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Frequency of Dengue Fever in Children Presenting with Hepatomegaly and Elevated SGPT Level

Adeel Murtaza, Kashan Arshad, Muhammad Azam, Tahir Munir, Ibrahim Ishaq, Muhammad Asghar Butt

ABSTRACT

Objective: To determine the frequency of Dengue fever in children presenting with Hepatomegaly and elevated SGPT level. **Study Design:** Cross sectional study. **Duration of Study:** March 2016 to August 2016. **Setting:** Department of Pediatric Medicine Unit-1, Allied Hospital, Faisalabad. **Methodology:** Over 6 months, 91 children meeting the inclusion criteria were selected from OPD and ward after parental informed consent. Laboratory investigations included Complete Blood Count with peripheral film for Malarial Parasite, SGPT level, IgM and IgG typhoid antibodies, Hepatitis A by ELISA, Hepatitis B and C. Patients were thoroughly evaluated by detailed history and clinical examination. Ultrasonography of the patients was performed to confirm the presence of hepatomegaly. After 5 days 2cc blood for IgM and IgG dengue antibodies were sent to pathology laboratory. Finally, the data were analyzed to determine the mean and standard deviation for quantitative variable like age of child, duration of fever and SGPT level. Qualitative variable like sex and presence of Dengue Fever were presented as frequency and percentage. **Results:** Age distribution of the patients was done which shows that 59.34% were between 1-7 years and 40.66% were between 8-14 years of age, mean±SD was calculated as 7.02±4.05 years. Mean SGPT levels were recorded as 58.32±6.43. Frequency of dengue fever in children presenting with hepatomegaly and elevated SGPT level was recorded in 72.53%. **Conclusion:** We concluded that the frequency of Dengue fever in children is high among patients presenting with hepatomegaly with elevated SGPT levels. Therefore, it is recommended that every child who presents with hepatomegaly and elevated SGPT levels might also be elevated for Dengue fever in dengue endemic areas.

Keywords: Dengue Fever, Hepatomegaly, Elevated SGPT.

Corresponding Author
Dr. Adeel Murtaza
Senior Registrar, Pediatrics Unit-1
Allied Hospital, Faisalabad.
Contact: +92 333-7770522
Email: dr.adeel777@gmail.com

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INTRODUCTION

Dengue fever is a benign syndrome caused by arthropode born viruses mostly transmitted by Aedes aegypti mosquito, a day time biting mosquito.[1]

Approximately 50 to 100 million cases of dengue fever are reported yearly.[2] Data collected from 112 nations with well-prepared registration system suggests that 12000 deaths in south east asia, 4000 in western pacific and 2000 in America for the year 2002 occur due to dengue fever.[3] Dengue fever is endemic and its incidence becomes very high in post monsoon period in Pakistan. The flood in recent years had made it more worse. According to dengue Surveillance Cell Sind province, 1809 suspected dengue patients were screened, out of which 881 confirmed till 11th October 2010 with 5 deaths, while 16 cases reported in Islamabad without any mortality.[4]

Monocytes and macrophages are the target cells for the dengue virus and are responsible for pathogenesis.[5] There are 4 types of dengue RNA virus (DENI to 4), study reported that 90% of the children suffered from dengue fever have 15 folds higher risk of death than that of adults.[6] In dengue fever, hepatic derangement is a well-recognized feature and is characterized by hepatomegaly, mild to moderate increase in liver enzymes but jaundice and acute liver failure is uncommon. Liver biopsy of the patients suffering from dengue fever showed microvascular steatosis, hepatocellular necrosis, associated with councilman bodies, kubfed cells and inflammatory infilterates at the hepatic portal tracts.[7] In a study done in 2008 in India, 62.5% dengue patients had hepatomegaly and 66.7% of dengue patients had their SGPT level elevated.[8]

Dengue fever usually presents with biphasic fever, retro orbital pain, headache, vomiting, myalgia and artheralgia. Dengue hemorrhagic fever presents with hemorrhage and shock. Atypical presentations of dengue fever may be dengue encephalitis, myocarditis, hepatitis and cholysystitis.[9] For early

diagnosis of dengue fever, complete blood count, hematocrit, and detection of IgM antibodies by enzyme linked immunosorbent assey (ELISA) are done.[10] Treatment of dengue fever is supportive.[11]
Rationale of this study was to determine the frequency of dengue fever in children presenting with fever. Hepatomegaly and elevated SGPT level, both are not the component of diagnostic criteria for dengue fever according to previous data, and many patients remained undiagnosed who present with fever, Hepatomegaly and elevated SGPT. So if proven, both elevated SGPT and Hepatomegaly may help investigators in early diagnosis of dengue fever.
The aim of this study was to determine the frequency of Dengue fever in children presenting with hepatomegaly and elevated SGPT level.

METHODOLOGY

Study Design: Cross sectional study
Place of Study: Pediatrics Unit-1, Allied Hospital, Faisalabad
Duration of Study: March to August 2016
Method:
Informed written consent from parents/guardians of 91 children meeting the inclusion criteria (children having age 6 months to 14 years and of either sex presenting with fever from last 3 to 4 days, thrombocytopenia, elevated SGPT level and hepatomegaly) were selected from ward and OPD after performing laboratory investigations by sending total 4cc blood sample to the pathology department of Allied Hospital, Faisalabad. Laboratory investigations included Complete Blood Count by Medonic CA 620 with peripheral film for Malarial Parasite, SGPT level by Hitachi 912 (Roche) USA, IgM and IgG typhoid antibodies by CTK, Biotech, Inc, USA. Hepatitis A by ELISA cobase411, Roche (Hitachi), Hepatitis B and C by (ACON). Ultrasonography of the patients was performed in the radiology department to confirm the hepatomegaly. Exclusion criteria (children with fever, thrombocytopenia, hepatomegaly and elevated SGPT due to other causes e.g. enteric fever, Malaria, hepatitis A, B and C) were strictly followed. Patients included in this study group were thoroughly evaluated by taking detailed history including Bio data (age and sex), Presenting complain of fever, its duration and by clinical examination for hepatomegaly.
Then after 5 days 2cc blood withdraw for IgM and IgG dengue antibodies by ELISA Human GmbH. 65205 Wiesbaden. Germany, were sent to pathology laboratory of Allied Hospital, Faisalabad. Contact number was taken from the admitted and non-admitted patients for follow up. Data was collected by researcher through specially designed Performa.
Finally, the results were entered and analyzed with the help of SPSS version 19. Quantitative variable like age of child, duration of fever and SGPT level presented by mean and standard deviation. Qualitative variable like sex and presence of Dengue Fever were presented as frequency and percentage. All the results for qualitative variables were presented in the form of tables and charts.

RESULTS

Age distribution of the patients was done which shows that 59.34% (n=54) were between 1-7 years and 40.66% (n=37) were between 8-14 years of age, mean+SD was calculated as 7.02±4.05 years (Table No. 1).

Table 1: Age distribution (n=91)

Age(in years)	No. of patients	%
1-7	54	59.34
8-14	37	40.66
Total	**91**	**100**

Mean±SD: 7.02±4.05

Gender distribution of the patients was done which shows that 43.96% (n=40) were male and 56.04% (n=51) were females (Table No. 2).

Table 2: Gender distribution (n=91)

Gender	No. of patients	%
Male	40	43.96
Female	51	56.04
Total	**91**	**100**

Duration of fever was recorded, 80.22% (n=73) were between 1-3 days and 19.78% (n=18) had >3 days of duration of fever, mean±SD was 3.76±1.29 days (Table No. 3).

Table 3: Duration of fever (n=91)

Duration of fever (in days)	No. of patients	%
1-3	73	80.22
>3	18	19.78
Total	**91**	**100**

Mean±SD: 3.76±1.29
Mean SGPT levels were recorded as 58.32±6.43 (Table No. 4). Frequency of dengue fever in children presenting with hepatomegaly and elevated SGPT level was recorded in 72.53% (n=66) while 27.47%

(n=25) had no findings of dengue fever (Table No. 5).

Table 4: Mean SGPT levels of the patients (n=91)

Mean	SD
58.32	6.43

Table 5: Frequency of dengue fever in children presenting with hepatomegaly and elevated SGPT level (n=91)

Dengue fever	No. of patients	%
Yes	66	72.53
No	25	27.47
Total	**91**	**100**

DISCUSSION

Most of dengue infections are asymptomatic. Those with symptoms can be classified into three patterns, based on their severity; undifferentiated fever, dengue fever (DF) and dengue hemorrhagic fever (DHF) which if accompanied by shock, is called dengue shock syndrome (DSS).[12] In clinical practice, the diagnosis and management are based on clinical findings and abnormal initial laboratory tests.[13] Other laboratory tests may be requested to confirm case, as being used in research. These tests take several days to weeks for the results and are not used in routine practice. They are therefore used mainly for epidemiological purposes.[14-15]

We planned this study to determine the frequency of Dengue Fever in children presenting with fever, Hepatomegaly and elevated SGPT level, both hepatomegaly and elevated SGPT level are not the component of diagnostic criteria for dengue fever according to previous data, and many patient remained undiagnosed who present with fever, hepatomegaly and elevated SGPT level.

In our study, out of 91 cases 59.34% (n=54) were between 1-7 years and 40.66% (n=37) were between 8-14 years of age, mean+SD was calculated as 7.02±4.05 years, 43.96% (n=40) were male and 56.04% (n=51) were females, mean duration of fever was 3.76±1.29 days. Mean SGPT levels were recorded as 58.32±6.43. Frequency of dengue fever in children presenting with hepatomegaly and elevated SGPT level was recorded in 72.53% (n=66) while 27.47% (n=25) had no findings of dengue fever.

Our findings are correlated with a study done in 2008 in India 62.5% dengue patients had hepatomegaly and 66.7% of dengue patient had their SGPT level elevated in reference prrovided.[8]

Aisha Sajid and others[16] evaluated the clinical features, disease severity, laboratory findings and outcome of serologically confirmed cases of dengue fever in children during the recent outbreak in 2011. They enrolled 35 cases of dengue fever, 20 patients were male and 15 were females. Twenty nine patients belonged to rural area and 6 came from urban society. Mean age of the patients was 7 years. Splenomegaly was present in 94% of cases. Fifteen children had mild elevation of SGPT.

Vaibhav Shukla and others[17] are of the view that dengue is a major international health concern that is prevalent in tropical and sub-tropical countries. There are certain clinical features that are associated with dengue in addition to the classical features. An analysis of 70 patients suffering from dengue showed liver dysfunction was present in all patients. Vomiting was an important symptom. SGOT levels were higher than SGPT levels. Hepatosplenomegaly and ascitis were also present in significant number of patients. 50% of the patients had hepatomegaly with or without splenomegaly. Studies of liver involvement in children report a higher percentage of patients presenting with hepatomegaly, as high as 80-100%.[18] There are few reports of spleen enlargement in dengue infection.[19, 20] The mechanism of liver involvement in dengue infection is not clear and may involve a direct injury to liver cells or an immunological response.

They suggested that one should be aware of these presentations when dealing with suspected cases of dengue. Most of the studies are done with the view to determine elevated SGPT levels and hepatomegaly in dengue fever while we determined the frequency of dengue fever in children presenting with hepatomegaly and elevated SGPT level. However, the comparative studies are limited which needs some other trials for comparison with the findings of our study.

Our data is primary in this context but showing a significant frequency of dengue fever in both hepatomegaly and elevated SGPT level which is helpful for investigators in early diagnosis of Dengue fever.

CONCLUSION

We concluded that the frequency of Dengue fever in children is high among patients presenting with hepatomegaly and elevated SGPT levels. So, it is recommended that every child who presents with hepatomegaly and elevated SGPT levels should be evaluated for dengue fever. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

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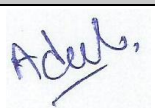
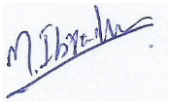
AUTHORSHIP AND CONTRIBUTION DECLARATION

AUTHORS	Contribution to The Paper	Signatures
Dr. Adeel Murtaza Senior Registrar, Pediatrics Unit-1 Allied Hospital, Faisalabad	Main author of paper	
Dr. Kashan Arshad Senior Registrar, Pediatrics Unit-1 Allied Hospital, Faisalabad	Data analysis & Interpretation	
Dr. Muhammad Azam Medical Officer, Pediatrics Children Hospital, Faisalabad	Give his expert view of manuscript designing	
Dr. Tahir Munir Medical Officer, Pediatrics Children Hospital, Faisalabad	Drafting the article	
Dr. Ibrahim Ishaq Medical Officer, Pediatrics Unit-1 Allied Hospital, Faisalabad	Drafting the article	
Dr. Muhammad Asghar Butt Professor, Head of the Department of Pediatrics Unit-1 Allied Hospital, Faisalabad	Supervised the study, Expert research opinion