A COMPARATIVE STUDY ON NS1 ANTIGEN DETECTION IN ACUTE DENGUE INFECTION BY RAPID DIAGNOSTIC TEST AND ELISA IN A TERTIARY CARE HOSPITAL IN KANCHIPURAM.

INTRODUCTION:
Dengue fever is a life-threatening infection and mimics various diseases such as Chikungunya, Malaria, viral infection, urinary tract infections, Typhoid, Leptospirosis, Scrub typhus etc. Hence prompt LAB diagnosis in the early management of cases is necessary. Since Dengue virus was first isolated in India in the year 1945 and is endemic in both urban and semi-urban areas. Dengue fever has struck again in India and cases of dengue fever (DF) / dengue haemorrhagic fever (DHF) / Dengue Shock Syndrome (DSS) have been reported from various parts of the country during the last 4 decades. It has high mortality and morbidity, early and accurate diagnosis is needed. The first evidence of occurrence of Dengue fever was reported in 1956 from vellore district in Tamilnadu. Over the last five years, 22,584 Dengue cases were reported from Tamilnadu and the number of cases varied from year to year. Dengue virus, belonging to the genus Flavivirus and Family Flaviviridae, are mosquito borne viruses and the principal vector, Aedes aegypti is a day-biting mosquito of public importance that breeds in natural or artificial waters.

Dengue illnesses are caused by any one of the four serologically related viruses designated as DENV-1, DENV-2, DENV-3 and DENV-4. Infection with any one of these serotypes mostly causes a mild, self-limiting febrile illness (Classical Dengue fever), however, a few cases develop severe life threatening Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS)1. Recently, an Rapid Diagnostic Test (ROT) test for early diagnosis of dengue infection is Dengue NS1 antigen detection. NS1 is a glycoprotein produced by all flaviviruses and is essential for viral replication and viability2. Because this protein is secreted into the blood stream, many tests have been developed to diagnose DENV infections using NS1. These tests include antigen-capture ELISA, lateral flow antigen detection and measurement of NS1-specific IgM and IgG responses3. In the present study, we evaluated two diagnostic tools for acute Dengue virus infection. An Immunochromatography lateral flow card test (RDT), an Enzyme Linked Immunoassay(ELISA) for detecting Dengue virus NS1 antigen in human serum.

STUDY DESIGN: This Cross-sectional study.

STUDY PERIOD: MARCH 2016 _MARCH 2017

SAMPLE SIZE: Blood samples from 100 patients with clinical features suggestive of Dengue infection as per CASE DEFINITION were included in this study.

INCLUSION CRITERIA: All patients with clinical diagnosis suggestive of DF/DHF/DSS (CASE DEFINITION) of all groups were included in the study.

EXCLUSION CRITERIA: Patients with clinical evidence of urinary tract infection, pneumonia, abscess or any other apparent cause of fever due to long term illness (TB) were excluded.

SOURCE OF SAMPLE: The patient’s Blood samples were collected aseptically from fever clinic and from in-patients with features suggestive of Dengue infection. The serum was separated by centrifugation technique. The ICT,ELISA was done in the samples and was stored at -70 C in the laboratory.

RESULTS: A total of 100 patients presenting with clinical features of dengue infection were selected for the study.

Table-1: sex distribution

<table>
<thead>
<tr>
<th>Sex</th>
<th>Distribution – Total 100 numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>58</td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

TABLE.2. AGE DISTRIBUTION

<table>
<thead>
<tr>
<th>AGE</th>
<th>Distribution – Total 100 numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 30 Years</td>
<td>56</td>
</tr>
<tr>
<td>31-40Years</td>
<td>16</td>
</tr>
</tbody>
</table>
A higher distribution of Dengue cases in the present study was seen in the (Table-2) <30 year age group 56(56%), followed by 31-40 year age group 16(16%), the age between 41 – 50 years age group 11(11%) and above age 50 years age group (1%). This was similar to the study conducted by Freeti Bharaj et al in 2008, in which the common age group involved was 20-40 years (35.4%), followed by 0-20 years group (20.8%). Ekta gupta et al, in 2006, in her work also showed that the maximum number of cases in a 3 year study period was seen in the 21-40 year age group.Acute Dengue infection is a major health problem in India. It has risen to epidemic proportions and is endemic to many areas, both urban and rural. In our study highest prevalence was seen in the age groups between 11-50 years and with male preponderance which is seen in other studies also (Gupta et al., 2006, Chakravathi et al., 2005; sarkar et al 2012). In comparison with RDT and ELISA our study show 100% specificity and 48% sensitivity with confidence Interval 95% (34-60%). Even though the test has various advantages like lesser turn over time, less technical support, does not require batching, this test has a main disadvantage of lesser sensitivity – according to our study.

REFERENCES:
8. Park’s Textbook of Preventive & Social Medicine, K Park, 18th Edition, Jan 2005, Epidemiology of communicable diseases; p-198-201