Research Article

Dengue fever in a tertiary care hospital

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Abstract

Introduction: Dengue fever is one of the most important emerging diseases of tropical and subtropical regions, affecting urban and peri-urban areas. It is caused by an arbovirus which is transmitted by the bite of an insect vector Aedes aegypti mosquito[1,2]. It is estimated that in world each year 50 million cases of dengue infection occur with 5, 00,000 cases of dengue hemorrhagic fever and at least 12,000 deaths, mainly among children[3]. Hence this study is planned to find out clinical profile of dengue fever in children. **Aims and Objectives:** To find out demographic features, clinical manifestations, laboratory profile and outcome of dengue fever in childrens. **Material and Methods:** This prospective study was conducted in pediatrics department of tertiary care centre from Jan 2012 to June 2013. The study group includes childrens attending the pediatrics OPD and IPD with following inclusion and exclusion criteria. **Inclusion Criteria: 1:** Patients attending OPD already diagnosed as case of dengue by NS1 antigen test or dengue IgM/ IgG test and got admitted in pediatrics wards. **2:** Patients diagnosed as a case of dengue fever after admission in pediatrics wards in our institution. **3:** Age group of 3 months to 12 years. **Exclusion Criteria: 1:** Children attending outpatient department only. **2:** Age group < 3years and >12 years. **Observation and Results:** The present study was carried out at tertiary care center in department of pediatrics from January 2012 to June 2013. The study group includes 100 cases that were diagnosed as a case of dengue fever by NS1 antigen test or dengue IgM or IgG test during study period. In present study distribution of cases with male to female ratio was 1:1. Most of the cases were found in month of August to November, contributes to 90% of cases. Majority of cases were from rural area (62%) as compared to urban area (38%). In the present study 38% of patients were positive for dengue NS1 antigen test, 64% of patients were positive for IgM antibody test and 27% of patients were positive for IgG antibody test. In the present study fever (100%) was predominant symptoms followed by abdominal pain (48%), headache (42%), Rash (39%), Body ache (36%), Cough (36%), Bleeding (33%), Vomiting (26%) breathlessness (12%), retro-orbital pain (10%), altered sensorium (6%), convulsion (6%) and loose motion (4%). In our study malena is a most common bleeding manifestation (15%) case followed by skin bleeding (6%) cases, multiple bleeding sites (5%) cases, hematemesis (2%), gum bleeding (2%), hematuria (2%) and epistaxis in 1% of cases. In present study 1% cases have platelet count <10000 , 3% have between 10001-20000, 24% case have between 20001-50000, 51% have between 50001-100000 and 21% cases have platelet count between 1000001-150000. Out of 100 cases studied 50% cases were classified as classical dengue fever, 33% cases as DHF and 17% cases as DSS. Out of 100 children, 96% cases recovered completely, where as 4% of cases who presented in late stages succumbed. **Conclusion:** In present study the highest number of cases was found in age group of 6 - 12 years with equal sex distribution and the maximum number of cases was found in between months of Aug to Nov. Dengue fever was most common presentation followed by DHF and DSS which are major cause of morbidity and mortality. Hence early diagnosis and treatment can decrease both morbidity and mortality in dengue patient. It is also important for both preventive measures and laboratory preparedness during dengue season which will improve outcome in terms of both morbidity and mortality.

Keywords: Dengue fever, clinical profile, outcome.

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Received Date: 12/07/2015 Revised Date: 09/08/2015 Accepted Date: 30/08/2015

Access this article online	
Quick Response Code:	Website: www.statperson.com
	DOI: 05 September 2015

INTRODUCTION

Dengue fever is one of the most important emerging diseases of tropical and subtropical regions, affecting urban and peri-urban areas. It is caused by an arbovirus which is transmitted by the bite of an insect vector Aedes aegypti mosquito[1,2]. It is estimated that in world each year 50 million cases of dengue infection occur with 5, 00,000

How to site this article: Tiple Nishikant, Pawara Kisan, More S S. Dengue fever in a tertiary care hospital. *International Journal of Recent Trends in Science and Technology.* September 2015; 16(2): 358-362 http://www.statperson.com (accessed 09 September 2015).

cases of dengue hemorrhagic fever and at least 12,000 deaths, mainly among children[3]. The clinical feature of dengue vary with age of the patient and in addition to clinically in apparent infection, it can be classified into five presentations: Non-specific febrile illness, Classical Dengue fever, Dengue haemorrhagic fever, Dengue haemorrhagic fever with Dengue shock syndrome and other unusual syndromes such as encephalopathy and fulminant liver failure[2]. Diagnosis of dengue fever can be established by detection of virus or detection of anti dengue antibodies by serology[4]. There is no specific treatment exist for Dengue. Hydration therapy and early recognition and management of complication of the disease are the key component of reducing both mortality and morbidity in dengue patients[5].

MATERIAL AND METHODS

This prospective study was conducted in pediatrics department of tertiary care centre from Jan 2012 to June 2013. The study group includes childrens attending the pediatric OPD and IPD with following inclusion and exclusion criteria.

Inclusion Criteria

1. Patients attending OPD already diagnosed as case of dengue by NS1 antigen test or dengue IgM/ IgG test and got admitted in pediatrics wards.
2. Patients diagnosed as a case of dengue fever after admission in pediatrics wards in our institution.
3. Age group of 3 months to 12 years.

Exclusion Criteria

1. Children attending outpatient department only.
2. Age group < 3years and >12 years. The study group includes 100 cases that were diagnosed as a case of dengue fever by NS1 antigen test or dengue IgM or IgG test detected with the help of rapid Dengue Day 1 test from J. Mitra and co Pvt. Ltd Delhi which was confirmed by Mac ELISA kit. A detailed demographic data, clinical history, physical examination and relevant baseline investigations were undertaken.

RESULTS

The present study was carried out at pediatrics department of tertiary care hospital from January 2012 to June 2013. The study group includes 100 cases that were diagnosed as a case of dengue fever by NS1 antigen test or dengue IgM or IgG test during study period.

Table 1: Age distribution

Age	No. of cases (%)
< 1 yr	4
1-<6 yr	35
6-12 yr	61
Total	**100**

The highest number of cases were found in age group of 6 - 12 years (61%), followed by 35% cases in the age group of 1 to <6 years and lastly 4% cases fell in less 1 year age group. (Table-1)

Table 2: Gender distribution

Gender	No. of cases (%)
Male	50
Female	50
Total	**100**

In our study, out of the 100 patients 50 were male and 50 were female with male: female ratio of 1:1. (Table-2)

Table 3: Month wise distribution

Month	No. of cases (%)
January	1
February	0
March	1
April	1
May	0
June	2
July	4
August	19
September	46
October	16
November	9
December	1

Most of the cases were found in month of September (46%), followed by August (19%), October (16%), November (9%), July (4%), June (2%) and 1% cases in month of January, March, April and December. (Table-3)

Table 4: Area wise distribution

Area	No. of cases (%)
Urban	38
Rural	62
Total	**100**

Majority of cases were from rural area (62%) as compared to urban area (38%). (Table-4)

Table 5: Clinical features

Symptoms	No. of cases (%)
Fever	100
Headache	42
Body ache	36
ROP	10
Rash	39
Abdo. Pain	48
Vomiting	26
Loose motion	4
Bleeding	33
Cough	36
Breathlessness	12
Alt. sensorium	6
Convulsion	6

In present study 100% patients presented with fever as the predominant symptom followed by abdominal pain (48%), headache (42%), rash (39%), body ache (36%), cough (36%), bleeding (33%), vomiting (26%), breathlessness (12%), retro-orbital pain (10%), altered sensorium (6%), convulsion (6%) and loose motion (4%). (Table-5)

Table 6: Relationship between various site of bleeding and dengue

Types of bleeding	No. of cases (%)
Skin	6
Epistaxis	1
Hematemesis	2
Malena	15
Puncture sites	0
Gum bleeding	2
Hematuria	2
Multiple	5
Total	**33**

In the present study malena is the most common bleeding manifestation (15%) case followed by skin bleeding (6%) cases, multiple bleeding sites (5%) cases, hematemesis (2%), gum bleeding (2%), hematuria (2%) and epistaxis in 1% of cases. (Table-6)

Table 7: Systemic examination **a)** abdominal examination

Findings	No. of cases (%)
Tenderness	22
Hepatomegaly	57
Splenomegaly	25
Ascitis	22

b) Respiratory examination

Findings	No. of cases (%)
Decreased air entry	11
Crepitations	14

CNS examination

6% cases had altered sensorium and 6% cases had convulsions. In present study on abdominal examination 57% patients had hepatomegaly, 25% cases had splenomegaly, 22% cases had ascites and 22% cases had tenderness on palpation. Respiratory system examination revealed decreased air entry in 11 patients and crepitaions in 14 patients. CNS examination state that 6% cases had altered sensorium and 6% cases had convulsions. (Table-7)

Table 8: Platelet count

Platelets	No. of cases (%)
<10000	1
10001 – 20000	3
20001 – 50000	24
50001 – 100000	51
100001- 150000	21
Total	**100**

In present study 1% cases have platelet count <10000, 3% have between 10001-20000, 24% case have between 20001-50000, 51% have between 50001-100000 and 21% cases have platelet count between 1000001-150000. The WHO criteria for low platelet count of <100000/mm^3 was seen in 79 % of cases. (Table-8)

Table 9: Final diagnosis and outcome

Grade	No. of cases (%)	Recovered cases	Expired
DF	50	50	0
DHF	33	32	1
DSS	17	14	3
Total	**100**	**96**	**4**

In present study out of 100 cases studied 50% cases were classified as classical dengue fever, 33% cases as DHF and 17% cases as DSS. Out of 100 children, 96% cases recovered completely, where as 4% of cases who presented in late stages succumbed. (Table-9)

DISCUSSION

Dengue fever is one of the most important arboviral infections and has become a major global public health problem. In India, epidemics are becoming more frequent. Involvement of younger age group and increasing in the frequency of epidemics are indicators of higher incidence of infection[1,2,3]. The highest number of cases were found in age group of 6 – 12 years (61%), followed by 35% cases in the age group of 1 to <6 years and lastly 4% cases fell in less than 1 year age group. The following table gives incidence in the age group of 6 – 12 years among other studies.

Sr. No	Study	Place	Year	(%)
1	Gomber *et al*[6]	New Delhi	2001	78.9
2	Batra P *et al* [7]	Wardha	2004 -2005	44
3	Hema Mittal *et al*[8]	Delhi	2010	68.1
4	Present study	Yavatmal	2012 -2013	61

The present study had equal distribution of 1:1 among both sexes. The equal distribution among both sexes due to increased out-door activities of children of 6 –12 years. Batra P *et al*[7] found M: F ratio 1.08:1, which correlates with our study. But other study showed increased preponderance among boys as in Hema Mittal *et al*[8] found M: F ratio 1.32:1 and Chandrakanta *et al*[9] found M: F ratio 1.6:1. The present study had maximum number of cases in months of September (46%), followed by August (19%), October (16%) and November (9%), which contributes 90% of cases. The following patterns of monthly distribution have been observed in other studies.

Sr. No	Study	Place	Year	Max %
1	Anuradha *et al*[10]	New Delhi	1998	Sept – Nov
2	Gomber *et al*[6]	New Delhi	2001	July – Oct
3	Present study	Yavatmal	2012 - 2013	Aug – Nov

In present study 62% of cases were from rural area and 38% cases from urban area. More number of cases in our study is from rural area as majority of patients admitted in our institute were from rural area. Similar finding documented in study done in Gujarat (India) during 1988 and 1989 outbreak[11]. Historically DF/DHF occurring predominantly among urban population. But in India there is wide spread distribution of Aedes aegypti both in rural and urban areas. Increased transport, spread of periurbanisation also helps in spread to rural areas[12,13]. In the present study fever (100%) was predominant symptoms followed by abdominal pain (48%), headache (42%), Rash (39%), Body ache (36%), Cough (36%), Bleeding (33%), Vomiting (26%), Breathlessness (12%), Retro-orbital pain (10%), altered sensorium (6%), Convulsions (6%) and loose motion (4%).

The following patterns of symptom had observed in other studies

Symptoms	Batra P *et al*[7] 2004-2005	Chandrakanta *et al*[9] 2008	Hema M *et al*[8] 2010	Present study 2012-2013
Fever (%)	100	100	100	100
Abdo. Pain (%)	52	25	71	48
Headache (%)	-	-	63	42
Rash (%)	24	37.5	26.6	39
Body ache (%)	8	-	-	36
Cough (%)	36	-	-	36
Bleeding (%)	40	38.8	48.8	33
Vomiting (%)	72	41.2	-	26
CNS complications (n)	4	Alt. sensorium-43 Convulsions-36	2	Alt. sensorium-6 Convulsions-6

In the present study bleeding manifestation were found in 33% of cases. Malena was predominant bleeding manifestation accounting for 15% of cases followed by skin bleeding (6%), multiple bleeding sites (5%), hematemesis (2%), gum bleeding (2%), hematuria (2%) and lastly epistaxis in 1% of cases. Hematemesis was the most common bleeding manifestation in other Indian studies.

The following bleeding manifestations had observed in other studies

Bleeding manifestations	Ratageri VH *et al*[13] 2003-2004	Chandrakanta *et al* [9] 2008	Hema M *et al*[6] 2010	Present study 2012-2013
Bleeding (%)	60	38.8	48.8	33
GI bleeding (%)	22	23.7	33.2	17
Skin (%)	18	16.2	34.8	6
Epistaxis (%)	-	2	44	1

The systemic examination revealed non-specific signs, as like other viral illness. Hepatomegaly was seen in 57% of cases in present study. Other studies also reported hepatomegaly in significant percentage as follow:

Sr. No.	Study	Place	Year	Hepatomegaly (%)
1.	Ratageri VH *et al*[13]	Hubli, Karnataka	2003 – 2004	87
2.	Batra P *et al* [7]	Wardha	2004 -2005	56
3.	Chandrakanta *et al*[9]	Lucknow	2008	62.5
4.	Hema Mittal *et al*[8]	Delhi	2010	31.1
5.	Present study	Yavatmal	2012 – 2013	57

Other systemic finding include splenomegaly (25%), ascites (22%) and 22% cases had tenderness on palpation. Respiratory system examination revealed, out of 100 patients there is decreased air entry in 11 patients and crepitaions in 14 patients. CNS examination state that 6% cases had altered sensorium and 6% cases had convulsions. On taking WHO limit of <100000/mm^3 for low platelet count, 79% of cases in the present study had low platelet count. The studies done by Gomber *et al*(2001)[6] and Narayanan *et al*(2002)[14] correlate with our study. The platelet count provides a very useful means of diagnosis at the screening level. Hence the platelet count was the sensitive indicator for diagnosis but it did not correlated with the outcome. Bleeding manifestations are more frequent with low platelet count. Serology shows that 38% of patients were positive for dengue NS1 antigen test, 64% of patients were positive for IgM antibody test and 27% of patients were positive for IgG antibody test. In present study out of 100 cases of dengue, 50% cases were classified as DF, 33% cases as DHF and 17% cases as DSS. Out of 100 childrens, 96% cases recovered completely without any sequalae, where as 4% of cases who presented in late stages succumbed. The mortality pattern in other studies is as follows:

Sr. No.	Study	Place of study	Year	No. of cases	Mortality (%)
1.	Kabra *et al*[15]	New Delhi	1999	240	7.5
2.	Gomber *et al*[6]	New Delhi	2001	304	4.8
3.	Narayanan *et al*[14]	Chennai	2002	59	3.4
4.	Batra P *et al* [7]	Wardha	2004 -2005	25	8
5.	Present study	Yavatmal	2012 - 2013	100	4

CONCLUSION

In present study the highest numbers of cases were found in age group of 6 - 12 years with equal sex distribution and the maximum number of cases was found in between months of Aug to Nov. Dengue fever was most common presentation followed by DHF and DSS which are major cause of morbidity and mortality. Hence early diagnosis and treatment can decrease both morbidity and mortality in dengue patient. It is also important for both preventive measures and laboratory preparedness during dengue season which will improve outcome in terms of both morbidity and mortality. DF- Dengue Fever, DHF- Dengue Haemmorhagic Fever, DSS- Dengue Shock Syndrome.

REFERENCES

1. R Kumar, P Tripathi, S Tripathi, et al. Prevalence and clinical differentiation of dengue fever in northern India. Infection 2008 Oct; 36(5): 444-449.
2. Park K Epidemiology of communicable diseases; the dengue syndrome. In Parks textbook of preventive and social medicine, 21th edition. Jabalpur, India. Feb 2011: 224-231.
3. WHO (2002), Weekly epidemiological record, no. 6, 8th feb 2002; 77: 41-48.
4. Dengue hemorrhagic fever: diagnosis, treatment, prevention and control. 2nd edition. Geneva: World Health Organization, 1997.
5. WHO; Dengue Guidelines for Diagnosis, Treatment, Prevention and Control. New edition 2009: 25-144.
6. Gomber S, Ramchandran VG, Kumar S, Agrawal, Gupta P. Hematological observations as diagnostic markers in dengue hemorrhagic fever- a reappraisal. Indian pediatric 2001; 38: 477-481.
7. Batra P, Saha A, Chaturvedi P, Vilhekar KY, Mehinderatta DK. Outbreak of dengue infection in Rural Maharashtra. Indian J Pediatr 2007; 74: 794-795.
8. Hema Mittal, M M A Faridi, Shilpa Khanna Arora, Rahul Patil. Clinicohematological profile and Platelet trends in children with Dengue during 2010. Epidemic in North India. Indian J pediatric 2011; 79(4): 467471.
9. Chandrakanta, Kumar R, Garima, Agrawal J, Jain A, Nagar R. Changing clinical manifestations of dengue infection in North India. Dengue Bull. 2008; 32: 118-125.
10. Anuradha S, Singh NP, Rizvi SN, Agrawal SK, Gur R, Mathur MD. The 1996 outbreak of dengue hemorrhagic fever in Delhi, India. Southest Asian J Trop Med Public Health. 1998. 29: 503-506.
11. Govt. of India (2010), National health profile 2009, DGHS, Ministry of health and family welfare, New Delhi.
12. Hayes CG, Phillips IA, Callahan JD et al. The epidemiology of dengue virus infection among urban, jungle and rural population in Amazon region of Peru. Am J Trop Med Hyg 1996; 55: 459-463.
13. Ratagery VH, Shepur TA, Wari PK, Chavan SC, Mujahid IB, Yergolkar PN. Clinical profile and outcome of dengue fever cases. Indian J Pediatr. 2005; 72: 705-706.
14. Narayanan M, Arvind MA, Thilothammal N, Prema R, Sargunam Rex CS et al. Dengue fever outbreak in Chennai- A study of clinical profile and outcome. Indian Pediatr 2002; 39: 1027-1033.
15. Kabra SK, Jain Y, Pandey RM, Madhulika, Singhal T, Tripathi P et al. Dengue hemorrhagic fever in children in the 1996 Delhi epidemic. Trans R Soc Trop Med Hyg. 1999; 93: 294-298.

Source of Support: None Declared
Conflict of Interest: None Declared