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Research Article

**RATE OF OCCURRENCE OF CIRRHOTIC
CARDIOMYOPATHY AMONG PATIENTS SUFFERING FROM
LIVER CIRRHOSIS**

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Abstract:

Objective: The aim of this research work is to find out the rate of Cirrhotic Cardiomyopathy in the patients suffering from cirrhosis of liver.

Methodology: This research work carried out in Shaikh Zayed Medical College and Hospital Rahim Yar Khan from January 2019 to June 2019. 54 patients of liver cirrhosis from both genders having more than 14 years of age were the part of this research work. In the start, we performed the ECG of the patients. The calculation of the value of the QTc carried out from Lead-2. The interval of QTc greater than 0.440 seconds was the prolonged. Ejection fraction was in use for the assessment of the systolic dysfunction. The manifestation of the diastolic dysfunction carried out by decreased E/A ratio. Then, the determination of the levels of pro-BNP level of all the patients carried out. The confirmation of the availability of the cirrhotic cardiomyopathy carried out by the anomalous ECG or/and echocardiography, in addition with the abnormalities of the pro-BNP. SPSS V.16 was in use for the processing of the data. The calculations of the Mean \pm SD carried out for the age and levels of pro-BNP.

Results: A sum of 54 patients were the part of this research work, out of these patients 53.39% (n: 31) were the male patients and 42.56% (n: 23) were the female patients. The average age of the patients was 44.18 ± 8.78 . Out of 54 patients, 10.18% were from child Pugh-A, 37.18% were from child Pugh-B and 46.58% belonged to child Pugh-C. Raised proBNP was available 54.78% patients, E/A ratio of less than one in 18.28% patients, prolong interval of QT in 19.58% patients, Ejection Fraction greater than 0.53 was available in 31.78% patients. Cirrhotic Cardiomyopathy was present in 42.58% patients. We found a positive association between the cardiomyopathy and the severity of the liver cirrhosis, levels of proBNP, QTc greater than .44 seconds, Ejection Fraction greater than 53.0% and E/A ratio less than 1.

Conclusion: Cirrhotic Cardiomyopathy was present in a considerable amount of the patients suffering from liver cirrhosis, mostly in the patients who were at the late stages of the liver cirrhosis disease.

Key Words: Liver Cirrhosis, Ejection Fraction, Echocardiograph, Association, Severity, Cirrhotic Cardiomyopathy, Anomalies.

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INTRODUCTION:

Cirrhotic Cardiomyopathy is the chronic cardiac malfunctioning among patients suffering from liver cirrhosis categorized by dull contractile receptiveness to stress or/and changed diastolic easing with electrophysiological anomalies in the non-availability of the cardiac abnormality. Cirrhosis of liver has association with different cardiovascular disorders. Patients suffering from liver cirrhosis are present with normal systolic function. The systolic malfunction is not masked when patient comes under the pharmacological or physical stress condition. Among infection due to bacteria like impulsive bacterial peritonitis where there is requirement of the increase cardiac output, systolic ineffectiveness develops evident. The inability's evidence to mount adequate cardiac output is reinforced further when patient appeared with hepatorenal syndrome as a consequence of the decreased cardiac output.

The suppression of the function of cardiac systolic carried out by negative inotropic cytokines like TNF-A and interleukin-1B created by the infection causing to develop hepatorenal syndrome. The availability of the cirrhotic cardiomyopathy and adverse cardiac response of the attendant to the physical stress has the ability to have impact on health related quality of life and a cause of fatigue in patients. With the increase in the plasma level of the NT pro-BNP, there were echocardiographic anomalies among patients of cirrhosis. Garcia-Tsao G. examined echocardiographic features in a group of sixty patients of cirrhosis with no pulmonary disease and gave useful findings.

METHODOLOGY:

Total 54 patients who got admission in the Medical Department of Shaikh Zayed Medical College and Hospital Rahim Yar Khan from January 2019 to June 2019 were the part of this research work. The diagnosed patients of cirrhosis from both genders and having more than 14 years of age were the part of this research work. Patients suffering from any other serious diseases or under the impact of any medication were not the part of this research work. We took the consent from every patient. We gathered the information about the Patient on a form about their

age, sex, weigh, severity of liver cirrhosis. We carried out the blood test for the function test of the liver, prothrombin time, profile of the protein, abdomen's ultrasound in the laboratory of the same institute. We labeled the cirrhosis on the basis of clinical, radiological and biochemical finds according to international standards. ECG carried out for all the patients by a technician with at least five years of experience. The interval of QTc greater than 0.440 seconds was prolonged.

The assessment of the systolic dysfunction carried out for Ejection Fraction. The manifestation of the diastolic dysfunction carried out by decreased E/A ratio. The cut-off pro-BNP levels for men was $e^{*}93.0$ -pg/ml and for women $e^{*}144.0$ -pg/ml. There was diagnosis of cirrhotic cardiomyopathy if there was malfunctioning of systolic and/or diastolic, with the criteria defined above. Mean \pm SD values were in use for the expression of the continuous variables like age and interval of QTc, level of pro-BNP and E/A ratio. Frequency or percentage was in use for the expression of the categorical variables like gender, Child Pugh-class, raised pro-BNP, Ejection Fraction and E/A ratio. Chi-square method was in use for the comparison of the categorical variables. SPSS V. 16 was in use for the statistical analysis of the collected information.

RESULTS:

A sum of 54 patients were the part of this research work in which 53.39% (n: 31) were male patients and 42.56% (n: 23) were female patients. The average age of the patients was 44.18 ± 8.78 , interval of QTc as 0.37780 ± 0.050 seconds, level of pro-BNP 180.754 ± 43.308 and E/A ratio as 0.7540 ± 0.04150 . Out of 54 patients, 10.18% were from child Pugh-A, 37.18% belonged to child Pugh-B and 46.58% belonged to child Pugh-C. Raised pro-BNP was available in 54.78% patients, E/A ratio lower than one in 18.28% patients, prolong interval of QT of greater than .44 seconds in 19.58% patients, Ejection Fraction of greater than 0.330 was available in 31.78% patients. According to the mentioned standard, cirrhotic cardiomyopathy was available in 42.58% patients. Table-1 displays the baseline traits of the patients who underwent study.

Table-I: Baseline Characteristics of Patients.

Continuous Variables	Mean \pm SD
Age(years)	46.20 \pm 10.80
QTc interval (normal 0.30 to 0.44 sec)	0.3778 \pm 0.05
pro-BNP (pg/mL) (normal males:<93pg/ ml, females: <143 pg/ ml)	182.97 \pm 45.31
E/A ratio (normal <1)	0.98 \pm 0.0637

Categorical Variables		Frequency	Percentage
Gender	Male	31	53.39
	Female	23	42.56
Child-Pugh Class	Class A	9	10.18
	Class B	19	37.18
	Class C	26	46.58
pro BNP	Increased	41	54.78
	Normal	13	41.18
E/A ratio	< 1	15	18.28
	>1	39	77.68
QT interval	>0.44sec	16	19.58
	< 0.44 Sec	38	76.38
Ejection Fraction	>55%	15	31.78
	< 55 %	39	64.18
Cirrhotic Cardiomyopathy	present	23	42.58
	Absent	31	53.38

We discovered a strong association between cirrhotic cardiomyopathy and seriousness of the liver cirrhosis, levels of pro-BNP levels, and interval of QTc greater than .44 seconds Ejection Fraction greater than 53% and value of E/A ratio lower than one as presented in Table-2.

Table-II: Relationship between Cirrhotic cardiomyopathy and other variables	
Variables	P-Value
Severity of cirrhosis	0.0208
pr0-Bnp levels	0.0028
QTc >44 sec	0.0038
Ejection fraction >53%	0.0038
E/A ratio	0.0048

DISCUSSION:

In this current research work, there was an increase in the occurrence of cirrhotic cardiomyopathy with the severity of the liver cirrhosis. Bernardi M examined that rate of occurrence of cirrhotic cardiomyopathy increased from 23.0% in child Pugh-A to 49.0% in Pugh-B and up to 58.0% in Pugh-C linked with the prolonged interval of QT. Yildiz R also examined an increase in the rate of occurrence of cirrhotic cardiomyopathy in accordance with the increase in the severity of liver cirrhosis with the rise in the level of pro-BNP. There are three phenomena related with this complication; electro-physiological alterations, echocardiographic anomalies and presence of the fluctuation in the amounts of the natriuretic peptides. The electro-physiological anomalies contained

repolarization for long duration which establishes itself in form of the prolonged interval of QT.

In current research work, 19.58% patients were present with the prolonged interval of QTc. This finding is very similar to the research work conducted by Zuberi in the year of 2006. But, Wong in the same year was against such values and stated the abnormalities of interval of QTc at a staggering 43.0% in the patients of cirrhosis. Systolic malfunction was available when Ejection fraction greater than 53.0% at rest. Traditionally, other research works as the study of Baik emphasized on the stress inductive environments in the duration of the echocardiography, while this research work emphasized on the echo anomalies at rest. Pozi stated that about 48.0% patients were present with ratio of E/A reversal at rest,

particularly when patients were available with ascites additionally with liver cirrhosis. Moller and Henriksen stated that if there are important improvements in the E/A ratio after the drainage of ascites. A research work of similar nature from India stressed that diastolic malfunctioning was available in most of the patients with liver cirrhosis.

There are some contradictions that raised pro-BNP levels represented some twisted type of the alcoholic cardiomyopathy and assigning it the name of cirrhotic cardiomyopathy was gross misnomer. To assess this particular method, Woo JJ discovered that pro-BNP levels increased significantly in the patients suffering from Child Pugh-Turcot Class-C than the Child Pugh-Turcot Class-A and Class-B.

CONCLUSIONS:

This research work describes that the occurrence of cirrhotic cardiomyopathy is very common. There is very strong association of the cirrhotic cardiomyopathy with the seriousness of the diseases of liver while electro-physiological, echocardiographic and biochemical alterations provide the basic knowledge for this prevailing condition.

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