MEDICAL CHANNEL

Original Article

EXPERIENCE WITH DENGUE IN TERTIARY CARE CENTRE

1. **MASHAL KHAN**
MBBS, DCH, MCPS, FCPS
2. **KHALID MAHMOOD A. KHAN**
MBBS, MCPS, FCPS
3. **ASHFAQUE AHMED**
(MSC)

1. ***Assistant Professor,***
Medical Unit National Institute of Child Health, Karachi.
2. ***Associate Professor,***
Medical Unit National Institute of Child Health, Karachi.
3. ***Statistical Officer***
PMRC,
National Institute of Child Health, Karachi.

Correspondence:
DR. MASHAL KHAN
Flat No.C-3/III
Doctor's Colony, JPMC,
Karachi-75510
Cell No. 0300-9292905
Ph: No.02135655220
E-mail: drmashal64@gmail.com

ABSTRACT

Objectives : To evaluate the clinical profile, laboratory parameters and outcome of children admitted with dengue infection.
Place and duration: National Institute of Child Health, Karachi from 1st August 2011 to 31st October 2011.
Study designed: Case series
Material and method : Patients presenting with fever fulfilling the WHO case definition and seropositive IgM, IgGfor dengue fever by ELISA method were included in the study. Their age ranged from 2 months to 16 years. Detailed history, physical examination, demographic data, laboratory findings and outcome were assessed and recorded in the proforma. Data was analyzed with appropriate statistical tests. P value of < 0.05 was taken as significant.
Results : A total of 39 patients with dengue were studied. Male were 24 while female were 15. The mean age of patient was 7.39 +_ sd 4.69 years. The most common features observed were fever (100%), abdominal pain (51.28%), bodyaches (43.58%) and nausea/vomiting (33.3%), followed by headache (28.20%), diarrhea (17.94%) and skin rash (12.82%).(Table-I). The most common physical sign detected was splenomegaly (79.48%) followed by pallor (53.84%) and hepatomegaly (46.15%.). Thrombocytopenia was a constant feature but leucopenia was found in only 06 (15.38%) patients. (Table-I). ALT was elevated in (46.55%) patients. Unfortunately 1 patient expired.
Conclusion : Dengue is one of the major emerging viral infections. Children less than 08 years were found to be more vulnerable to dengue fever. Fever, abdominal pain and bodyaches were the common presenting symptoms. Splenomegaly was the most common clinical sign noted followed by pallor and hepatomegaly.

Key word: Dengue fever, Thrombocytopenia, splenomegaly.

INTRODUCTION

Dengue fever also known as breakbone fever is one of the most common mosquito-borne viral diseases of humans that in recent years has become a major international public health concern.

Dengue fever is one of the fastest emerging infections on the planet. More than 3.5 billion people or over half the world population, across 120 countries live under the threat of dengue infection.[1]

Dengue fever is caused by a dengue virus transmitted to humans primarily by the Aedesaegypti mosquito. Thisvirushas 4 different serotypes. Infection withoneserotype confers long term immunity to that specific serotype only,while remain unprotected against the other serotype, therefore, individuals may be infected upto 4 times.

Dengue infection is a systemic and dynamic disease. It has a wide clinical spectrum that

includes both severe and non-severe manifestations.[2] Clinicalmanifestation of dengue fever includes fever, headache, myalgia, arthralgia, leucopenia and thrombocytopenia. Dengue hemorrhagic fever is characterized by appearance of hemorrhagic manifestations in addition to the above while dengue shock syndrome is characterized by shock, capillary leakage, and altered mental status.[3]

Major demographic changes such as uncontrolled population growth, unplanned urbanization resulting in substandard housing and need for water storage has greatly aided vector proliferation.[4]

Early in the 20thcentury,the epidemics of dengue fever were common in temperate regions of Europe, America and Asia but now, it hasbecome endemic in tropical and subtropical regions of the world.[5]In Pakistan, the 1st outbreak of dengue fever was reported in 1994[6] After that epidemics are becoming more frequent in Karachi and Lahoreand are straining the limited resources of public health system[7,8,9]. Children often experience symptoms similar to those of the common cold and gastroenteritis and have a greater risk of severe complications, though initial symptoms are generally mild but include high grade fever.[610,11.] Therefore, it will be useful if certain signs,symptoms and laboratory parameters associated with development of complications are identified so that such cases would receive more focus.

The earliest change detectable on laboratory investigation is a low white cell blood count, which may then be followed by low platelets and metabolic acidosis.[12]

Most people with dengue recover without any ongoing problem. The mortality is 1-5% without treatmentand less than 1% with adequate treatment.[12,13]. However, severe disease carries a mortality of 26%.[12]

The WHO's vision is to combat dengue fever by 2020 with immediate aim of dengue fever vector control, research on medicines and vaccines and improved diagnostics.

Considering the importance of current situation of dengue fever in Pakistan, the emerging nature of the disease and its dynamic epidemics, the present study was designed with the aim to evaluate the clinical manifestations, laboratory parameters and outcome in our setup to be able to formulate strategies to combat this menace.

METHODOLOGY

This case series was conducted on seropositive cases of dengue fever at National Institute of child Health, Karachi from 1stAugust to 31stOctober 2010. The patients fulfilling the WHO case definitioni.e. fever and two of the following: headache, myalgia, retro-orbital pain, bleeding, altered sensorium, shock or low platelet count were registered in the study. Forall cases, rapidIgM and IgG antibodies by ELISAwhich is the gold standard method were performed. Patients from 2 months to 15 years of age were chosen.Patients with obvious features of other diseases like malaria, typhoid fever, ITP, aplastic anemia and leukemia were excluded from the study. Informed consent was taken from the parents/care givers.A detailedhistory of each case including bio-data, signs, symptoms and laboratory findings were recorded in the predesigned proforma.Clinical examination was thoroughly done at the time of admission and close followup of every patient was done to watch for any progress or complication of the disease.The laboratory investigations which were carried out on these patients include CBC, peripheral smear, haematocrit and serum electrolyte.Liverfunction test and renal function test were performed routinely. X-ray chest and ultrasound abdomen was done on these patients for pleural effusion and ascites.Strict monitoring of vital signs, temperature and capillary refill time (CRT) were carried out. Patientswere managed according to the standard WHO protocol of dengue fever. The CBC,platelets and Haematocritwere serially monitored until they were in the normal range. Outcome of all these patients were also recorded.

All the data were entered into SPSS for analysis. P valueof < 0.05 were taken as significant.

RESULTS

A total of 39 patients of dengue fever were hospitalized during

TABLE- I: CLINICAL PROFILE OF STUDY SUBJECTS: N=39

Signs and symptoms	Frequency	Percentage
Fever	39	100
Morbilliform rash	05	12.82
Abdomen pain	20	51.28
Diarrhea	07	17.94
Nausea/vomiting	13	33.33
Bodyaches/Backache	17	43.58
Hemorrhagic manifestations	03	7.69
Headache	11	28.20
Retrobulbar pain	08	20.51
Pallor	21	53.84
hepatomegaly	18	46.15
splenomegaly	31	79.48
Pleural effusion	03	7.69
Ascites	1	2.56
Shock	01	2.56

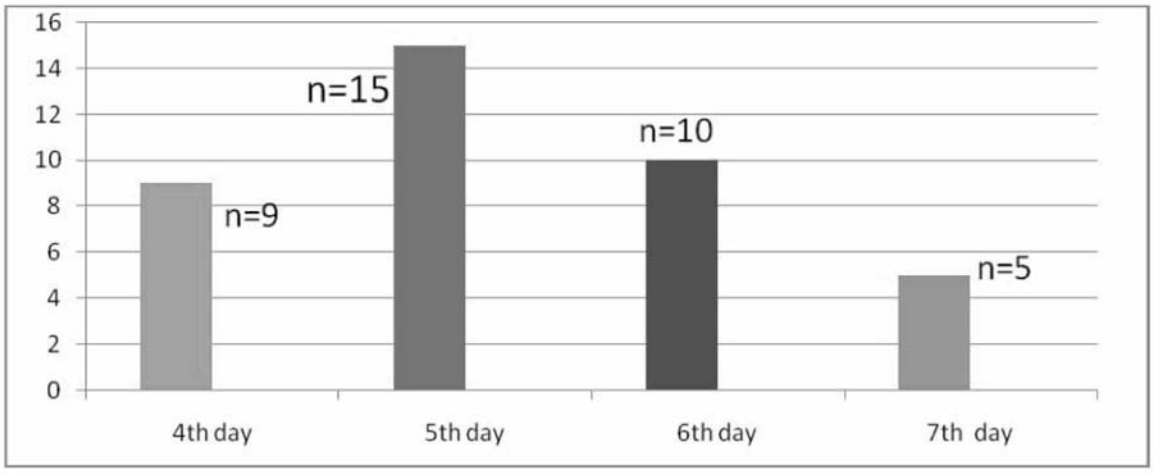
TABLE= II.
LABORATORY PARAMETERS OF STUDY SUBJECTS N=39

Parameters	Frequency	Percentage	P-Value
Hemoglobin level <7gm% 7 - 9gm% 9 - 11gm%	04 24 11	10.26 61.54 28.20	0.001
Hematocrit level <18 21-30 >33	04 24 11	10.26 61.54 28.20	0.001
Platelets count <20,000/cumm^3 20,000 – 50,000 50,000 – 150,000	05 26 08	12.82 66.67 20.51	0.001
Leucocyte count <4,000/cumm^3 4,000 – 11,000 >11,000	06 30 03	15.38 76.92 07.69	0.001
Raised ALT <40 40 - 50	21 18	53.85 46.15	0.469
Ig M ELISA Ig M + IgG ELISA	39 13	100.00 33.33	0.001
Serum albumin <3gm/dl	05	12.82	

TABLE – III:
AGE AND SEX DISTRIBUTION OF STUDY SUBJECTS: N=39

Age (year)	Male	%	Female	%	Total	%
< 1 year	03	7.7	01	2.6	04	10.3
1 - 5	05	12.8	04	10.3	09	23.1
6 – 8	07	17.9	05	12.8	12	30.7
9 -12	04	10.3	02	5.1	06	15.4
13 – 16	05	12.8	03	7.7	08	20.5
Total	24	61.5	15	38.5	39	100

FIG- I:
DURATION OF ILLNESS BEFORE ADMISSION:



the defined study period. Out of these, 24 were male and 15 were female with the male to female ratio of 1.6:1. The age of patients ranged from 2 months to 15 years with mean age of 7.39 +- SD 4.69.Fever was the most common presentation, ranging from 101F^0 to 104F^0 and was present in 100% patients. Abdominal pain was the next common symptom followed by bodyaches (43.5%) and nausea/vomiting (43.33%). Only 7 patients had diarrhea and 5 patients had skin rash in this study. Hemorrhagic manifestations were observed in (7.69%) of patient and were in the form epistaxis and gum bleed (Table- I).

Splenomegaly (79.48%) was the most common clinical sign followed by pallor (53.48%) and hepatomegaly (46.15%). Only 3 patients had plural effusion and one patient had minimal ascites in the study group. (Table-I)

Hemoglobin level less than 9gm/dl were observed in majority of the patients (61.53%). Only 11 patients had the hemoglobin level of more than 11gm/dl. Lower total leukocyte count (TLC) was observed in only 06% patients. Majority (66.66%) of the patient had platelets count between 20,000—50,000/cumm^3. Only 12.82% patients had platelets count of less than 20,000/cumm^3. (Table-II). Most of the patients were below 8 years of age and presented on 5th and 6th day of illness. (Table-III,IV). Low albumin was observed in 5 patients. All patients were ELISA IgM positive while Ig M and IgG ELISA were positive in 33.33% cases. Unfortunately only 1 patient expired because of intractable shock.

DISCUSSION

Dengue fever is a global public health problem. It is increasing in magnitude with epidemics after epidemics.The peak incidence of dengue fever was reported to occur from August to October in Pakistan.[14]

In our study male patients were predominant and this finding is comparable with many local and Indian studies.[15,16,17,18] This observation may be due to highly prevalent gender bias or due to more exposure of male during day time activities.

All patients had fever as part of dengue case definition and found in all patients followed by abdominal pain in (51.28%), vomiting (32.33%)and bodyaches(43.58%). Similar reports were quoted from many local and international studies.[15,19,20] In our study skin rash was found in only 5 patients but it was reported to be rare from Saudi Arabia.[19]

splenomegaly (79.48%) and pallor (53.84%) were the most common clinical signs detected which is similar to study from Lahore but is different to the studies from IndiaandBangladesh, where splenomegaly was reported to be 32.4% and 3% cases respectively.[15,18,20]. An early study from Karachi showed pallor in (57%) patients which is comparable to our study[21].

In our study hepatomegaly was documented in (46.15%) which is in contrast to the reports from India where 100% patients had hepatomegaly.[18]Study from Karachi showed hepatomegaly in 37% patients which is almost similar to our study.[21]Thrombocytopenia was the most common laboratory finding, similarreports had been quoted from other cities of Pakistan.[21,22]In our study leucopenia was found in 06 patients which is similar to study from Faisalabad but is different to other studies from Karachi where 43% had leucopenia.[16,21].

Alanine Aminotransferase (ALT) was elevated in (46.15%) of patients in our study, similar report had been quoted from Dehli and JamshoroPakistan.[18,22].

In our study S. Albumin was low in 05 patients which is compatible to report by VillarCenteno study.[23]A study from Lahore showed 16 patients had low albumin.[15]Inour study unfortunately 1 patient expired and the case fatality rate is in accordance with the WHO data[12,13].

CONCLUSION

Epidemics of dengue fever have been associated with monsoon season. Children less than 8 years of age were more affected by dengue fever. Fever, abdominal pain and bodyaches were the common presenting symptoms. splenomegaly followed by pallor were the common clinical signs noted. Thrombocytopenia was the constant feature observed in the study.

RECOMMENDATION

We recommend the following strategies to prevent dengue fever:

1. Public awareness through print and electronic media about dengue fever.
2. Frequently check and remove stagnant water at home.
3. Use of mosquito repellent on uncovered skin, nets and spray in houses.
4. Wear long trouser and shirts with long sleeves while stay indoors.
5. Effective and extensive fumigation on regular basis by the city government.
6. Isolation of dengue fever cases.

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