Oral Abstracts

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UTILIZING QT CORRECTED BY DMITRIENKO FORMULA TO PREDICT TORSADES DE POINTES FROM DRUG INDUCED QT PROLONGATION

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Introduction:
QT prolongation may cause torsades de pointes(TdP). Utilizing a formula to calculate corrected QT (QTc) should be accurate enough to predict occurrence of TdP.

Objectives:
1) To determine the best cut-off value of QT corrected by Dmitrienko formula (QTcDMT) as a predictor of TdP
2) To compare the sensitivity and specificity using the cut-off value of QTcDMT with those obtained when using the QT nomogram and QTcBazett.

Methods:
Data were derived from two data sets. All patients in both sets aged over 18 years with the use of QT prolonging drugs. Group 1, all patients had TdP which occurred after QT prolongation. Data in group 1 was obtained from systematic review of reported cases using a Medline search since its establishment until 10 December 2015. In contrast, Group 2 is composed of patients who overdosed on QT prolonging drugs, but did not develop TdP. This data set was previously extracted from a chart review at 3 medical centers from 1 January 2008 to 31 December 2010. Data from both groups were used to calculate QTcDMT. We then found the optimal cut-off point that provides the optimal sensitivity and specificity to predict TdP. Area under the receiver operating characteristic (ROC) curve and McNemar's test were applied where they are appropriate.

Results:
Group 1, 230 cases of drug-induced TdP were included from the systematic review from Medline after applying our inclusion and exclusion criteria. Group 2 (control group) which did not develop TdP, consisted of 292 cases. After applying the Dmitrienko formula to both groups, the cut-off QTcDMT that provided the highest accuracy (88.31%) with the highest sensitivity (91.30%) and specificity (85.96%) to predict TdP was 475 milliseconds(ms). For the QTcBazett, the cut-off point with the highest accuracy (86.97%) that provided the highest sensitivity (88.26%) and specificity (85.96%) was 490 ms. We found a significant difference (*p-value*=0.0275) between the area under the ROC curves of the QTcDMT (0.936) and the QTcBazett (0.923). The accuracy, sensitivity and specificity of the QT nomogram were 89.08%, 91.30% and 87.33%, respectively. The McNemar's test failed to demonstrate any differences between QTcDMT andQT nomogram as a better predictor tool for TdP (*p-value*=0.584).

Conclusion:
The cut-off value of QTcDMT at 475 ms could be a useful tool which gives a better TdP prediction for those who have QT prolongation from drugs compared with the QTcBazett. On the other hand, QTcDMT above 475 ms predicts TdP as accurate as the QT monogram.