

Short Communication

A Study of Ultrasonography Findings in Dengue Fever

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ABSTRACT

Introduction: Dengue fever (DF) is a mosquito-borne acute febrile infectious disease caused by flavivirus. Dengue has become a major international public health concern in recent years. Positive serology is the mainstay in the diagnosis of DF. Ultrasonography (USG) is a cheap, rapid and widely available non-invasive imaging method.

Aim: The aim of this study was to evaluate the ultrasonography findings of patients with dengue fever in Mangalore.

Methods: This cross-sectional observational study was carried out in A J Institute of medical sciences during the period of October 2012 to September 2013 on patients having dengue fever. Relevant clinical information was collected systematically.

Results: Among 200 patients included in this study, the age ranged between 15 to 60 years. The sonographic findings show that gall bladder pathology (55%) and ascites (68%) are the commonest findings followed by hepatomegaly (53%) and pleural effusion (42%). Gall bladder pathology was found in 110(55%) patients.

Conclusion: The study concludes that, abdominal and thoracic ultrasonography in patients with dengue fever shows a lot of findings, the most important and commonest findings being gall bladder wall thickening, ascites, hepatomegaly, pleural effusion and may be useful for early prediction of the severity of the disease. On USG, gall bladder wall thickening can be diagnostic as well as prognostic.

Key words: Dengue, Ultrasonography, gall bladder wall thickening.

INTRODUCTION

Dengue fever (DF) is a mosquito-borne acute febrile infectious disease caused by flavivirus. [1] Dengue fever (DF) has been known for more than a century in the tropical areas of South East Asia and the Western Pacific regions. A significant increase in the incidence of this infectious disease has taken place in the last 20 years and Dengue has become a major

international public health concern in recent years. It is an acute mosquito-transmitted systemic viral disease caused by 1 of 4 virus serotypes (DEN-1, DEN-2, DEN-3, and DEN-4). DF is endemic in South East Asia, East and West Africa, the West Indies, the Pacific Islands, the Caribbean, Mexico, and Central America. In 1998, it was deemed to be the most important tropical mosquito-transmitted infectious disease, surpassed

only by malaria. ^[2] Its mortality ranges from 1-5% for treated patients to a maximum of 50% for untreated or poorly treated patients resulting in at least 12,000 deaths annually mainly among children. ^[3] Positive serology is the mainstay in the diagnosis of DF. ^[4] Ultrasonography (USG) is a cheap, rapid and widely available non-invasive imaging method. In recent years several studies concluded that ultrasonography of the chest and abdomen can be an important adjunct to clinical profile in diagnosis of DF and diagnosis can be made early in the course of disease compared with other modes of diagnosis. Sonographic findings of dengue fever have been described in several previous literatures. Some authors concluded that during an epidemic the ultrasound findings of gall bladder wall thickening with or without polyserositis in a febrile patient should suggest the possibility of DF. It is found that a Gall bladder wall thickness of 5 mm is useful as a criterion for identifying dengue hemorrhagic fever (DHF) patients at high risk of developing hypovolemic shock. ^[5] The aim of this study was to evaluate the ultrasonographic findings of patients with dengue fever in Mangalore.

MATERIALS AND METHODS

This cross-sectional observational study was carried out in AJ Institute of medical sciences during the period of October 2012 to September 2013 on patients having dengue fever. Ultrasound scanning of both abdomen and thorax was done. Relevant clinical information was collected systematically. Then all of them underwent sonography and the sonographic findings were noted. All the patients subjected to ultrasonography were positive for dengue NS1 antigen or dengue IgM antibodies or IgG antibodies. In this study 200 dengue fever patients were subjected to ultrasonography and the findings were

analysed. Patients of dengue fever of all grades and severity, of all age groups and both sexes were included in the study. The following were excluded from the study: a) Patients who did not undergo serological test for dengue fever, b) whose serological reports were not available, c) who were seronegative for dengue fever, d) patients with pre-existing intra abdominal pathology and other systemic diseases.

After providing all the necessary information regarding the research study, data were collected in predesigned structured data collection sheets. Collected data was checked for consistency and to remove any minute error. All the relevant collected data were compiled on a master sheet first and was then organized by using scientific calculator and standard statistical formulae. Percentages were calculated to find out the proportion of the findings.

RESULTS

Among 200 patients included in this study, the age ranged between 15 to 60 years. There were 138 men (69%) and 62 women (31%). Ultrasonographic findings of the study population are shown in the table below. The sonographic findings show that gall bladder pathology (55%) and ascites (68%) are the commonest findings followed by hepatomegaly (53%) and pleural effusion (42%).

Gall bladder pathology was found in 110(55%) patients. Among them, gall bladder wall thickening was found in all the 110 patients, gall bladder thickness more than 8mm was found in 34 patients, reticular or trabecular pattern of gall bladder wall was found in 30 patients and pericholecystic fluid was found in 1 patient. Ascites, hepatomegaly, gall bladder wall thickening, pleural effusion was found in patients with all forms of clinical severity. Gall bladder wall thickness of more than 8mm and having reticular or trabecular pattern was

found in patients with higher degree of clinical severity.

Table 1 shows the ultrasonographic findings of the study subjects with the percentage involvement.

Table 2 shows the gall bladder involvement in the study subjects.

Table1: Ultrasonographic findings of the study population:

Sonographic characteristics	Number of patients	Percentage
Gall bladder pathology	110	55 %
Hepatomegaly	106	53 %
Splenomegaly	22	11 %
Ascites	136	68 %
Pleural effusion	84	42 %
Pericardial effusion	Nil	00 %
Pericholecystic fluid	01	0.5%

Table 2 : Gall bladder involvement of the study population :

GB Pathology	Number of patients	Percentage
GB wall thickening	110	100 %
GB wall thickness more than 8mm	34	30.9 %
Reticular or trabecular pattern of GB wall	30	27.27 %
Pericholecystic fluid	01	0.9 %

Total number of patients with gall bladder (GB) pathology – 110.

DISCUSSION

Dengue fever (DF) is an acute febrile illness characterized by the sudden onset of high fever, chills, frontal headache, sore throat, retroocular pain, muscle and joint pain, nausea, vomiting and rash. Laboratory findings commonly associated with DF include neutropenia, lymphocytosis, increased concentration of liver enzymes, and thrombocytopenia. Usually, the diagnosis of DF is suspected on the basis of clinical manifestations and laboratory results.

Out of 200 patients included in this study the age ranged from 15 to 60 years. There were 138 (69%) men and 62 (31%) women. This is consistent with previous study findings that dengue fever occurs more in male sex. The present study findings were compared with those previous studies. Sonographic findings of dengue fever found

in this study are similar to those found in some of the previous studies. [6] Some differences exist between some previous study findings and the present study. For example, Quiroz-Moreno et al found gallbladder thickening in 86% of the patients, but in this study it was present in 55% of the patients. [7] Another example is Pramuljo and Harun reported hepatic subcapsular fluid collections in dengue fever which was not seen in this study. [8] This may be due to serotype of the causative dengue virus, antibody patterns of the patients due to previous exposure to dengue viruses, race of the patients and other factors yet to be known. [9]

CONCLUSION

The study concludes that, abdominal and thoracic ultrasonography in patients with dengue fever shows a lot of findings, the most important and commonest findings being gall bladder wall thickening, ascites, hepatomegaly, pleural effusion and may be useful for early prediction of the severity of the disease. On USG, gall bladder wall thickening can be diagnostic as well as prognostic.

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