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Research Article

A study of clinical profile of dengue fever in a tertiary care hospital of Jamnagar, Gujarat, India

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ABSTRACT

Background: Dengue is the most rapidly spreading mosquito-borne viral disease of mankind, with a 30-fold increase in global incidence over the last five decades. It is a major public health concern throughout the tropical and subtropical regions of the world. This is a prospective study, objective of which is to study clinical manifestations of all laboratory confirmed dengue cases admitted in the tertiary care hospital, Jamnagar, India.
Methods: The study is carried out on 100 cases of dengue fever from January 2014 to November 2015. Patients those who are more or equal 12 year of age and; admitted with fever, headache, myalgia are evaluated with other clinical features and laboratory findings. Other causes of fever like malaria, enteric fever, chikungunya and respiratory infections are excluded by appropriate tests.
Results: The most common presentation in our study was dengue fever without any complications (94%) and severe dengue fever (6%). Most common age group was between 20-29 years, mean age being 28.6 years with M: F ratio was 1.94:1. Most common clinical manifestation was fever observed in all patients (100%) followed by headache (98%), myalgia (97%), vomiting (49%). Warning signs present in total 28 patients out of 100.
Conclusions: The study draws attention to susceptibility of the male, young adult age group. Fever, headache and myalgia are common presenting complaints.

Keywords: Dengue, Fever, India, Gujarat

INTRODUCTION

Dengue is the most rapidly spreading mosquito-borne viral disease of mankind, with a 30 fold increase in global incidence over the last five decades. It is a major public health concern throughout the tropical and subtropical regions of the world. Almost half the world's population lives in countries where dengue is endemic. According to WHO (World Health Organization), about 50-100 million new dengue infections are estimated to occur annually in more than 100 endemic countries, with a steady increase in number of countries reporting the disease.[1]

According to global scenario dengue has been identified as one of the 17 neglected tropical diseases by WHO as mentioned in their first report on neglected tropical diseases (2010).[2] Although the full global burden of the disease is still uncertain, the patterns are alarming for both human health and the economy. Every year, hundreds of thousands of severe cases arise, of which 20000 lead to death. The loss to the economy is 264 disability-adjusted life years (DALYs) per million population per year.[3,4]

Approximately 1.8 billion (more than 70%) of the population at risk for dengue worldwide live in Member States of the WHO South-East Asia Region (SEAR) and Western Pacific Region, which bear nearly 75% of the current global disease burden due to dengue.[5] Of the 11 countries of SEAR, 10 countries including India are

endemic for Dengue. The only exception is the Democratic People's Republic of Korea. In 2012, SEAR countries reported approximately 0.29 million cases, of which Thailand contributed almost 30%, Indonesia 29%, India 20%. Similarly, Western Pacific countries have reported 0.33 million cases, of which Philippines contributed almost 52%, Vietnam 24% and Cambodia 14% (source WHO).[5] The true numbers are probably far more, since severe underreporting and misclassification of dengue cases have been documented by the countries.[3]

National scenario: Dengue virus was isolated in India for the first time in 1945. The first evidence of occurrence of dengue fever in the country was reported in 1956 from Vellore district in Tamilnadu. The first dengue hemorrhagic fever (DHF) outbreak occurred in Calcutta (West Bengal) in 1963.[6,7] Of the 36 states/UTs, 35 (all except Lakshadweep) have reported dengue cases during the last two decades. Recurring outbreaks of dengue fever (DF)/DHF have been reported from various states/UTs.

During 1996, one of the most severe outbreaks of DF/DHF occurred in Delhi, with 10252 cases and 423 deaths being reported (country total being 16517 and 545 deaths). In 2006, the country witnessed an outbreak of DF/DHF with 12317 cases and 184 deaths. The incidence of dengue is increasing in the last few years.

During 2010, a total of 28292 cases were reported, which increased to 50222 in 2012 and 75808 in 2013-the highest since 1991. The case fatality ratio (CFR-deaths per 100 cases) has declined from 3.3% in 1996 to 0.4% in 2010 after the national guidelines on clinical management of DF/DHF/dengue shock syndrome (DSS) were developed and circulated in 2007. This further declined to 0.3% in 2013.[7,8]

This is a prospective study, objective of which is to study clinical manifestations of all laboratory confirmed dengue cases admitted in the tertiary care hospital, Jamnagar, India.

METHODS

The study was a prospective study with ethical approval. The study was carried out on 100 cases of dengue fever admitted in our tertiary care hospital from January-2014 to November 2015. The case definition was based on consent, compatible clinical history and examination based on WHO criteria, confirmed by positive serology to dengue fever.

Patients those who were more than 12 years of age and, those admitted with fever, headache, myalgia were evaluated with other clinical features (warning signs of dengue fever, signs of haemorrhage, signs of plasma leakage and signs of shock). Laboratory investigations such as Hb, total count, differential count, platelet count, packed cell volume, peripheral smear for malarial parasite, and liver function test (including S. protein) and renal function test were carried out. Blood coagulation profile such as Bleeding Time, Clotting Time, Prothrombin Time and aPTT were carried out. Radiological investigations such as X-ray chest and USG abdomen were carried out. Other investigations such as S. widal, blood for culture were carried out. Brain imaging, fundus examination were carried out as and when required. Serology examinations for dengue fever (NS1, IgM, IgG) were carried out.

Patients with clinical features, lab evidence and positive for dengue serology were classified according to WHO classification and their outcome noted. Other causes of fever like malaria, enteric fever, chikungunya and respiratory infections were excluded by appropriate tests.

RESULTS

This study has been done to study the clinical profile of dengue fever patients.

Age

In present study most common age group was between 20-29 years, mean age being 28.6 years. So dengue fever is common in young adults. This may be due to the fact that adults are not immune to all strains of dengue virus. (Table 1).

Table 1: Age distribution of patients (N=100).

Age (in years)	Male	Female	Total
13-19	7	10	17
20-29	41	12	53
30-39	11	3	14
40-49	3	4	7
50-60	4	5	9
Total	**66**	**34**	**100**

Sex

In present study males were more affected than females. Males were affected in 66% while females are affected in 34%. M: F ratio was 1.94:1. This is due to male are more exposed to mosquito in outdoor activity (Table 2).

Table 2: Sex distribution of patients (N=100).

Sex	No. of patients	Percentage (%)
Male	66	66
Female	34	34
Total	100	100

Clinical spectrum

The most common presentation in our study was dengue fever without any complications, which was observed in 94% of patients and dengue haemorrhagic fever in 6% patients (Table 3).

Table 3: Clinical spectrum in dengue fever patients (N=100).

Clinical spectrum	No. of patients	Percentage
Dengue fever	94	94
Dengue Haemorrhagic fever	6	6
Total	100	100

Symptoms

Most common symptom was fever observed in all patients followed by headache (98%), myalgia (97%), vomiting (49%) (Table 4).

Table 4: Symptoms in dengue fever patients.

Symptoms	No. of patients	Percentage
Fever	100	100
Headache	98	98
Retro orbital pain	22	22
Myalgia	97	97
Arthralgia	29	29
Rash	09	09
Petechiae/Ecchymoses/Purpura	04	04
Bleeding from any site	05	05
Vomiting	49	49
Abdominal pain	07	07
Frequency of stool	02	02

Warning signs: We observed that warning signs present in total 28 patients out of 100 which includes ascites (08), hypotension (05), pulse pressure (<20 mmHg) (05), positive tourniquet test (05), pleural effusion (03); uncommon gall bladder wall oedema (02),icterus (01), altered sensorium (01) patients. Out of these ascites (08) is commonest warning sign (Table 5).

Table 5: Warning signs in dengue fever patients.

Signs	No. of patients	Percentage (%)
Hypotension (<90/60 mmHg)	5	5
Pulse pressure (<20 mmHg)	5	5
Tourniquet Test positive	5	5
Pleural effusion	3	3
Ascites	8	8
Gall bladder wall oedema	2	2
Icterus	1	1
Altered sensorium	1	1

Abnormal laboratory findings

We observed that most common abnormal laboratory finding was thrombocytopenia present in 79 patients out of total 100 patients followed by leucopenia in 56 patients, HCV (≥45%) in 14 patients, s. creatinine (>1.2mg%) in 08 patients, Hb (≤10gm%) in 07 patients and 04 patients had PT (>14sec), aPTT (>40sec), INR (>1.2). We observed in our study that thrombocytopenia is most common abnormal laboratory finding in dengue fever patients (Table 6).

Table 6: Abnormal laboratory findings in dengue fever patients.

Laboratory findings	No. of patients	Percentage (%)
Hb (≤10 gm%)	7	7
Leucopenia (<4000/ul)	56	56
Thrombocytopenia (<1.0 lac/ul)	79	79
Haematocrit (≥45%)	14	14
PT (>14 sec)	4	4
aPTT (>40 sec)	4	4
INR (>1.2)	4	4
S.creatinine (>1.2 mg%)	8	8

Serology

We observed in our study that most common type of serology test which was positive is NS1 in 86%, IgM was positive in 06% patients and 06% patients had mixed positivity (NS1&/IgM ± IgG) (Table 7).

Table 7: Serology in dengue fever patients.

Type of serology (By ELISA)	No. of patients	Percentage (%)
NS1	86	86
IgM	6	6
MIXED (NS1&/ IgM±IgG)	8	8
Total	100	100

Mortality

In present study mortality rate was 4%.

DISCUSSION

Age

In present study commonest age group involved was between 20-29 years (table 1, figure 1). Findings were in accordance with other studies like Gupta et al, 21-30 years and Kolkata study, 11-30 years.[9,10]

Sex

In present study M: F ratio was 1.94:1. The overall male predominance was observed (table 2, figure 2). In Kerala study also observed male predominance (M: F=1.08:1).[11] Clinical spectrum: In present study only 06% patients had

dengue haemorrhagic fever (Table 3), while in Sharma S and Sharma SK 13.5%.[12]

Symptoms

We observed in our study that dengue fever patients present with varying manifestations. Fever was the most common clinical feature with which patients present to the hospital. ever was observed in all patients followed by headache (98%), myalgia (97%), vomiting (49%), arthralgia (29%), retro-orbital pain (22%), rash (9%), abdominal pain (7%), bleeding from any site (5%), petechiae/ecchymoses/purpura (4%) and frequency of stool (2%) (Table 4).

In Kerala study and in Northeast India study also fever was a most common symptom observed in 96.8% and 98.1% cases respectively.[11,13]

In Itoda I et al, in Japan and Northeast India study headache observed in 90% and 93.4% cases respectively.[13,14] In Northeast India study myalgia observed in 81.3% cases.[13]

Warning signs

In present study warning signs were found in total 28 patients out of 100 which includes ascites (08), hypotension (<90/60 mmHg) (05), pulse pressure (<20 mmHg) (05), positive tourniquet test (05), pleural effusion (03); uncommon gall bladder wall oedema (02), icterus (01), altered sensorium (01) (Table 5).

Out of these ascites was commonest warning sign present in 08%. In Kerala study ascites observed in 13% cases.[11]

Abnormal laboratory findings

In present study thrombocytopenia was the most common abnormal laboratory finding, observed in 79% patients (Table 6). In Ageep AK et al, Mittal H et al and Seema A et al also thrombocytopenia was a most common laboratory finding, observed in 88%, 92.6% and 84% cases respectively.[15-17]

Serology

In present study that most common type of serology test which was positive is NS1 in 86%, IgM was positive in 6% patients and 8% patients had mixed positivity (NS1&/IgM±IgG) (Table 7). In northeast India study NS1 was positive in 91.6% cases, IgM positive in 4.7% cases and mixed positivity in 3.7% cases.[13]

Mortality

In present study mortality rate was 4%. In Kerala study mortality rate was 3.2% and in Gupta et al study mortality rate was 4.14%.[9,11]

CONCLUSION

Dengue fever commonly affects the male and young population. Fever, headache, myalgia are common presenting complains but in the recent few years, the world has seen varied clinical presentation of the dengue fever in different epidemics, even in the same regions and even with the period of times. Where some known features are still manifesting, few atypical features are noted from several parts of world. So a continuous sero-epidemiological surveillance and timely interventions are needed to identify the cases and use of vaccines& mosquito control measures to prevent epidemics. Hence its complications, outbreaks and mortality can be minimized.

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