ORIGINAL ARTICLE

Dengue Fever Out Break in Lahore, Pakistan. A Clinical Management Experience

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ABSTRACT

Objective: To present clinical features, laboratory investigation and management out come of hospitalized patients of suspected or confirmed Dengue virus infection
Study Design: A descriptive study
Setting: Medical wards of three units Sir Ganga Ram Hospital, Lahore
Duration of Study: September-November 2008.
Methodology: Patient above 16 years presenting fever of equal or more than 10 days duration, bone pains, rash loss of appetite and bleeding manifestations were included in the study. Demographic characteristic of patients were recorded. Complete blood count specifically platelet count, liver function test were done. Serological evaluation was done for dengue IgM by rapid test chromatography. Seronegtive patients were also included in the study on basis of high degree of suspicion. Paracetamol and parentral fluids were prescribed Platelet transfusion were given to those with bleeding and those with platelet count < 20,000/mm^3. Patients were discharged when symptoms selected and platelet count > 50,000/mm^3
Results: The study included 254 patients between 16-80 years of age males were 156 (57.5%) and females 108 (42.5%). Average duration of symptoms at presentation was six days. Predominant symptoms were fever in 248 (97.6%) myalgia in 247 (97.2%) anorexia in 249 (98%), rash in 76 (29.9%) and bleeding manifestations in 58 (22.8%). Platelets were low i.e. <100,000/mm^3 in 86.7% of patients. Leucopenia was observed in 56% of patients. Serology for Dengue infection IgM was positive in 60% of patients. In the study 72 patient (28.3%) required platelet infusions. Majority of patient were discharged home with average stay of 6 ± 4.76 days in hospital except three. Two developed Dengue shock syndrome and third died of gastro intestinal bleeding.
Conclusion: Dengue fever is acute febrile self limiting illness but may have fatal out come in some patients. Since there is no vaccine available prevention of disease depends upon mosquito control.
Key words*:* Dengue, Fever, platelet count.

INTRODUCTION

Prevalence of Dengue fever has increased tremendously in the recent decades. About 2.5 billion people i.e 2/5 of the world population is at risk of the disease. WHO currently estimates 50 million cases of dengue infection world wide each year[1]. Disease burden is enhanced by its progressively longer and more frequent cyclical epidemics of dengue and dengue hemorrhagic fever, the later being associated with serious illness leading to death in 20% – 30% when untreated[2].

Dengue fever illnesses were described in Chinese medical writing dates back 265 AD. In 1789 Benjamin Rush published an account of dengue fever epidemic that occurred in Philadelphia in 1780[3]. After that out break occurred every 10 – 30 year until World War II which lead to its world wide spread[4].

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In 1975, a pandemic in South East Asia led to increased mortality among children in the region. By 1990, it was the most important cause of mosquito borne disease affecting humans after malaria.

In Pakistan first out break of Dengue was reported in 1994, in Pakistan with serotype DENV-2.[5] Another epidemic occurred during 2005-2006 in Karachi effecting masses[6,7].

Dengue fever is a viral infection transmitted by female Aedes aegypti mosquito which is found between latitude 35°N and 35°S. It is found in tropical and subtropical climates world wide mostly in urban and semi urban areas. The virus has four distinct but closely related serotype (DENV-1 to DENV-4) that can cause dengue. The spectrum of disease ranges from mild febrile flu-like illness to a potentially lethal complication called Dengue hemorrhagic fever DHF and Dengue Shock Syndrome (DSS)[8].

DHF/DSS usually occurs during second dengue infection in person with pre-existing actively or passively (maternal) acquired immunity to heterologous dengue virus serotype. The antigen

antibody complexes lead to cascade of immune reactions and activation of complement system[9,10,11]. Patient with DHF presents with abrupt onset of fever, bleeding tendencies, thrombocytopenia, and circulatory failure. In severe cases mortality is 20% – 30% when untreated.

This study was to describes the clinical features, biochemical profile and management outcome of hospitalized patients with suspected or confirmed dengue fever. The suspicion of DF should be high if fever, rash, arthralgias, are associated with thrombocytopenia, hemoconcentration and raised ALT and AST.

METHODOLOGY

This descriptive, cross sectional study was carried out during September to November, 2008 in Medical Wards of unit I, II, III in Sir Ganga Ram Hospital, Lahore Pakistan. All patients above 16 years of age presenting with fever of 10 days less bone pains, rash, loss of appetite, and hemorrhagic manifestations were included in the study. Patients with chronic liver and kidney diseases as well as blood hematological disorders were excluded. Demographic characteristics such as age, gender, residential address, exposure to mosquito bite and any comorbid illness were recorded. Detailed clinical examination was carried out and recorded.

Complete blood count specifically platelet count liver function test (LFT), Prothrombin time (PT) were carried out in each case. Serum sample was analysed for Dengue IgM and IgG by Rapid test chromatography. Seronegative patients were also included in the study on the basis of high degree of suspicion. All the patients were kept in isolation in the allocated area of each word.

All patients were prescribed paracetamol, parentral fluids and antiemetics, according to WHO guidelines. Patients with bleeding manifestation and those with platelet count < 20,000/mm^3 without bleeding were given platelets concentrates. Whole blood transfusion was given if Hb% <7gm/dl. Patients were discharged in 3 – 7 days when symptom of fever, nausea, vomiting, myalgia and bleeding settled and platelet count was >50,000/mm^3. Data was processed and analyzed with SPSS

RESULTS

The study included 254 patients who met the inclusion criteria. The age range between 16 – 80 year, 146 (57.5%) were male and 108 (42.5%) female. These patients presented with a symptoms of 3–10 days duration. The average duration of symptoms at presentation was six days. Fever was predominat symptom (97.6%) as were the myalgia and bone pains (97.2%). The other symptoms are listed in table 1. emoglobin level ranged between 7-10 gm/dl in 70% of patients. Other laboratory parameters are listed in table. 2.

The sera of patients were analyzed by rapid test chromatography for Dengue IgM antibodies. 60% patients were positive. 40% patients were seronegative. Seropositive patients were 60%, the rest seronegative.

Most of the patients (86.7%) had platelet count less than hundred thousand (100,000) on admission. Mean platelet count was 64010 with SD 46407.315. Seventy two patients were transfused platelet infusion. Treatment with intravenous fluids, antiemetics improved the symptoms of the patients. Monitoring of blood pressure, hemorrhagic manifestation, urinary out put and platelet count was done. Reassurance of patients and their relatives was carried out to abat their apprehension. Majority of the patients were discharged home within 3 to 5 days. Average stay in the hospital was 6±4. 76 days. Three patients expired. Two were female and one male patient. Among the patient who died two developed Dengue shock syndrome and the third died of severe gastro intestinal bleeding.

Table 1. Clinical characteristic of patients (n=254)

Clinical features	=n	%age
Fever	248	97.6
Myalgia	247	97.2
Nausea/anorexia	249	98
Abdominal pain	120	47.2
Rash	76	29.9
Bleeding manifestation	58	22.8
Hepato spleenomegaly	5	2.8
Pleural effusion	5	2.4
Ascitis	2	0.78

Table.2: Hemoglobin and the Biochemical Parameters among the patients (n=254)

Parameters	n=	%age	Range
Hb% (gm/de)			
• >10 gm/dl	76	29.9	
• 7-10	151	45.27	5-12
• <7	27	10.62	
Lencoytec count 10^3/L			
• >8.0	70	27.55	
• 8-2	144	56.69	1.5-9.5
• <2.0	40	15.7	
ALT u/l			
• 40-160	114	44.8	40-240
• >160	140	55.11	
AST			
• 40-160	129	50.78	
• >160	125	49.21	40-282

DISCUSSION

Dengue infection has emerged as public health problem in our country. Initially reported at Karachi, many individual outbreaks have been reported in small studies from all over the country[12]. This global spread of infection is related to population growth, uncontrolled urbanization and large numbers of human travel[13].

This study showed fever, myalgia and anorexia as the dominant symptoms of DF as were also observed in another study[14] however bleeding tendencies were present in 22.8% as compared to 2% in the same study. The difference might be due to previous sub-clinical infection in these individuals with one or the other serotype of the virus and phenomena of antibodies dependent enhancement with recent infection has led to more severe hemorrhagic manifestations. In addition certain strains like DEN-2 are more virulent and epidemics of DHF are reported more with DEN-2 than other strains[15]. Serotyping of virus could not be checked in the study because of financial constraints.

Ascitis developed in only two patients who had fatal outcome. In another study[16], ascitis and persistant vomiting were considered as warning sign of DHF. Pulmonary hemorrhage has also been reported[17] but none of our patients had respiratory symptoms. Myocarditis and encephalopathy are also life threatening manifestation[18] but none was found in our patients. Thrombocytopenia was frequently observed abnormality among the patients (86.5%) which led to bleeding in 22.8% and proved fatal in one who died of gastrointestinal hemorrhage.

Detection of virus by PCR is the gold standard test for the diagnosis of Dengue virus infection[19], but the serological testing is also comparable to PCR[20]. In the study patients had serological diagnosis only. Because of unexpected large number of patients and limited facilities it was not possible to have PCR testing and identification of its strains.

The main stay of treatment is timely supportive therapy. Supplementation with intravenous fluids and platelets transfusion were carried out during this period. Therapeutic options for Dengue infection may include intravenous immunoglobulin IVIG[21], Ribazole and mycophenolic acid in future which may help to reduce the morbidity and mortality.

There is no commercially available vaccine for dengue virus infection however several tetravalent live attenuated vaccine are under clinical trials[22].

Primary prevention of dengue infection resides in mosquito control which can be implemented by environmental management and chemical method. Peak incidence of infection has been observed in November. This pattern is seen in several countries and correlates well with summer moonsoon season when breading condition is ideal for Aedes aegypti mosquito, a vector for the virus. During the period public awareness programmers should be encouraged. The masses should be educated about use of proper clothings, disposal of rain water, covering of domestic water storage containers and use of insecticides, etc.

During out breaks, emergency control measures should also include application of insecticides as space spray to kill mosquitoes using portable or truck mounted machine or even air crafts. Regular monitoring of vector's susceptibility to most widely used insecticides is necessary to ensure appropriate choice of chemical agents.

Diagnostic facilities for early and appropriate detection of infection, and its genotyping should be made available. Necessary arrangement should be made for provision of platelets in various transfusion centres. Apprehension of people should be alleviated by mass communication.

CONCLUSION

Dengue fever is an acute febrile illness manifestation of the discuses disease ranges for benign self limited illness to life threatening complication like DHF/DSS. Complicated cases with bleeding manifestations, abdominal pain, thrombocytopenic, hypotension, and anemia needs hospitalization for monitoring, careful fluid management and replacement of platelets. Important risk factor for DHF/DSS is secondary infection by different strain which might be anticipated this year with resurgence of dengue infection.

No vaccine is available for this disease vector control enforced by environmental management in the main stay for prevention.

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