CORRELATION OF CLINICAL OUTCOME WITH LABORATORY PARAMETERS IN CHILDREN WITH DENGUE INFECTION

AN APPRAISAL FROM A TERTIARY CHILDREN'S HOSPITAL

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Dengue infection is caused by dengue virus (arbovirus) incidence of which is increasing in India. There has been an increase in southern states including Karnataka in the last two years. In dengue endemic setting early diagnosis and monitoring for complications is important especially in children.

DENGUE CASES AND DEATHS: 5 WORST AFFECTED STATES IN 2017

	2014		2015		2016		2017	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Kerala	2575	11	4075	25	7439	13	18,727	35
Karnataka	3358	2	5077	9	6083	8	13,016	5
Tamil Nadu	2804	3	4535	12	2531	5	11,552	18*
West Bengal	3934	4	8516	14	22,865	45	5389	13
Delhi	995	3	15,867	60	4431	10	4545	1

*Data available with the National Vector Borne Disease Control Programme (NVBDCP) till 8 October, 2017. However, the Tamil Nadu state health department has confirmed that 80 have died since January.

DISTRIBUTION OF DENGUE CASES IN 2015*

Objectives:

- 1.To correlate clinical profile and out come with detection of NSI antigen, Ig G and IgM and laboratory parameters.
2. To evaluate clinical parameters and blood component utilization

Diagnostic Markers for Dengue

New WHO classification	
Probable dengue (group A - OPD management)	
Dengue with warning signs (Group B - inward observation and management)	(patients are admitted for social reasons and when they are in high risk category)
Severe Dengue (Group C - resuscitation and management)	
1. With compensated shock	
2. With hypotensive shock	
3. With severe organ impairment	

Patients and methods

- ★ All children who presented to hospital and diagnosed with dengue infection from 1 November 2016 to October 31, 2017 were included.
- ★ NS1, IgG and Ig M were done (immunochromatography method) for diagnosis. The hemogram and biochemistry parameters were done using automated analyzers.
- ★ Degree of association between clinical parameters and disease severity was expressed as odds ratio.
- ★ The blood component utilization was evaluated against platelet count and hemoglobin levels.

Decreased platelet production

213 children (6months to 15 years) were diagnosed and treated among which 126 were treated as inpatients. NS1 positivity was observed in 72.3 % patients. Among them 20 patients had moderate to marked thrombocytopenia. When the non parametric test was applied to assess the correlation of platelet count and NS1 positivity, it was significant. (Z score:3.8 p<.05)

IN PATIENT PROFILE

The 126 inpatients were classified as severe (8) and non-severe (118) based on evidence of fluid leakage/platelet levels/presence of bleeding manifestations/any evidence of organ damage. The common clinical presentation was fever followed by rashes.

Transfusion requirements

- All patients in the severe group required ICU admission.
 - Two of the patients required platelet transfusions and packed red blood cells as the platelet count was <35 thousand/cubic mm.
 - Four required PRBC, FFP and Cryoprecipitate.
 - Two children were given only PRBCs.
- Only 0.93% of patients required platelet transfusion.

The hospital stay of the severe group ranged from 4-14 days, while in the non severe group, the maximum stay was 5 days.

One death was reported in severe group.

The clinical outcome was assessed (Odds ratio: 2.3 p<.05)

Highlights from other studies

Clinical profile- Adult vs children

- The burden of disease and severe dengue was found predominantly in infants 4-9 months of age and in children 5-9 years old. Thrombocytopenia was less in adults (17%) compared to infants (46%) and children (31%)¹ (Nicargua)
- Liver function impairment was more common among adults than children; when the severity progressed to DHF, liver injury was more common in children ²(Singapore)
- In 97 cases of only children (non severe 84, severe 13), the most common presentation was fever followed by hepatomegaly.³ (India)

Diagnostics

- NS 1 antigen positivity beyond day 5 was associated with risk of developing severe dengue.⁴ (Sri Lanka)
- Concurrent testing of NS1, Ig M and Ig G and platelet count helped in early differential diagnosis and intervention⁵ (India)

Findings- Facts and Figures

- ★ The present series is one of the largest exclusively in children from south India.
- ★ The triad of testing (NS1,Ig M and Ig G) was useful. In 27.7% (NS 1 negative - 59) patients, based on IgM and clinical features the children were admitted and monitored.
- ★ Correlation of platelet count and NS1 positivity by non-parametric test (Z score: 3.8 p<.05) indicated NS1 positivity is associated with higher risk of thrombocytopenia.
- ★ Only 0.93% of patients required platelet transfusion.

References:

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