ORIGINAL ARTICLE

CLINICAL CHARACTERISTICS OF PATIENTS WITH DENGUE FEVER: REPORT OF 48 PATIENTS IN 2010

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Background: Dengue fever is a mosquito born viral disease. It occurs in tropical and sub-tropical areas of the world. Symptoms appear 3−14 days after the infective bite. Mortality can occur in dengue hemorrhagic fever and dengue shock syndrome unless prompt and adequate management is provided. **Objective:** To determine the clinical and epidemiological characteristics along with outcome of patients with dengue fever (DF) dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). **Design**: Prospective, follow-up study. **Place and duration of study:** Department of Medicine, Shaikh Zayed Federal Postgraduate Medical Institute, Lahore from 3rd Oct 2010 to 20th Nov 2010. **Patients and Methods:** Specific serological tests for dengue fever were done in all 60 patients admitted with suspected diagnosis of DF, DHF and DSS. Forty-eight confirmed cases were evaluated for age, gender, clinical features and outcome of the disease. **Results:** Forty-eight out of 60 patients had positive serology for dengue fever. Male to female ratio was 1.09:1. Their ages ranged from 5 years to 68 years with the mean of 31.5±15.2 years. DF, DHF and DSS were found in 71%, 19% and 10% cases respectively. Common presentations were fever (100%), skin rash (83.33%), myalgia (69.75%), restlessness (66.67%) and rigors and chills (66.67%). All, except one patient improved clinically. One patient died on second day of admission. **Conclusion:** Dengue fever, a viral infection is re-emerging as a serious public health problem. Fever, rash, myalgia with rigors and chills were common presenting features.

Keywords: Dengue fever, Dengue hemorrhagic fever, dengue shock syndrome, skin rash, epidemic

INTRODUCTION

Dengue fever is a mosquito born viral disease. It is caused by one of the four serotypes of dengue virus (DENV1-4) which belongs to the family *Flavi viridae*. The virus is transmitted by Aedes Egypti and a few other members of Aedes Species.[1] It occurs in tropical and sub-tropical areas of the world. An infected person during viremia within six days, if bitten by female *Aedes* mosquito can be source of DEN virus.[2] Symptoms appear 3−14 days after the infective bite. Dengue fever (DF) is a febrile illness that affects infants, young children and adults. The fever manifests in three ways, a mild atypical form, classical dengue, dengue hemorrhagic fever which may evolve in dengue shock syndrome. Mortality can occur in dengue hemorrhagic fever[3] and dengue shock syndrome unless prompt and adequate management is provided[4].

DF is an acute illness of sudden onset of symptoms such as high grade fever, headaches, skin rash (dengue triad), exhaustion, severe muscle and joint pain and swollen glands. Infection with one serotype does not protect against the others, and sequential infections put people at greater risk for Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS).[5] Appearance of haemorrhagic rash or haemorrhagic manifestations in addition to classical DF characterises the dengue hemorrhagic fever (DHF).[6] Dengue shock syndrome is characterised by hypotension, altered mental status and delayed capillary filling.[6]

DF is an old disease.[3] The first record of the disease was found in Chinese Medical Encyclopaedia in 992.[7] The first major epidemic of sever and fatal form of disease occurred in South East Asia after World War II.[7] In the second half of the 20th century, dengue spread throughout the tropics, threatening the health of a third of the world's population.[7] Each year there are an estimated 50−100 million dengue infections, 500,000 cases of DHF and 20,000−25,000 deaths, mainly in children.[7] Data from India and Bangladesh suggests increasing incidence of disease with all four serotypes.[8] Pakistan has reported sporadic cases of DF and DHF. The Dengue infection was first documented from Punjab in 12 out of 174 samples collected in 1968 and 1978.[9] The first epidemic of DHF was recorded from Civil Hospital, and Aga Khan University Hospital, Karachi in 1994−95, published in 1997−98.[8]

Epidemic of DF/DHF has an economic impact of high magnitude on the community as is seen with other infectious diseases such as malaria.[7] Currently there are no vaccines or antiviral drugs available for dengue viruses, although several tetravalent live-attenuated dengue vaccines are in clinical phases I or II, and prevention through vaccination has become a major priority on the agenda of World Health Organization and of national ministries of health and military

organisations. Today the only effective way to prevent epidemic DF/DHF is to control the mosquito vector. Survival is related directly to early diagnosis, hospitalization and proper management.

Dengue is emerging as a serious public health problem in Pakistan. The present study will help to generate proper information on epidemiology of the disease, which is essential for planning and development of the relevant control/preventive measures against dengue.

MATERIAL AND METHODS

All 60 patients admitted in medical ward with suspected diagnosis of DF, DHF and DSS were included in the study. Detailed clinical history and examination were performed and recorded on a pre-designed proforma after taking their written consent. According to WHO criteria[10] (fever and any two of the findings; headache, myalgia, petechi, arthralgia and leucopenia) patients were classified into DF, DHF and DSS. Sera of all cases were tested for anti-dengue immunoglobulins (IgM and IgG) by Enzyme Linked Immunoassay (ELISA). Patients were confirmed to have DF if IgM alone or both IgM and IgG were positive. Patients were followed up during their stay at hospital.

All data were entered and analysed by using SPSS-15.0. Demographic variables were reported as frequency and percentages. Numerical data was reported as Mean±SD.

RESULTS

During study period 60 patients with suspected DF were admitted. Out of these, 38 cases (17 males and 21 females) were found to have positive IgM and ten cases (8 males and 2 females) had positive IgM and IgG to dengue virus. Among these 48 patients, 25 were males and 23 were females with a ratio of 1.09:1. Their ages ranged from 5 years to 68 years with a mean age of 31.5±15.2 years (Table-1).

Table-1: Age and sex distribution of patients with dengue fever (n=48)

Age (Yr)	Male	Female	Total	Percentage
<10	1	1	2	4.17
11−20	6	6	12	25.00
21−30	5	6	11	22.92
31−40	4	7	11	22.92
41−50	3	2	5	10.42
51−60	4	0	4	8.33
61−70	2	1	3	6.25
Total	25	23	48	100.00

All patients had fever at the time of admission. Symptoms of the disease are tabulated as Table-2. There were no significant differences in symptoms of males and females, except abdominal pain more in females and cough more in males.

Table-2: Symptoms of dengue fever (n=48)

Symptoms	Male	Female	Total	%	*p*
Fever	25	23	48	100.0	1.0
Rash	19	21	40	83.33	0.14
Myalgias	17	16	33	68.75	0.907
Restlessness	15	17	32	66.67	0.3
Rigors & chills	14	18	32	66.67	0.09
Nausea & vomiting	15	15	30	62.5	0.708
Gen. weakness	15	15	30	62.5	0.708
Sore throat	15	12	27	56.25	0.584
Headache	11	15	26	54.17	0.131
Anorexia	14	12	26	54.17	0.79
Dysphagia	12	9	21	43.75	0.534
Arthralgias	10	12	22	45.83	0.395
Loose motion	3	6	9	18.75	0.21
Abdominal pain	2	7	9	18.75	0.042
Cough	5	1	6	12.5	0.084
Nose bleeding	4	1	5	10.42	0.169
Dyspnea	1	4	5	10.42	0.129
Drowsiness	3	1	4	8.33	0.324
Constipation	1	2	3	6.25	0.506
Neck pain	2	1	3	6.25	0.596
Gingival bleeding	1	1	2	4.17	0.952
Malena	1	1	2	4.17	0.952
Palpitation	1	1	2	4.17	0.952
Vertigo	0	1	1	2.08	0.307

The most common clinical signs were: mucous membrane involvement, skin rash, normotension, tachycardia. Females were significantly more normotensive than males ($p<0.001$) whereas pyrexia and hypertension were more common in males (Table-3).

Table-3: Clinical signs of patients with dengue fever (n=48)

Signs	Male	Female	Total	%	*p*
Mucous membrane involved	20	21	41	85.42	0.255
Skin rash	19	21	40	83.33	0.14
Normotension	13	21	34	70.83	0.001
Tachycardia	18	13	31	64.8	0.258
Pyrexia	19	11	30	62.5	0.036
Hypertension	9	1	10	20.83	0.003
Pallor	4	4	8	16.67	0.897
Abdominal tenderness	3	4	7	14.58	0.598
Hypotension	4	1	5	10.42	0.169
Lymphadenopathy	2	3	5	10.42	0.57
Ankle oedema	2	0	2	4.17	0.14
Facial oedema	1	1	2	4.17	0.952
Jaundice	0	1	1	2.08	0.307
Neck rigidity	0	1	1	2.08	0.307

DISCUSSION

Due to changing climate, urbanisation, poor living conditions and inadequate waste management, vector born diseases like dengue fever are becoming more common. Although vector control programs are launched in endemic countries every year yet dengue fever has become a serious problem worldwide.

Pakistan being a tropical country provides suitable weather for Aedes mosquito to grow and an increase in the disease burden has been noticed in recent years.

This study describes signs and symptoms of dengue fever patients admitted in a tertiary care hospital of Lahore. It includes 48 patients, more males than females as is also reported in other studies from Pakistan[11] and India[12] In our study mean age of patients was 31.5±15% years whereas in another study it was 47.5±17.9%.[13]

In this study DF, DHF, DSS were found in 70.83%, 18.75% and 10.42% of patients respectively. A study from Pakistan[8] the values were; 78%, 19.4% and 2.42% respectively. This closely relates with present study except the frequency of DSS[8]. In another study from Pakistan[14] the values of these conditions between years 2000−2004 were 73%, 24% and 2.4% while after 2005 these values were 58%, 39% and 3% respectively. In a study from India the values for DF, DHF and DSS were 83.9%, 8.8% and 7.3% respectively.[12]

In present study all cases presented with fever (100%). Skin rash appeared in 83.33% of patients 1−6 days after onset of fever. In other studies the skin involvement was seen in 82%[15], 65%[6], 53.7%[13], 46.8%[16], 36.4%[11], 28%[4] and 21.7%[12] of patients.

Myalgia and headache were common clinical features of dengue in adults and children as documented by a study from Thailand.[17] In our study, 68.75% patients complained of myalgia while in a previous study from Pakistan myalgia was found only in 25.8% of patients. Other reports from Asia and India, myalgia was seen in 68.5%[13] and 64.6%[12] which is similar to our findings. In present study 54.17% patients had symptom of headache while in another study from Pakistan the incidence was quiet low (11%) but is similar to other studies from Pakistan 87%[14], Taiwan (55.4%)[13] and India (47.6%)[12].

Vomiting and Nausea were present in 62.5% of patients enrolled in this study while an other study from Pakistan found 59.3% of patients with the symptom of nausea.[8] Other studies reported 47.6% of patients with nausea and vomiting.[12] Cough was experienced in 12.5% of patients in this study compared with 11%[8] and 38% in studies from India.[18] Hemorrhagic manifestation was present in 10.42% patients in present study where as other studies documented 73% [13] and 18.2% [11]. This variation may indicate exposure status of studied populations. Studies from India also showed haematamesis (38%)[19] and malena (50%)[19] compared to 4.17% of our patients presented with malena.

In current investigation neurological manifestations in form of drowsiness, neck pain and vertigo were also seen. Symptoms like restlessness, rigors and chills, generalized weakness, sore throat, dysphagia are not reported in previous studies.

More females were found normotensive than males. This may reflect increase severity of disease in males than females. It may be related to their outdoor activities compared to females. Hypertension was found in 20.83% of our patients which is already not reported.

In this study as well as other studies[20] the incidence of complications as constipation, gingival bleeding and palpitation and neck rigidity was low.

In our study only one patient died of dengue shock syndrome where as in other reported study death rate was 2.4%[12] , this might be due to previous exposure, delay in seeking treatment and difference in management protocols.

Tourism has increased now a days. The travellers after visiting endemic areas may present with fever and it is important to exclude life threatening conditions like dengue. General practitioners should be alert to the public health implications of dengue.[21] A reduction in dengue related complications can be achieved in a wider scale through an integrated approach through the community, by following recommended protocols at tertiary care centres and preventive strategy by the public health departments.

CONCLUSION

Significant number of patients showed listed signs and symptoms, thus these clinical features can be used for early diagnosis and prevention of complications of dengue fever.

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