

QT interval in patients receiving HCQ in SARS-CoV-2- A study on risk factors and correlation of baseline QTc with delta QTc in Pakistani population

Saadia S.; Hassan M.; Ejaz T.; Shaikh A.; Saeed Y.; Ahsan S.

Aga Khan University Hospital, Karachi, Pakistan

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Introduction: Hydroxychloroquine(HCQ) use alone or in combination with Azithromycin (AZM) in SARS-CoV-2 infection is associated with QTc prolongation and risk of arrhythmias.

Objectives: To determine changes in QTc interval and factors predictive of extreme QTc prolongation in patients receiving HCQ alone or in azithromycin combination in Pakistani patients.

Methodology

Retrospective review of records of hospitalized patients with SARS-Cov2 RT-PCR positive result who received HCQ or HCQ/Azithromycin in combination from March-May 2020. Baseline ECGs as well as post drug use ECGs data was recorded. Tisdale score was calculated for predicting risk of QTc prolongation,QTc interval was calculated using Bazett formula. Data entry and analysis was done in SPSS version 23.

Results: A total of 134 patients were included in the study. 82.1%(110) were males and 17.9%(24) were females, mean age was 54.9 ± 13.7 years. 61.2% (82) had severe disease and 38.8 %(52) had non-severe disease. 14.2%(19) had history of cardiac disease, 35.8%(48) had hypertension and 35.1%(47) had diabetes mellitus. 70.1% (94) patients had received HCQ, AZM, or HCQ/AZM in combination. 40(29.9%) patients had not received any drug. Median baseline QTc among controls and non-control group was 383.5 (IQR 342.25-413.75)msec and 379(IQR 358-402)msec respectively. HCQ alone was administered to 26.9%(36) and HCQ/AZM to 33.6%(45) patients. 55.6% (45/81) developed QTc prolongation(QTc> 480 msec) or delta QTc increase > 60 msec. 6.2%(5/81) had absolute QTc > 500 msec post-drug administration. 55.6%(25/45) and 30.6%(11/36) (p-value 0.024) developed QTc prolongation in combination and HCQ alone groups respectively. Delta QTc increased to >60msec in 42.0% (34/81); 53.3%(24/45) in combination group and in 27.8%(10/36) of those receiving HCQ alone(p-value 0.021). Median delta change was 63(IQR 25-81) and 48.5(IQR 26.25-66.75) msec; Median Day 2 QTc was 413.5 msec (IQR 377.5-436) and 413 msec (IQR361-447); and median maximum QTc was 447(IQR391-471) and 429.8(IQR401.5-45.75) msec in those receiving HCQ/AZM combination and HCQ alone respectively. 9%(12/134) had arrhythmias during hospital stay, in 8.9% (4) and 5.6%(2) patients of those receiving HCQ/AZM combination and HCQ alone respectively, no patient developed torsade de pointes, one patient had non-sustained VT. There was no statistically significant association of QTc prolongation with mortality, acute kidney injury, myocardial injury or severity of disease. Diuretic use was found to be statistically significant association with QTc prolongation(p-value 0.038). There was a weak correlation of baseline QTc with Δ QTc($r = 0.207$ and p-value 0.017)

Conclusion: QTc prolongation was observed in a significant population of patients receiving HCQ and HCQ/AZM combination, however, no significant life threatening arrhythmias occurred.