Research Article

Clinico- laboratory profile of suspected dengue patients in a tertiary care hospital

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Abstract

Introduction: Dengue fever is an arthropod borne viral fever. Dengue fever (DF) with its severe manifestations such as Dengue Hemorrhagic Fever (DHF) and Dengue Shock syndrome (DSS) has emerged as a major public health problem of international concern. Today, Dengue ranks as one of the most important mosquito-borne viral disease in the world. **Aims and objectives:** to study the clinical and laboratory profile of patients suspected to be suffering from dengue. **Material and method:** patients with clinical suspicion of dengue as per WHO criteria were included in the study. A detailed demographic data, clinical history, physical examination and relevant baseline investigations were undertaken as per the proforma. **Results:** Majority (73.01%) of the patients suspected to be suffering from dengue were young individuals (less than 30 years of age). 67.74% study subjects were male. It was observed that fever (98.16%) was the most common presenting symptom followed by myalgia (82.21%) and headache (79.14%). breathlessness was diagnosed in 9.20% cases where as pleural effusion was present in 7.36% cases. Whereas ascites was diagnosed in 6.13% cases. Dengue check (Rapid diagnostic test) was positive in 13.50% patients. IgM ELISA was positive in 29.45% patients. Low platelet count of < 100000 cells/cu mm was seen in most of the cases (67.48%). **Conclusion:** A focused history, detailed clinical examination and appropriate relevant investigations can aid for early diagnosis and treatment.

Key Word: dengue, IgM ELISA, fever, myalgia.

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INTRODUCTION

Dengue fever is an arthropod borne viral fever. It is acquiring epidemic proportion in this part of the world. The geographical distribution has greatly expanded over the last 30 years, because of increased potential for breeding of Aedes aegypti. This has been prompted by demographic explosion, rapid growth of urban centers with strain on public services, such as potable water and rainwater harvesting. Dengue fever (DF) with its severe manifestations such as Dengue Hemorrhagic Fever (DHF) and Dengue Shock syndrome (DSS) has emerged as a major public health problem of international concern.[1] Today, Dengue ranks as one of the most important mosquito-borne viral disease in the world. In the past 50 years, its incidence has increased 30-fold with significant outbreaks occurring in five of six WHO regions. Current estimates report that, atleast 112 countries are endemic for Dengue and about 40% of the world populations (2.5-3 billion people) are at risk in tropics and sub-tropics. Estimates suggest that annually 100 million cases of dengue fever and half a million cases of dengue haemorrhagic fever (DHF) occur in the world with a case fatality in Asian countries of 0.5%–3.5%. 90% of DHF subjects are less than 15 years of age. Early recognition and prompt initiation of treatment are vital if disease related morbidity and mortality are to be controlled.[2] Dengue fever is caused by an RNA virus of the family Flaviviridae; genus Flavivirus. It has 4 closely related serotypes DEN 1, DEN 2, DEN 3, DEN4 which bear partial cross reactivity with each other. The viruses are transmitted to man by the bite of infective mosquitoes, mainly Aedes aegypti. The present study was undertaken to study the clinical profile of patients suffering from dengue and also study the laboratory profile of them.

AIMS and OBJECTIVES

To study the clinical and laboratory profile of patients suspected to be suffering from dengue.

MATERIAL and METHOD

The present study was conducted in the KEM hospital Mumbai. All the patients attending the OPD or IPD

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during the study duration with clinical suspicion of dengue were enrolled. The study was conducted for the duration of six months (April 2008 to September 2008). Following inclusion criteria was used to enroll the study subjects.

Inclusion criteria

patients with clinical suspicion of dengue (fever, headache, retro-orbital pain, and myalgia) as per WHO criteria were included in the study.

Exclusion criteria

Fever patients with other confirmed diagnosis like malaria, leptospirosis. Patients with an identified bacterial focus or any other identified specific infection were excluded during the Study.

Written consent was taken from parents before enrolling in study. A detailed demographic data, clinical history, physical examination and relevant baseline investigations were undertaken as per the proforma. Serum samples were obtained on an average of 5 to 7 days after DF symptoms had appeared. The cases were followed-up daily for the clinical and laboratory parameters. The patients were treated with IV fluids, paracetamol, antacids, blood products and inotropics as per WHO criteria for treatment of dengue. The frequency of various signs and symptoms and the values of laboratory tests were compared. The results were tabulated and correlated. The outcome was recorded in every subject.

RESULTS

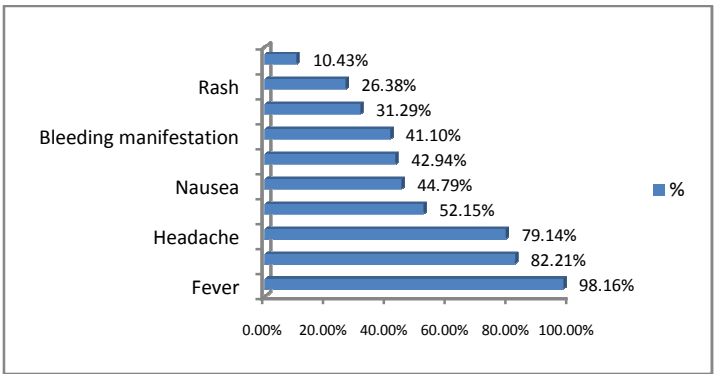
Table 1: Distribution of patients according age sex and duration of illness

Variable		No.	Percentage
Age	0-9 yrs	39	23.93
	10-19 yrs	40	24.54
	20-29 yrs	40	24.54
	30-39 yrs	27	16.56
	40-49 yrs	08	4.91
	≥ 50 yrs	09	5.52
Sex	Male	110	67.48
	Female	53	32.52
Duration of illness	≤ 5 days	99	60.74
	6-10 days	60	36.81
	> 10 days.	4	2.45

It was observed that majority (73.01%) of the patients suspected to be suffering from dengue were young individuals (less than 30 years of age). 67.74% study subjects were male. Majority of the patients reported to the hospital within 5 days of appearance of symptoms.

Table 2: Distribution of patients according to complaints

Complaints	No.	Percentage
Fever	160	98.16
Myalgia	134	82.21
Headache	129	79.14
Vomiting	85	52.15
Nausea	73	44.79
Arthalgia	70	42.94
Bleeding manifestation	67	41.1
ROP	51	31.29
Rash	43	26.38
Diarrhea	17	10.43



Graph 1: Distribution of patients according to complaints

It was observed that fever (98.16%) was the most common presenting symptom followed by myalgia (82.21%) and headache (79.14%). Other common complaints were vomiting (52.15%), nausea (44.79%), arthalgia (42.94%) and bleeding manifestation (31.29%).

Table 3: Distribution of patients according to clinical findings

Clinical findings		No.	Percentage
RS	Breathlessness	15	9.20
	Pleural effusion	12	7.36
	ARDS	1	0.61
CVS	Hypotension	13	7.98
	Pericardial rub	1	0.61
P/A	Pain	22	13.50
	Ictrerus	4	2.45
	Hepato-spleenomegaly	10	6.13
	Ascities	10	6.13
CNS	Altered sensorium	2	1.23
	Hepatic encephalopathy	1	0.61
	Convulsion	2	1.23
Renal	Oligourea	7	4.29
	High creatinin and urea	3	1.84

On clinical examination breathlessness was observed in 15 cases (9.20%). Whereas pleaural effusion was diagnosed in 12 cases (7.36%). Acute respiratory distress syndrome was diagnosed in one case. Hypotension was seen in 13 cases (7.98%) and pericardial rub was seen in one case. On per abdominal examination pain was observed in 22 cases (13.50). Jaundice was diagnosed in 4 cases (2.45%) and hepato spleenomegaly and ascities was diagnosed in 10 cases each (6.13%).

Altered sensorium was seen 2 cases. and hepatic encephalopathy was diagnosed in one case. Convulsions were observed in 2 cases (1.23%). Oligouria was seen in 7 cases and high levels of creatinin and urea was seen in 3 cases.

Table 4: Distribution of patients according to various laboratory findings

Investigation		No.	Percentage
Rapid diagnostic test	Positive	22	13.50
	Negative	141	86.50
IgM ELISA	Positive	48	29.45
	Negative	105	64.42
	Equivocal	10	6.13
Platelet count	< 20000	20	12.27
	20000 – 50000	28	17.18
	50000 – 100000	62	38.04
	> 100000	53	32.52
Hemoglobin	≤ 15 mg%	136	83.44
	> 15 mg%	27	16.56
TLC	< 4000	39	23.93
	4000 – 11000	114	69.94
	> 11000	10	6.13

Dengue check also called as Rapid diagnostic test was positive in 13.50% patients. IgM ELISA was positive in 29.45% patients. Whereas result of IgM ELISA was equivocal in 6.13%. Platelet count was also done in all the cases and it was observed that count more than one lakh was observed in 32.52% cases. The WHO criteria of low platelet count of < 100000 cells/cu mm was seen in most of the cases (67.48%). 83.44% cases were having Hb less than 15mg%. whereas mean hemoglobin of the study subjects was 12.83 mg% with SD 0.17mg%. when TLC was performed it was observed that 69.94% cases were having TLC in normal range. The mean TLC was 6033.62/cmm with SD 256.12/cmm.

DISCUSSION

The present study was conducted with the objective to study the clinical and laboratory profile of patients suspected to be suffering from dengue. In the present study majority of the patients were young (less than 30 yrs of age). Chaturvedi UC *et al*[3] also reported high incidence in young population. The incidence of male (67.48%) children that were affected more in our study. Similar observation was made by others also showed increased preponderance among boys as in WHO study[4] in 1999 due to increased outdoor activities of male children. In the present study fever (98.16%) was the predominant symptoms followed by myalgia (82.21%), headache (79.14%), vomiting (52.15%) and arthalgia (42.94%). Fever as a common symptom in dengue was also reported by Narayana *et al*[5], Anuradha *et al*[6], Misra *et al*[7], Sajid *et al*[8] and Kumar *et al*[9]. Bleeding manifestation was reported in 41.1% cases. Various bleeding manifestation in the form of bleeding gums, hemoptysis, hemetemesis, melena, purpura, sub conjuctival hemorrhage, ecchymosis etc were reported in the present study. Similar findings were also reported by Mittal H *et al*[10] and Tripathy BK *et al*[11]. Headache and retro-orbital pain mostly from systemic inflammatory mediators, are well known features in dengue fever. In our study we found 79.14% patients presented with headache that is similar (61.6%) to the study by Singh NP *et al*[12]. But in some studies like by Itoda I *et al*[13], in Japan, headache was present in 90% cases. On the other hand the north Indian study by Seema A *et al*[14] reported headache in only 9% of cases. On systematic examination breathlessness was diagnosed in 9.20% cases where as pleural effusion was present in 7.36% cases. Whereas ascites was diagnosed in 6.13% cases. Ascites and pleural effusion from capillary leak syndrome are one of those features, more and more reported in recent years of outbreaks, by the help of technological advances like ultrasonography. In contrary to our finding Singh NP *et al*[12] found ascites in 1.08% cases and pleural effusion in 1.08% cases. In a Bangladesh based study by Mia MW *et al*[15], 41% patients developed ascites and 42% had pleural effusion. This variation may be because of geographical variation in the place of study and severity of the disease. Various neurological manifestations were also diagnosed in the study. Altered sensorium and convulsion were reported in 1.23% cases each. Hepatic encephalopathy was diagnosed in one case. Neurological involvement in dengue may occur because of neurotropism of the virus, immunologic mechanism, cerebral anoxia, intracranial haemorrhage, hyponatremia, cerebral edema, fulminant hepatic failure with portosystemic encephalopathy, renal failure or release of toxic products. Kamath SR *et al*[16] (20%) and Mendez A *et al*[17] (25%) reported higher incidence of neurological manifestations in their study. On serological examination was also done in all the patients. Rapid diagnostic test was positive in 13.50% cases. IgM ELISA was positive in 29.45% cases and equivocal in 6.13% cases. The mean hemoglobin of the study subjects was 12.83 mg% with SD 0.17mg%. Narayanan *et al*[5] reported nearly same levels of Hb (10.8 gm %). Leucopenia was observed in 23.93% cases I the preset study. The mean TLC was 6033.62/cmm with SD 256.12/cmm. Nazish Butt *et al*[18], in their series found that mean leucoycte count was 5200 cells/cmm , which almost correlates with the present study. Platelets counts carry one of the most important key for diagnosis. On taking the WHO limit of < 100000/cmm for low platelet count, 85 % had thrombocytopenia in the present study. Low platelet count of < 100000 cells/cu mm was seen in most of the cases (67.48%. The platelet counts at the admission were neither an indicator of prognosis nor of bleeding

tendencies or progression of the disease. This suggests that other factors like platelet dysfunction or disseminated intravascular coagulation may have role in bleeding in dengue fever cases. However studies which include only DHF cases shows correlation between low platelet count and bleeding manifestations.[19]. The studies by Gomber *et al* and Narayanan *et al* have documented the same opinion.[5,20] But platelet count provides a very useful means of diagnosis at the screening level. Hence the platelet count was a sensitive indicator for diagnosis but it did not correlated with the outcome. Bleeding manifestations are more frequent with low platelet count. Nazish Butt *et al*[18] study found that history, clinical examination and triad of thrombocytopenia, haematocrit and elevated liver enzymes useful in early diagnosis of Dengue hemorrhagic fever without waiting for Dengue serology. In Nazish Butt *et al* study, 100% of the patients had thrombocytopenia. In Larreal *et al*[21] study, laboratory test findings showed leucopenia in 72.5% in both forms of dengue, and of patients with DHF severe thrombocytopenia (<50,000/mm3 platelets) in 70.9%. Faridi *et al*[22] study found that children presented with fever and hepatomegaly, had a platelet count of between 20,000 /mm3 and 50,000/mm3, bleeding manifestations were not related to platelet count. The present study findings concurred with the previous studies and we found that thrombocytopenia was the most commonly associated finding.

CONCLUSION

Thus in the end we could conclude that there is wide variation in the clinco laboratory profile of dengue. A focused history, detailed clinical examination and appropriate relevant investigations can aid for early diagnosis and treatment.

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