Clinical Profile in A Cohort of Unicentric Admitted Dengue Patients during One Monsoon Season

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Abstract:

Background-

Dengue is endemic and highly prevalent in tropical and sub-tropical countries including India and can cause significant mortality and morbidity.Clinical presentation of dengue virus infection varies from no symptoms to severe dengue with shock. It is the most rapidly spreading vector borne disease in the world, nearly 100 million cases of Dengue fever and between 250,000 and 500,000 cases of severe dengue are annually reported.In this observational study, data of clinical characteristics, blood counts, biochemical parameters, severity of disease and complications were recorded during entire hospital stay till discharge in a cohort of admitted patients. Complications occurred during the hospital stay were addressed and managed. Incidence of common complications were noted for monitoring in future with respect to similar cases.

Methods and Materials-

All the patients who were serologically tested with Dengue positive status requiring inpatienthospital admission during June 2022 to November 2022 were included in the study. A total of patients were included in the study. Clinical presentation, lab parameters, severity of illness, complications and outcomes were recorded. The information and details obtained for the study were collected after taking consent from all the patients. In this study there was no conflict of interests.

Results-

The study included 78 subjects, out of which 12 individuals had severe dengue and 34 individuals had mild dengue. The most common symptom was fever associated with myalgia. The study included male and females with distribution of 76% and 24 % respectively. In this data we noticed LDH at time of admission had positive and significant correlation in assessing the severity of disease. This was a major breakthrough of study and can be used as a prognostic marker in predicting the severity at time of admission.

GLOSSARY OF ABBREVIATIONS:

LDH – Lactate Dehydrogenase

TLC – Total Leucocyte count

SD- Standard Deviation

SE – Standard error

Cumm – cubic millimetres

U/L – International units/ Litre

I.   Introduction:

Dengue fever is the arboviral infection with the largest incidence worldwide. [1] Clinical expression of dengue virus infection varies from no symptoms to severe dengue with shock. Nearly 100 million cases of dengue fever and between 250,000 and 500,000 cases of severe dengue are annually reported to the World Health Organization. [2,3] Severe dengue is characterized by thrombocytopenia, spontaneous haemorrhages, and gradual plasma leakage that can lead to shock. [4] Despite its clinical variability, the acute phase of dengue begins with fever that is indistinguishable from the initial phase of other acute febrile infectious diseases. Thus, acute dengue infection is often unrecognized until the appearance of the more severe forms of the disease. [1,2,4] This non-specificity of clinical features leads to inadequate or late treatment of a potentially lethal medical condition. There is direct and indirect evidence of biochemical and radiological alterations related to severity of dengue. [5,6] In view of heterogenic presentation and unpredictable outcomes biomarkers in assessing severity at time of admission is the need of hour. There are few studies were biomarkers like LDH and albumin were used as biomarkers in assessing the severity at the time admission.

II.   Methods And Materials:

All the patients who were serologically tested with Dengue positive status requiring hospital in patient admission during June 2022 to September 2022(Monsoon) were included in the study. A total of 78 patients were included in the study. Clinical presentation, lab parameters, severity of illness, complications and outcomes were recorded. The information and details obtained for the study were collected after taking consent from all the patients. In this study there was no conflict of interests.

Statistical Analysis-

Descriptive, correlation and regression statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean±SD and results on categorical measurements are presented in Number (%). Significance is assessed at 5 % level of significance. Statistics were performed with help of IBM SPSS 20 software.

III. Observations And Results:

a.   Demographic profile & Clinical characteristics –
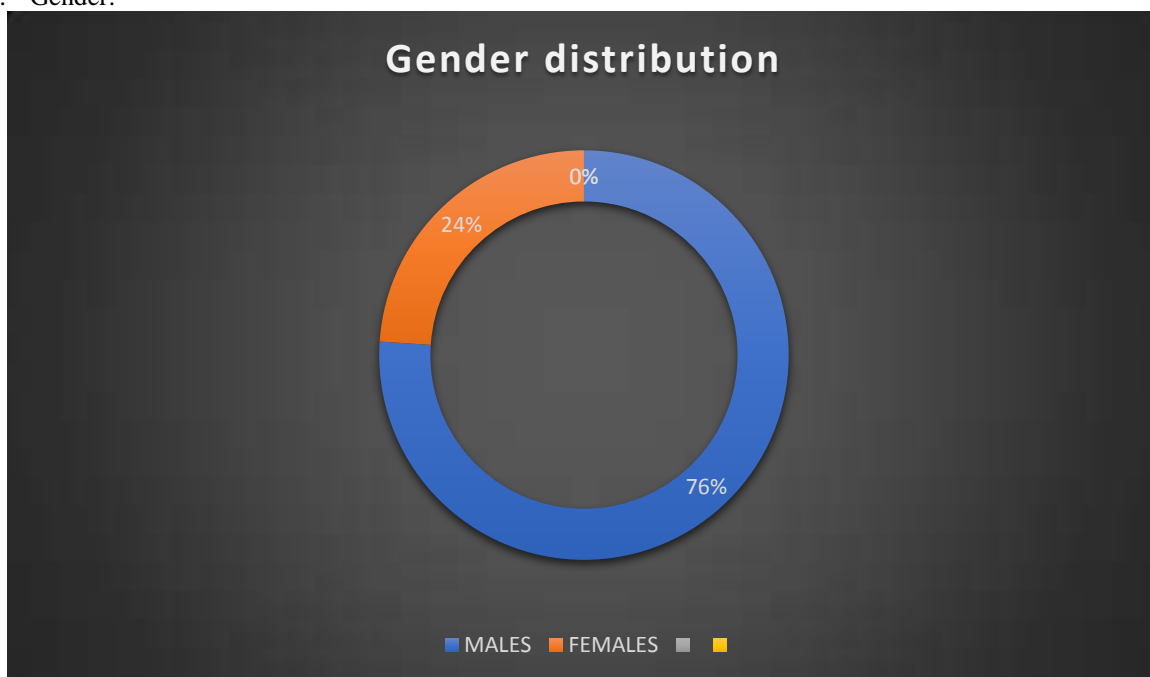
 I. Gender:

Figure 1 showing Gender distribution
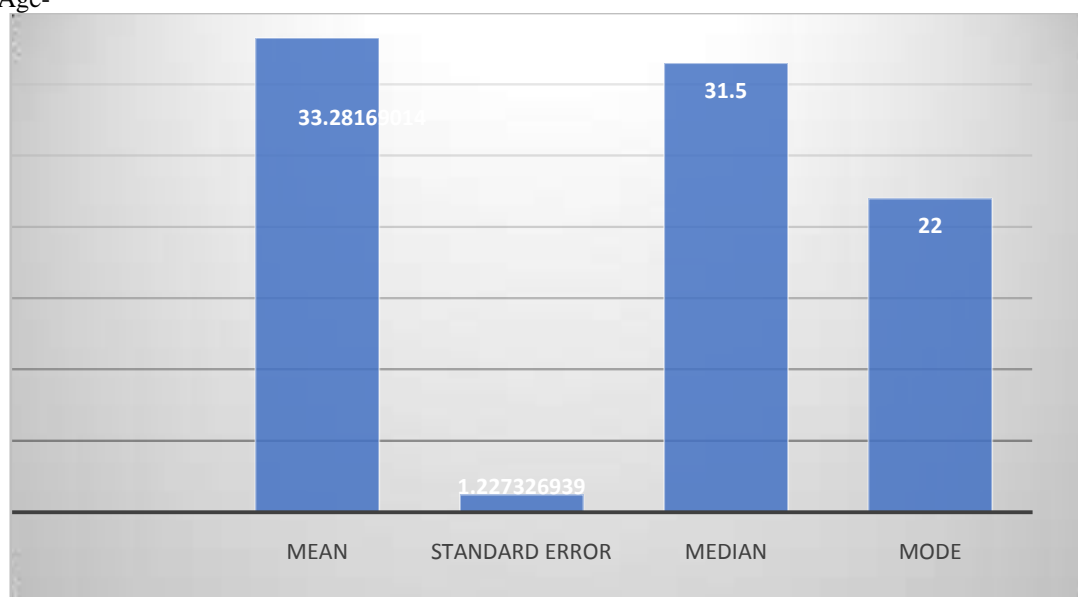
 II.   Age-

Figure 2 showing mean age of study
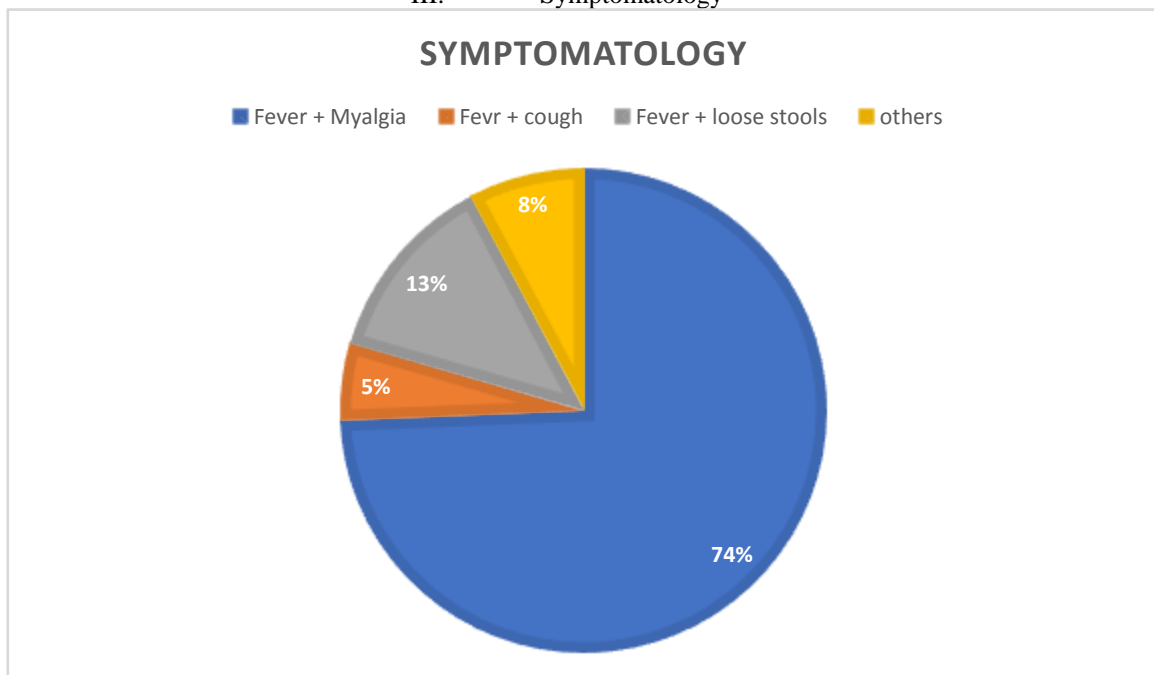
III.   Symptomatology

Figure 3 showing predominant symptoms distribution at time of admission
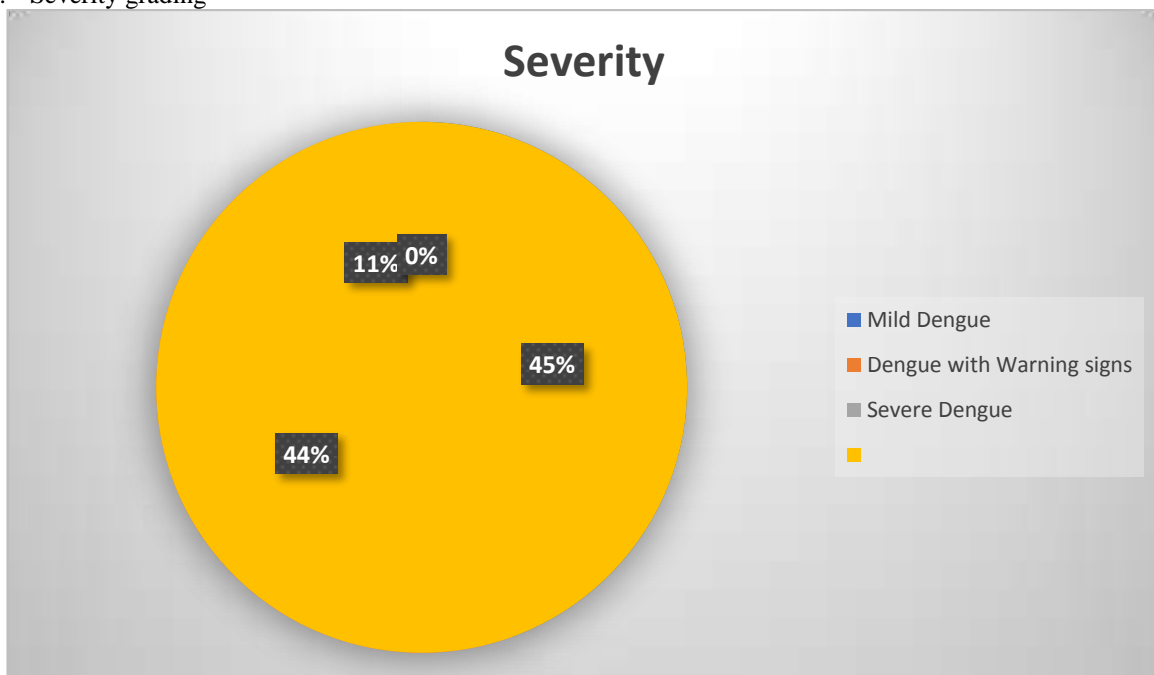
IV.   Severity grading

Figure 4 showing distribution of cases according to severity

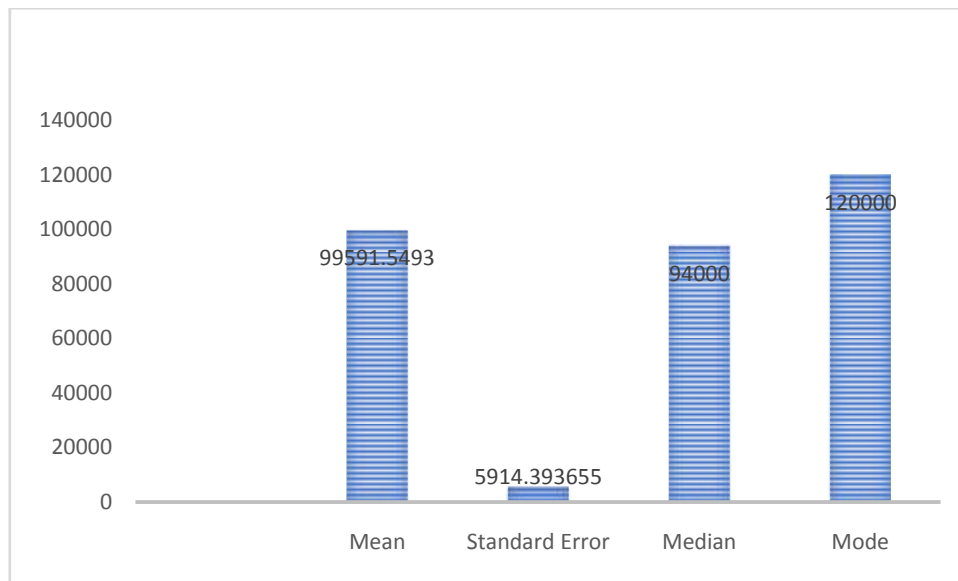b.   Biochemical Characteristics-

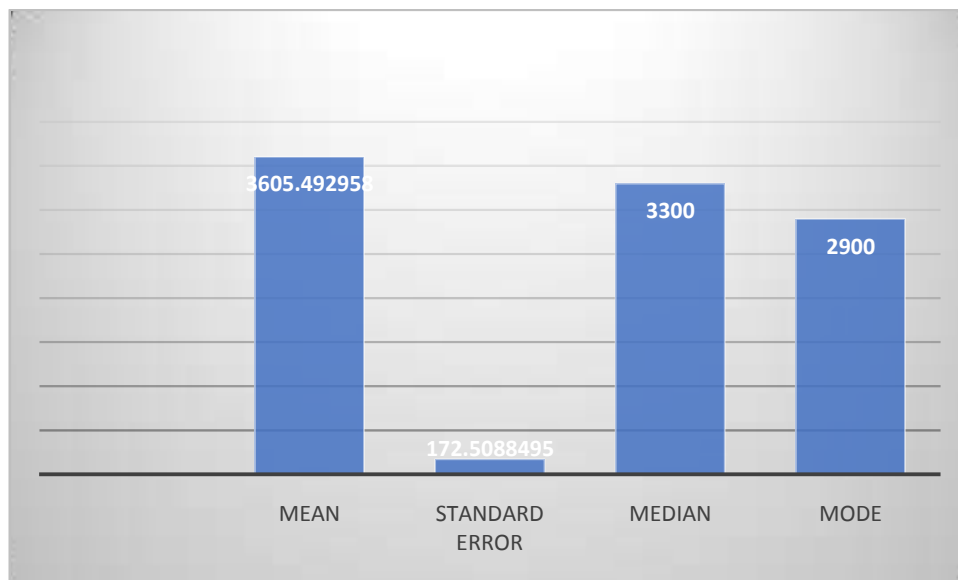Figure 5 showing mean platelet count at time of admission

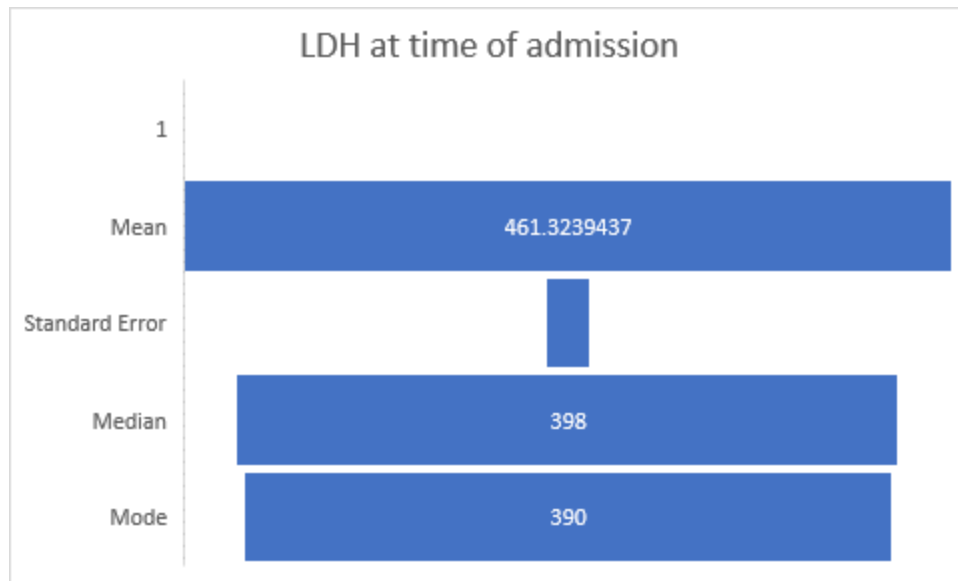Figure 6 showing mean TLC at time of admission

Figure 7 showing mean LDH at time of admission

c.   Correlation & Regression:

Correlations

		LDH at time of admission	grading of severity
LDH at time of admission	Pearson Correlation	1	.840[**]
	Sig. (2-tailed)		.000
	N	78	78
grading of severity	Pearson Correlation	.840[**]	1
	Sig. (2-tailed)	.000	
	N	78	78

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1 showing Correlation statistics between LDH and severity grading

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.692	1	20.692	182.790	.000[b]
	Residual	8.603	76	.113		
	Total	29.295	77			

a. Dependent Variable: grading of severity
b. Predictors: (Constant), LDH at time of admission

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.462	.089		5.179	.000
	LDH at time of admission	.002	.000	.840	13.520	.000

Dependent Variable: grading of severity
Table 2 & 3 showing regression analysis between LDH and Severity of disease
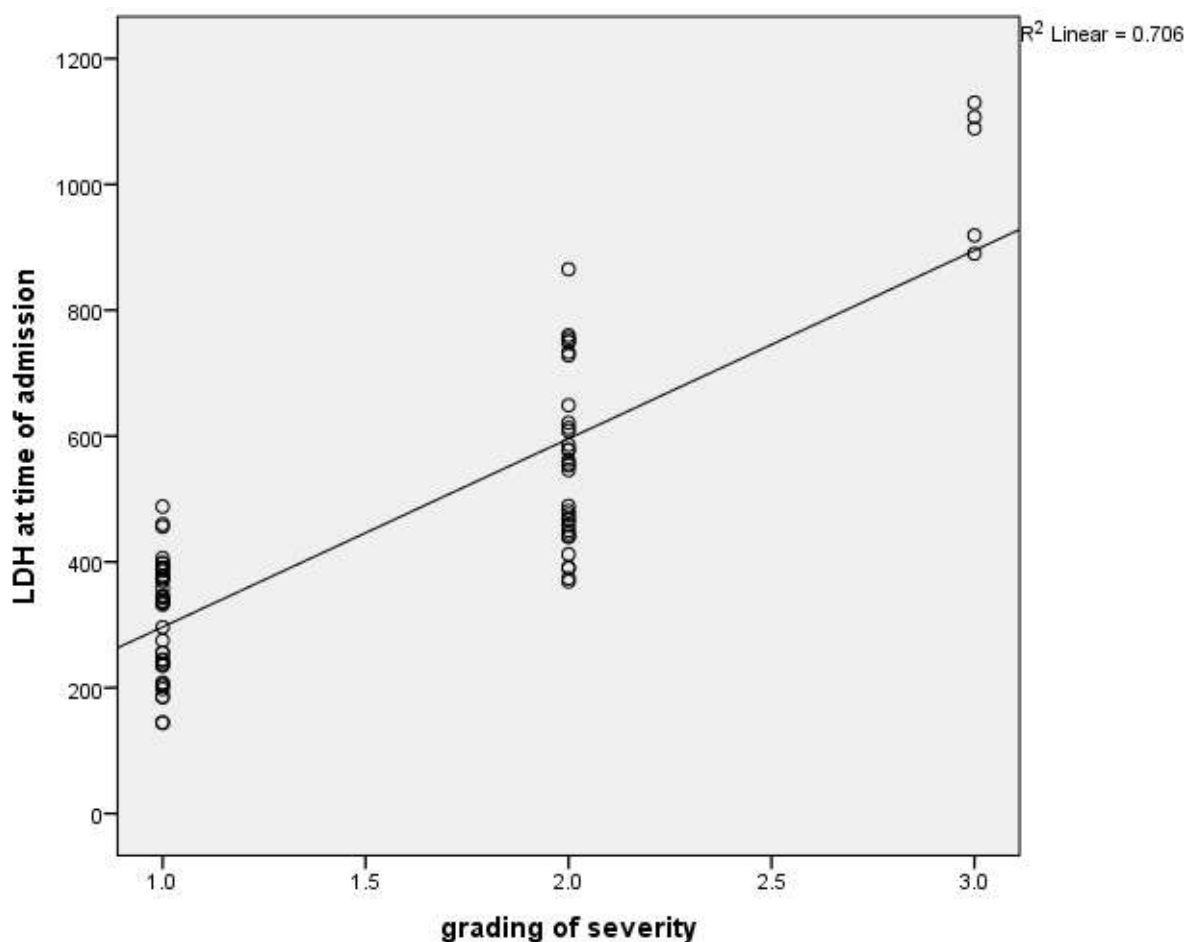

Figure 8 showing scatter plot of correlation between LDH at time of admission with severity of disease

IV. Discussion:

a)   Demographics: The study included total of 78 subjects. It was a study with male predominance as shown in figure 1 where 76 % were males.
The mean age of sample population was around 33 years with SE 1.22 as shown in figure 2.
The study shows males are at significant risk of mosquito bite in comparison with females and majority being young adults.

b)   Clinical Characteristics :
All the patients invariably had fever, but the most common symptom accompanying fever was myalgia. Other symptoms included cough and diarrhoea as shown in figure 3.
Among the 78 subjects 45 % had mild dengue followed by dengue with warning signs in 44 % individuals and severe dengue in 11% of total sample size as shown in figure 4.
There was one death reported secondary to dengue encephalitis

c)   Biochemical characteristics :
Following means were obtained pertaining to biochemical parameters
Platelet at time of admission – 99591 cells/cumm with SE – 5914
TLC at time of admission – 3605 cells/cumm with SE – 172.5
LDH at time of admission- 461 U/L

As shown in figures 5,6 and 7 respectively

d)   Correlation :

Serum LDH has been tried as a prognostic marker, but not on larger scale. In view of the same our study included LDH testing from day one till discharge among the patients.

Table 1 showing positive correlation of LDH at time of admission with progression of severity of the disease, the Pearson's coefficient of correlation between the same was 0.8 indicating good correlation.

However regression analysis was performed to confirm correlation which confirmed correlation with P value <0.01.Linear positive correlation between LDH at time of admission and severity of disease is clearly evident as seen in figure 8.

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