

Study of Clinical Profile of Dengue Fever in Tertiary Care Hospital

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Abstract

Background: Dengue fever is a most common arboviral disease in India. Dengue viruses are spread to people through the bite of an infected *Aedes* species (*Ae.aegypti* or *Ae.albopictus*). Dengue has a varied and wide spectrum of clinical presentations. Objectives of this study were to evaluate the clinical profile of dengue fever and to study Outcome and clinical predictor of mortality in dengue patients.

Methods: This was a cross sectional, descriptive observational study done in tertiary care hospital and teaching institute, study period was from December 2018 to December 2020. Patients of age more than 12 years admitted in medicine wards with dengue were included in this study (diagnosis of dengue was done on the basis of clinical features and positive NS1 or positive IgM antibody against dengue). sample size was 375.

Results: While classifying patients according to WHO classification most of the patients were in dengue fever without warning signs (68.5%), dengue with warning signs (21.9%) and severe dengue 9.6%. The presenting symptoms were fever (100%), chills (77.3%), headache (91.7%), retroorbital pain (21.8%), facial puffiness (2.1%), severe abdominal pain (6.6%), petechiae (8.8%) and mucosal bleed in 1.6%.

Conclusion: The application of the clinical spectrum of the WHO classification system is not as very simple and straightforward because clinical features may overlap among different categories of dengue. The most common clinical presentation was fever and most common sign was conjunctivitis. Thrombocytopenia and leukocytopenia were the main laboratory abnormalities. In the present study liver function test abnormality was also found in one-third of patients. Blood pressure and hematocrit should be monitored for evaluating the progress of the disease. Management of patients with dengue is mainly supportive. Mortality in this study was less than 1%.

Keywords: Dengue, clinical profile, DCF, DHF, DSS, Jaundice, fever, dengue with warning signs, severe dengue.

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Introduction

Dengue is a viral disease caused by an arbovirus in the flavivirus genus. Dengue viruses are spread to people through the bite of an infected *Aedes* species (*Ae.aegypti* or *Ae.albopictus*). Commonly known as break-bone fever. It is the most common Arboviral mosquito-borne disease in the world [1]. Many countries especially the countries of the Indian subcontinent have suffered at the hands of this disease. Dengue first reported in India in 1946 [2]. In India dengue is a public health problem, because of its serious emerging health threats, coupled with possible serious consequences, including death, it has aroused considerable public health and medical concerns worldwide. The epidemiology of Dengue Fever in the Indian subcontinent is very complex and has changed over the last few years about the strains, affected regions, and disease severity.

Dengue has a varied and wide spectrum of clinical presentations; so many times it has unpredictable clinical evolution and outcome. Most of the patients will recover following a self-limiting, less severe clinical course, whereas a small proportion of patients progress to severe disease, characterized by plasma leakage, with or without hemorrhagic manifestations [3]. Intravenous rehydration of the patient is the treatment of choice. By this simple intervention, case fatality rate is reduced to less than 1% even in severe cases.

The clinical profile of dengue fever may vary with each epidemic because of the numerous strains present, varied possibilities of co-infections according to the geography, and also the vector density of the particular area of the outbreak.

Material and Method

This is a cross sectional, descriptive observational study done in tertiary care hospital and teaching institute, study period was from December 2018 to December 2020.

Patients of age more than 12 years admitted in medicine wards with dengue were included in this study (diagnosis of dengue was on the basis of clinical features and positive NS1 or positive IgM antibody against dengue). Total 375 patients were studied. The severity of dengue was defined using modified categorization of WHO in 2012 which include dengue with or without warning signs and severe dengue. consent from each patient was taken at the time of enrollment. Detailed history and through clinical examination of each patient was done. Blood samples were collected for complete blood count and biochemical investigations including liver function test, renal function test and another test as when needed. Patients age less than 12 years and those who not give consent was excluded from the study, those patients with history of thrombocytopenia due to other causes was excluded from the study, patients with mild uncomplicated dengue fever will not require hospitalization were excluded from the study

Results

The present study was observational study where we studied the clinical profile of 375 serologically proven dengue patients admitted to general medicine wards in a tertiary care centre and teaching institute from December 2018 to December 2020, while considering age group of patients majority of patients were young adults <30 years of age, about 70.8% the incidence appeared to be reducing with advancing age with the the least number of cases were seen in the age group of >60 years. In total 375 of patients 259 were males (69%) and females were 116 in number (31%). Most of the patients were belonging to DCF (303), DHS were 37 and 32 patients with DSS. According to new classification out of 375, 257 patients belonging to dengue without warning signs, 82 were dengue with warning signs and 36 were severe dengue. (Table 1)

While considering clinical features, fever was documented in all the cases, in these around 12% of patients experienced biphasic type of fever with afebrile period of 3 to 4 days in between fever periods. Second most common symptom experienced by most of the patients (91.7%) was headache. 77.3% of patients experienced chills, only 21.8% of patients experienced retro orbital pain. Around 6.6% of patients experienced severe abdominal pain and around 8.2% patients had severe vomiting. (Table 2)

While coming to bleeding manifestations out of 375, 58 patients experienced bleeding manifestations in these most common was petechiae (8.8%) and the second most common was subconjunctival hemorrhage (5.3%).(Table 3)

While considering signs most commonly observed signs were conjunctival congestion 21.33% and around 36% patients were showed positive tourniquet test most of them were young patients. In dengue fever, blood pressure is very important because the patient can present in shock. For early identification of complications, blood pressure monitoring is important. Pulse pressure is more important than blood pressure in identifying early shock. Narrowed pulse pressure, that is <20 mm of Hg is the most sensitive sign. In this study hypotension was noted at the time of presentation in about 9.3%, most of the patients improved on the administration of crystalloids, rest need inotropic support. Hypotension was persistent in 32 cases of dengue shock syndrome. They had managed with intensive fluid therapy according to WHO treatment guidelines.

Table 1

Age	Clinical Type		
	DCF	DHF	DSS
<20	103 (79.2%)	18(18.5%)	9(6.9%)
20-29	113(83%)	11(8%)	12(9%)
30-39	46(83.6%)	2(3.6%)	7(12.7%)
40-49	17(81%)	2(9.5%)	2(9.5%)
50-59	15(71.4%)	3(14.3%)	3(14.3%)
>60	9 (69.2%)	1(7.6%)	3(23.1)

*DCF-Dengue classical Fever,**DHF-Dengue haemorrhagic fever,***DSS-Dengue shock syndrome.

Table 2

Symptoms	Number	Total Cases	Percentage
Fever	375	375	100
chills	290	375	77.3
rash	27	375	7.2
head ache	344	375	91.7
retro-orbital pain	82	375	21.8
lethargy	45	375	12
facial puffiness	8	375	2.1
severe abdominal pain	25	375	6.6
Severe vomiting	31	375	8.2
mucosal bleeding	6	375	1.6
petechiae	33	375	8.8

Table 3

Bleeding manifestations	Frequency	Percentage
Gum bleeding	6	1.6%
petechiae	33	8.8%
Malena	5	1.33%
haematuria	1	0.2%
Sub conjunctival haemorrhage	20	5.3%

Table 4

Signs	Frequency	Percentage
Conjunctival congestion	80	21.33
Pleural effusion	2	0.5
Ascites	5	1.3
Rashes	27	13.88
Hepatomegaly/splenomegaly	5/3	2.1
Puffiness of face	8	2.1
Breathlessness	1	0.2

Analysis of complete blood count among cases

Thrombocytopenia was the most common abnormality found in dengue fever patients. In our study around 97% of patients, that is 364 cases presented with thrombocytopenia which ranges from mild to severe. Only 3% of patients had a platelet count of more than 1.5 lakh.

In our study Leukocytopenia was observed in 42.1% of cases and 2 patients were presented with leucocytosis. Liver function test was done all cases and it was found that 40% patients had deranged SGOT and 33.1% of patients had deranged SGPT. Compromised renal function was seen in 12.3%.

Discussion and conclusion

This study describes the clinical presentation, laboratory features, classification of dengue fever. Presenting symptoms were analyzed and categorized into common presentation and atypical presentation. 375 cases had fever at the time of presentation that is 100% of cases presented with fever in our study, similar result were obtained in studies conducted in other parts of Maharashtra, Chennai, Kerala Kollam, north Karnataka and Telangana.

Traditional teaching of saddleback fever was not observed during our study. Most of the cases had high-grade intermittent fever associated with chills (77.3%) and headache (91.9). Headache was the second most common symptom, 91.7% of patients experienced headache, a study conducted by Rajesh deshwal et.al.in 2014 got similar results which shows 94.8% patients experienced headache [6]. In a study conducted in Telangana by Yousuf khan et.al. (2016) 76.77 % complained of a headache [5].

57 % of cases experienced moderate to severe myalgia most common site involved were the back, lower limb and hips. Dengue is also called break-bone fever so incidence of bone pain should be high in dengue cases, but in our study only few patients had bone pain. Severe abdominal pain was seen in 6.6% of patients in our study. Study done by Yagnik H. chhotala [4] 33% but in study conducted by md Yousuf khan [5] *et al* in 2016 showed 42% it may be it is due to we only included severe abdominal pain, study conducted by Mahesh padyana in 2019, 41.7% patients experienced abdominal pain .abdominal pain mainly diffuse and non-

colicky in type and it is vague in character and mainly involved in epigastrium region of the stomach.

Examination of dengue patients should be done properly so that no critical signs that aid in prompt diagnosis and complication of dengue fever should not be missed. Signs are analyzed in detail in the present study and observations are given below. Conjunctival congestion, which is due to dilatation of capillaries of the conjunctiva is the most frequent clinical sign observed in our study. Which was noted in 21.33% of patients. Rashes were present in 7.2% of patients which was of transient morbilliform rashes. The spectrum of rashes varied from erythematous flush that blanched on the pressure to exfoliative dermatitis in one case. The rash is associated with itching in 8 patients.

Free fluid in the abdomen was clinically appeared in 5 cases. Ascites, collection of fluid in peritoneal cavity which is due to increase capillary leakage more during later phase of the disease. We did not try ascitic tapping or ascitic fluid analysis to prove etiology and ascites was reduced and disappeared with the improvement of the disease.

Bleeding manifestations are important in the cases of dengue fever. Common manifestations come across in this study were petechiae. Petechiae are small red non-blanching macular lesions caused by intradermal capillary bleeding found in 33 patients that is 8.8 % of total cases, the lower limb is commonly involved than the upper limb. This may be due to gravity which aggravates capillary damage. Another common site of petechiae was the palate.

In dengue fever, blood pressure is very important because the patient can present in shock. For early identification of complications, blood pressure monitoring is important. Pulse pressure is more important than blood pressure in identifying early

shock. Narrowed pulse pressure, that is <20 mm of Hg is the most sensitive sign. Hypotension was noted in 9.3% patients, most of the patients were improved on the administration of crystalloids, rest need ionotropic support. Hypotension was persistent in 32 cases of dengue shock syndrome.

They had managed with intensive fluid therapy according to WHO treatment guidelines and ionotrops. Thrombocytopenia was the most common abnormality found in dengue fever patients. In our study around 97% of patients, that is 364 cases presented with thrombocytopenia which ranges from mild to severe. Only 3% of patients had a platelet count of more than 1.5 lakh. Leukocytopenia was observed in 42.1% of cases and 2 patients were presented with leucocytosis. Fever with thrombocytopenia and leukocytopenia strengthen the suspicion of dengue fever and was later confirmed with dengue serology. Leukopenia was very important in the cases of dengue fever because progressive leukopenia and rapid decline in platelet counts are the initial signs of plasma leakage.

Hepatic manifestations are either as a result of direct viral toxicity or dysregulated immunologic injury in response to the virus. The spectrum of involvement includes asymptomatic elevation of hepatic transaminases to the occurrence of severe manifestations in the form of acute liver failure. Kuffer cells and hepatocytes are the primary targets of dengue virus infection. Liver Function Test were done all cases and it was found that 40% had deranged SGOT and 33.1% of patients had deranged SGPT in these 64 patients SGOT was more than 3 times of upper limit. In SGPT 43 patients value was more than 3 times the upper limit. 12 patients had raised bilirubin levels more than 2. The maximum value of SGOT obtained in this study was 800 U/L and in the case of SGPT it was 566 U/L. This

elevation in Liver Function Test was due to direct injury to the liver cells by virus or immunological response. Ischaemic hepatitis in patients especially with shock was another possibility.

Conclusion

In this study, the clinical profile of serologically proven dengue fever patients was studied from December 2018 to December 2020 particularly during an epidemic that occurred in our area. With a clinical profile, it is easy to identify and understand the clinical problem. The application of the clinical spectrum of the WHO classification system is not as very simple and straightforward as it seems because clinical features may overlap among different categories. The most common clinical presentation was fever followed by headache. While considering signs conjunctivitis was more frequently present. Thrombocytopenia and leukocytopenia were the main laboratory abnormalities. In the present study liver function test abnormality was also found in one-third of patients but most of them were asymptomatic derangement only. The WHO classification system of dengue does not include unusual manifestations like encephalopathy, seizures, myocarditis etc, which might be life-threatening. Although these manifestations are rare, clinicians should always have a high index of suspicion and knowledge of these atypical manifestations, particularly because of the increasing burden of dengue in recent years. Blood pressure and hematocrit should be monitored for evaluating the progress of the disease. The bleeding tendency should be closely watched. Management of patients with dengue is mainly supportive simple

inexpensive and very effective in saving lives, prophylactic Fresh Frozen plasma (FFP) and platelets are not necessary for treating DHF, DSS, but early and meticulous monitoring are the cornerstone for a positive outcome. In our study Transfusion of Platelets, Fresh Frozen plasma and blood was given if required as per need of patients and guidelines. Critical patients of dengue with complications were managed in intensive care units. Mortality in our study was less than 1%.

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