8-1-2020

QTc Cutoff, Gender, Race and Age on Reporting of Prolonged QTc

Supraja Thunuguntla
The University of Texas Rio Grande Valley, supraja.thunuguntla@utrgv.edu

Michael Machiorlatti
The University of Texas Rio Grande Valley

QTc Cutoff, Gender, Race and Age on Reporting of Prolonged QTc

Supraja Thunuguntla (1), Michael Machiorlatti (2)

1) Department of Internal Medicine, The University of Texas Rio Grande Valley- Valley Baptist Medical Center
2) Department of Population Health & Biostatistics, The University of Texas Rio Grande Valley

Background

The aim of the study is to evaluate the association of QTc cutoff, gender, race, and age on reporting of QTc interval prolongation.

Methods

Retrospective study of 147 patients admitted to our hospital or ER visit from January 2016 to May 2020. It should be noted that some patients had multiple measures, and this was accounted for in the analysis and consequently there were 213 overall observations total. Simple descriptive statistics were created for all covariates [mean, SD for continuous covariates and n (%) for categorical variables] overall. For the purposes of this study we wanted to examine the association between any of the covariates and interpretation of a prolongation. A longitudinal general linear mixed model was created to explore these associations for each covariate. The longitudinal model was necessary due to the repeated measures for some patients. Odds ratios and 95% CIs were reported for each model. Variables with p-values < 0.25 were then included in a final model and a final adjusted model was created. Among this subset of variables, two-way interactions were explored.

Results

The average age of the patients was 65 (±17.8, 18-98) years. Females were 32% (n=47) and Hispanics 78.4% of sample. QTc prolongation was reported in 65% (n=138) of the 213 EKG's. Calculated 90th and 99th percentile for QTC is 522 and 586 milliseconds respectively. Unadjusted, QTc > 480 millisecond is 1.7 times more likely to be reported as prolongation (p=0.08) while, QTc >90th is 2.37 times more likely to be reported as a prolongation (p=0.07). With every year increase in age, the interpretation of prolonged QTc is 2% less likely (OR= 0.98, p= 0.04). After adjusting for age and gender, reporting of prolongation is 2.38 times more likely with QTc >480 milliseconds (p=0.01) and 2.66 times more likely with QTc >90th percentile (p=0.06).

Conclusion

For the same value of QTc, the odds of reporting of QTc prolongation is less likely for older patients. After adjusting for age and gender, the odds of prolonged QTc reporting is more than two times higher for >480 and >522 milliseconds. Our study provides evidence that greater

guidance on prolongation reporting should be considered to ensure more consistent reporting of prolongation.

Table 1 – Unadjusted Longitudinal General Linear Mixed Model Association with Prolongation

***We are predicting whether the QTc value was reported as a prolongation (Y/N)**

Variable	Class	OR	LB	UB	p-value
Age	-	0.98	0.96	0.999	0.0391
Race	Hispanic vs Non-Hispanic	0.92	0.43	1.96	0.8171
Gender	F vs M	1.41	0.74	2.70	0.2878
QTc 480	> 480 vs ≤ 480	1.70	0.93	3.10	0.0810
QTc 90th	90th Percentile and more vs less	2.37	0.93	6.06	0.0714

Table 2A – Adjusted Longitudinal General Linear Mixed Model Association with Prolongation for QTC >480 ms

Variable	Class	OR	LB	UB	p-value
Age	-	0.98	0.96	0.999	0.0367
Gender	F vs M	1.11	0.55	2.23	0.7582
QTc 480	> 480 vs ≤ 480	2.38	1.21	4.67	0.0137

We find that after adjusting for age and gender that a patient with a QTc >480 is 2.38 times more likely to be reported/interpreted with a prolongation vs those who have QTc values lower than 480.

Table 2B – Adjusted Longitudinal General Linear Mixed Model Association with Prolongation for QTC >90th percentile

Variable	Class	OR	LB	UB	p-value
Age	-	0.98	0.96	1.00	0.0530
Gender	F vs M	1.31	0.67	2.55	0.4199
QTc 90th	90th vs ≤ 90th	2.66	0.97	7.34	0.0579

We find that after adjusting for age and gender that a patient with a QTc in the 90th percentile is 2.66 times more likely to be reported/interpreted with a prolongation vs those who have QTc values lower.