Study of seasonal prevalence of dengue fever and it's management according to the WHO guidelines (2012)

Suresh Nana Waydande[1], C S Rajput[2*]

[1]Assistant Professor, [2]Professor, Department of Pediatrics, BVDUMCH, Sangli, Maharashtra, INDIA.
Email: snwaydande1960@gmail.com

Abstract
Background: Dengue is most rapidly spreading mosquito borne viral disease of mankind, with increase in global incidence over last five decades. According to WHO 2012 criteria it is classified as Dengue fever, Dengue with Warning signs and Severe Dengue. Dengue can be managed with this classification and death rate can be reduced with initial fluid resuscitation. **Material and Methods:** It was prospective hospital based observational study of serologically positive dengue cases admitted in BVDUMCH, Sangli. All cases admitted in Bharati Hospital of age group of 3yrs. to 18yrs, were included in this study. Cases of viral haemorrhagic fever other than dengue and cases of malaria, leptospirosis, rickettsial infection and septicemia were excluded. **Results:** 110 children were diagnosed with dengue fever out of which 67 boys and 43 girls were admitted. Boys to girl's ratio was 3:2. Dengue fever (without warning signs) 32 cases were reported, Dengue fever with warning signs 52 cases were reported and Severe dengue 26 cases were reported. Seasonal incidence of dengue is also noted. 84 cases were reported from June to November and only 26 cases were reported from January to May. Platelet count was reduced less than 1.5 lakhs/cumm in 85 cases; however haematocrit was raised in 56 cases. Fever was noted in all cases, however headache, body ache, abdominal pain, vomiting was presenting complaint in more than 50% cases. History of bleeding was noted in 22 (20%) cases. All patients received isotonic normal saline (0.9%NS). None of the patients required dextran 40. I.V. fluid normal saline bolus was required in 73 (66.36%) cases. Dopamine drip was required in 11 (10%) cases and platelet and plasma transfusion was required in 24 (21.81%) cases. All patients recovered completely and discharged. **Conclusion:** In this study male to female ratio was 3:2, Dengue is common during monsoon and post monsoon period in this study out of 110 cases, 84 (76.36%) cases are observed during this period of June to November of year. In this study Dengue fever without warning signs 32 (29.10%) cases, Dengue fever with warning sings 52 (47.27%) cases and Severe Dengue 26 (23.63%) cases were observed. All the cases are managed with use of 0.9% NS, All the cases are recovered completely and discharged from hospitals.
Key Words: dengue fever.

[*]**Address for Correspondence:**
Dr. Suresh Nana Waydande, Assistant Professor, Department of Pediatrics, Bhararti Vidyapeeth Deemed University Medical College and Hospital, Sangli, Maharashtra, INDIA.
Email: snwaydande1960@gmail.com

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INTRODUCTION

Dengue is the most rapidly spreading mosquito borne viral disease of mankind; with a 30 fold increase in global incidence over last five decades. Almost half of world's population lives in countries, where dengue is endemic. According to WHO about 50-100 million new dengue infections are estimated to occur. Dengue is spreading all over world due to increase in construction activities, life style change, improper management of water storage, stagnation of water outside of houses which increases the mosquito breeding sites. During monsoon temperature is 25 degree C and humidity 80% with many water collection sites as a result increase in mosquito density.

Aedes Aegypti gets infected with dengue virus when it takes blood from infected person during febrile phase, after extrinsic incubation period of 8-10 days. This virus get transmitted when infected mosquito bites and injects its saliva into the bitten person. There is 4-7 days intrinsic incubation period fallowed by febrile phase of 2-7 days. During febrile phase fever, headache, bodyache, vomiting, abdominal pain and rash with bleeding manifestations may be seen, After 3-4 days of onset of fever, leakage stage is started, leads to high Haemoconcentration, hypotension, Ascitis, Pleural effusion and metabolic derangement with multi-organ failure. This leakage phase is persisting for 36-48 hours. During this phase specific treatment is very important. After 6-7 days, recovery phase is started This recovery phase usually lasts for 2-3 days but due to severe shock and organ involvement it may require longer period. According to the 2009 WHO guidelines dengue was classified as asymptomatic dengue fever to Dengue Hemorrhagic fever grade I to IV and Dengue Shock Syndrome. In 2012 WHO further revised and simplified classification as Dengue fever (D), Dengue with Warning signs (DW) and Severe Dengue (SD). This is observational study, the cases were classified according to revised classification, and symptoms, signs and investigation were evaluated for predicting the severity of Dengue Disease accordingly.

MATERIAL AND METHOD

Study Design: Prospective observational study.**Study Place:** Bharati Vidyapeth Deemed University Medical College and Hospital, Sangli. **Study Population:** Total 110 patients admitted at BVDUMCH Sangli. **Inclusion Criteria:** Admitted cases of serologically positive Dengue patients from age group of 3 yrs. to 18 yrs. **Exclusion criteria:** Viral haemorrhagic fever other than than dengue and cases of enteric fever, malaria, leptospirosis, rickettsial infection, septicemia. Detailed clinical examination along with laboratory parameters like serial haemoglobin estimation, serial haematocrit, platelet count, liver function test, abdominal sonography, chest X-ray, serology tests for Dengue: NS1 antigen, IgG, IgM antibody test were done. All the patients of Dengue were classified according to the 2012 WHO classification: Dengue fever (D), Dengue with Warning signs (DW), and Severe Dengue (SD). All the cases were treated with symptomatic treatment along with supportive care and I.V. fluid management according to the WHO 2012 guidelines. During treatment period vital parameters monitoring charts were kept. Initially one hourly monitoring was kept; monitoring was continued till clinical improvements were seen. Isotonic saline was used for initial management and I.V. fluids were

discontinued after patient became haemodynamically stable. Analysis was done with Microsoft excel.

OBSERVATIONS AND RESULTS

110 children were diagnosed with Dengue fever and were admitted in PICU and Pediatric ward under Dept. of Pediatrics during the study period. In this study 67 (60.90%) Boys and 43 (39.1%) Girls were included. Boys to Girls ratio were 3:2.Most common age group was between 5 yrs. to 10 yrs. The youngest child was 3 yrs. of age and oldest child was 17 yrs. of age and mean age was 8 yrs. of age.

Table 1: Symptoms of dengue

Sr. No.	Symptoms	No. of cases	Percentage (%)
1.	Fever	110	100
2.	Headache	61	55.45
3.	Body ache	64	58.18
4.	Rash	30	27.27
5.	Vomiting	62	56.36
6.	Abdominal pain	59	53.63
7.	H/O Bleeding	22	20

Table 2: Signs of dengue

Sr. No.	Sign	No. of cases	Percentage (%)
1.	Febrile on admission	51	46.36
2.	Bradycardia	30	27.27
3.	Tachycardia	20	18.18
4.	Low volume pulses	71	64.54
5.	CRT more than 3 seconds	21	19.1
6.	Rash over skin	33	30
7.	Active bleeding present	21	19.1
8.	Hepatomegaly	99	73.63
9.	Ascitis	99	73.63
10.	Pleural effusion	80	72.72

Table 3: Investigation in dengue

Sr. No.	Investigation carried out	No. of cases	Percentage (%)
1.	Platelet count less than 1.5L/cumm	85	77.27
2.	Haematocrite above 40	56	50.90
3.	LFT AST/ALT elevated	64	58.18
4.	NS 1 Antigen +ve	101	91.81
5.	IgG +ve	29	26.36
6.	IgM +ve	20	18.18
7.	Hepatomegaly in USG abdomen	99	90
8.	Ascitis in USG abdomen	99	90
9.	Pleural effusion	80	72.72
10.	Gall bladder thickness in USG	53	48.18
11.	Mesenteric lymphadenitis in USG	06	5.45

Table 4: Platelet count in dengue

Sr. No.	Platelet Count per cumm	No. of cases	Percentage (%)
1.	Above 2Lakhs	12	10.91
2.	1.5 - 2Lakhs	13	11.82
3.	1- 1.5Lakhs	14	12.72
4.	50000- 1Lakh	39	35.46
5.	Less than 50000	32	29.09
	TOTAL=	110	-

Table 5: Diagnosis of dengue as per who 2012 classification

Sr. No.	Diagnosis	No. of cases	Percentage (%)
1.	Dengue without warning signs (D)	32	29.10
2.	Dengue with Warning signs (DW)	52	47.27
3.	Severe Dengue (SD)	26	23.63

Table 6: Seasonal prevalence of dengue

Sr. No.	Calender months	No. of cases	Percentage (%)
1.	June to August	30	27.27
2.	September to November	54	49.09
3.	December To February	16	14.54
4.	March to May	10	9.10
	TOTAL	110	

Table 7: I.V. fluids in dengue fever

Sr. No.	Days	Total cases	Percentage (%)
1.	1 day	4	3.64
2.	2 days	17	15.45
3.	3 days	40	36.36
4.	4 days	28	25.45
5.	5 days	10	9.09
6.	6 days	8	7.27
7.	7 days and above	3	2.73

Table 8: Bolus/dopamine/platelet transfusion in dengue

IVF	SD	DW	D	TOTAL	PERCENTAGE (%)
Bolus on admission	25	48	0	73	66.36
Dopamine drip	8	3	0	11	10
Platelet/Plasma transfusion	18	06	0	24	21.81

Initial resuscitation was done with 10 ml/kg of Bolus of normal saline fallowed by 7-10ml/kg/hour, then 5-7ml/kg/hour and lastly 3ml/kg/hour.

DISCUSSION

In present study 110 total dengue diagnosed children were included, 67 boys and 43 girls The Boys to Girls ratio was 3:2.The commonest age group was 5-10 years with mean age of 8 years. In this study NS1 antigen was positive in 101 (91.81%) cases, IgG was positive in 29 (26.36%) cases and IgM was positive in 20 (18.18%) cases. Out of 110 patients 32 (29.10%) cases are diagnosed as Dengue fever (without warning signs), 52(47.27%) cases were diagnosed as Dengue with warning signs and 26 (23.63%0 cases were diagnosed as severe Dengue. Dengue is common in monsoon and post monsoon period, in this study maximum number of 84 (76.36%) cases were reported in this period of June to November. Fever was main symptom in all children headache, bodyache, vomiting and abdominal pain was present in more than 50 % cases. Rash was present in 30 (27.27%) cases, history of bleeding was present in 22(20%) and active bleeding was present in 21 (19.1) cases. Bradycardia was present in 30(27.27%) cases; Tachycardia was present in 20 (18.18%) cases, low volume pulses were recorded in 71 (64.54%) cases and Capillary refilling time more than 3 seconds were recorded in 21 (19.1%) cases. Hepatomegaly and ascitis was noted in 99 (90%) cases, pleural effusion was present in 80(72.72%) cases, Gall bladder thickness was noted in USG abdomen in 53 (48.18%) cases and Mesenteric lymphadenopathy was noted 6 (5.45%) cases. Platelet count was less than 1.5 Lakhs /Cumm in 85 (77.27%) cases, Platelet count was less than 50000/Cumm in 32 (29.09%) cases, Haematocrit was raised above 40 in 56 (50.90%) cases, LFT (AST/ALT) was also elevated in 64 (58.18) cases. In this study all patient have received 0.9% normal saline as I.V.fluid. Initial bolus of 10ml/kg was required in 73 (66.36%) cases, Dopamine drip was required in 11(10%) cases and Platelet /plasma was required in 24(21.81%) cases. I.V. fluid were given as per WHO 2012 guidelines. I. V. fluids were required up to 5 days to 99(90%) cases. All the patients were completely recovered and discharged. Supportive and symptomatic treatment was given to the all patients.

CONCLUSION

In this study male to female ratio was 3:2, Dengue is common during monsoon and post monsoon period in this study out of 110 cases, and 84 (76.36%) cases are observed during this period of June to November of the year. In this study also Fever, headache, bodyche, abdominal pain, and vomiting are major symptoms. Investigations like reduced Platelets counts, Raised Haematocrit and LFT, Presents of Ascitis, Pleural effusion and positive NS1Antigen, IgG, IgM were very helpful for the managements of Dengue cases. In this study Dengue fever without warning signs 32 (29.10%) cases, Dengue fever with warning sings 52 (47.27%) cases and Severe Dengue 26 (23.63%) cases were observed. All the cases are managed with use of 0.9% NS,73 (66.36%) cases are required bolus, Dopamine drip was required in only 11 (10%) cases and Platelet /plasma

was required in 24(21.81%) cases. Majority of 99 (90%) cases required I.V. Fluids up to 5 days only. All the cases are managed, recovered completely and discharged from hospitals.

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