

Original article:

Study of complications of dengue fever paediatric cases in tertiary care Hospital

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Abstract:

Introduction: Dengue virus is now the most common cause of arboviral disease in the world, with an estimated annual occurrence of 100 million cases of dengue fever and 250,000 cases of dengue hemorrhagic fever and a mortality rate of 25,000 per year

Materials and methodology: This was cross sectional study. The study was initiated after approval from the institutional ethical committee. Informed consent was obtained from the parents of the children included in the present study, prior to the clinical examination and withdrawal of the blood for laboratory investigations.

Results: Association between signs (systemic examination) and outcome in the study group. Decreased breath sound was seen in 9 cases of DHF, 5 Cases of DSS, and 1 case of DF. Liver was palpable in 24 cases. Ascitis was present in 4 cases of DSS and 2 cases of DHF. Altered sensorium was seen in 2 cases off DSS and 1 cases of DHF. To test association between signs on systemic examination and outcome in study group chi-square test was applied as test of significance. which is statistically significant ($p < 0.0001$) for decreased breath sound, hepatomegaly, ascites and altered sensorium respectively.

Conclusion: During epidemic, dengue should be considered one of the differential diagnosis of any child presenting with fever.

Keywords: Dengue fever, abdominal pain

Introduction:

Dengue virus is now the most common cause of arboviral disease in the world, with an estimated annual occurrence of 100 million cases of dengue fever and 250,000 cases of dengue hemorrhagic fever and a mortality rate of 25,000 per year.¹ Dengue virus infection has been reported in more than 100 countries, with 2.5 billion people living in areas where dengue is endemic.^{2,3} Most cases of dengue hemorrhagic fever are reported from Asia, where it is a leading cause of hospitalization and death among children. In Latin America, dengue hemorrhagic fever was a rare disease before 1981.⁴

The 1980s and 1990s saw a dramatic geographic expansion of epidemic dengue fever and dengue hemorrhagic fever from Southeast Asia to the South Pacific Islands, the Caribbean, and Latin America, with regions changing from non-endemic (no serotypes present) to hypoendemic (one serotype present) or hyperendemic (multiple serotypes present).¹ The World Health Organization (WHO) classifies dengue as a major international public health concern because of the expanding geographic distribution of both the virus and the mosquito vector, the increased frequency

of epidemics, the cocirculation of multiple virus serotypes, and the emergence of dengue hemorrhagic fever in new areas.^{1,5}

Materials and methodology:

This was cross sectional study. The study was initiated after approval from the institutional ethical committee. Informed consent was obtained from the parents of the children included in the present study, prior to the clinical examination and withdrawal of the blood for laboratory investigations.

All patients, irrespective of sex, nutritional status, economic status and caste within age group of 2 years to 12 years of age, presenting to the wards of Paediatrics at Padmashree Dr. D.Y. Patil Medical College and Hospital who tested positive for dengue were included in the study. The patients were clinically assessed as per the proforma. After hospitalization the requisite blood investigations were sent.

INCLUSION CRITERIA:

1. Patient with age more than 2 years - less than 12 years
2. Children with acute febrile illness with any one of the following:
 - Myalgia
 - Headache
 - Retro-orbital pain
 - Bleeding
 - Altered sensorium
 - Shock
 - Low platelet count
3. Children with either NS1, IgG or IgM Positive.

EXCLUSION CRITERIA:

- Patients with age less than two years
- Patients with age more than 12 years
- Patients with other identifying specific infection

Results:

Table 1: Association between signs (Systemic examination) and outcome in study group

Signs present	DF (n=38)	DHF (n=20)	DSS (n=7)	Chi-square	P Value
Respiratory system				23.58	<0.0001
Present(BCS,DB)	1	9	5		
Absent	37	11	2		
Abdomen Liver				19.02	<0.0001
Palpable	6	12	6		
Not Palpable	32	8	1		
Abdomen spleen				4.82	>0.05
Palpable	2	1	2		
Not Palpable	36	19	5		
Ascitis				23.06	<0.0001
Present	0	2	4		
Absent	38	18	3		
CNS				19.33	<0.0001
Present	0	1	2		
(IRR,ALT SENS.+)	38	16	5		
Absent					

The table above shows association between signs (systemic examination) and outcome in the study group. Decreased breath sound was seen in 9 cases of DHF, 5 Cases of DSS, and 1 case of DF. Liver was palpable in 24 cases. Ascitis was present in 4 cases of DSS and 2 cases of DHF. Altered sensorium was seen in 2 cases off DSS and 1 cases of DHF.To test association between signs on systemic examination and outcome in study group chi-square test was applied as test of significance. which is statistically significant ($p < 0.0001$) for decreased breath sound, hepatomegaly, ascites and altered sensorium respectively.

Table 2: Association between CXR and outcome in study group

CXR	DF	DHF	DSS	Total
Rt. PE	1	6	5	12
B PE	0	2	0	2
Lt PE	0	1	0	1
Normal	37	11	2	50
Total	38	20	7	65

By combining RPE, BPE and LPE chi-square test is applied.

Chi-square =27.18, P<0.0001

The above table shows association between CXR finding in cases with dengue. 15 cases with DF (1), DHF(9) and DSS(5) had pleural effusion. Rest 50 cases were normal on CXR. To test association between CXR and outcome in study group Chi- square test was applied as test of significance. Chi-square value worked out to be 27.18 which is statistically very highly significant (p<0.0001)

Table 3: Association between NS1 and outcome in study group

NS1	DF	DHF	DSS	Total
Positive	7	1	0	8
Negative	31	19	7	47
Total	38	20	7	65

Chi-square =3.29, P>0.05

The above table shows association between NS1 finding in cases with dengue. 21 cases with DF (10), DHF (8) and DSS (3) had positive NS1 test result. Rest 44 cases were negative for NS1. To test association between NS1 and outcome in study group Chi- square test was applied as test of significance. Chi-square value worked out to be 1.52 which is statistically not significant (p>0.05)

Discussion:

Classical dengue fever is an acute febrile illness but in a small percentage of dengue infection a more severe form of disease known as DHF occurs. Early recognition and meticulous management are very important to save precious lives from the killer disease. The present study was carried out with the aim of clinico-pathological correlation of dengue infection in children. A total of 65 patients were included in the study which was carried over a period of 2 years from August 2010 to July 2012.

Out of 65 patients included in the study 38 cases were of dengue fever (58.4%) in which 23 were males (60.51%), and 15 were females (39.49%). 20 cases were of DHF (30.8%) out of which 11 (55%) were males and 9 were females (45%). There were 7 cases of DSS (10.8%) of which 1 was male (14.3%) and 6 were female (85.7%)

Out of the 65 children 63 (96%) recovered without any sequelae. 2 (3%) children who presented with late to the hospital and were in shock, died within 24 hrs. of hospitalisation. Mortality in other Indian studies like Anuradha et al at New delhi² and Narayanan et al⁶ at Chennai were 6.6% and 3.4% respectively. This could be due to delay in recognition of epidemic in previous years or delay in seeking medical attention. Hence, health education regarding manifestations of dengue shock syndrome is important during an epidemic. It needs to be emphasized that when a child between 1 and 6 years becomes drowsy or cold after a period of fever lasting 3 to 4 days has to be immediately brought to the hospital.⁷

Conclusion:

During epidemic, dengue should be considered one of the differential diagnosis of any child presenting with fever.

References:

- 1) Gubler DJ. The global emergence / resurgence of arboviral diseases as public health problems. Arch Med Res 20: 330-342
- 2) Centers for Disease Control and Prevention. World distribution of dengue – 2000 [Internet]. Accessed August 8, 2005. Available from: <http://www.cdc.gov/ncidod/dvbid/dengue/map-distribution-2000.htm>.)
- 3) Shivabalan S, Anandanathan K, Balasubramanian S, Datta N. Predictors of spontaneous bleeding in dengue. Indian J Pediatr. 2004 Jan ; 71 (1) : 33-36.
- 4) Gubler DJ. Epidemic dengue/dengue hemorrhagic fever as a public health, social and economic problem in the 21st century. Trends Microbiol 2002; 10:100-103.
- 5) World Health Organization. WHO – Dengue: Guidelines for diagnosis, treatment , prevention and control. A joint publication of the World Health Organization (WHO) and the Special Programme for Research and Training in Tropical Diseases (TDR). New edition. 2009
- 6) Narayanan M ,Arvind MA , Thilothammal N ,Prema R ,Sargunam Rex CS et al. Dengue Fever Epidemic in Chennai- A Study of Clinical Profile and Outcome. Indian Pediatr 2002; 39: 1027-1033.
- 7) Aggarwal A, Chandra J, Aneja S, Patwari AK, Dutta AK. An epidemic of Dengue Hemorrhagic fever and Dengue shock syndrome in children in Delhi. Indian Pediatr 1998; 35 : 727-732.