AN EPIDEMIOLOGICAL STUDY ON DENGUE VIRAL FEVER AND ITS CORRELATE BETWEEN THROMBOCYTOPENIA AND LEUKOCYTOPENIA IN DENGUE MARKERS AT RURAL POPULATION IN JAIPUR, RAJASTHAN.

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ABSTRACT

INTRODUCTION

Dengue is the most important arthropod-borne viral infection of humans. Globally, an estimated 2.5 billion people are at risk of Dengue, and approximately 975 million of these lives in urban areas of the tropical and sub-tropical countries of southeast Asia, the Pacific and the Americas. Every year, 50-100 million cases occur, hospitalizations for the infection have reached 50 million and the global death toll is >260,000 people.

Dengue virus is belonging to the Flaviviridae family and it is maintained in nature primarily through biological transmission between susceptible vertebrate hosts by hematophagous arthropods.

The dengue virus has antigenically four distinct serotypes which are called DEN-1, DEN-2, DEN-3, and DEN-4. Each serotype of the virus produces a specific, lifelong immunity, but it provides only a short-term cross-immunity.

Dengue fever results in a wide spectrum of clinical manifestations ranging from asymptomatic or mild illness to severe dengue haemorrhagic fever (DHF) or dengue shock syndrome (DSS) which is characterized by hemodynamic disturbances, increased vascular permeability, hypovolemia, hypotension, and shock.

Thrombocytopenia and platelet dysfunction are common in both cases and are related to the clinical outcome. Thrombocytopenia is one of the diagnostic criteria of DHF and DSS. Though the dengue virus-induced bone marrow suppression decreased platelet synthesis, an immune mechanism of thrombocytopenia caused by increased platelet destruction appears to be operative in patients with DHF. The study in India, thrombocytopenia was found in 71% of dengue cases.

Thrombocytopenia is often symptomatic demanding platelet transfusion. As there is an inherent risk associated with platelet transfusion, it is imperative to define precise criteria and transfusion trigger for platelets in dengue patients.

MATERIAL AND METHODS

This study was conducted on September 2019 to December 2019 and specimens were received blood samples in the Microbiology lab for detection of dengue. We used the DAY1 kit by J Mitra and DENGUE DUO by SD company which is detected dengue NS1, IgM and IgG antibodies, from patients with clinical suspicion of dengue fever-like illness, who presented to the outpatient’s department and indoor patients were admitted NIMS hospital Jaipur, Rajasthan.

RESULTS:

Among 1222 patients were dengue suspected and diagnosed as 390 dengue positive patients. Which is dengue NS1 383 (95.2%), IgM 18 (4.5%) and IgG 2 (0.5%). And according to male and female as well as age group wise, male population is more predominant 694 (55.1) & 694 (55.1) respectively and 11-20 years 30.8%, Most predominant thrombocytopenia is according to platelet count less than 50,000/microliter (25.6%) were patients. Among leukocytopenia is 48.7% is dengue fever patients.

Conclusions:

Present study concludes that clinical surveillance about dengue haemorrhagic fever is important as timely recognition can influence outcome and may prevent any complications.

KEYWORDS: Dengue, Thrombocytopenia, Leukocytopenia

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Fig no. -1. Distribution of Dengue positive and negative.

A total of 390 dengue positive patients which is dengue NS 1, IgM & IgG positive i.e. 383(95.2%), 18(4.3%) and 02(0.5%) respectively (fig 2).

Fig no. -2. Distribution of NS1, IgM and IgG antibody in patient’s serum sample.

In dengue patients 296 Male and 94 Female, we distribute age wise patients like <10 age, <20, <30, <40, <50 and >51. We found 237 patients > 18 old age, and percent of 61.8 % patients Men, 70 Female patients <10 age, <20, <30, <40, <50 and >51. We found 237 male patients > 18 old age, and percent of 61.8 % patients Men, 70 Female patients. This result is compared to M, Chatterjee et al. (2008) in this study males’ patients (61%) were more commonly affected like a report from 2006 in New Delhi 15.

In our study total positive male patients 294 (75.4%), while 96 (24.6%) female patients. This result is compared to M, Chatterjee et al. (2008) in this study males’ patients (61%) were more commonly affected like a report from 2006 in New Delhi 15.

In our study Out of 1222 suspected patients of dengue and 390 patients of dengue positive which is dengue NS1 383 (95.20%), IgM antibody 18 (4.30%) and IgG antibodies 02 (0.5%). Similar observations find out Kumar S et al, at Bikaner 15.

Table no 1. Age wise distribution and number of total positive patients and percentages.

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Number of patients</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>21(5.4 %)</td>
<td>12(3.1%)</td>
<td>9 (2.3%)</td>
</tr>
<tr>
<td>11-20</td>
<td>150 (38.5 %)</td>
<td>120 (30.8%)</td>
<td>30 (7.7%)</td>
</tr>
<tr>
<td>21-30</td>
<td>126 (32.3 %)</td>
<td>108 (27.7%)</td>
<td>18 (4.6%)</td>
</tr>
<tr>
<td>31-40</td>
<td>44 (11.3 %)</td>
<td>27 (6.9%)</td>
<td>17 (4.4%)</td>
</tr>
<tr>
<td>41-50</td>
<td>24 (6.2 %)</td>
<td>14 (3.6%)</td>
<td>10 (2.5%)</td>
</tr>
<tr>
<td>&gt;51</td>
<td>25 (6.3 %)</td>
<td>13 (3.3%)</td>
<td>12 (3.1%)</td>
</tr>
<tr>
<td>Total</td>
<td>390 (100%)</td>
<td>294 (75.4%)</td>
<td>96 (24.6%)</td>
</tr>
</tbody>
</table>

Describe Thrombocytopenia less than 10000/ microliter platelets count, number of patients in our study 40 (10.2 %), like distribution, less than 50000/ microliter, number of patients 100 (25.6 %), <100000/ microliter, number of patients 80 (20.5 %),< 150000/ microliter, number of patients 59 (15.2 %) and normal platelet count were 111 patients (28.5%) (fig 3).

Fig no: -3. Distribution of Thrombocytopenia in various platelet counts.

Describe Leukocytopenia we found <4000/ml, patients 190 and percentages 48.7%, <4000/ml, 200 patients and percentages 51.3% (fig 4).

Fig no. 4. Distribution of Leukocytopenia.

DISCUSSION

Dengue is the most important, an emerging disease of the tropical and subtropical regions today. It has been known to be endemic in India for over two centuries, as a benign and a self-limited disease. To analyze the seroprevalence of dengue specific antibodies from patients with clinically suspected dengue fever or dengue hemorrhagic fever 1.

In our study, 71.5 % have Thrombocytopenia less than 150000/ microliter in Dengue cases. Our study is compared to Khan DM KK et.al (2014), thrombocytopenia was found in 71% of dengue cases 1.

In our study dengue patients have Leukocytopenia 190 (48.7%) and normal white blood cells 200 (51.3%). Our observation similar to Prathyusha et al (2013) in her study at Eluru showed that with increasing severity of leukenia there is increased the incidence of hemorrhagic manifestation 16.

A total dengue suspected patient 1222 which is dengue positive patients 390 (31.9%) and dengue Negative patients 832 (69.1%). Our study compared to Ukey PM et al. 2010, central India reported 31.3% of patients to be serologically positive for dengue infection 14.

In our study total positive male patients 294 (75.4%), while 96 (24.6%) female patients. This result is compared to M, Chatterjee et al. (2008) in this study males’ patients (61%) were more commonly affected like a report from 2006 in New Delhi 15.

In our study Out of 1222 suspected patients of dengue and 390 patients of dengue positive which is dengue NS 1 383 (95.2%), IgM antibody 18 (4.3%) and IgG antibodies 02 (0.5%). Similar observations find out Kumar S et al, at Bikaner 15.

CONCLUSION

This study shows a significant prevalence of dengue infection between dengue suspected patients and it hence reflects that dengue is fast emerging as a major health problem in rural Rajasthan. I coupled with general awareness among the public and constant observation by healthcare officials is needed in combating dengue. Further studies are required to map out the prevalence of different sero types and genotypes of dengue viruses in Rajasthan, so as to forecast any future outbreak of DHF in the state.

REFERENCES