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CLINICO- LABORATORY PROFILE OF SUSPECTED DENGUE PATIENTS IN A TERTIARY CARE HOSPITAL

MICROBIOLOGY

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ABSTRACT

Background and Objectives: Dengue fever is an arthropod borne viral fever. Dengue fever (DF) with its severe manifestations such as Dengue Hemorrhagic Fever (DHF) international concern. Today, Dengue ranks as one of the most important mosquito borne disease. The present study was undertaken to study the clinical profile of patients suffering from Dengue and also study the laboratory profile of patients suspected to be suffering from Dengue.

Materials and Methods: Detailed demographic data, clinical history, physical examination and relevant baseline investigations of patients with clinical suspicion of Dengue 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). 56.90% study subjects were females. Fever (100%) was the predominant symptoms followed by Myalgia (84.03%),Headache (43.34%), Vomiting (3.43%) and Bleeding manifestations (2.87%). IgM ELISA was positive in 27.29% patients. Platelet count of < 100000 cells/cu mm was seen in most of the cases (93.54%).

Conclusion: A focused history, detailed clinical examination and appropriate relevant investigations can aid for early diagnosis.

KEYWORDS

Dengue fever(DF), Dengue Hemorrhagic Fever (DHF) IgM ELISA, Platelet count

INTRODUCTION

Dengue fever is an arthropod borne viral fever. Dengue fever is caused by an RNA virus the family *Flaviviridae*; Genus *Flavivirus* 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 geographical distribution has greatly increased during 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 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. Dengue Hemorrhagic fever and Dengue Shock syndrome (DSS) has emerged as a major public health problem of mosquito-borne viral disease in the world. The early diagnosis of a case of fever as dengue is based primarily on clinical features, with platelet count and Haematocrit as main laboratory parameters. The spectrum of clinical features includes fever, headache, myalgia, arthralgia and various bleeding manifestations.[2]

Diagnosis during the early stages of disease includes NS1 ELISA, IgM ELISA and RT-PCR. Early identification of the exact clinical profile is of paramount importance as it greatly reduces morbidity and mortality, especially in cases with strong clinical features of Dengue but which are serologically negative. The main objective of this study was to evaluate the clinical features of patients diagnosed with Dengue and also to study the laboratory profile of patients suspected to be suffering from Dengue during outbreak time in a tertiary care hospital.

MATERIAL AND METHODS

The present study was conducted in a tertiary care hospital. All the suspected Dengue fever patients admitting in Medicine and Pediatrics wards during the period of October 2015 to March 2016 were included in the study.

Study population

INCLUSION CRITERIA

Patients with Clinical Suspicion of Dengue (Fever, Headache, Retro-Orbital Pain and Myalgia) were included in the study.

EXCLUSION CRITERIA

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

Sample collection and Processing

Clinico-laboratory data were collected from 1253 suspected Dengue fever patients(540 males and 713 females) admitted from Medicine and Pediatrics wards during the period of October 2015 to March 2016.Written consent was taken from patients before enrolling in the 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 Dengue Fever symptoms had appeared. The cases were followed-up daily for the clinical and parameters. The patients were treated with IV fluids,Paracetamol, antacids, Blood products as per WHO criteria for treatment of Dengue. The frequency of various signs and symptoms and laboratory tests were compared. The results were tabulated and correlated.

RESULTS

All the suspected Dengue fever patients admitting in Medicine and Pediatrics wards during the period of October 2015 to March 2016 were included in the study. Total 1253 cases of Dengue occurred during the study period were taken as sample. Majority (73.01%) of the patients suspected to be suffering from Dengue were young individuals (less than 30 years of age). 56.90% study subjects were females. Majority of the patients reported to the hospital within 5 days of appearance of symptoms**.(Table-1)**

TABLE 1: Distribution of patients according Age, Sex and Duration of illness

Variable		No.	Percentage
Age	0-12 years	291	23.22
	12-24 years	451	35.99
	24-36 years	198	15.80
	36-48 years	199	15.88
	48-60 years	114	9.09
Sex	Male	540	43.10
	Female	713	56.90
Duration of illnes	< 5 Days	552	44.05
	> 5 Days	701	55.95

Fever (100%) was the predominant symptoms followed by Myalgia (84.03%), Headache (43.34%), Vomiting (3.43%) and Bleeding manifestations (2.87%).**(Table-2)**

TABLE 2: Distribution of patients according to complaints

Complaints		No.	Percentage
Fever	**<5 days**	**552**	44.05
	>5 days	**701**	55.95
Myalgia	**1053**	84.03	
Headache	**543**	43.34	
Vomiting	**43**	3.43	
Bleeding manifestations	**36**	2.87	

On clinical examination breathlessness was observed in 30 cases (2.39%). Whereas pleural effusion was diagnosed in 24 cases (1.92%). Hypotension was seen in 26 cases (2.08%)

On per abdominal examination, Hepatosplenomegaly was observed in 22 cases (1.76%).

and Ascites was diagnosed in 20 cases each (1.6%). Convulsions were observed in 4 cases (0.32%). Oliguria was seen in 14 cases(1.12%).**(Table-3)**

TABLE 3: Distribution of patients according to clinical findings

CLINICAL FINDINGS	No.	Percentage
Breathlessness	30	2.39
Pleural effusion	24	1.92
Hypotension	26	2.08
Ascites	20	1.6
Hepatosplenomegaly	22	1.76
Convulsion	4	0.32
Oliguria	14	1.12

IgM ELISA was positive in 27.29% patients. Platelet count was also done in all the cases and it was observed that count more than one lakh was observed in 6.46% cases. The WHO criteria of low platelet count of < 100000 cells/cu mm was seen in most of the cases (93.54%). 63.93% cases were having Haemoglobin less than 15 gm%. when Total Leucocyte Count was performed it was observed that 87.23% cases were having TLC in normal range.

TABLE 4: Distribution of patients according to various laboratory findings

Investigation		No.	Percentage
Platelet count	20000-50000	429	34.24
	50000-100000	743	59.30
	>100000	81	6.46
Total Leucocyte count	< 4000	140	11.17
	4000-11000	1093	87.23
	>11000	20	1.60
Hemoglobin	< 15 gm	801	63.93
	> 15 gm	452	36.07
IgM ELISA	Positive	342	27.29
	Negative	911	72.71

Dengue IgM ELISA test results among Pediatric and adult patients were described in Table 5.

TABLE 5: Dengue IgM ELISA test results among Pediatric and adult patients

Patients	IgM Positive		IgM Negative	
	Male	Female	Male	Female
Children	104	73	41	73
Adults	86	79	309	485
Total	190	152	350	561

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 also reported high incidence in young population.[3] The incidence of male (67.48%) children that were affected more in this study. Similar observation was made by others also showed increased preponderance among boys as in WHO study in 1999 due to increased outdoor activities of male children.[4]

In the present study, Fever (100%) was the predominant symptoms followed by Myalgia(84.03%),Headache (43.34%), Vomiting (3.43%) and Bleeding manifestations (2.87%). 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 Raghunath 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 this 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 clinical examination breathlessness was observed in 30 cases (2.39%). Whereas Pleural effusion was diagnosed in 24 cases (1.92%). Ascites was diagnosed in 20 cases each (1.6%). 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. It was similar to Singh NP et al[12] found Ascites in 1.08% cases and Pleural effusion in 1.08% cases. In contrary to the present study findings,41% patients developed Ascites and 42% had Pleural effusion in a Bangladesh based study by Mia MW et al[15]. 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. Convulsion was reported in 0.32% cases. 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. IgM ELISA was positive in 27.29% patients. 63.93% cases were having Haemoglobin less than 15gm%. Narayanan et al[5] reported nearly same levels of Haemoglobin (10.8gm %). when Total Leucocyte Count(TLC) was performed it was observed that 87.23% cases were having TLC in normal range. Leucopenia was observed in 23.93% cases in the preset study. Nazish Butt et al[18] study almost correlates with the present study.

Platelets counts carry one of the most important key for diagnosis. Platelet count was also done in all the cases and it was observed that count more than one lakh was observed in 6.46% cases. The WHO criteria of low platelet count of < 100000 cells/cu mm was seen in most of the cases (93.54%). 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. Platelet count provides a very useful means of diagnosis at the screening level[19]. Hence the platelet count was a sensitive indicator for diagnosis but it did not correlate with the outcome. Bleeding manifestations are more frequent with low platelet count.

CONCLUSION

Thus in the end we could conclude that there is wide variation in the clinico laboratory profile of dengue. A focused history, detailed clinical examination and appropriate relevant investigations can aid for early diagnosis and treatment. Continuous seroepidemiological surveillance and timely interventions are needed to identify the cases, so that its complications, outbreak and mortality can be minimized.

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