ORIGINAL RESEARCH PAPER
Volume - 11 | Issue - 09 | September - 2022 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

STUDY OF CLINICAL PROFILE, LABORATORY DIAGNOSIS AND OUTCOME WITH SPECIAL EMPHASIS ON HEPATIC DYSFUNCTION IN DENGUE FEVER

General Medicine

Dr Aher Sangeeta MD, DHA, A P, Dept. Of Medicine, T.N.M.C & Nair hospital.
Dr Raghavendra R M.D., Lecturer, T.N.M.C.
Kalpana Sadanand Parab Lab Technician.
Vidya Viyayendra Pai Junior Scientific Officer

ABSTRACT

Dengue it is the most common cause of arboviral disease globally. Around 2.5 billion people in 100 endemic countries are believed to be susceptible Dengue has been found to have profound effect on multiple organ systems, the commonest being the liver. Starting from asymptomatic elevated transaminase levels to acute liver failure (ALF), dengue has all the properties of a hepatic illness. **Aim & Objectives:-** 1.To evaluate the derangement in liver function test's as an early marker of severity and timely diagnosis of dengue fever complications. 2.To measure the outcome of dengue fever with hepatic involvement in terms of discharge or death during hospital stay. **Material And Methods: Study Design:** A hospital based prospective, observational study was done with 100 patients to assess clinical profile, laboratory diagnosis and outcome with special emphasis on hepatic dysfunction in dengue fever. **Study Duration:** 18 months. **Study Population:** All patients with serologically proved Dengue fever NS1 Ag & Ig M Positive cases .Sample Size: 100 patients **Inclusion Criteria:** All the adult patients were admitted in General Medicine ward in NAIR Hospital with Dengue NS1/IgM/IgG/RT-PCR test positive were included in study. **Exclusion Criteria:** Mixed infections and patients with pre-existing liver diseases. **Statistical Analysis:** Data was collected using a predesigned pretested questionnaire, data was entered in Microsoft Excel and was analysed using SPSS version 20 and EpiInfo version 7.2.1. **Conclusion:** In developing country like India with increased incidence of Dengue outbreaks, AST and ALT can be a useful early marker to assess the severity of the hepatic dysfunction in dengue fever which can thus lead to early recognition of high risk cases thereby limit the dengue related morbidity and mortality.

KEYWORDS

Dengue infection, Hepatic dysfunction

INTRODUCTION

Dengue fever has a wide geographical distribution, and can present with a diverse clinical spectrum presenting with a wide range of severity."Severe" dengue (Group C) as categorized by World Health Organization (WHO) in 2009 includes the dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS)[3].

This disease has been found to have profound effect on multiple organ systems, the commonest being the liver. Starting from asymptomatic elevated transaminase levels to acute liver failure (ALF), dengue has all the properties of a hepatic illness. In this paper we review, the pathogenesis, biochemical parameters and management of the effects of dengue on liver.

MATERIAL AND METHOD:

A hospital based prospective, observational study was done with 100 patients to assess clinical profile, laboratory diagnosis and outcome with special emphasis on hepatic dysfunction in dengue fever.

Study Design: A hospital based prospective observational study done in 18 months.

Sample Size: 100 patients
Inclusion criteria: All patients with serologically proved Dengue fever NS1 Ag & Ig M Positive cases above 18 years attending OPD/ IPD of Tertiary care Hospital who fulfilled the inclusion criteria.

Exclusion Criteria: Pt with Chronic liver Disease/ Alcoholic liver disease,Viral hepatitis and history of use of hepatotoxic drugs.

METHODOLOGY

Patients history ,clinical examination investigations included Complete blood count, Platelet count, Liver function tests includes AST/ALT, Bilirubin, Serum creatinine, Fever profile which included Dengue (NS1 Ag & Ig M)/ Malaria RMAT, Leptospirosis IgM testing, anti-HAV, HBsAg, anti HCV, Chest X-ray & USG abdomen were done

Statistical Analysis

The appropriate statistical software, including but not restricted to MS Excel, SPSS ver. 20 will be used for statistical analysis. Graphical representation will be done in MS Excel 2010.

OBSESRVATIONS AND RESULTS

A hospital based prospective, observational study was done with 100 patients to assess clinical profile, laboratory diagnosis and outcome with special emphasis on hepatic dysfunction in dengue fever.The mean age of patients was 39.81 ± 16.35 years.78 (78%) patients were male while female patients constituted 22% of the study group.85 (85%) patients presented with fever while 73 (73%) and 70 (70%) patients complained of headache and retroorbital pain respectively. The other common symptom was body ache (65%), abdominal pain (54%) arthralgia (52%), bleeding manifestations (19%) and rash (16%).The most common sign was hepatomegaly (48%) followed by pleural effusion (26%), splenomegaly (15%), ascites (14%) and icterus (13%).Table 1

Table 1 Distribution Of Patients According To Signs

Signs	Male (n=78)		Female (n=22)		Total	
	N	%	N	%	N	%
Hepatomegaly	40	51.3%	8	36.4%	48	48%
Pleural effusion	21	26.9%	5	22.7%	26	26%
Splenomegaly	11	14.1%	4	18.2%	15	15%
Ascites	11	14.1%	3	13.6%	14	14%
Icterus	10	12.8%	3	13.6%	13	13%

74 (74%) patients were positive for NS-1Ag while 52 (52%) and 39 (39%) patients were positive for IgM and IgG respectively. Out of these 26 (26%) patients were positive for both NS-1Ag and IgM.

The bilirubin levels were raised in 18 (18%) patients while 70 (70%) and 72 (72%) patients had elevated AST and ALT levels respectively. The ALP levels were raised in 10 (10%) patients (Table 2)

Table 2: Liver Function Test (LFT) Of Patients

Liver Function Test	Male (n=78)		Female (n=22)		Total	
	N	%	N	%	N	%
Total Bilirubin (mg/dl)						
≤1.3	64	82.1%	18	81.8%	82	82%
>1.3	14	17.9%	4	18.2%	18	18%
AST (IU/L)						
<5	0	-	0	-	0	-
5-40	23	29.5%	7	31.8%	30	30%

>40	55	70.5%	15	68.2%	70	70%
ALT (IU/L)						
<5	0	-	0	-	0	-
5-40	21	26.9%	7	31.8%	28	28%
>40	57	73.1%	15	68.2%	72	72%
ALP (IU/L)						
<53	19	24.3%	5	22.7%	24	24%
53-128	54	69.3%	12	54.4%	66	66%
>128	5	6.4%	5	22.7%	10	10%

DISCUSSION

In the present study, majority of the patients (29%) were from the age group of 21-30 years followed by 24% from the age group of 31-40 years, The mean age of patients was 39.81 ±16.35 years study by Gandhi *et al*. in Mangalore reported similar mean age among dengue patients . 78 (78%) patients were male while female patients constituted 22% of the study group. This is similar to the studies of Kumar S et al[4], Fernando S et al[2] and Soni A et al[1]. other Asian studies, such as by Agarwal *et al.* [1], Ray *et al.* [**3**] and Wali *et al.* [**4**],

In our study, 85 (85%) patients presented with fever while 73 (73%) and 70 (70%) patients complained of headache and retroorbital pain respectively. The other common symptom was body ache (65%), abdominal pain (54%) arthralgia (52%), bleeding manifestations (19%) and rash (16%). The most common sign in our study was hepatomegaly (48%) followed by pleural effusion (26%), splenomegaly (15%), ascites (14%) and icterus (13%). 74 (74%) patients were positive for NS-1Ag while 52 (52%) and 39 (39%) patients were positive for IgM and IgG respectively. Out of these 26 (26%) patients were positive for both NS-1Ag and IgM. This is comparable to the study of Kumar S et al[9] other Asian studies, such as by Agarwal *et al.* [1], Ray *et al.* [**3**] and Wali *et al.* [**4**],

It was observed in our study that 30 (30%) patients had normal Aspartate transaminase (AST) levels while 70 (70%) patients had elevated AST levels. Kumar S et al[9]Pancharoen C et al[5] noted similar observations in their study assessing AST and ALT as early marker in severity of hepatic dysfunction in dengue fever.

In our study, the mean hemoglobin values were 11.5±1.47 g% while the mean TLC and platelet count values was 6887.8±3326.52 and 80580.5±61893.32mm^3/dl respectively. The mean AST and ALT values were 163±270.09 and 144±202.65 respectively and mean creatinine and BUN values were 1.0±0.38 and 16.74±14.21 respectively. The mean eGFR, sodium and potassium levels were 115.94±49.27, 139.04±6.44 and 4.22±0.75 respectively. The bilirubin levels were raised in 18 (18%). The ALP levels were raised in 10 (10%) patients. The present study which showed raised AST and ALT levels are valuable parameters for the evaluation of these verities of the infection similar to the study done by Kumar S et al[4], Pancharoen C et al[5] and Fernando S et al[2] had majority of the patients with raised AST and ALT levels.

The most common complication in our study was dengue hemorrhagic fever (DHF) (20%) followed by dengue shock syndrome (DSS) (5%), septicemia (4%), Acute kidney injury (3%), acute respiratory distress syndrome (3%), hepatic failure (2%) and encephalopathy (2%).

Of the 20 patients with DHF, 6 patients had mild elevation of AST while 11 and 3 patients had moderate and severe elevation of AST levels respectively. All patients with complications like DSS, AKI, ARDS, Hepatic failure and Encephalopathy had severe elevation of AST levels. There is significant association of complications and AST levels of patients as per Chi-Square test (**p<0.05**).Similar observations were noted in the studies of Kumar S et al[9], Uchadadia S et al[7], Fernando S et al[2], Soni A et al[1]and Kuo CH et al[8].

In the present study, majority of the patients with DF had platelet count >1 lakh while majority of the patients with DHF and DSS had platelet count <20000. There was significant correlation between platelet count and severity of Dengue fever as per Chi- Square test (**p<0.05**).

Thus it can be concluded that elevation of the transaminases, total and direct bilirubin, ALP levels, hypoalbuminemia and A:G reversal are all markers of a more severe form of the disease. Similar conclusions have been drawn by Bandyopadhyay D *et al.* [7]. Tinambunan E *et al.* [9], Soni A *et al.* [3]. In our study, we found increase in SGOT and SGPT level with increase in dengue severity which is indicated by fall in platelet count as they are negatively correlated with each other.99 (99%) patients recovered and were discharged while 1 (1%) patient expired.

CONCLUSION

In developing country like India with increased incidence of Dengue outbreaks, AST and ALT , hypoalbuminemia and reversal of A:G ratio should be used as early biochemical markers in dengue patients to detect and monitor hepatic dysfunction which can thus lead to early recognition of high risk cases thereby limit the dengue related morbidity and mortality. Platelet indices plays significant role in early predictive diagnosis and severity of dengue fever. Management is primarily supportive and the outcome is usually good.

REFERENCES

1. Guzman MG, Halstead SB, Artsob H et al. Dengue: a continuing global threat.Nat Rev Microbiol. 2010;8:S7–16.
2. alavige GN, R anatunga PK, Jayaratne SD et al. Dengue viral infections as a cause of encephalopathy. Indian J Med Microbiol. 2007;25(2):143–145.
3. Trung DT, le Thao TT, Hien TT et al. Liver involvement associated with dengue infection in adults in Vietnam. AmJTrop Med Hyg. 2010;83(4):774–780.
4. WHO. Comprehensive guidelines for prevention and control of dengue fever and dengue hemorrhagic fever. SEARO, New Delhi, India: World Health Organization, 2011.
5. Park K. Park's Textbook of Preventive and social medicine. 19th Ed., Jabalpur: BanarasidasBhanot Publisher, 2008.
6. Jagdish C. Challenges in the Management of Dengue Hemorrhagic fever and Dengue Shock Syndrome. Paediatr Today. 2000;4:273-277.
7. Kumarasamy V, Wahab AH, Chua SK et al. Evaluation of a commercial dengue NS1 antigen-capture ELISA for laboratory diagnosis of acute dengue virus infection. J Virol Methods. 2007;140:75–79.
8. Kumar S, Basu A. Study of hepatic dysfunction in dengue fever. Int J Biomedical Advance Res. 2016;7:397-401
9. Pancharoen C, Rungsarannont A, Thisyakorn U. Hepatic dysfunction in dengue patients with various severities. J Med Assoc Thai 2002; 85(1):298-301.
10. Soni A, Patel PM et al. Spectrum of liver dysfunction in patients with dengue infection . J Liver Res Disord Ther. 2017;3(4):95-98.