ORIGINAL ARTICLE
pISSN 0976 3325 | eISSN 2229 6816
Open Access Article
www.njcmindia.org

CLINICAL AND LABORATORY CHARACTERISTICS OF PEDIATRIC DENGUE FEVER PATIENTS IN A TERTIARY CARE HOSPITAL

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Financial Support: None declared
Conflict of interest: None declared
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How to cite this article:
Dhobale RV, Gore AD, Waghachavare VB, Kumbhar SG, Kadam YR, Dhumale GB. Clinical and Laboratory Characteristics of Pediatric Dengue Fever Patients in a Tertiary Care Hospital. Ntl J Community Med 2015; 7(1):21-24.

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Date of Submission: 06-10-15
Date of Acceptance: 30-01-15
Date of Publication: 31-01-16

ABSTRACT

Background: Dengue is fast emerging problem which causes significant mortality & morbidity in children.

Objective: This study was conducted to study the clinical features of dengue in pediatric cases from tertiary care hospital.

Methodology: Cross-sectional study based on record of all the diagnosed cases during 2008-2012 from a tertiary hospital.

Results: Out of 100 patients, male were 72(72%) and females 28(28%). The commonest presentations were fever 93(93%), pain in abdomen 43(43%), vomiting 37(37%) and bodyache 15(15%). Among these 64(64%) patients were diagnosed as dengue fever & 33(33%) dengue hemorrhagic fever. Common complications were pleural effusion (41%) and ascitis (42%). Range of hospital stay was 3-13 days with 59(59%) patients were admitted for 6-10 days.

Conclusion: DF was common in children <5yrs while DHF seen in older children. Early diagnosis and proper treatment is needed to reduce the morbidity.

Key words: Dengue fever, pediatric, DHF, morbidity.

INTRODUCTION

WHO estimates that Dengue Hemorrhagic Fever (DHF) is endemic in over 100 countries; 40% of the world's population lives in high risk areas. About 50–100 million cases occur every year and an estimated 5,00,000 people with severe dengue require hospitalization every year, out of which 2.5% affected die.[1] Dengue fever (DF) and DHF ranks highly among newly emerging infectious diseases in public health and is considered as the most important of the arthropod borne viral diseases.[2] Early in the 20th century, the epidemics of Dengue fever were common in temperate areas of America, Europe, Australia and Asia but now Dengue fever has become endemic in Tropical

Asia, South Pacific Islands, Northern Australia, Tropical Africa, Caribbean, Central and South America.[3] So DF has become major international public concern, particularly in tropical and subtropical regions, affecting urban and suburban areas. Though several measures have been taken to prevent and control it, still recurrent outbreaks of dengue reported in India. The first recorded outbreak of DF in India was in 1812.[4]

Dengue fever (DF) is an acute febrile viral illness presenting with headache, bone or joint & muscle pains, rash &leucopenia caused by arthropod borne viruses.[5] There are four serotypes of dengue viruses, DENV – 1, DENV-2, DENV- 3 & DENV – 4. All Dengue viruses are transmitted among the humans through the bite of Aedes aegypti & Aedes albopictus. Dengue virus causes classic dengue fever, dengue hemorrhagic fever & dengue shock syndrome which are endemic & epidemic in tropical regions of Asia & the Americas. Dengue fever & dengue hemorrhagic fever are commonly seen in children.

Ranging from mild undifferentiated fever to sever shock, dengue illnesses have wide spectrum of clinical presentations. Dengue hemorrhagic fever is characterized by appearance of hemorrhagic manifestations in addition to above; while Dengue shock syndrome is characterized by shock, capillary leakage and altered mental status.[6] At this stage if they are not treated & monitored properly, it could be fatal. Thus children under 15 years are more susceptible to develop dengue hemorrhagic fever.

Certain factors, like uncontrolled population growth, unplanned urbanization, poor sanitary facilities, overcrowding, open sewage system resulting in substandard housing and need for water storage are the reasons for rise in dengue cases in India.[7] Recently some outbreaks of dengue illnesses have occurred in our country.

Hence, this study was planned to find out various clinical presentations, laboratory manifestations, complications and duration of hospital stay in pediatric patients admitted in tertiary care hospital.

METHODOLOGY

A record based descriptive study was conducted amongst all the clinically diagnosed pediatric patients from B.V.D.U.M.C. & H. Sangli, a tertiary care hospital, Maharashtra State, India. Data was collected through hospital records of three years, from Sept 2011 to August 2014. Written permission for data collection was taken from the medical superintendent to get indoor case papers. Incharge of Pediatric department of medical college was informed regarding the procedure of project. Information was also given to the medical record department about the procedure. Information was collected by paying visits to Medical record department. Incomplete records were excluded from the study.

All relevant data was filled into Microsoft Excel. The analysis was done with the help of MS® Excel®.

The Institutional Ethical Committee approved this study.

RESULTS

Total pediatric patients in this study were 100. Among them, 72 were males & 28 females. Thirty one children were having less than 5 years of age group. Out of that, 9(29%) children were females & 22(71%) males. Children in the age group between 6-10 years were 39, 14(35.90%) females and 25(64.10%) males. Thirty children were in the age group of 11-15 years of which 5(16.70%) were females and 25(83.30%) males as shown in Table 1.

Table 2 shows clinical features and laboratory investigations. The commonest symptom was fever (93%) followed by Abdominal pain (43%), vomiting (37%) and bodyache (15%). IgG was positive in 23 patients, IgM was positive in 31 patients whereas NS1Ag was positive in 20 patients. Laboratory findings reveal that leukopenia was seen in 29 patients whereas 60 patients were had normal leukocyte counts. Thrombocytopenia was seen in 23 children whereas severe thrombocytopenia (platelet count <50000) was seen in 30 patients on admission. Platelet count was rechecked on discharge. At discharge, 74 patients were had normal platelet counts as compared to 26 patients had between 100000-150000.

Complications were seen in the form of hepatosplenomegaly, pleural effusion & ascites in children. 42(42%) patients were had pleural effusion as well as ascites. Hepatosplenomegaly was noted in 11(11%) children. These complications were shown in Table 3.

Table 4 shows duration of hospital stay for patients with dengue fever. Maximum number of patients 59(59%) required hospital stay between 6-10 days.

Table 1: Age-sex distribution of patients with dengue fever

Age (in years)	Sex		Total
	Female (%)	Male (%)	
0-5	9 (29.00)	22 (71.00)	31
5 - 10	14 (35.90)	25 (64.10)	39
11 and above	5 (16.70)	25 (83.30)	30
Total	28 (28.00)	72 (72.00)	100

Table 2.Clinical features and laboratory manifestations of patients with dengue fever.

Clinical and Laboratory Features	Patients
Presenting Symptoms	
Fever	93
Abdominal pain	43
Vomiting	37
Bodyache	15
IGG Positive	23
IGM Positive	31
NS 1 AG Positive	20
Total Leucocyte count	
Leucopenia	29
Normal TLC	60
Leucocytosis	11
Platelet on admission	
Below 50000	30
50000 - 100000	46
100000 - 150000	23
Normal	1
Platelet on discharge	
100000 - 150000	26
Normal	74

Table 3: Complications seen in patients with dengue fever

Complications	Patients (%)
Hepatospenomegaly	11 (11%)
Plerual effusion	42 (42%)
Ascitis	42 (42%)

Table 4.Duration of hospital stay of patients with dengue fever

Hospital Stay (in days)	Patients (n=100) (%)
0 - 5	33 (33%)
6 - 10	59 (59%)
More than 10	8 (8%)

Thirty three (33%) children were admitted in hospital for less than 5 days whereas 8(8%) children required more than 10 days for hospitalization.

DISCUSSION

Dengue is one of the rapidly spreading mosquito borne viral diseases with a rapidly expanding geographical limits and has become a major disease of public health importance. The clinical manifestations of Dengue fever are quite variable depending upon the age of the patient and the type of infecting strain of virus.[8,]

Majority of the patients were males in our study that is similar finding in other studies carried out in India.[9,10] This may be due to more exposure of male children in outdoor activities during the day timings.

Clinically, symptoms were high grade fever (93%) which was present in all the children followed by abdominal pain (43%) and vomiting (37%). These results are comparable tothe study carried in Jeddah by Maimoona where fever, vomiting and abdominal pain were more common, while headache, retro orbital pain, myalgia and skin rash were very rare.[11]

NS1Ag is a strong diagnostic marker of Dengue fever. The serological evaluation showed a prevalence of NS1 positivity in 20% cases, IgM positivity in 31% and IgG positivity in 23%. Our findings were similar to the study conducted in North Indian referral hospital which showed NS1 positivity in 36.6%, Ig M positivity in46.6%. However their percentage of IgG positivity was only 16.6%.[12]

Low leukocyte count in DF, may be due to virus induced inhibition/destruction of myeloid progenitor cells. We found that only 29% cases had leukocyte count below 4000/cmm.But in study of Itoda et al[13], leucopenia was detected in 71% cases, Mittal H et al[14], found leucopenia in 19.2% cases and in Bangladesh based study by Rahim MA[15] detected it in only 4.1% cases.

Thrombocytopenia was the consistent finding in our patients and most of the patients had counts between 50,000-100,000/cmm. Many studies report that thrombocytopenia is the commonest but not the constant finding in Dengue fever. Decreased production and increased destruction of platelets could result in thrombocytopenia.

Hepatosplenomegaly was noted in our study (11%) whereas the studies carried out in India and Bangla Desh documented the frequency of splenomegalyin 32.4% and 3% children respectively in Dengue fever.[10]Both Pleural effusion as well as ascites was the complications found in 42% of children.

Maximum number of patients required hospital stay less than 10 days. This may be because of early diagnosis and adequate treatment made

available to patients as well as awareness among parents about the disease.

CONCLUSION

We found different clinical manifestations in children with Dengue fever.

In our study, clinically common symptoms were fever followed by abdominal pain, vomiting and body-ache. Laboratory findings revealed that leucopenia and thrombocytopenia were common in children suffering from dengue fever.

Complications were seen in the form of hepatosplenomegaly, pleural effusion & ascites in children. Nearly 50% of patients with dengue fever required hospital stay around one week or beyond. Early diagnosis and proper treatment is needed to reduce the morbidity and mortality of dengue fever in children.

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