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RESEARCH ARTICLE
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FREQUENCY OF LONG QT SYNDROME IN PATIENTS PRESENTING TO TERTIARY CARE HOSPITAL

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Abstract:
Background: Long QT syndrome is a myocardial repolarization disorder that results in long QT interval on the ECG.
Objective: The aim of this study is to determine the frequency of long QT syndrome in patients presenting to tertiary care hospital**.**
Materials and methods: This observational study was conducted at the department of cardiology, Hayatabad medical complex Peshawar from October 2014 to December 2021 to evaluate the prevalence of Long QT syndrome at admission and its influence on outcomes in CCU. The calculation of QTc using the formula by BAZETT, which suggests a range of >440 ms for males and >460 mm for females, was considered long. Furthermore, the illness's particulars, clinical observations and laboratory parameters were examined.
RESULTS: A total of 150 patients were enrolled in this study.There were 72 females and 78 males. At the time of admission to the CCU, Long QT Syndrome was frequently observed (32%). which dropped to 20.5% on day 3. Patients who suffered from long QT syndrome were found to have a high likelihood of adverse outcomes and were more likely to be admitted to the CCU of the hospital.
Conclusion: Our Study showed a high incidence of Long QT syndrome (32%) and was more likely to have adverse effects and had a higher admission in CCU.

Keywords: Long QT syndrome, prevalence, QTC,

Introduction

The heterogeneous Long QT syndrome (LQTS) can be acquired or congenital. [1] With the latter being more typical. [2] Which is characterized by a Long QT (QTc) interval with values larger than 470 ms for males and 480 ms for women. [3] Values greater than 500 ms are regarded as severe in both genders and suggest a heightened risk for ventricular tachycardia that is polymorphic (pVT) or torsades de pointes (TdP). [, 4] A surge >60 ms from the QTc standard is also considered a frightening indication. [5] it may results Ventricular tachycardia therefore it is essential to diagnose and treat it [,6) For long QT syndrome major risk factors are imbalances in electrolytes, gender ,old age ,disturbance in metabolic activities and cardiac diseases (acute coronary syndromes and myocarditis) [7). Various drugs also play major role in the progression of Long QT syndrome. A

broad range of drugs influence repolarization that include, antifungal, antihistamine, antiarrhythmic, quinolones, antidepressants and antipsychotics.[8,] Earlier studies described a frequency between 28.5%–35% for QT prolongation, both acquired and inherited. [9] Patients admitted to cardiac care care units (CCUs) had prolonged QTc intervals (25%) of the [3) and 20%–24% had severely prolonged QTc intervals when admitted to CCU. [10] The occurrence of QTc interval longer than 500 ms in other hospice wards was 0.7%– 0.9%. [11] The electrical activity of the heart is shown by ECG and QT interval linked to ventricular tachycardia, if extended has been revealed to have link with poor CCU results. (12) .It is noticed that the frequency of prolonged QT interval is extraordinary in acutely ill patients. (13) This study was conducted to determine the frequency of long QT syndrome in patents in presenting to tertiary care hospital

Material and methods

This observational study was conducted at department of cardiology, Hayatabad medical complex Peshawar from October 2014 to December 2021. A total of 150 patients presented to the hospital were included in the study.

Inclusion and exclusion criteria of the study: Patients admitted in the cardiac care unit with Long QT and age above 18 years were included. Individuals with pacemaker were excluded.

Study tool

The foremost assessment was on the frequency of prolonged QTc at admission. The relationship between extended QT time and the length of time spent in the CCU and hospital, as well as positive or negative outcomes, were secondary findings. Successful discharge from CCU / Hospital was a good outcome, but bad one due to medical advice leading to death . Arrhythmias, hypotension, cardiac arrest, acute coronary syndrome (ACS), intubation, and death were among the other outcomes analyzed. Patients were admitted to the CCU from emergency departments or wards. ECG was taken within 4 hours of admission after stabilization. A proforma was filled out containing information about the diagnosis, medications used, comorbidities, and the need for CCU admission.The blood tests and other pertinent tests were recorded. The heart rate, blood pressure, respiratory rate and oxygen saturation were continuously monitored in the CCU. On day 3, a repeat ECG and blood tests were conducted.

BAZETT's formula was employed to determine the calculation of QT. The list of drugs taken on day 1 and day 3 was recorded and the drugs that could prolong QT were examined. The final diagnosis, CCU time, hospital visit, and results were recorded upon departure. For males, prolonged QT was taken for >440 ms; for females it was used for over460 mm.

Statistical analysis

They QTc intervals were compared between men, women, different age groups and other factors. Microsoft Excel was used to input data, and the analysis was conducted in percentages or proportions as required.

Results

This Study examined a total of 150 patients. There were 72 females and 78 males. The mean QTc of total patients on day one of admission were 447.636. Mean QTc for males was 442.5 and that of females was 453.2.

Table 1 revealed that 48 (32%) of patients had experienced prolonged QTc on day 1. Of these 23 males, were (29.4%) and women were 34(4%) had sustained QTc, while the rest (4%) did not. QTc was prolonged by 7%. Patients had an average age of 46.5 years. A comparison of the QTc across various age ranges revealed that the longest QTC measured was in groups from 46 - 60 years.

On day 3 of admission, the mean QTc interval of over-all individuals was 442.539. In which 441.4 for the males and 443.6 were for females . Proportion of patients with long QTc was 20.5 (29/141). The percentage of males with long QTc was 19.11% (13/68) and that of females was 21.91 % (16/73). **As Shown in table 2**

The CCU patients had a wide range of primary diagnosis choices, as shown in **Table 3.** Cardiovascular problems were the most frequent, followed by respiratory issues. Often, these patients had involvement in more than one organ. The proportion of QTc prolongation cases decreased from 32% on day 1 to 20. Day 3: 5% the average QTc dropped from 447. Between 636 and 442, 539. Data indicates that the number of patients with prolonged QTc has decreased and the mean QTC stage between day 1 and day 3. In the normal QTc group, patients had an adverse outcome of 22. 5 and 25. 5% of the individuals were admitted to both the CCU and hospital. The adverse effects of prolonged QTc were more pronounced in the CCU and hospital, with 54% and 52% of patients being affected.

Discussion and conclusion

Those patients admitted to CCU with different illnesses and age brackets who exhibit both chronic and acquired acute risk factors that may be treatable. The average age of the patients in this study was 46. Compared to the west, CCU patients have a shorter stay and are admitted for fewer years.(14) On the first day of admission to the CCU, nearly 32% of patients had prolonged QTc. In this study the occurrence of prolonged QTc in ICUs has been found to be similar by other researches. Kozik TM et al reported that it was 52%, George TK et al , 30%, 28% Tisdale et al, and Pick ham D EE etc.(15,16.17) The study revealed that the number of patients with prolonged QTc decreased from 32 to 20 on day 1 to 3. 5%. Acute risk factors for QTc prolongation may be the cause of the high prevalence in newly admitted patients with critical illnesses.(16) This resolution could also be explained by the patient's stabilization in the CCU within 48 hours, with reduced biochemical derangements and control of the underlying acute illness. The current study revealed that patients with prolonged QTc were almost three times more likely to have adverse outcomes in the ICU than those with normal QTC at admission. The findings of Pickham D et al. and Hangga KH flr were similar.(18,19) The study is purely observational and therefore does not necessarily account for the adverse outcomes of a prolonged QTc. Still, the evidence suggests a significant correlation between long-term QTc usage and negative consequences. The QTc interval can be easily determined using a basic ECG. The inclusion of QTc in predictive diagnostic scores is necessary because it can predict the severity of an illness. A high prevalence (32%) of long QT syndrome was found in patients admitted to the CCU. The research suggests that patients with acutely QTc intervals have a high likelihood of poor outcomes in the CCU and require longer stays in hospitals and in intensive care units. Prognosticating patients in medical CCU can be made easier with a simple ECG and simulated QTc interval, which can assist in developing if necessary.

Table 1: Demographic characters of admitted participants	
Characteristics	Numbers
Age in years	46.5 yrs
Male	78
Female	72
Reasons of admission	
Hemodynamic compromise	79
Respiratory diseases	67
Neurology	11
Poisoning	06
Mean duration of stay	
ICU	7.4
Hospital	11
Adverse outcome from ICU	49

[redacted].		
Characteristics	Day 1 (n=150)	Day 3 (n=141)
Prolonged QTc (%	48/150 (32%	29/41(20.5%)
Males	23/78 (29.4%)	13/68 (19.11%)
Females	25/72 (34.7%)	16/73(21.91%)
Mean QTc	447.636	442.539
Males	442.5	441.4
Females	453.2	443.6

Table 3: Primary diagnosis and long QTc interval		
Diagnosis	Number	Long QTc
Cardiac	63	22
Respiratory	39	12
Neurological	11	4
Infections	17	5
Poisoning	6	2
Miscellaneous	14	3
Total	150	48

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