Frequency of Dengue Hemorrhagic Fever and Dengue Shock Syndrome in Dengue Fever

Raza Ullah¹, Rab Nawz Khan¹, Tahir Ghafar¹, Shahida Naz¹

BACKGROUND: Dengue fever is caused by one of the four dengue virus sero types transmitted by Aedes aegypti mosquito. It was thought to be a disease of tropics but now it's a global health problem.

OBJECTIVE: To determine the frequency of dengue hemorrhagic fever and dengue shock syndrome in dengue fever.

MATERIALS & METHODS: This cross sectional descriptive study was conducted in medical wards, Hayatabad Medical Complex, Peshawar. All patients of either gender, aged > 14 years and febrile patients with positive dengue IgM or NS1 antigen were included in the study. Patients with respiratory, urinary tract and CNS infection, liver disease, hepatotoxic or bone marrow suppressant drugs and using alcohol were excluded. All cases of dengue fever, with one or more symptoms and positive dengue specific IgM or NS1 antigen were included in the study. After detailed history, examination and bio data, patients were looked for Dengue hemorrhagic fever and Dengue shock syndrome. Statistical analyses were carried out with SPSS-17. Mean ± standard deviation was calculated for continuous variables like age while frequencies and percentages for categorical variables like gender, complications.

RESULTS: Among the 161 patients 68% were male and 32% were female. Mean age was 35 ± 1.26 years. The frequency of Dengue hemorrhagic fever was 12% and Dengue shock syndrome was 5%.

CONCLUSION: Infections associated to dengue virus are emerging global health problem. Its most dangerous complications are Dengue hemorrhagic fever and Dengue shock syndrome with Dengue hemorrhagic fever being more common.

Key words: Dengue fever, Dengue hemorrhagic fever, Dengue shock syndrome

INTRODUCTION

Dengue fever is mosquito borne disease caused by dengue virus. It is a member of family flaviviridae and has four closely related serotypes. All are transmitted from human to human by mosquitoes named Aedes aegypti. It is a fast spreading, arthropod born viral disease with a significant public health impact. Around 50-100 million people are infected with dengue virus and among these, about 50,000 cases develop dengue hemorrhagic fever throughout the world. Out of these, 2000 die annually due to its complications¹. Mortality rate in treated dengue hemorrhagic fever/dengue shock syndrome is 1% but increases to 20%² if not treated. Although it was considered a disease of tropics but now has become a global health problem and is endemic in about 110 countries³.

Dengue fever has now affected all major cities and towns of Pakistan. The first case of dengue was reported in 1994 in Karachi and then slowly progressed to other cities of Pakistan⁵. In 2006WHO reported 4,800 cases of diagnosed dengue fever. First case of dengue fever in Lahore was reported in 2007. After that the disease spread rapidly. There was an outbreak of dengue fever in whole country in 2010 most probably due to flood effects. There is no effective management for prevention of dengue fever in the country like effective drainage system so that no stagnant pools and ponds stay for long period after rain⁷.

Dengue fever is characterized by prodrome of chills, erythematous mottling of the skin, and facial flushing, headache, retro-orbital pain, severe myalgia, arthralgia, nausea and vomiting, petechiae etc. its complications include dengue hemorrhagic fever, dengue hemorrhagic shock syndrome, hepatitis, coagulopathy, encephalopathy, ARDS. These all complications can increase morbidity and mortality if not addressed in time. In developing countries like Pakistan these complications are not properly sought out or diagnosed late in the course of disease leading to increase mortality rate.

The purpose of the study is to determine the frequency of dengue hemorrhagic fever and dengue shock syndrome in patients diagnosed with dengue fever. No local data is available at the time of the study and this study will help in addressing earlier this problem and timely management.
MATERIALS AND METHODS:
Operational definition:
Dengue Hemorrhagic Fever: Diagnosed dengue patient with bleeding from gums, oral cavity, hematemesis, hemoptyisis, epistaxis, melena and hematuria.
Dengue Shock Syndrome: Dengue patient with systolic blood pressure less than 90 mm of Hg, and other signs of circulatory failure (heart rate more than 90 beats/minute, respiratory rate more than 20 breaths/minute, urine out put less than 0.5ml/kg/hour, alter mental status, capillary refill ing requires three seconds or longer), hematochezia and hematuria.

This cross sectional descriptive study was carried out in medical wards, Tertiary care teaching hospital, Hayatabad Medical Complex, Peshawar, Pakistan from 1st July 2014 to 31st December 2014. 201 patients were included in study through consecutive non-probability sampling technique. Sample size was calculated taking 7.3% proportion of dengue shock syndrome, 95% confidence level, 5% margin of error with the help of WHO software for sample size calculation.

All patients including male and female of age > 14 years and febrile, who are dengue IgM or dengue NS1 antigen positive were included in the study. Patients with upper respiratory infection, urinary tract infection, liver disease, CNS infection, on hepatotoxic or on bone marrow suppressant drugs were excluded.

Statistical analyses were carried out with SPSS-17. Mean±standard deviation (SD) was calculated for continuous variables e.g., age while frequencies and percentages were calculated for categorical variables like gender, complications.

RESULTS:
In this study a total of 201 patients were observed to determine the frequency of dengue hemorrhagic fever and dengue shock syndrome.

Out of 161 patients 68% were male and 32% were female (Table No1). Mean age was 35 ± 1.26 years. 16(8%) patients were in age range 14-20 years, 44(22%) patients were in age range 21-30 years, 60(30%) patients were in age range 31-40 years, 51(25%) patients were in age range 41-50 years, and 30 (15%) patients were in age range > 50 years. Mean age was 35 years with standard deviation (SD)± 1.26. (Table No2).

Dengue hemorrhagic fever was found in 24(12%) patients while Dengue shock syndrome was found in 10(5%) patients. (Table No 3). Seven patients died due to dengue fever in our study population. 2 from dengue hemorrhagic fever and 5 from dengue shock syndrome.

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<thead>
<tr>
<th>TABLE NO 1. GENDER DISTRIBUTION</th>
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<td>(n=201)</td>
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<tr>
<td>GENDER</td>
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<td>Male</td>
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<table>
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<tr>
<th>TABLE NO 2. AGE DISTRIBUTION</th>
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<tr>
<td>(n=201)</td>
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<td>31-40 years</td>
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<tr>
<td>41-50 years</td>
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<td>&gt; 50 years</td>
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Mean age was 35 years and standard deviation ± 1.26
A higher incidence of dengue IgM (n = 173, 37.24%) and IgG (n = 96, 17.58%) antibodies was noted among males than females (IgM n = 22, 17.88%; IgG n = 28, 22.76%), which is consistent with study conducted by Low EE et al. In tropical and subtropical countries in which males were found to be more susceptible to dengue than females.

Dengue is noticed an urban disease and in more populated towns in rural areas. We identified dengue cases during the period of August October in 2014. Lower percentages of IgM (23%) and IgG (13.41%) dengue antibodies were observed in rural areas compared to urban areas (IgM 41.13% and IgG 27.42%), in concordance with the study of Hayes et al. who found the dengue antibody seroprevalence to be higher in urban populations as compared to rural populations.

In our study frequency of Dengue hemorrhagic fever was found in 12% patients while Dengue shock syndrome was found in 5% patients. Similar results were found in another study conducted by Ashwini K et al. the frequency of dengue hemorrhagic fever and dengue shock syndrome were 8.8% and 7.3% respectively. Seven patients died due to dengue fever in our infected population.

This all shows that dengue hemorrhagic fever and dengue shock syndrome is common in patients with dengue infection. Further critical analysis is necessary to characterize the current dengue virus circulation patterns and to identify the linked serotypes and genotypes.

**CONCLUSION**

Dengue hemorrhagic fever and dengue shock syndrome are common complications of dengue infection and contribute to major mortality and morbidity in these patients.
REFERENCES