CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.3124323

Available online at: http://www.iajps.com *Research Article*

AN ASSESSMENT OF SEVERITY LEVEL OF LIVER CIRRHOSIS AND ITS ASSOCIATION WITH PROLONGED QTC INTERVAL

[1]Dr Momina Sohail, [2]Dr Mahlaqa Rana, [3]Dr Rimsha Jabbar

[1]Aziz Fatimah Medical and Dental College Faisalabad.

Article Received: March 2019 **Accepted:** April 2019 **Published:** May 2019

Abstract:

Objective: *The primary aim of the research was to find the connection of extended QTC period with the intensity of liver cirrhosis.*

Material and Methods: *The research was performed at Sir Ganga Ram Hospital, Lahore from February to September 2018. Total numbers of patients selected for research are ninety-seven.*

Results: *The number of male and female patients was fifty-three (54.60%) and forty-four (45.40%) respectively. Whereas the average age and time period of the disease are 47.55±10.88 years &1.799±2.131 years respectively. With respect to MELD score, a number of patients (67.01%) was displayed with the temperate disease. Results had displayed extended QTC period (>450msec) in (54.64%) cases, whereas (45.36%) patients displayed nil QTC period extension, liver cirrhosis intensity was expressively connected with (P-value < 0.001) with extended QTC period.*

Conclusion: *Commonness of extended QTC period in patients of liver cirrhosis was comparatively high and substantially linked with disease intensity.*

Keywords: *Model for End-Stage Liver Disease (MELD), International Normalized Ratio (INR).*

Corresponding author:

Dr. Momina Sohail,

Aziz Fatimah Medical and Dental College Faisalabad.

QR code

Please cite this article in press Momina Sohail et al., ***An Assessment of Severity Level of Liver Cirrhosis and Its Association with Prolonged Qtc Interval.,*** *Indo Am. J. P. Sci, 2019; 06(05).*

INTRODUCTION:

The ultimate general histological pathway was represented by cirrhosis for huge assortments of persistent disease of the liver. In 1826, Laennec was the first one who introduces "cirrhosis" term. The process was extended from the Greek word "Scirrhus" and assigned as "orange" or liver tawny surfaces examined at autopsy [1]. Cirrhosis is delineated histologically as this disseminates hepatic procedure depicted by fibrosis as well as standard typical liver designed transformation into structurally aberrant nodules. The progression of the liver wound to cirrhosis may appear over a week to month and years. Certainly, the patients having hepatitis "C" might have persistent hepatitis as long as forty years earlier advancing to cirrhosis. Multiple issues could happen as a consequence of cirrhosis, among which varies, ascites and portal hypertension are common [1]. The cirrhosis consequences on circulatory along with cardiovascular are not thoroughly studied [3]. Anciently, an association of liver cirrhosis has not been detected with any cardiac irregularity, even with the reality that a hyperdynamic flow has been characterized in cirrhosis cases more than fifty years earlier [4]. The utilization of fresh inquisitive procedures has displayed multiple lines of proofs of defective cardiac contractility and achievements in cirrhosis cases and move towards the initiation of the modern clinical entity " cirrhotic cardiomyopathy" [5, 6]. It consisted of myocardium hypertrophy foremost to a stiffer ventricle and consequently diastolic breakdown as well as common systolic function at relaxation. However systolic incompetency under stress circumstances [6, 7]. Ventricular repolarization was reflected by electrocardiographic QT period. Substrate for ventricular and arrhythmias was provided by extended QT period. Extension in the QT period is the main electro physiological symptoms of cirrhotic cardiomyopathy [8]. It is assumed that this irregularity happened because of cardio toxins contacting the heart because of portosystemic switching [9]. Heart rate influence the QT period, therefore the particular formula for the disease was applied for the correctness of QT, and this specie formula is called QT cirrhosis formula. Identification of liver cirrhosis was established on the base of the existence of any 3 of these physical outcomes. Palmar erythematic: reddening of the palms at thenar and hypothenar preeminence was assumed as positive. Spider nevi: central red spot, as well as reddish expansion which emanate outwardly such as spider web below skin surface, was assumed as positive. Splenomegaly: touchable expended spleen with greater than 11cm in its extensive dimension was assumed positive. Ascites: fluid existence in peritoneal cavity discover through ultrasonography as well as on examination existence of transferring duliness and fluid thrill was assumed as positive. Deranged clotting profile: PT is greater than thirteen sec and INR is greater than 1.2. Low serum albumin: i.e. less than 3.4g/dl. Abdominal ultrasound: common echo texture and extended QTc period is the time sweeping from the starting of the QRS complex up till T wave conclusion on ECG and was measured by subsequent formula QTc = QT × RR-1/3.02. It was assumed as extended when its value was greater than 450msec. Severity of liver cirrhosis: liver cirrhosis intensity was examined by utilizing MELD marking system. For s/bilirubin and s/creatinine, model for end stage liver disease utilized patient's value as well for prothrombin time its utilized INR. It was measured by the subsequent formula. Model for end stage liver disease = 3.78 [s/bilirubin (mg/dl)] +11.2 [INR] + 9.57 [s/bilirubin (mg/dl)] +6.43. Moderate disease: MELD marks are seven to nineteen. Intense disease: MELD marks range is greater than nineteen.

MATERIAL AND METHODS:

The research was performed at Sir Ganga Ram Hospital, Lahore from February to September 2018. Total numbers of liver cirrhosis patients selected for research are ninety-seven having age twenty to sixty years without gender discrimination. Entire those patients having an additional factor for extended QT period including electrolyte unevenness., such as anti arrhythmic and hyperkalemia, DM, valvular heart complication patients and ischemic heart complication, patients with inborn extended QC period, patients with drunkenness record along with patients taking loop diuretics since last week are not included in the research.

Standard laboratory analysis i.e. prothrombin time with INR, CBC, serum creatinine and LFT, serum sodium, blood urea as well as phosphate calcium and potassium levels were done in each patient. Researcher verified anti HCV and HBs Ag state in all patients to decide either the analysis was viral or not. For hepatobiliary, the researcher performed ultrasonic imaging. At the end of these twelve-lead ECG was performed in entire patients, additionally, QC period was measured manually. QT period was measured from the beginning of waves up till the end of T wave, by applying disease particular formula, entire value was corrected i.e. QTc = QT ˣRR-1/s.02. If the value was greater than 450msec then QTc period was extended. Researcher examines the computer facts by utilizing SPSS software and measured age and SD for qualitative variables i.e. age and period of the disease. Additionally, the researcher also measured repetition and percentage for

qualitative variants i.e. disease aetiology (viral or not) gender, liver cirrhosis intensity (normal or intense) and extended QTc period. Results modifier such as disease, period, gender, disease analysis (viral/non viral) age, as well as the intensity of disease were managed via stratification. The researcher also executed post stratification chi-square test and P value ≤ was assumed as expressive.

RESULTS:

Age limit in our research was from twenty to sixty years with 47.55±10.88 years of average age. The researcher performed ECG for all enrolled patients for research with the objective of QTc interval calculation and results presented extended QTc period in fifty-three (54.64%) whereas forty-four (45.36%) has presented normal QTc period. Average QTc period was 476.34±52.37msec. Among fifty-three male patients, extended QTc period was recorded in twenty-eight (52.83%) cases, similarly in entire forty-four females' cases extended QTc period was recorded in twenty-five (56.82%) patients. No important connection was found between extended QTc period and gender with P-value =0.694. Entire patients were further divided into four age categories. Age category twenty to thirty, thirty-one to forty, forty-one to fifty and fifty-one to sixty years respectively. Only ten patients associated with twenty to thirty years age category followed by twenty cases in thirty-one to forty years age category, thirty cases in forty-one to fifty years and thirty-seven cases associated with fifty-one to sixty years age category. Extended QTc period was recorded in four (40.0%), ten (50.0%), twenty (66-67%) and nineteen (51.35%) respectively in entire age categories. However, nil substantial connection was found between the age group and extended QTc period with P value = 0.399. The numbers of patients having six months to one year of disease period use forty-four, among them only sixteen (36.36%) were found with extended QTc period. The number of patients having greater than one-year disease period was fifty-three and extended QTc period was recorded in sixteen (30.19%). The unimportant association was found between extended QTc temperate and disease period (P = 0.520). The number of patients having moderate cirrhosis was sixty-five and extended QTc period was recorded in twenty-five (38.46%) cases. In thirty-two intense cirrhosis patients, extended QTc period was recorded in twenty-eight (87.50%) patients. Statistically, substantial connection was found between extended QTc period and cirrhosis intensity.

Table – I: Status of Prolonged QTc Interval

Prolonged QTc Interval	Number	Percentage
Yes	53	54.64
No	44	45.36

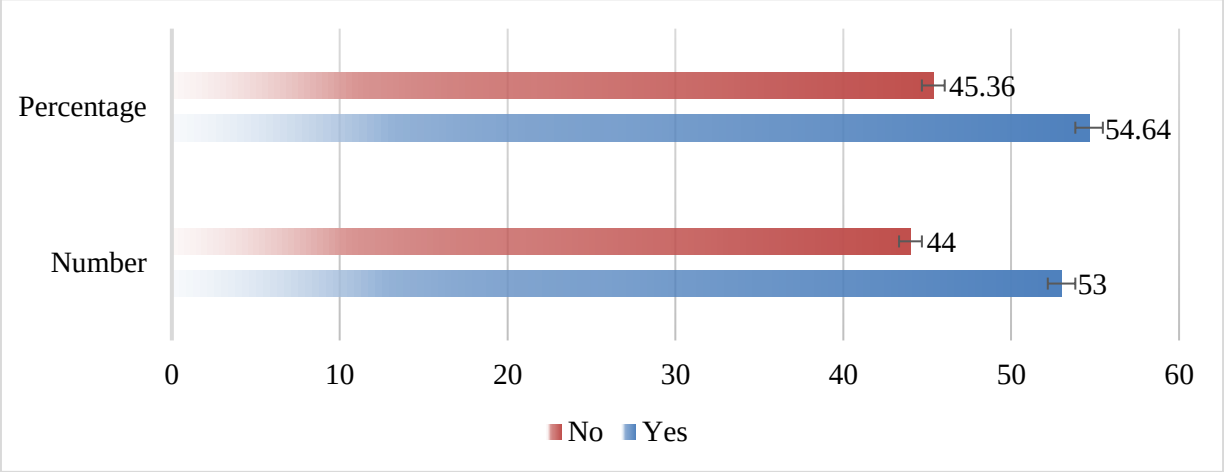
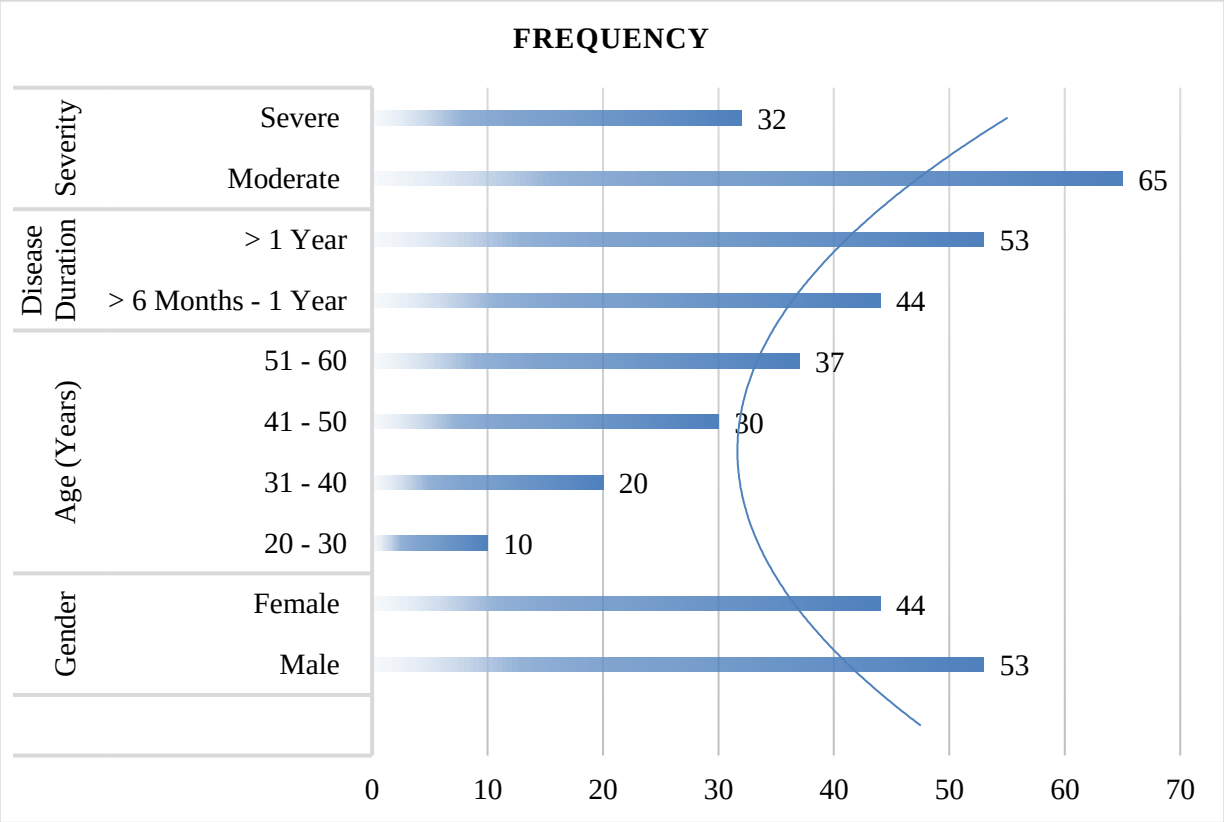
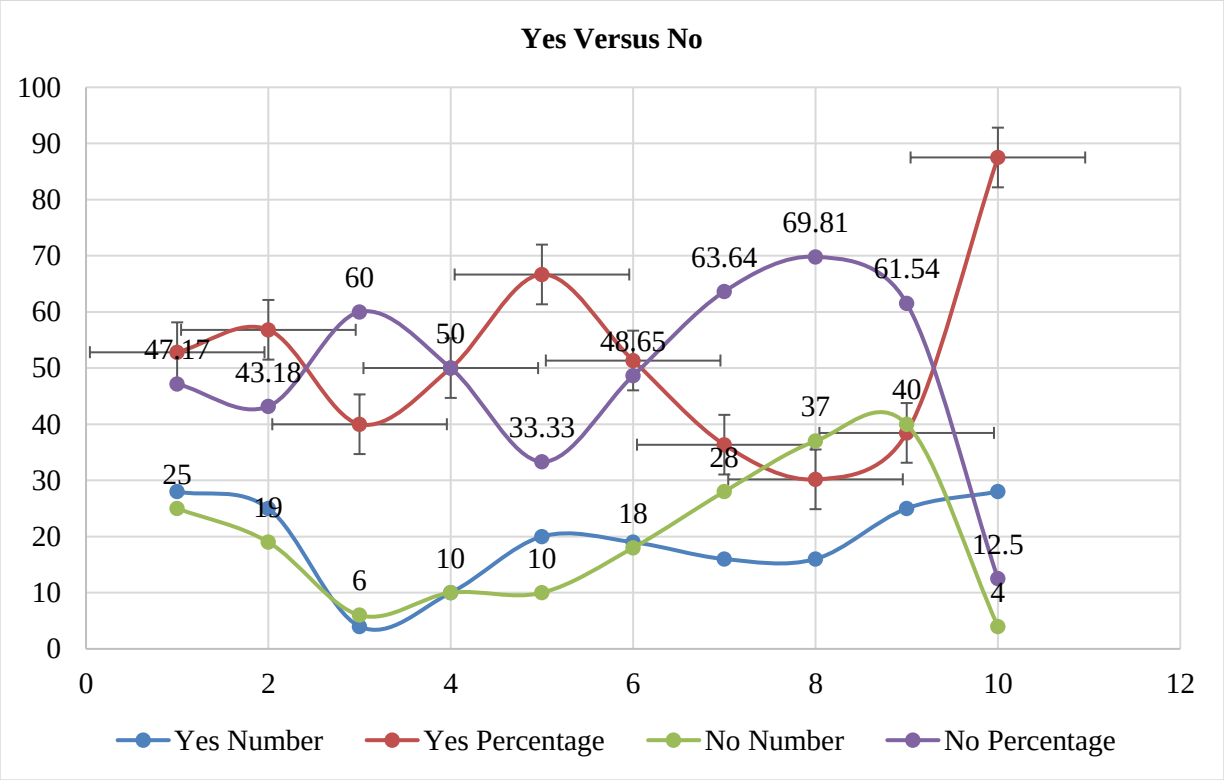


Table – II: Variables (Prolonged QTc Interval)

Prolonged QTc Interval		Frequency	Yes		No		P-Value
			Number	Percentage	Number	Percentage	
Gender	Male	53	28	52.83	25	47.17	0.694
	Female	44	25	56.82	19	43.18	
Age (Years)	20 – 30	10	4	40	6	60	0.399
	31 – 40	20	10	50	10	50	
	41 – 50	30	20	66.67	10	33.33	
	51 – 60	37	19	51.35	18	48.65	
Disease Duration	> 6 Months - 1 Year	44	16	36.36	28	63.64	0.52
	> 1 Year	53	16	30.19	37	69.81	
Severity	Moderate	65	25	38.46	40	61.54	<0.001
	Severe	32	28	87.5	4	12.5	





DISCUSSION:

The primary aim of the research was to find the connection of extended QTC period with the intensity of liver cirrhosis. The average age of the patients in our research was 47.55±10.88 years, which was too greater as compare to Zuberi B F et al who presented an average age of thirty-five year in his research [10]. Additionally, Tarique S et al and Nasr GMA et al had presented fifty-three and fifty years of average age in his research respectively. This is also too greater to our research [11]. In our research, the number of male and female patients was fifty-three (54.60%) and forty-four (45.40%) respectively with male and female ratio of 1:2:1. Multiples of earlier research have also identified a huge incidence of diabetic in males as compared to female patients [12, 13].

In our research, multiple liver cirrhosis patients had non viral factor (52.60%) along with (47.40%) had a viral factor. However, Firmensyah et al. and Puthmana L et al had identified the viral aetiology as the general factor of liver cirrhosis in his research. With respect to the model for end-stage liver disease, huge numbers of patients (67.01%) were displayed normal disease in our research. The uniform results were also identified by Tarique S et al & Firmansyah et al in their research [12, 13]. Our current research has presented extended QTc period in (54.64%) along with (45.36%) patients had displayed normal QTc period which is much uniform with the findings identified BAL Js et al. [15]. In a research conducted by Nars GMA et al. had identified the expansion of extended QTc period as (45%) in patients of liver cirrhosis which is a little bit less as compared to our research. Moreover, Zuberi BF et al had identified too less expansion i.e. (19%) with respect to our research [16]. However, some earlier trails had presented a too greater expansion of extended QTc period in liver cirrhosis cases with respect to our research. The expansion of extended QTc duration patients with liver cirrhosis was (67.90%) in research conducted by Firmansyah I et al [12].

The particular system responsible for QT extension in cirrhotic is argumentative. Bernardi et al presented a direct association between plasma noradrenalin level and QTc. This proves that augmented adrenergic stimulation of myocardial cell performs a role in pathologic electrophysiology specified as extended QTc [17]. Research performed by Gazzaniga et al displayed the direct association between diastolic irregularity & MILD scores in those patients which are experiencing TIPS (on question paper) diastolic irregularity is a demonstration of cirrhotic cardiomyopathy as in QTc extensions. Genovesi et al have found an important association of huge hepatic venous pressure gradient and extended QTc temperate. This research provides proof s that cardiac

abnormality in cirrhosis and portal pressure changes can be compared.

Conclusively it was determined that commonness of extended QTc period in patients of liver cirrhosis is too greater in males and directly linked with disease intensity. This might be because of lack of knowledge and comprehensive check-up at the time of detection of cirrhosis.

CONCLUSION:

The commonness of extended QTC period in patients of liver cirrhosis was comparatively high and substantially linked with disease intensity. To develop an appropriate approach, it is approved that the patient must be subjected to cautious cardiac evaluation before any procedure.

REFERENCES:

1. Firmansyah I, Hasan I, Lesmana LA, Alwi I, Rahardjo P. Prolonged QTc Interval in Liver Cirrhotic Patient: Prevalence and its Relationship with Severity of Liver Dysfunction. Indonesia J Gastroenterol Hepatol & Digest Endosc. 2004;5(1):1-6.
2. Tarique S, Sarwar S. Correlation of prolonged QT interval and severity of cirrhosis of the liver. ANNALS. 2011;17(2):103-7.
3. Puthumana L, Chaudhry V, Thuluvath PJ. Prolonged QTc interval and its relationship to autonomic cardiovascular reflexes in patients with cirrhotic. J Hepatol. 2001; 35:733-8.
4. Bal JS, Thuluvath PJ. Prolongation of QTc interval: relationship with aetiology and severity of the liver disease, mortality and liver transplantation. Liver Int. 2003;23(4):243-8.
5. Zuberi BF, Ahmed S, Faisal N, Afsar S, Memon AR, Baloch I et al. Comparison of heart rate and QTc duration in patients of cirrhosis of the liver with noncirrhotic controls. J Coll Physicians Surg Pak. 2007;17(2):69-71.
6. Aytemir K, Aksoyek S, Ozer N et al. QT dispersion and autonomic nervous system function in patients with type I diabetes. Int J Cardiol. 1998; 65:45–50.
7. Wong F. Cirrhotic cardiomyopathy. Hepatol Int. 2009;3(1):294–304.
8. Nasr GMA, Eldin MM, Ragheb M. Systolic and Diastolic Functions, QT Interval and Myocardial Perfusion Imaging in Post-Viral Cirrhosis with and Without Ascites. Heart Mirr J. 2008;2(1):28-35.
9. Zambruni A, Trevisani F, Di Micoli A, Savelli F, Berzi-Gotti A, Bracci E, et al. Effect of chronic â-blockade on QT interval in patients with liver cirrhosis. J Hepatol. 2008;48(3):415-21.
10. Genovesi S, PrataPizzala DM, Pozzi M, Ratti L, Mila-nese M, Pieruzzi F et al. QT interval prolongation and decreased heart rate variability in cirrhotic patients: relevance of hepatic venous pressure gradient and serum calcium. Cli Sci. 2009;116 (12):851-9.
11. Zuberi BF, Ahmed S, Faisal N, Afsar S, Memon AR, Baloch I et al. Comparison of heart rate and QTc duration in patients of cirrhosis of the liver with noncirrhotic controls. J Coll Physicians Surg Pak. 2007;17(2):69-71.
12. Tarique S, Sarwar S. Correlation of prolonged QT interval and severity of cirrhosis of the liver. ANNALS. 2011;17(2):103-7.
13. Schuppan D, Afdhal NH. Liver cirrhosis. Lancet. 2008; 371:838–51.
14. Ishak KG. Pathologic features of chronic hepatitis: a review and update. Am J Clin Pathol. 2000 113:40–55.
15. Kosar F, Ates F, Sahin I, Karincaoglu M, Yildirim B. QT interval analysis in patients with chronic liver disease: a prospective study. Angiol. 2007; 58:218– 24.
16. Moller S, Henriksen JH. Cirrhotic cardiomyopathy. J Hepatol. 2010 Jul;53(1):179-90.
17. Cazzaniga M, Salerno F, Pagnozzi G, Dionigi E, Visentin S, Cirillo I et al. Diastolic dysfunction is associated with poor survival in patients with cirrhosis with trans jugular intrahepatic portosystemic shunt. Gut. 2007; 56:869- 75.