

Title: Sex Hormones and Repolarization Dynamics During the Menstrual Cycle in Women with Drug-Induced Long QT Syndrome

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Abstract:

Background:

Females with long QT syndrome (LQTS) have a higher risk of life-threatening cardiac events after the onset of adolescence, possibly due to a modulating effect of female sex hormones on cardiac repolarization. Clinical research data suggests that women account for most cases of drug-induced QT prolongation and torsade de pointes, indicating that there are sex-related differences playing a role in repolarization duration. However, the predisposition to ventricular arrhythmias in women treated with drug-induced QT prolongation is not well understood.

Methods:

This is an observational clinical study. The study population consisted of 20 women of reproductive age recruited from the University of Rochester Medical Center clinic, who were treated with dofetilide as per standard of care for atrial fibrillation. In addition, 20 healthy women subjects of reproductive age were recruited through approved advertisements posted in designated areas in Strong Memorial Hospital.

All subjects underwent three 7-day ECG monitoring acquired using M5 Recorder ECG monitoring. The three recording cycles were planned within pre-specified periods of the menstrual cycle, which is counted from the first day of 1 period to the first day of the next period. Recordings were collected on days 3-9, days 13-19, and days 22-28. Simultaneous saliva samples for sex hormone level testing were obtained on the first day of each recording cycle (days 3, 13, and 22).

Results:

Our data is currently undergoing analysis. The primary analysis of the study is focused on QTc measured during pre-specified 7-day periods to be correlated with sex hormone levels obtained during the same periods.

Conclusion:

Pending data analysis, we hope to show that hormonal changes during the menstrual cycle may affect propensity for ventricular in women who are treated with QT-prolonging drugs.