ORIGINAL ARTICLE

An Observational Study of Dengue Fever in a Tertiary Care Hospital of Eastern India

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Abstract

Background: Dengue fever (DF) has become a significant resurgent tropical disease in the past 20 years all over the globe. The recent outbreak in West Bengal has once again underlined our failure in vector control and prevention. Our study outlines the clinical spectrum as well as the geographical expansion of the disease beyond urban confines.

Material and Methods: All patients with acute febrile illness positive for IgM antibody for Dengue virus were taken as cases. The patients were subjected to clinical examination and baseline investigations so as to fill in a structured proforma.

Result: The total number of patients were 180 of whom 92(51.1%) were male and 88(48.9%) were female. The maximum number of patients belonged to the age group 20-29 years (26.9%) The patients mostly hailed from Kolkata followed by Nadia, 24- Parganas(S),Murshidabad and Midnapur. The most common presentation apart from fever and bodyache were gastrointestinal symptoms. 42% patients complained of abdominal pain, 24% had vomiting, 9.6% diarrhoea. Bleeding manifestations occurred in 23% of patients.CNS features were documented 10.4%. Case fatality came out to be 3.8%. Investigations revealed thrombocytopenia in 55% and leucopenia 32.7%, transaminitis in 72% Evidence of organomegaly (22.2%) and serositis (42%) were detected. Complications included intracranial haemorrhage, DIC, pancreatitis, myocarditis and even a solitary case of splenic rupture.

Conclusion: The current outbreak was affecting both the genders equitably and mostly the younger age group from rural as well as urban areas. A febrile illness characterised by myalgia, mild bleeding and gastrointestinal symptoms, it was more or less promptly responsive to early conservative therapy like fluids, FFP and platelet transfusion where required.

Introduction

Dengue epidemics are becoming a regular threat every few years in West Bengal leading to significant mortality and morbidity.1,2 It is also generating unprecedented panic amongst the general population.

The recent epidemic in 2012 July raged for nearly six months and caused immense deleterious medical as well as socioeconomic consequences.3 Hence this study was designed to characterise the demographic and clinical profile of the outbreak.

Aims and Objectives

1. To outline the demographic characteristics of the cases
2. To evaluate the clinical profile of the patient

Material and Methods

Patients admitted in the medicine indoor in our unit were studied from July 2012
to Dec 2012. All patients with acute febrile illness underwent serology (IgM and IgG) by IVD micro well ELISA DENGUE fever kit. Only cases positive for IgM antibody for Dengue virus were taken as cases. The diagnosis of dengue fever, dengue haemorrhagic fever and dengue shock syndrome was based on the WHO criteria DHF is defined as an acute febrile illness with minor or major bleeding, thrombocytopenia (platelet count <1 lac/cu mm), and evidence of plasma leakage documented by haemoconcentration (haematocrit increased by at least one-fifth or decreased by the same amount after intravenous fluid therapy), pleural or other effusions, or hypoalbuminaemia or hypoproteinaemia.

DSS is defined as DHF with signs of circulatory failure, including narrow pulse pressure (20 mm Hg) hypotension, or frank shock.

The patients were subjected to a thorough clinical examination and a structured proforma was filled in for each case. They underwent investigations like complete haemogram, urea, creatinine, liver function tests, chest X ray, ECG and ultrasound of abdomen, along with serum amylase, lipase and CSF study where indicated.

The SPSS software (version 15) was used for analysis of data. Descriptive statistics were calculated. Numbers and percentages were enumerated for all categorical variables such as clinical characteristics and biochemical tests.

**Results**

All adult patients with confirmed dengue fever, admitted in our unit of medicine indoor during a 6-month period from July to December 2012 were selected for this study. Only IgM dengue antibody-positive cases were included.

The total number of patients were 180 of whom 88(48.9%) were male and 92(51.1%) were female. The difference in prevalence was not statistically significant (Figure 1).

The age of the patients varied from 13 to 70 years mean age being 46.7 years. The maximum number of patients belonged to the age group 20-29 years 56 (31.1%) closely followed by 10-19 years 48 (26.6%) (Figure 1).

The patients hailed from various districts of West Bengal however Kolkata followed by Nadia tops the list. Following closely are 24- Parganas south, Murshidabad and Midnapur (Table 1).

Only cases positive for Dengue IgM antibody were included in the study. There were 128(71%) cases of dengue fever with DHF/DSS in 52 (29%). Cases were randomly referred from outskirts to our centre out of which about 36% were NS1 positive while others were positive for IgM antibody. Of the NS1 positive cases 92% came out to have IgM positivity.

**Clinical Features**

Fever was documented in 176 (98%) patients. Headache with retro orbital pain was noted in patients 162 (90%), and myalgia in 155(86%). The most common presentation apart from fever and body ache were gastrointestinal symptoms. 83 (42%) patients complained of abdominal pain, 43(24%) had vomiting, 17(9.6%) diarrhoea (Table 2).

Isolated hepatomegaly was found in 24(13.5%) while hepatosplenomegaly in 16(9 %)

Skin rashes mainly maculopapular and diffuse...
flashing in some were noted in 50(28%). Two patients were referred to our hospital with drug reactions due to over-the-counter antipyretics.

Bleeding manifestations occurred in 42(23%) of patients. Gastrointestinal tract (GIT) bleeding in the form of melaena was the most frequent, while epistaxis, petechia, gum bleeding and haematuria were less common. Intracranial haemorrhage occurred in one case which expired. A patient developed haemoperitoneum, CT scan of abdomen revealed splenic rupture. The patient was managed conservatively and survived (Figure 2).

Disorientation was reported in 18(10.4%) cases while seizures were found in 7(3.8%). Heart failure developed in 9(5%) patients after fluid therapy.

Ascites was detected clinically 17.7% while 13%, had pleural effusion while some of them had both. The total number of patients with radiological evidence of effusions either pleural or peritoneal or both is 77(43%). Hypotension was found in 21(11.53%).

The tourniquet test was positive in the patients 56(31%) on whom it was carried out.

Haematocrit (Hct) was measured in patients 155(86%) had Hct <45%. total white cell count was found to be <4000/cmm in patients 59(32.7%). Sixty two cases(34.6%) had a platelet count of 50000-100000/cmm and 38 patients (21%) had a count < 50 000/cmm. Aspartate amino transferase (AST) was > 45 IU/L in 130(72%) cases. Raised amylase and lipase levels were documented in 35% cases but acute pancreatitis was documented in only 4(2.2%) cases.

A case fatality rate came out to be 3.8%. The causes of death were intracranial haemorrhage1 and DIC8 and delayed referral from outskirts to our centre was a key factor.

Discussion

Dengue is emerging as a serious public health problem globally, 50 million dengue infections occurring annually. The expanding geographical distribution of both the virus and the mosquito vector is leading to increased frequency of epidemics, and the emergence of dengue haemorrhagic fever in new areas.5 This may be due to climatic changes and to the failure to control the mosquito vector.6 DHF was first reported in India from Kolkata in 1963-64, 200 people died.7

DHF has become endemic in various parts of India since 1987, with the first major widespread epidemics of DHF and DSS occurring in 1996.8 In West Bengal state, nearly 61% of dengue cases reported between 2005 and 2007 were secondary dengue infection cases.9 The current epidemic that is raging from Delhi to Chennai, Mumbai to Bangalore has not spared West Bengal.

Our study reveals an outbreak equitably distributed amongst the genders with a predilection for the younger age group.10-29 This is in contrast to another epidemic of dengue that was simultaneously occurring in Madeira (Europe) in 2012. Upto November 2012 there were 1891 cases of which 41.1 were male 58.9% female. Majority were in the age group 25-64 years and had mild symptoms.8

Prior epidemics in West Bengal had documented mainly urban distribution of cases, however our observation is that large number of cases hailed from the outskirts of Kolkata and various districts including Nadia south 24 Parganas and Murshidabad. This is a fact comparable to the study by Ukey et al10 from Mahararsta which concluded majority of the dengue-positive patients were from the rural areas of Vidarbha (Maharashtra), The study also reveals that dengue infection is also prevalent in adjacent rural areas of Maharashtra like Chhindwada and Balaghat districts. However, one limitation of our study was that the geographical expanse of affection as reflected by our cases is essentially the catchment area of our hospital; hence many districts of West Bengal seem to be left out.

In our series predominant presentations were fever with bleeding (of various degrees) and gastrointestinal symptoms. However bleeding was not always associated with thrombocytopenia as noted in many similar studies e.g a study from Kerala11 as well as that by Sharma et al though the percentage of bleeding was as high as 69%.8

Moreover tourniquet was not a reliable pointer for bleeding tendency in these patients.

Abdominal pain and intractatable vomiting were another frequent presentation. Hepatomegaly in this series was 13.5% which is comparable with other studies in India12 and Thailand13,14 and Australia.17

Hypotension recorded in 11.5% responded well to fluids however overzealous fluid replacement had led to heart failure in 5% patients. Myocarditis was later documented in one of them. Fluid overload is a well recognised complication occurring at the end of the critical phase of plasma leakage when fluids start getting reabsorbed. We managed such cases with judicious diuretic therapy in conjunction with inotropes.

Serositis was self limiting and subsided within 2-3 weeks of recovery.

CNS features said to be very uncommon15 was documented in 10.4% in our series and included encephalopathy, seizures intracranial haemorrhage and even aseptic meningitis.
Laboratory investigations in our series showed, apart from thrombocytopenia gross leucopenia and transaminitis were significant derangements, often associated with increased amylase, lipase. Frank pancreatitis was seen in only 2.2%.

The therapy in most cases involved antipyretics and fluid management along with fresh frozen plasma where indicated. ICU referral was done in 12% cases. Platelet transfusion was given only if the platelet count was below 10,000/cu mm or there was life threatening haemorrhage (8%). Inotropic support was required in 5% cases.

According to the WHO report, the mortality in untreated cases of dengue fever was reported to be as high as 20%. The case fatality rate in patients with dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS) can be as high as 44%. In our indoor patients however the case fatality was 3.8% only which demonstrates that prompt diagnosis and early institution of therapy creates significant changes in prognosis.

Therefore to conclude, the current outbreak of Dengue was predominantly affecting the younger age group. Mostly a febrile illness with myalgia, mild bleeding and gastrointestinal symptoms, it was more or less promptly responsive to conservative therapy. Mere NS1 positivity had led to unnecessary panic and higher centre referrals in this outbreak. Proper confirmation of diagnosis, early institution of therapy, public awareness and vector control are important factors to be taken into consideration in order to form policies on dengue prevention and management.

### Table 2: Clinical Features of cases

<table>
<thead>
<tr>
<th>Clinical Features</th>
<th>Number</th>
<th>Percentage (%)</th>
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<tbody>
<tr>
<td>Fever</td>
<td>176</td>
<td>97.8</td>
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<tr>
<td>Headache</td>
<td>155</td>
<td>86</td>
</tr>
<tr>
<td>Myalgia</td>
<td>162</td>
<td>90</td>
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<tr>
<td>Arthralgia</td>
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<td></td>
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<tr>
<td>Abdominal pain</td>
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<td>46</td>
</tr>
<tr>
<td>Vomiting</td>
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<td>24</td>
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<tr>
<td>Diarrhoea</td>
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<td>9.6</td>
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<td>Bleeding</td>
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<td>2</td>
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<tr>
<td>Rash</td>
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<td>28</td>
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<tr>
<td>Hypotension</td>
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<td>11.5</td>
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<td>Drowsiness</td>
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<td>10.4</td>
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<tr>
<td>Seizures</td>
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<tr>
<td>Organomegaly</td>
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<td>22.2</td>
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<tr>
<td>Effusions</td>
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References