectively. Most common complication was hypotension (7.6%) followed by hepatic dysfunction (5.3%). One death was reported. **Conclusion:** Few atypical clinical, haematological and biochemical presentations of dengue fever cases along with common presentations were noted in this study. Complications were found in few cases. Early diagnosis, careful monitoring and proper fluid management can surely reduce hospital stay, complications and mortality in dengue fever cases.

Keywords: Break bone fever, Vector borne, Arboviruses, DSS, DHF.

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INTRODUCTION

Break bone fever or Dengue caused due to dengue viruses which are arboviruses capable of infecting humans, and causing disease. Dengue is major international public health problem. In India, during 2017, about 157,996 cases were reported with 253 deaths. The case fatality rate was 0.16%. All the four serotypes i.e. DENV-1, DENV-2, DENV-3 and DENV-4 have been isolated in India but at present DENV-1 and DENV-2 serotypes are widespread [1, 2].

These infections may be asymptomatic or may lead to "classical" dengue fever, or dengue haemorrhagic fever (DHF) with or without shock. Sudden onset of fever, headache, retro-orbital pain, and severe myalgia are the classical presentations of dengue fever. Anorexia, nausea or vomiting, and cutaneous hypersensitivity are additional signs and symptoms may appear in illness [3]. Leukopenia is the characteristic laboratory finding along with thrombocytopenia, elevations of serum aminotransferase concentrations.

IgM ELISA or antigen-detection ELISA or RT-PCR during the acute phase can be used for diagnosis. Principle of management of disease include fluids, rest, and antipyretics Platelet transfusions for severe thrombocytopenia [4].

Several studies conducted all over the world revealed varied typical and atypical clinical presentations of dengue fever. Duration required for diagnosis and clinical management affects outcome of patients. So this study was conducted to know clinical presentations, haematological and biochemical profile along with complications in dengue fever cases.

MATERIAL AND METHODS

An observational, descriptive, cross sectional study was conducted in medicine ward of tertiary care hospital over a period of 6 months from Jan 2019. Permission from Institutional Ethics Committee was taken before data collection. Total 170 dengue cases admitted in hospital for treatment with IgM Dengue

antibody positive status were enrolled for this study. Patients of both gender of age more than or equal to 12 years, admitted in hospital, positive for Dengue IgM antibody by ELISA and willing to participate were included. Patients with concomitant typhoid, malaria, leptospirosis and any other major illness were excluded.

Informed consent was taken from patients. Ascent was taken for patients between 12 to 18 years of age. WHO criteria used for the diagnosis of dengue fever (DF), dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS). Dengue haemorrhagic fever (DHF) is defined as an acute febrile illness with minor, major bleeding, thrombocytopenia (platelet count < 1 lac/Cmm), and evidence of plasma leakage documented by haemoconcentration, plural or other effusions. Dengue Shock Syndrome (DSS) is defined as DHF with signs of circulatory failure, including narrow pulse pressure (20mm Hg), hypotension, or shock [5]. Thorough clinical examination done by taking history and physical examination. Haematological and biochemical investigation done were leukocytes count, haemoglobin %, haematocrit value, platelet count, liver function test, renal function tests, chest radiograph and ultrasonography of abdomen. Tourniquet test was performed. Differential diagnosis were tackled by appropriate investigations. IgM dengue antibody was estimated using dengue IgM capture ELISA. Complications were noted down. Standard operating protocols were fixed before commencement and followed till end.

Data was collected and entered in Microsoft Excel 2007. SPSS version 16 was used for statistical analysis. Descriptive statistics like frequencies and proportions were used. Graphs and tables were used to summarize and present data at appropriate places. Data was compared with previous literature.

RESULTS

Total 170 cases of dengue fever were studied for their clinical, hematological and biochemical profile. Table-1 shows age and gender wise distribution among study subjects. Total number of males (61.2%) were more than females (38.8%). Male to female ratio was 1.57:1. Among both gender, highest number of cases were found in 21 to 40 years of age group. Lowest number of cases were reported from more than 60 age group.

Distribution of clinical manifestations among dengue cases depicted in Figure-1. Fever was associated with all dengue cases followed by headache (74.7%), myalgia (69.4%) and abdominal pain (43.5%). Skin rash, retro orbital pain, arthralgia, coryza and bleeding were other common presentations.

Haematological and biochemical findings are highlighted in Table-2. Thrombocytopenia was found in 162 out of 170 dengue cases. Thirty seven percent cases had platelet count between 50000 to 100000 Cmm. About 23% cases had haematocrit more than 45% and 38% had leukopenia. Among biochemical parameters, raised SGOT and SGPT levels found in 40.6% and 28.2% cases respectively. Ten percent cases had raised bilirubin levels. Hepatomegaly (16%), splenomegaly (18%), ascites (15%), pleural effusion (10%) and gall bladder oedema (9%) were radiological findings found in study subjects.

Conservative management with IV fluids, antibiotics and antipyretics did for all patients. Platelet transfusion was reserved for patients with active bleeding or prophylactically at a platelets count of less than 10000/Cmm. Table-3 highlights complications occurred in dengue cases. Most common complication was hypotension (7.6%) followed by hepatic dysfunction (5.3%). One death was reported. Twenty cases had more than one complication. Renal failure (3.5%), pneumonia (2.9%) and multi organ failure (0.6%) were other complications reported in study cases.

Table-1: Age and gender wise distribution of study subjects

Age groups (years)	Male		Female		Total	
	No.	%	No.	%	No.	%
12 to 20	24	23.1	15	22.7	39	22.94
21 to 40	59	56.7	36	54.5	95	55.88
41 to 60	15	14.4	10	15.2	25	14.71
>60	6	5.8	5	7.6	11	6.47
Total	104	100	66	100	170	100

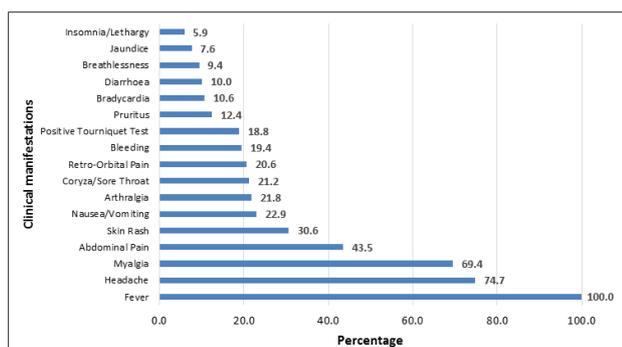


Fig-1: Clinical manifestations in study subjects

Table-2: Haematological and Biochemical observations in dengue cases

Criteria	No. of cases	%
Thrombocytopenia <20000/cm ³	26	15.3
Thrombocytopenia 20000-50000/cmm	47	27.6
Thrombocytopenia 50000-1 lakh/cmm	63	37.1
Thrombocytopenia 1-1.5Lakh/cmm	26	15.3
Haematocrit > 45%	39	22.9
Leukopenia (TLC <4000/cmm)	66	38.8
Serum Bilirubin >2mg/dl	18	10.6
SGPT (>45 IU/L)	48	28.2
SGOT (>45 IU/L)	69	40.6
Serum Creatinine >1.5mg/dl	8	4.7

Table-3: Complications of dengue fever among study subjects

Complications	No.	%
Renal Failure	6	3.5
Hypotension	13	7.6
Multi-Organ Failure	1	0.6
Pneumonia	5	2.9
Hepatic dysfunction	9	5.3
Death	1	0.6

DISCUSSION

Steady increase in the number of dengue cases over the past few years was noted. In the South-East Asia region, India is regularly reporting incidence of DF/DHF outbreaks [6]. This study discusses the clinical presentation, hematological and biochemical profile of dengue fever cases. Total 170 cases of dengue fever were studied in this study. The study observed majority of cases belongs to 21 to 40 years of age group with male preponderance. These findings are well coinciding

with studies done by Chandralekha *et al.*, and Kashinkunti *et al.*, [7, 8].

Fever was the most common presentation (100%) in present study. Similar finding was reported in studies done in South East Asia and India [9, 10]. Study done by Mandal *et al.*, have mentioned headache in 62.16% and rash in 37.84% of cases [11]. In our study slightly different findings were noted about headache and rash. Munde *et al.*, in have reported headache in 25% and myalgia in 50% of all patients [12]. Oxidative stress causes thrombocytopenia in dengue cases [13]. Dengue fever typically present with the sudden onset of fever, frontal headache, back pain, retro-orbital pain along with severe myalgias. Hepatosplenomegaly, altered sensorium, diarrhoea, rash, and cough in a significant number of cases were reported in study done in Mumbai on dengue shock syndrome [8]. This study also noted similar complaints among study group. In this study bleeding manifestations occurred in 19.4% cases. Similar findings were noted in studies done by Lepakshi *et al.*, and Chatterjee *et al.*, [14, 15]. Tourniquet test was positive in about 19% parallel to study findings reported by Rajesh *et al.*, [16].

Liver enzymes like SGOT and SGPT were found to be increased in present study. Studies done by Prakash *et al.*, and Itha *et al.*, also reported elevated liver enzymes in dengue fever cases [17, 18]. Liver dysfunction is a common feature of dengue and cases with raised SGOT is usually higher than cases with raised SGPT. Dsouza *et al.*, reported similar findings in their study [19]. Raised serum creatinine (>1.5mg/dl) was found in 8 cases (4.7%) which is higher than finding (1.36%) by Mohamed MurtuzaKauser *et al.*, [20]. Haematocrit levels were raised in 23% cases in this study which is comparable with previous study findings [12, 15]. Munde *et al.*, [12] noticed in 50% cases with leukopenia while present study reported 38.8% cases of leukopenia. Thrombocytopenia reported in 95.29% cases in this study. Study done by Rajesh *et al.*, reported 70% cases having thrombocytopenia [16].

Hypotension (7.6%) and hepatic dysfunction (5.3%) were major complications. Dengue Haemorrhagic Fever and Dengue Shock Syndrome found in 10% slightly lower to Sharma *et al.*, [21] (13.5%) and Vanamali *et al.*, [22] (12.6%). Renal injury is less common but well recognized complication of dengue fever. In this study 06 (3.5%) cases suffered from this complication. One death (0.6%) was reported due to multi organ failure. Study done in Kerala reported 3.2% death rate [23]. Lower mortality reported in present study may be due to prompt management.

CONCLUSION

Few atypical presentations of dengue fever cases along with common presentations were noted from several parts of world. This study reveals clinical

presentations, haematological and biochemical profile of dengue fever cases. Complications in dengue fever cases also highlighted. Early diagnosis, careful monitoring and proper fluid management can surely reduce hospital stay, complications and mortality in dengue fever cases.

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