ORIGINAL RESEARCH PAPER

Medical Microbiology

CLINICAL AND SEROLOGICAL PROFILE OF DENGUE PATIENTS.

KEY WORDS: Dengue Fever , Leucopenia , Thrombocytopenia , Ascites , Pleural Effusion

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ABSTRACT

Dengue is a major public health concern globally .Dengue fever continues to be a significant health problem especially in Northern region of India .The majority of dengue virus infections are managed conservatively, but complications may cause substantial morbidity and mortality .The present study is an observational study that was conducted in the department of general medicine of Acharya Shri Chander College Of Medical Sciences and Hospital over a period of 3 months .A total of 100 dengue positive patients were included in this study and classified into dengue and severe dengue .81% cases were primary dengue and 19% were secondary dengue cases. The most commonly involved were males 68%.Most common clinical manifestation was fever which was observed in 98% cases, followed by myalgia(94% cases). Most common hemorrhagic manifestation noted was patechiae 16% followed by gum bleeding 9% cases. Case fatality was 1%.

INTRODUCTION

Dengue is an emerging public health problem in tropical countries including India(1,2). India is one of the seven identified countries in South-East Asia region regularly reporting dengue fever (DF)/dengue hemorrhagic fever (DHF) outbreaks. According to World Health Organization (WHO), it is estimated that over 2.5 billion people (40% of the total world population), in urban areas of tropical countries, are at a risk of developing dengue infection(3).A member of family flaviviridae dengue virus is transmitted to humans by the bite of an infected female mosquito. Aedes aegypti is the principal vector involved in transmission of dengue virus (DENV), with Aedes albopictus mainly serving as secondary vector(4).Dengue cases are seasonally distributed with the highest dengue cases being reported during July-September due to more rainfall, optimum temperature, and humid environment which are ideal for breeding of Aedes mosquitoes(5).Dengue fever is caused by any of four distinct serotypes (DENV 1-4) of single-stranded RNA viruses of the genus Flavivirus. Infection by one serotype results in lifelong immunity to that serotype but not to others(6).The coding region of flaviviruses includes, in the following order of three structural genes encoding for the proteins capsid (C), precursor membrane (prM, cleaved to membrane protein M during maturation) and envelope (E), and seven nonstructural (NS) genes encoding for NS1, NS2A, NS2B, NS3, NS4A, NS4B, and NS5. NS2B and NS3 form the protease, and NS3 also has helicase and RNA triphosphatase activity; NS5 is the RdRp and also has methyltransferase activity (7)

Dengue fever typically manifest as febrile illness with frontal headache, retro-ocular pain, muscle pain, joint pain, and rash. Other signs and symptoms include lymphadenopathy, petechiale, nausea, hepatomegaly, and different types of hemorrhagic manifestations(8).Atypical manifestations are rare and include encephalopathy, encephalitis, seizures, hepatocellular damage, acalculous cholecystitis, myocarditis, pericardial effusion, and severe gastrointestinal hemorrhage(9).

DENV infection is characterized by a spectrum of illness from mild, self limiting dengue fever to life threatening dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS). The WHO/TDR, 2009 proposed a new classification of dengue, i.e. dengue (D), dengue with warning signs (DW) and severe dengue (SD) in order to re-evaluate the current classification for better management of high case fatalities (WHO/TDR, 2009)(10).

In a previously affected individual reinfection with other serotype of dengue virus is called secondary dengue which causes severe dengue and can be attributed to severe immunological response of the body .(11)Primary infections have high levels of Ig M and low levels of Ig G , while secondary infections have low levels of Ig M and high levels of Ig G. (12)

Aims and Objectives

The viral hemorrhagic fevers are becoming increasingly common in tropical and subtropical countries with dengue fever currently being the most important arthropod borne viral disease because of its widespread distribution. Since the occurrence of dengue infections and its complications are increasing , the primary objective of conducting this study was to study the incidence and outcome of dengue fever in a tertiary care setup, thereby to create awareness among general public about preventive measures and health care system for diagnosing and treatment of dengue infection as timely measures may help physicians in preventing morbidity and mortality associated with dengue

Aim

1. To assess the clinical profile of the dengue infection in patients more than 14 years of age. 2. To categorize dengue cases as dengue fever and severe dengue according to WHO guidelines. 3.To evaluate proportion of primary and secondary dengue infections. 4.To evaluate outcome of dengue fever.

MATERIALS AND METHODS

The present observational study was conducted at Acharya Shri Chander College of Medical Sciences and Hospital, Jammu in the department of general medicine after obtaining the ethical clearance from the institutional ethical committee.It was done over a period of three months(July-September) after obtaining the informed consent from the patients. A total of 100 patients with clinical features suggestive of dengue fever were included in this study.

Inclusion Criteria

1. Serum NS1 antigen and /or IgM/Ig G antibody positive by ELISA .
2. Age- more than 14 years.

Exclusion Criteria

- Patients having both dengue and malaria by MP-QBC/Slide Test .
- Patients with pneumonia, urinary tract infection, abscesses.

Categorization of Primary and Secondary Dengue Infection :

Patients with NS1 Ag / IgM positivity were categorized as primary infection and patients with IgG positivity were categorized as secondary infection.

The data was recorded in Microsoft Excel and analysed with the help of SPSS 22.0 version.

OBSERVATIONS AND RESULTS.

This study was done with 100 patients with confirmed diagnosis of dengue infection.The frequency of dengue fever in our study was higher in age group more than 50 years ,followed by 20-30 yrs. The mean age of patients was 54±11.2 with significant male preponderance(68%)(table 1) .Fever was the most common clinical symptom reported(98%) followed by myalgia (94%) , headache(64%) arthralgia (58%), GIT symptoms (56%) and retroorbital pain (42%) (table 2). Hemorrhagic manifestations were seen in 38% patients (Table 4) in the present study . The common hemorrhagic manifestations seen were patechiae (16%) followed by gum bleeding (9%).Thrombocytopenia with platelet count less than 1 lakh was seen in most of the patients (92%) while 32% patients had platelet count <50,000/cumm (table 3) and 6% cases in our study required platelet transfusion .The number of primary dengue infections noted in our study was 81% and secondary dengue was 19% (table 6). Severe dengue manifestations were more common in secondary dengue cases among which most common manifestation noted was bleeding manifestations 38% cases followed by thrombocytopenia 32% cases . (Table 5)

Table-1: Epidemiological Profile Of Dengue Cases

AGE GROPUS	NUMBER OF CASES	PERCENTAGE
0-10	0	0%
10-20	2	2%
20-30	26	26%
30-40	18	18%
40-50	20	20%
>50	34	34%

	NUMBER OF CASES	PERCENTAGE
MALES	68	68%
FEMALES	32	32%

In the present study the mean age of study participants waswas 54±11.2

Table-2: Clinical Presentations Of Dengue Cases

SYMPTOMS	NUMBER OF CASES	PERCENTAGE
FEVER	98	98%
MYALGIA	94	94%
HEADACHE	64	64%
JOINT PAINS	58	58%
GI SYMPTOMS	56	56%
RETRO-ORBITAL PAIN	42	42%

Table-3 Thrombocytopenia In Dengue Cases:

	CASES	%AGE
>1.5 lacs	8	8%
1-1.5 lacs	22	22%
0.5-1 lac	38	38%
30,000-50,000	22	22%
<30,000	10	10%

Table-4 Bleeding Manifestations In Dengue Cases:

	NUMBER OF CASES	%CASES
EPISTAXIS	4	45
HEMATURIA	6	6%
VAGINAL BLEEDING	2	2%
PATECHIAE	16	16%
BLEEDING GUMS	9	9%
HEMATEMESIS	0	0%
MALENA	1	1%
ECCHYMOSIS	0	0%

Table-5 Severe Dengue Manifestatios

	NUMBER OF CASES	PERCENTAGE
PLEURAL EFFUSION	26	26%
ASCITES	25	25%
BLEEDING MANIFESTATIONS	38	38%
THROMBOCYTOPENIA (50,000)	32	32%
ACALCULAR CHOLECYSTITIS	24	24%

Table -6 : Dengue Serotyping:

	NUMBER OF CASES	PERCENTAGE
PRIMARY DENGUE (NS1 Ag POSITIVE)	41	41%
PRIMARY DENGUE (NS1 AND IgM POSITIVE)	40	40%
SECONDARY DENGUE (IgG positive)	19	19%

DISCUSSION

Dengue has been recognized as emerging infectious disease and is extremely common in tropical countries . Due to high prevalence of dengue it is necessary to evaluate the incidence and seropositivity of dengue cases .In our study the ratio of primary dengue to secondary dengue infection noted was 4.2:1 which doesnot correlate with study conducted by Malavige et a in 2006.(13), they observed that 34.3% patients presented with primary dengue and 65.7% patients presented with secondary dengue infection. In our study the number of primary dengue cases noted was 81%.In this study males were more commonly affected than females (68% and 32% respectively).In the study done by Nadeem Sajjad Raja et al in 2006 , the incidence of dengue in males was 51.55% and 48% in females .(14) Most common symptom with which the patients presented in the present study were fever (98% cases) and myalgia (94% cases). In the study conducted by Shahid Ahamed et al in 2008 fever was the commonest symptom (100%), followed by myalgia (67%). (15)Case fatality rate in the present study was 1%.

CONCLUSION

There is no specific medical therapy for dengue and clinical recovery largely depends on hematological and radiological parameters.. By knowing various clinico-hematological manifestations of dengue, and careful supervision of the patients' management we can prevent them from progressing into severe dengue. Early serological diagnosis should be done in all the clinically suspected dengue cases as early treatment and timely measures of management can be undertaken by physicians which can help prevent mortality associated with dengue.

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