Retrospective Observational Study Of Platlet Count In Dengue Fever With IGM Positive Casesinteritary Care Hospital.

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Abstract:
Background: Arthropod borne viral disease caused by flavivirus transmitted by aedes aegypti mosquito.
Objectives: To study the platlet count in IgM positive cases of dengue fever in tertiary care hospital, anantapuramu, Andhra Pradesh.
Material and methods: Retrospective analysis of 200 dengue cases from government general hospital, anantapuramu. only confirmed IgM (ELISA) cases were analysed for platlet count of age group between 18-65 years.
Conclusion: Among these 80%(160) have platlet count less than one lakh, 12% have platlet count between 1.5 lakhs and 8% have platlet count between 1.5-2.5 lakhs. our study concludes that severe thrombocytopenia occurs after the IgM antibodies appearance.

I. Introduction
Dengue fever is probably most important arthropod borne viral disease worldwide and is caused by flavivirus that cause fever, myalgia syndrome by dengue viruses 1-4. All four viruses have aedes aegypti as their principal vector. Dengue is widespread throughout tropics. Dengue fever caused by flavivirus causes fever, myalgia syndrome by four serotypes 2. One recent estimates indicates 390 million dengue infections per year (95% credible interval 284-528 million) of which 96 million manifest clinically. Prevalence of dengue estimates that 3.9 billion people in 128 countries are at risk of infection with dengue virus. Dengue is second most re-emerging tropical disease. WHO declared dengue as most important mosquito borne disease in world. India alone occupies 34% of global dengue burden. Aedes aegypti typically breeds near human habitation, usually in fresh water from sources such as waterjars, vases, discarded containers, coconut husks and old tyres. Dengue begins after incubation period of 4-7 days. Typical patient experiences the sudden onset of fever, frontal headache, retroorbital pain, back pain along with severe myalgias. These symptoms give rise to designation of dengue as “break bone fever”. Dengue fever classified as undifferentiated fever, dengue fever, dengue haemorrhagic fever. Dengue illness is characterised by three distinct phases like febrile phase, critical phase, recovery phase. Laboratory findings of acute dengue include leucopenia, thrombocytopenia and in many cases elevation of serum aminotransferase concentrations. Laboratory diagnosis of dengue fever by virus culture, detection of viral RNA by RT-PCR excellent result within 24-48hrs. Detection of viral antigen (NS1) by ELISA or rapid test – kit is most popular test. Specific antibodies by Mac-ELISA format is most commonly employed diagnostic test. Diagnosis is made by IgM ELISA or paired serology during recovery or by antigen detection ELISA or RT-PCR during the acute phase. Severe Dengue is identified by the detection of bleeding tendencies (torniquet test, petichiae) or overt bleeding in the absence of underlying causes such as pre-existing underlying gastrointestinal lesions. Shock may result from increased vascular permeability. Samples with a negative IgG in the acute phase and a positive IgM in the convalescent phase of the infection are primary dengue infections. Samples with a positive IgG in the acute phase and a fourfold raise in IgG titre in the convalescent phase within at least a seven days interval between two samples is a secondary dengue infection. Both IgM and IgG are produced after 5-7 days of illness. Our study outlines the platlet count in IgM positive case in tertiary care hospital, Anantapuramu.
II. Material And Methods

Retrospective observational study done in department of general medicine at govt. Medical college, anantapuramu, Andhra Pradesh from January 2017 to December 2017. A total of 200 adult subjects (both males and females) of aged >18 years were for in this study.

Study design: Retrospective observational study.
Study location: Tertiary care hospital based study done in department of general medicine at government general hospital, anantapuramu, Andhra Pradesh.
Study duration: January 2017 to December 2017.
Sample size: 200 patients.
Selection method: Records of one year IgM positive cases were collected from govt. Medical college and hospital, anantapuramu, Andhra Pradesh. Pattern of platelet count in IgM positive cases can be recorded.

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Platelet count below 1 lakh: 80%
Platelet count between 1 to 1.5 lakh: 12%
Platelet count between 1.5 to 2.5 lakh: 8%

Statistical analysis: Data were entered in Microsoft excel software and was analysed by microsoft excel 2009. Institutional ethical committee permission was sought prior to conduction of study.

III. Results

Total 200 cases of IgM positive cases of dengue from period of January 2017 to December 2017 considered.

Table 1 Represents the platelet count in IgM Positive patients

| Platelet count below 1 lakh | 80% |
| Platelet count between 1 to 1.5 lakh | 12% |
| Platelet count between 1.5 to 2.5 lakh | 8% |

Fig No. 1 Diagrammatic representation of platelet count in IgM Positive cases.
Graph no. 1 shows that percentage of platelet count in IgM positive cases. Graphically represents the percentage of people with platelet count (PC) less than 1 lakh, platelet count (PC) between 1-1.5 lakh and platelet count (PC) 1.5-2.5 lakh.

IV. Discussion

In past decade, dengue has been occurring regularly in India, with periodic surges in number of cases. Analysis of the year-wise distribution of dengue cases revealed an unsteady increase in number of dengue patients over the past few years. This may be partially attributed to the rapid urbanization, with unchecked construction activities and poor sanitation facilities contributing fertile breeding grounds for mosquitoes. Increased alertness to the disease among the medical fraternity, following the initial epidemic and the availability of diagnostic tools in the hospital, contributed to increased detection of cases. Study conducted on 200 cases of hospitalised IgM positive dengue for the period of January 2017 to December 2017 in tertiary care hospital, Anantapuramu. It is record based retrospective observational study conducted at tertiary care centre, Anantapuramu, Andhra Pradesh. Dengue specific antibodies begin to appear only around fifth day of fever in primary infection. Sometimes IgM/IgG antibodies cannot be detected before the third day of fever in dengue secondary infection. Common clinical features included fever, vomiting, headache, myalgia, abdominal pain, petechiae, melena, macular-papular rash, and retro-orbital pain as shown in the previous studies. Skin bleeds in the form of petechiae was the most common hemorrhagic manifestation followed by melena as against epistaxis in some studies. Hepatomegaly followed by narrow pulse pressure and hypotension were common clinical findings. Dengue fever has three phases namely, the febrile phase, the critical phase and the stage of plasma leakage. The febrile phase is characterized by dehydration. In the critical phase there is plasma leakage with accumulation of fluid in third spaces such as pleural and peritoneal cavities and the recovery phase may lead to hypervolemia especially if large amounts of fluids are being administered. Diagnosis of dengue fever by virus culture, detection of viral RNA by RT-PCR excellent result within 24-48hrs. Detection of viral antigen (NS 1 ) by ELISA or rapid test – kit is most popular test. Specific antibodies by Mac-ELISA format is most commonly employed diagnostic test. Diagnosis is made by IgM ELISA or paired serology during recovery or by antigen detection ELISA or RT-PCR during the acute phase. Severe dengue is identified by the detection of bleeding tendencies (tourniquet test, petechiae) or overt bleeding in the absence of underlying causes such as pre-existing gastrointestinal lesions. Shock may result from increased vascular permeability.

In our study it was concluded that, 200 cases of hospitalised IgM positive cases of platelet count less than one lakh in 160 (80%) cases, platelet count between 1.5 lakh and only 8% of cases with 1.5 -2.5 lakh in 15 (8%) cases Fig (1)

<table>
<thead>
<tr>
<th>Present study</th>
<th>Study of krunal D. Mehta et al[15]</th>
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<tbody>
<tr>
<td>No. of cases positive for IgM only</td>
<td>200</td>
</tr>
<tr>
<td>Platelet count less than one lakh in IgM positive cases</td>
<td>160</td>
</tr>
<tr>
<td>Platelet count more than one lakh in IgM positive cases</td>
<td>40</td>
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Table No. 2 Comparison of studies regarding association of thrombocytopenia with Dengue IgM positive cases.

Among two IgM and IgG, IgG is less reliable marker for diagnosis. Contrary to previous report no of cases came down in 2013 and 2014 but again increased from 2015. But overall India common pattern was gradual increasing number of cases in each year. This study showed that platelet count in 80% of cases was less than one lakh, 12% of cases was between 1-1.5 lakh and only 8% of cases with 1.5 -2.5 lakh.

Another study was conducted (January 2015 to December 2015) in a tertiary care centre of south India showed that IgM positivity rate was 5.8%.

In study of R.D. Kulkarni et.al taken 2104 samples were tested out of which 161(50%) were positive for IgM positive only. This study also showed the association between IgM positive cases and thrombocytopenia.

Krunal D. Mehta et al. 15 1628 patients tested, 563 were positive for dengue parameters. Of 563, 363 were positive for NS 1 antigen only, 200 were positive for IgM only. Thrombocytopenia was more with IgM positive cases compared to NS1 detection.

Our study showed that thrombocytopenia in 80% cases less than one lakh compared to other studies conducted by R.D. Kulkarni et al and Krunal D Mehta et al.

Higher association of IgM and thrombocytopenia in our study may be due to most of the cases coming to our hospital were referred from various places. This may result in delay in diagnosis and thus increasing morbidity. Out of these dengue specific parameters, platelet count is the only laboratory parameter performed in remote areas because of cost effectiveness and easy to perform without requiring costly setup that can support the diagnosis of dengue infection. Such predictions will help to reduce complication due to late treatment and initiate the preventive and control measures well in time for the containment of spread of the disease. So, studies...
like this will contribute significantly to the clinical management and reduce morbidity and mortality in dengue infection.

V. Conclusion

Our study shown thrombocytopaenia< one lakh in 80% of cases which was higher than other comparable studies. Presence of severe thrombocytopaenia could be a marker of early dengue infection especially when combined with other indicators. Thrombocytopaenia in IgM positive cases also may be a marker for the stage of plasma leakage necessitating increased fluid administration. Drawback of this study was that not considered all laboratory findings. More studies are required to look for serial platelet count and hematocrit levels during the course of dengue infection.

References


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