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Serum IgE, PCV and Liver Function Tests in Dengue Positive Patients: A Comparative Analysis

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ABSTRACT

The Aedes aegypti mosquito is the main vector of transmission for dengue, an acute viral infection brought on by the dengue virus. From mild feverish illness to severe symptoms like dengue hemorrhagic fever and dengue shock syndrome, the disease spectrum is wide. For prompt clinical intervention and better patient outcomes, early detection of laboratory markers linked to illness severity is essential. In this article, a comparative analysis on serum IgE, PCV and liver function tests in dengue positive patients has been discussed.

Keywords: *Serum IgE, PCV, Liver Function, Dengue Positive, Patients.*

INTRODUCTION

Mosquitoes carry the dengue virus (DENV), a member of the Flavivirus genus, which causes the rapidly spreading viral disease (Allamsette, J. et al., 2019). In tropical and subtropical areas, especially in nations like India, it is a serious public health concern and is mostly spread by the female Aedes aegypti mosquito (Bhagyamma, S.N., 2016). Asymptomatic or moderate febrile illness to severe forms like dengue hemorrhagic fever and dengue shock syndrome, which are marked by plasma leakage, thrombocytopenia, bleeding symptoms, and multi-organ involvement, are all part of the clinical spectrum of dengue infection (Dhotre, P.S. et al., 2022). Complex immunological processes, such as cytokine storm, antibody-dependent enhancement, and vascular endothelial dysfunction, are involved in the pathophysiology of dengue. These immune reactions affect a number of hematological and biochemical markers in addition to determining the severity of the disease. Consequently, laboratory tests are essential for the early diagnosis, follow-up, and prognostic evaluation of dengue patients (Kuber, D. et al., 2020). Although serum immunoglobulin E (IgE) has historically been linked to allergy and parasite disorders, new research indicates that viral infections, such as dengue, may change IgE levels through cytokine-mediated pathways and immune activation. Immune dysregulation may be shown in elevated IgE levels, which may also be correlated with the

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severity of the disease (Narasimhan, D. et al., 2018). Therefore, measuring serum IgE in dengue patients may offer more information about immunopathological alterations that occur during infection. Hematocrit, another name for packed cell volume (PCV), is a crucial hematological metric in dengue treatment. Severe dengue is characterized by hemoconcentration brought on by plasma leakage, and increasing PCV levels frequently signal upcoming problems. Clinicians can evaluate fluid balance and identify early indicators of shock by keeping an eye on PCV. Another important aspect of dengue infection is liver damage. Hepatocellular damage can result from the virus's direct infection of hepatocytes and Kupffer cells (Saradva, B. et al., 2023). Patients with dengue often have abnormal liver function tests (LFTs), such as serum transaminases (AST and ALT), bilirubin, and alkaline phosphatase. Systemic inflammation and the severity of the disease may be correlated with elevated liver enzymes (Swamy, A.M. et al., 2021). The objective of the study was to analyze the comparison on serum IgE, PCV and liver function tests in dengue positive patients.

RESEARCH METHODOLOGY

STUDY DESIGN:

Longitudinal Observational Study

STUDY POPULATION:

Patients more than 16 years of age and those who were admitted to the medicine ward of Bandel ESI Hospital with positive dengue serology (Dengue NS 1 Antigen or Dengue IgM or IgG Antibody) of 100 patients.

INCLUSION CRITERIA:

Age more than 16 years and Patients admitted with Dengue NS 1 and Dengue Ig M or Ig G positive serological profile.

EXCLUSION CRITERIA:

Alcoholic liver disease, Viral hepatitis, Coagulation disorders, Typhoid, Malaria.

METHODOLOGY:

Patients fundamental documents and data (such as age, gender of participant patients) and thorough Clinical and family history was recorded. Every patient under this study gone through a comprehensive physical and systemic health checkup. Following pathological investigations which included in this study were Complete hemogram, liver function test and serum total IGE study was done in all patients. Depending on the duration of fever Dengue NS1 Ag by ELISA method or IgM / Ig G ELISA was done for detection or confirmation of dengue virus infection.

Dengue IgM/IgG Immunoassay:

Dengue specific IgM and IgG antibodies are estimated in serum of study population blood sample by using common commercially availed ELISA test kit, and the test procedure is performed according to description by the manufacturer.

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DENGUE ANTIBODY ELISA:

Requirements:

- Anti-human IgM / IgG coated microwells (Assay plate).
- Dengue 1-4 antigens (Recombinant).
- Wash buffer concentrate-20X concentrate of phosphate buffered saline (PBS), pH 7.2-7.6 with Tween 20 and 0.1% proclin as preservative.
- Serum diluent-Tris buffered saline with preservatives and additives.
- Antigen diluent- PBS with preservative and 0.005% gentamycin.
- Horse Raddish Peroxidase(HRP) conjugated Monoclonal Antibody Tracer.
- Tetramethyl benzidine (TMB)- 3,3',5,5'-the substrate, tetramethyl benzidine, hydrogen peroxide in a citric-acid citrate buffer (pH 3.5-3.8).
- Positive control serum, Negative control serum, and cut-off calibrator – Human serum with 0.1 % sodium azide and 0.005% gentamycin sulphate.
- Stop solution-1Mole Phosphoric acid.

DENGUE IgM CAPTURE ELISA:

Procedure:

Serum Predilution:

- The microwells are inserted into the strip holder. 5 microwells are required for positive control (PC), negative control(NC) and cutt-off calibrator (CO) in triplicate.
- The PC, NC & CO & patient samples are diluted using suitable test tubes or microtiter plate.
- 1000 µl or 1ml of serum diluent is added to 10µl of serum and mixed well.

Elisa Procedure:

- Antigen is diluted 1/250 using the antigen diluent. i.e, 10µl of antigen + 2.5 ml of antigen diluent. A volume of 0.5 ml of diluted antigen is required per strip.
- Required volume of diluted antigen is mixed with equal volume of MAb tracer (Horse Raddish Peroxidase conjugated Monoclonal antibody tracer) in a test tube and kept at room temperature (20°-25°C) until required.
- 100µl of diluted patient sample and controls (one positive control, one negative control and three cut-off calibrators) are pipetted into their respective microwells of the assay plate.
- The plate is covered and incubated for 1 hour at 37˚C.
- After incubation, the plate is washed 6 times with diluted wash buffer.
- The antigen- MAb tracer solution is mixed well and 100µl is transferred to microtitre wells.
- The plate is covered and incubated for 1 hour at 37˚ C.
- The plates are washed 6 times with diluted wash buffer after incubation.
- 100µl of TMB(Tetramethylbenzidine) is pipetted into each well and a blue colour develops. The plate is incubated for 10 min at room temperature.
- At the end of 10min, 100µl of stop solution is pipetted into all wells. The blue colour will change into yellow.
- The absorbance of each well is read at a wavelength of 450nm with a reference filter of 600-650nm, using a dual wavelength spectrophotometer.

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Calculations:

- The cut-off value was determined by calculating the average absorbance of the triplicate of the cut-off calibrator.
- The index value was calculated by dividing the sample absorbance by the cut-off value.
- Panbio units can be calculated by multiplying the index value by 10.
- Index value= Sample absorbance
- Cut-off value
- Panbio units= Index value x 10.

Test Validity:

- Calibrator mean ≥ 1.5 x Negative absorbance.
- Positive control = 1.1-6.0
- Cut-off
- Negative control < 0.350

Interpretation of Results:

Index	Panbio Units	Results
<0.9	<9	Negative
0.9-1.1	9-11	Equivocal
>1.1	>11	Positive

Sensitivity of this test is 94.7%, Specificity is 100%.

DENGUE IgG CAPTURE ELISA:

Procedure:

The dengue IgG ELISA is set to detect high levels of IgG present in secondary but not primary or past dengue infections. All the reagents were brought to room temperature and serum pre- dilution done as for dengue IgM capture ELISA.

Elisa Procedure:

- Antigens are reconstituted with antigen reconstitution buffer. 1ml of reconstitution buffer was added to antigen and mixed.
- Required volume of reconstituted antigen is mixed with an equal volume of Mab tracer (Horse Raddish Peroxidase conjugated Monoclonal antibody tracer) in a test tube and kept at room temperature until required.
- Add 100µl of diluted patient sample and controls into their respective microwells of the assay plate (anti-human IgG coated microwells).
- The plate is covered and incubated for 30 min at 37^0C.
- After incubation, the plate is washed 6 times with diluted wash buffer.
- The antigen- MAb tracer solution is mixed well and 100µl is transferred to microtitre wells.
- The plate is covered and incubated for 1 hour at 37^0C.
- The plates are washed 6 times with diluted wash buffer after incubation.

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- 100µl of Tetramethylbenzidine is pipetted into each well and incubated for 10 min at room temperature, a blue colour will develop.
- At the end of 10min, 100µl of stop solution is pipetted into all wells. The blue colour will change into yellow.
- The absorbance of each well is read at a wavelength of 450nm with a reference filter of 600-650nm, using a dual wavelength spectrophotometer.

Calculations:

- The cut-off value was determined by calculating the average absorbance of the triplicate of the cut-off calibrator.
- The index value was calculated by dividing the sample absorbance by the cut-off value.
- Panbio units can be calculated by multiplying the index value by 10.
- Index value= Sample absorbance
- Cut-off value
- Panbio units= Index value x 10.

Test Validity:

- Calibrator mean > Negative absorbance.
- Positive control = 1.1-6.0
- Cut-off
- Negative control < 0.350

Interpretation of Results:

Index	Panbio Units	Results
<0.9	<9	Negative
0.9-1.1	9-11	Equivocal
>1.1	>11	Positive

Sensitivity of this test is 85.7% and specificity is 100%.

SERUM IgE ENZYME IMMUNOASSAY:

Total serum IgE antibodies are estimated in serum sample of study population by using common commercially availed ELISA test kit, and the test procedure is performed according to description by manufacturer. Patients were examined daily by general physical and systemic examination along with daily platelet count and hematocrit value estimation are monitored to detect any bleeding diathesis along with its complications. Hematology studies are performed by Automated cell counter and platelet estimation done by slide examination. Liver function test or LFT done at alternate day during the illness and this method is performed by Fully Automated Biochemistry Analyser, ERBA EM 200.

Calculations:

For estimation of IgM and IgG antibody against dengue virus, cut-off standard value of manufacturer is used. Dengue infections are considered primary if the ratio of dengue specific IgM/IgG serum antibodies is >1 and if this ratio is <1, then the infections are considered as secondary dengue infection. For quantification of serum IgE levels in patient sample, a standard curve is constructed by using various

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dilutions of a positive reference sample. Then actual concentration of the IgE antibodies is estimated by adjusting the dilution factor. The dengue virus-specific IgE antibody ratios are calculated according to the below mentioned formulation: Dengue virus-specific IgE ratio = (O.D. sample – O.D. blank) / (mean of negative controls + 3X S.D). Where O.D.: Optical density (extinction) of each sample.

Statistical Analysis:

Data will be documented in an excel sheet and will be analysed calculated using a SPSS statistical software (which is commercially available). Data will be documented as mean + / - standard deviation depending on their distribution category in excel sheet. Any statistical association will be analysed using chi-square test. Statistical correlation will be analysed by Pearson correlation method. A p value of <0.05 using two way tailed test method will be considered as being statistically significant for all tests.

DATA ANALYSIS, RESULTS AND DISCUSSION:

SEVERITY OF DENGUE CLASSIFICATION:

Table 1. Classification Based on Severity

Diagnosis	No of Patients	Percent
Dengue fever without warning signs	45	45.0
DF with warning signs	53	53.0
Severe Dengue	2	2.0
Total	100	100.0

Table 2. Age Distribution and Severity of Dengue Fever Among Study Population

	Dengue Fever	DF with Warning Signs	Severe Dengue
< 20 years	8	10	0
21- 30 years	21	17	1
31- 40 years	4	17	1
41-50 years	2	7	0
51-60 years	6	1	0
>60 years	4	1	0

Day of Presentation:

Table 3. No of Patients and Day of Presentation to Hospital

Day of Illness	No of Patients	Percent
1	3	3.0
2	5	5.0
3	25	25.0
4	23	23.0
5	24	24.0
6	16	16.0
7	4	4.0
Total	100	100.0

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DENGUE SEROLOGY:

Table 4. Dengue Serology Among Study Population

Antibodies	Positive
IgM	54
IgG	2
Both	44

SEVERITY OF DENGUE IN PRIMARY AND SECONDARY INFECTION:

Table 5. Severity of Dengue in Primary and Secondary Dengue Infection Among Study Population

	Dengue Fever	Dengue with Warning Signs	Severe Dengue
Primary dengue	30 (55.55%)	23 (42.59%)	1(1.85%)
Secondary dengue	14 (31.81%)	29 (65.9%)	1(2.27%)

Symptoms of Dengue Fever:

Table 6. Symptoms of Dengue Fever Among Study Population

Symptoms	No of Patients
Fever	100
Joint pain	68
Myalgia	52
Headache	72
RO pain	36
Abdominal pain	14
Vomiting	43
Diarrhea	14
Erythematous skin Rashes	15
Petechiae	11
Bleeding gums	7
Epistaxis	2
Increased bleeding PV	6
Malena	11
Hematuria	2

ACTIVATED LYMPHOCYTES AMONG STUDY POPULATION:

Table 7. Activated Lymphocytes Among Study Population

	No of Patients	Percent
Yes	53	53.0
No	47	47.0
Total	100	100.0

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MONOCYTOSIS AMONG STUDY POPULATION:

Table 8. Monocytosis in Dengue Among Study Population

	No of Patients	Percent
Yes	8	8.0
No	92	92.0
Total	100	100.0

THROMBOCYTOPENIA AMONG STUDY POPULATION:

Table 9. Frequency Distribution of Thrombocytopenia Among Study Population

	Frequency	Percent
Less than 20000	34	34.0
20000 to 50000	29	29.0
50000 to 100000	28	28.0
More than 100000	9	9.0
Total	100	100.0

CORRELATION BETWEEN MEAN HEMATOCRIT AND MEAN PLATELET COUNT:

Table 10. Correlation Between Mean Haematocrit and Mean Platelet Count Among Study Population

Category	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
Mean platelet count	63000	70600	71498	64050	56262	63830	67825
Hematocrit	40.54	39.75	40.1	41.34	42.89	42.3	42.2

EPISTAXIS AND DENGUE SEVERITY CORRELATION:

Table 11. Epistaxis and Dengue Severity Correlation Among Study Population

Diagnosis		Epistaxis		Total	P Value
		Yes	No		
Dengue fever	No	1	44	45	0.973
	% within Diagnosis	2.2%	97.8%	100.0%	
DF with warning signs	No	1	52	53	
	% within Diagnosis	1.9%	98.1%	100.0%	
Severe Dengue	No	0	2	2	
	% within Diagnosis	.0%	100.0%	100.0%	
Total	No	2	98	100	

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PLATELET COUNT AND BLEEDING MANIFESTATION:

Table 12. Platelet Count and Bleeding Manifestations Among Study Population

Bleeding Manifestations	Platelet			Total
	<20000	20000-50000	50000-1 lakh	
Bleeding gums	5	2	0	7
Petechiae	9	2	0	11
Malena	6	5	0	11
Epistaxis	2	0	0	2
Increased Bleeding PV	4	2	0	6
Hematuria	1	0	1	2
Total	27	11	1	39

BIOCHEMICAL PROFILE OF DENGUE PATIENTS:

Table 13. Serum SGOT Level Among Study Population

DIAGNOSIS		SGOT		Total	P value
		Normal	Elevated		
Dengue fever	Number	13	32	45	0.001
	% within DIAGNOSIS	28.9%	71.1%	100.0%	
DF with warning signs	Number	1	52	53	
	% within DIAGNOSIS	1.9%	98.1%	100.0%	
Severe Dengue	Number	0	2	2	
	% within DIAGNOSIS	.0%	100.0%	100.0%	
Total	Number	14	86	100	
			86.0%	100.0%	

GALL BLADDER WALL THICKENING IN DENGUE:

Table 14. Gall Bladder Wall Thickening in Dengue Among Study Population

DIAGNOSIS		GB Thickened and Edematous		Total	P value
		Yes	No		
Dengue fever	Number	13	32	45	0.000
	% within DIAGNOSIS	28.9%	71.1%	100.0%	
DF with warning signs	Number	38	15	53	
	% within DIAGNOSIS	71.7%	28.3%	100.0%	
Severe Dengue	Number	2	0	2	
	% within DIAGNOSIS	100.0%	.0%	100.0%	
Total	Number	53	47	100	
	% within DIAGNOSIS	53.0%	47.0%	100.0%	

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STATISTICAL ANALYSIS OF DATA:

Univariate and multivariate statistical analysis was successively performed using BMDP software. The univariate statistical tests allow showing a relation between two variables but without adjusting for the influence of other variables. Making a multivariate statistical analysis and thus, after adjusting for the other variables and their interactions, it could be possible that a significant relation using univariate test disappear. When the variables are numerous, the results of the univariate analysis may be useful in order to select the variables to be included in the multivariate analysis. First, univariate analysis was performed. Using Spearman test, Student test and ANOVA, which allows to assess the significance of group differences of a grouping variable, the relation of the dependent variables, i.e. the level of dengue virus-specific IgE and the independent variables, i.e. age, sex and days post onset of illness of the patients, severity of infection, immunity to dengue virus (primary and multiple dengue virus infection) and the level of total IgE, IgM and IgG were assessed.

Second a multivariate analysis was performed, using analysis of covariance (ANCOVA). Since the distribution of the data was normal as determined by computer analysis and in order to take into account the interactions of the independent variable in a global model, in a second time the independent variables were included in an ANCOVA descriptive model. An analysis of covariance can be viewed as a combination of analysis of variance (ANOVA) and regression. It was used to refine the univariate analysis by adjusting for covariates that may be related linearly to the outcome that is being investigated. Consequently, ANCOVA is conducted in order to show some variables, which could be significant using the univariate analysis and which have finally no significant role. A two-sided p-value <0.05 was considered to represent a significant difference. The results of the ANCOVA model allow assessing the real influence of the studied independent variable on the IgE specific level because this model takes into account the interactions of the different variables.

Table 15. Relation of The Levels of Total Serum IgE Antibodies and The Day Post Onset of Symptoms and The Levels of Total IgE and Dengue Virus-Specific IgM and IgG.

	P Value (Pearson Test)
Day post onset of symptoms	0.0011
Level of total IgE	$<10^{-9}$
Level of DEN-specific IgM	0.53
Level of DEN-specific IgG	$<10^{-17}$

Levels of Total and Dengue Virus-Specific IgE Serum Antibodies in Acute Phase of Illness

Levels of total IgE remains stable during acute dengue fever (from day 1 to 7 post onset of symptoms) in early convalescent dengue fever (from day 8 to 13 post onset of symptoms) and late convalescent phase of dengue fever after 14 days post onset of symptoms) alongwith mean and standard deviation ranging between 125 to 196, 108 to162 and 124 to203 U/L in the respective phases of illness. In contrast, dengue virus-specific IgE serum antibodies raised from mean ratio 0.9+1.1 in acute dengue fever to 1.9+1.6 and 1.5+1.4 during early convalescent and convalescent dengue fever respectively.

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Raised levels of total IgE antibodies are also observed in the dengue hemorrhagic fever group of patients having mean value U/L 154+206, 50+84 and 106+133 during these acute, early convalescent and convalescent dengue hemorrhagic fever respectively. Dengue virus-specific IgE serum antibodies in dengue hemorrhagic fever patients are raised at mean ratios 2.2+1.6, 2.0+1.3 and 1.8+1.1 at the time of acute, early convalescent and convalescent phase of dengue hemorrhagic fever respectively.

Those patients who are developed dengue shock syndrome having highest mean level of total IgE serum antibody acute phase of illness (331+285 U/L) and at the time of early convalescent phase of illness (300+265 U/L) and levels of total IgE decreased to 56+86 U/L in convalescence phases of illness. Dengue virus-specific IgE antibodies in patients of dengue shock syndrome are in stable levels at all stages of illness with mean ratios of 2.6+1.7, 3.3+2.1 and 2.7+2.3 during acute, early convalescent and convalescent periods of infection.

Results of The Univariate Analysis:

Dengue virus -specific IgE antibodies are significantly co-related to day after onset of fever along with severity of disease acquired immunity to dengue virus (primary vs. secondary infections) and the level of total serum IgE and IgG antibodies. Dengue virus-specific IgE serum antibodies are not significantly correlated to the age and levels of IgM antibodies. The results have to be confirmed by the results of the multivariate analysis.

Results of The ANCOVA After Adjusting for Covariates:

With the influence of the other independent variables, the ANCOVA showed significant increase of virus specific serum IgE Antibodies over time (regression coefficient=0.04, P=0.027) level and this dengue virus- specific IgE increased significantly along with the level of IgG (regression coefficient =0.16, P=0.0001)

Table 16. Comparison of the Level of Dengue Virus-Specific IgE Serum Antibodies Following the Level of Disease Severity and The Age Category of The Patients:

Mean		Standard Deviation	Df[1]	F Value	P Value (Anova)
Dengue Severity (WHO Classification)			4	28.6	$<10^{-21}$
DF	1.06	1.27			
DHF 1	2.37	1.52			
DHF 2	1.89	1.47			
DHF 3	2.66	1.6			
DHF 4	3.78	2.89			
Age			2	1.13	0.32
0-5 years	2.27	2.17			
6-10 years	2.05	1.74			
11-15 years	1.89	1.58			

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At less degree alongwith the level of total serum IgE level (regression coefficient =0.001, P=0.0006). Dengue virus- specific serum IgE level decreased gradually but significantly according to the age of patient (regression coefficient =- 0.06, P=0.016). Level of serum IgM level have no significant influence over level of dengue virus-specific IgE. This model also showed no influence of the immunological state of dengue virus infections (P=0.19) and no significant interaction observed between the immunological state and the severity of dengue illness (P=0.38).

Table 17. Comparisons of the Mean Level of Dengue Virus (DEN)-Specific IgE Following the Sex and The Immunity Status of The Patient

		Mean Standard Deviation	(Student Test)	P Value
Sex	male	1.89	1.73	0.08
	female	2.19	1.82	
Immunity status	primary DEN infection	1.00	1.32	$<10^{-9}$
	secondary DEN infection	2.34	1.79	

With consideration of the other independent variables, the ANCOVA permitted us to calculate the adjusted values of dengue virus-specific serum IgE antibody and this fact reveals that level of dengue virus-specific IgE is higher in case of dengue shock syndrome patients. In fact, the level of dengue virus-specific IgE antibody raised from mean ratio of 1.60 in primary dengue infection to mean ratio of 2.03 and 1.24 in primary dengue hemorrhagic fever 12 patients respectively (dengue hemorrhagic fever patients) to reach highest levels in primary dengue shock syndrome patients (mean ratios 1.85 and 2.85 in dengue hemorrhagic fever grade 3 and 4 patients respectively). The trend of dengue virus-specific IgE serum antibodies during secondary infections was not significantly different with primary infections (Table 5), increasing from mean ratio 1.37 in dengue fever patients to mean ratios of 2.36 and 1.82 in dengue hemorrhagic fever patients (dengue hemorrhagic fever 1 and 2 respectively) and reached highest values in dengue shock syndrome patients with mean ratios of 2.35 and 3.72 among dengue hemorrhagic fever 3 and 4 patients, respectively.

Comparison of Total and Dengue Virus-Specific IgE Serum Antibodies Among Dengue and Non-Dengue Febrile Patients.

Although the levels of total IgE serum antibodies between reference IgE serum (positive controls) and dengue fever, dengue hemorrhagic fever and dengue shock syndrome patients were not significantly different, the levels of dengue virus-specific IgE serum antibodies were significantly different between IgE reference serum and dengue hemorrhagic fever patients (P=0.03) or between IgE reference serum and dengue shock syndrome patients (P=0.002). Statistical analysis between control group (non-dengue febrile patients and blood donors) and acute phase dengue fever patients did not reveal a significant difference between these two groups (P=0.8 and P=0.4 for total and dengue virus-specific IgE respectively). The levels of total IgE antibodies did not differ significantly

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between non-dengue patients and acute phase dengue hemorrhagic fever patients (P=0.539), however, dengue virus-specific IgE antibodies was significantly different between acute phase dengue hemorrhagic fever patients and non-dengue patients (P=0.000). In acute phase dengue shock syndrome patients, the levels of total and dengue virus-specific IgE serum antibodies were significantly higher than in non-dengue patients (P=0.000 for both total and dengue virus-specific IgE serum antibodies).

CONCLUSION

- To conclude the study, dengue fever is most prevalent among young males.
- In our study, dengue fever with warning signs is the most common followed by dengue fever without warning signs and severe dengue.
- Dengue fever is clinically presented with classical features of fever, headache and joint pain as the common presenting symptoms. Petechiae, malena, bleeding gums are the most common bleeding manifestation.
- Thrombocytopenia is observed in 100% patients with 91% have platelet count of less than 1 lakh / cmm and 9% have platelet count of between 1 to 1.5 lakh / c mm. Mean platelet count in this study is 65,295 cells /cmm.
- Severe thrombocytopenia is associated mostly with Dengue patients with warning signs and severe Dengue patients. Significant statistical difference is present in mean platelet volumes between the study groups.
- Risk of bleeding manifestations increases if the platelet count becomes lower than 20,000 cells/ cumm
- Thrombocytopenia, Leucopenia and raised haematocrit values (hematological profile), deranged liver enzymes (biochemical profile), sonographic findings such as gall bladder wall edema and thickening, ascites, pleural effusion are seen in dengue fever, and all features individually or in combination indicates a provisional diagnosis of dengue infection
- In this study it is found that among the dengue patient without warning signs, AST elevated in 71.1% of cases. In patients with warning signs, AST elevated in 98.1% of cases and 100% patients with severe dengue having elevated AST. Significant differences present in these groups (p value = 0.001). Strong association present between SGOT elevation and severity of dengue disease.
- In this study we found higher levels of total and dengue virus-specific IgE antibody lev in Dengue patients with significantly higher levels of IgE antibodies in the acute phase of dengue hemorrhagic fever or dengue shock syndrome which strongly indicates that IgE responses may be involved in immuno pathogenesis of Dengue. Result of the study suggested that elevated levels of total and dengue virus-specific IgE serum antibodies in the acute phase of dengue virus infection may be prognostically important for developing severe complication of disease.
- Treatment of dengue fever is mostly supportive care.
- Early diagnosis and adequate fluid management have key role in disease outcome.
- Blood pressure, platelets, hematocrit level should be monitored closely to evaluate the progress of disease.

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REFERENCES

1. Allamsette, J. et al. (2019). Dengue Fever- Liver Function Tests Analysis. *IOSR Journal of Dental and Medical Sciences*, 18(10), 9-11.
2. Bhagyamma, S.N. (2016). Study of Liver function tests in Adult patients with Dengue viral infection in Anantapuramu, Andhra Pradesh. *Scholars Journal of Applied Medical Sciences*, 4(1), 81-84.
3. Dhotre, P.S. et al. (2022). Evaluation of Alterations in Liver Function Tests in Dengue Fever. *Research and Clinical Medicine Journal*, 6(2), 6-10.
4. Kuber, D. et al. (2020). Assessment of Liver Function Test and its Correlation with Severity of Dengue Fever. *International Journal of Medical Science and Education*, 7(6), 93-97.
5. Narasimhan, D. et al. (2018). Analysis of liver function tests in dengue fever. *International Journal of Advances in Medicine*, 5(1), 47–49.
6. Saradva, B. et al. (2023). Correlation of Liver Function Test and Severity in Dengue Patients. *International Journal of Pharmaceutical and Clinical Research*, 15(8), 114-118.
7. Swamy, A.M. et al. (2021). Liver function in dengue and its correlation with disease severity: a retrospective cross-sectional observational study in a tertiary care center in Coastal India. *Pan African Medical Journal*, 40(261), 1-12.