FREQUENCY OF HEPATITIS AND ABNORMAL LIVER FUNCTION TESTS IN DENGUE FEVER

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ABSTRACT

Background: Dengue has emerged as an important arboviral disease with significant impact on the disease burden in population residing in tropical countries. It is spread by Aedesaegyti mosquito. Derangements in the liver function tests are common and may include mild elevations in serum bilirubin, elevated transaminases and derangements in serum albumin. The objective of our study is to determine the frequency of hepatitis and abnormal liver function tests in dengue fever.

Methods: This cross sectional descriptive study was carried out in medical wards/OPDs, Hayatabad Medical Complex, Peshawar. All febrile patients of either gender and age > 14 years and who is dengue IgM or dengue NS1 antigen positive were included in the study. Patients with urinary tract infection, upper respiratory infection, liver disease, CNS infection, on hepatotoxic or bone marrow suppressant drugs and using alcohol were excluded. All diagnosed cases were admitted in medical wards. After detail history, examination and bio data entry, all patients were looked for hepatitis and abnormalities in liver function tests.

Results: out of 201 patients 32% were female and 68% were male. Mean age was 35 years with standard deviation (SD) ± 1.26. Hepatitis and abnormal liver function tests were found in 75% of patients with dengue fever, more common in males and age group 20-50 years.

Conclusion: liver is most commonly affected organ by dengue virus. It ranges from asymptomatic mild LFTSs abnormalities to severe symptomatic hepatitis. Care must be taken regarding the diagnosis and use of drugs which may worsen the liver damage.

Key Words: Dengue fever, liver function tests, hepatitis.

INTRODUCTION

Dengue also known as “break bone fever” has gradually emerged as important causes of febrile illness in the tropical and subtropical region. Dengue is a common mosquito-transmitted disease second to malaria. It has 4 serotypes (DEN 1-4) and is a member of the Flaviviridae family and the genus Flavivirus[1]. It is transmitted humans to humans by mosquitoes of the genus Aedesaegypti. Around 50-100 million people are infected with dengue virus. Around 2.5 billion people in around 100 countries are at risk of dengue infection[2]. It Present with a wide range of severity including the dengue hemorrhagic fever (DHF) and dengue shock syndrome as categorized by World Health Organization (WHO) 3 in 2009. Relentless urbanization with poor hygiene, poor health systems to increasing international travel help spread of this disease geographically and increase the disease burden of tropics significantly[3,4]. Dengue causes profound effect on multiple organ systems, the commonest being the liver. Right from asymptomatic elevated transaminase levels to acute liver failure, dengue has all the properties of a hepatic illness. Hepatic manifestations are either a result of direct viral toxicity or dysregulated immunologic injury in response to the virus.

Dengue fever has now affected all major cities and town of Pakistan. The first case of dengue was reported in 1994 in Karachi and then slowly progressed to other cities of Pakistan[5]. First case of dengue fever in Lahore was reported in 2007 then 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 rain[6].

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. Clinical features suggesting dengue related hepatic involvement are the presence of liver enlargement and elevated transaminases[7]. The frequency of hepatomegaly in the adult dengue patients ranges from 4%-52%[8,9,10]. Clinical jaundice has been detected in 1.7%-17% in various series[11] its complications include dengue hemorrhagic fever, dengue hemorrhagic syndrome,

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hepatitis, Coagulopathy, Encephalopathy, ARDS. These all complications can increase morbidity and mortality if not addressed in time. In developing country 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 hepatitis and abnormal liver function tests in patients diagnosed with dengue fever. No local statistics are available at the time of the study and this study will help in addressing earlier this problem and timely management.

MATERIALS AND METHODS

This descriptive cross sectional study was performed in medical wards, 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.

All febrile patients of either gender and age > 14 years and who is dengue IgM or dengue NS1 antigen positive were included in the study. Patients with urinary tract infection, upper respiratory infection, liver disease, CNS infection, on hepatotoxic or bone marrow suppressant drugs and using alcohol were excluded. All diagnosed cases were admitted in medical wards. After detail history, examination and bio data entry, all patients were looked for hepatitis and abnormalities in liver function tests. 2 cc bloods was taken in citrated bottle and sent for serum ALT, SGPT and bilirubin.

Statistical analyses were carried out with SPSS-16. Frequencies and percentages were calculated for categorical variables like gender while Mean±standard deviation (SD) was calculated for continuous variables e.g., age, ALT, SGPT and bilirubin.

RESULTS

Out of 201 patients 68% were male and 32% were female (Table 1). 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 2). Hepatitis and abnormal liver function tests were found in 75% of patients with dengue fever (Table 3). Males constituted majority of patients with liver damage especially in age group between 20 to 50 years. Males were found in increased frequency with abnormal LFTs and hepatitis. Seven patients died due to dengue fever in our infected population.

Table 1: Gender distribution (n=201)

Gender	Frequency	Percentage
Male	137	68%
Female	64	32%
Total	201	100%

Table 2: Age distribution (n=201)

Age	Frequency	Percentage
14-20 years	16	8%
21-30 years	44	22%
31-40 years	60	30%
41-50 years	51	25%
> 50 years	30	15%
Total	201	100%

Mean age was 35 years and standard deviation ± 1.26

Table 3: Hepatitis and abnormal LFTs (n=201)

Complications	Frequency	Percentage
Hepatitis and abnormal LFTs	151	75%

DISCUSSION

Dengue arthropod-borne viral (arboviral) illness transmitted by mosquitoes of the genus Aedes, which are widely distributed in subtropical and tropical areas of the world. Globally, 2.5-3 billion individuals live in approximately 112 countries that experience dengue transmission. Annually, approximately 50-100 million individuals are infected. Dengue fever is typically a self-limiting disease with a mortality rate of less than 1%. Repeated infections increase its severity and chances of Dengue hemorrhagic fever and Dengue shock syndrome[11,12]. Factors responsible for the spread of dengue are explosive population growth, unplanned urban overpopulation with inadequate public health system[12,13]. Poor control of standing water and vectors, viral evolution and increased international recreational, business, and military travel to endemic areas.

In a study from Singapore, Low et al reported that fever; headache, joint pain, fatigue, and skin rashes were statistically associated with dengue[14]. Similarly, the majority of our entire febrile cohort was symptomatic and symptoms were statistically related to dengue infection. Fever, headache, joint pain, and fatigue, as well as skin rashes were statistically linked with dengue infection.

In our study abnormal LFTs and hepatitis was found in 151 patients constituting about 75% of the population. Similar results were found in study by Butt MA et al where frequency of abnormal LFTs and acute hepatitis was found to be 80%, slight higher than our results. Raised ALT was the commonest finding in our study. Severe hepatitis was present in 10% in our study.

Majority of patients in our study experience sign

and symptoms of liver involvement. It includes abdominal pain (20-60%), nausea and vomiting (50-70%) and anorexia. It coincides with the results of the study by Parkashet al[15] which shows abdominal pain (18%-63%), nausea/vomiting (49%-58%) and anorexia. Abdominal pain and anorexia was found to be more common in DF than DHF the values of liver enzymes were noted to be higher in the febrile than in convalescent phase. This is consistent with study by Lee LK et al[16]

Frequency of liver damage was found to be more in males as compared to females in our study (68.8% were males and 31.8% were females). This is in contrast to study conducted by Souza LJ et al where 74.6% of females compared to 52.2% of males were having acute hepatitis[17]. This might be because of increased incidence of dengue fever in males in our area as a result of risk factors that results in majority of patients included in our study were males. However, no significant difference could be elicited between males and females as far as the level of transaminase elevation was concerned.

Seven patients died in our study population. 3 were because of Dengue shock syndrome, 2 were due to Dengue hemorrhagic fever and two were because of fulminant hepatitis. One was female and one was male. This all shows that liver damage is common in patients with dengue infection. Further critical analysis is necessary to characterize the current dengue virus circulation patterns and to identify the patents at risk of these complications.

CONCLUSION

Hepatitis and liver damage is common in dengue infection and contribute to major mortality and morbidity in these patients. Its incidence increases with recurrent dengue infections.

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